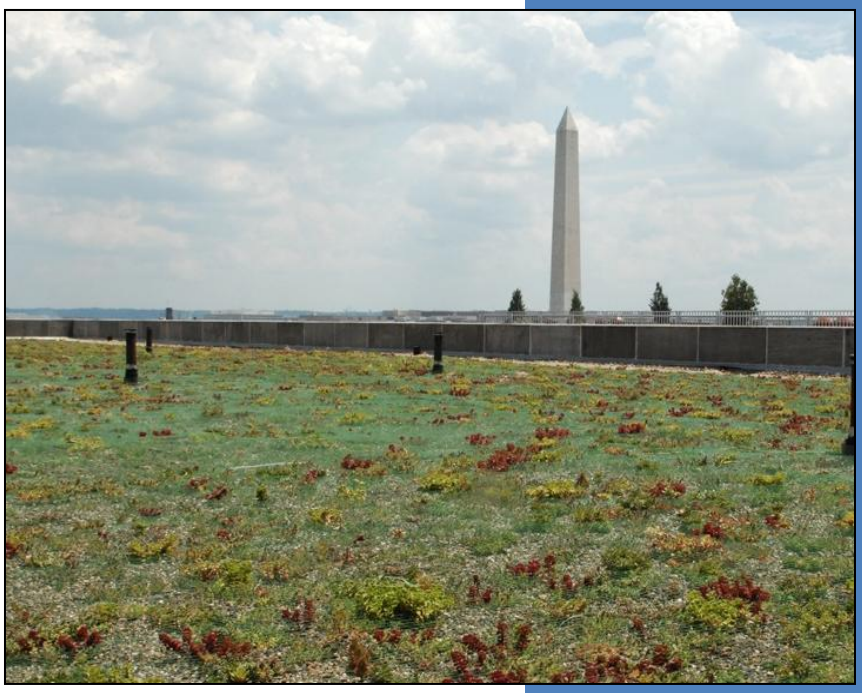
GOVERMENT OF THE
DISTRICT OF COLUMBIA
Vincent C. Gray, Mayor

Municipal Separate Storm Sewer System

NPDES Permit No. DC0000221

2013
DC MS4 Annual Report



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DISTRICT DEPARTMENT OF THE ENVIRONMENT
green forward

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List of Acronyms and Abbreviations

AFF	Alice Ferguson Foundation
AFV	Alternative Fuel Vehicle
Army Corps	U.S. Army Corps of Engineers
AWS	Anacostia Watershed Society
Bag Law	Anacostia River Clean Up and Protection Act
BMP	Best Management Practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSS	Combined Sewer System
CWA	Clean Water Act
DCHA	District of Columbia Housing Authority
DCMR	District of Columbia Municipal Regulations
DCPS	District of Columbia Public Schools
DCRA	Department of Consumer and Regulatory Affairs
DC Water	District of Columbia Water and Sewer Authority
DDOE	District Department of the Environment
DDOT	District Department of Transportation
DGS	Department of General Services
District	District of Columbia
District Government	Government of the District of Columbia
DOH	Department of Health
DPR	Department of Parks and Recreation
DPW	Department of Public Works
Enterprise Fund	Stormwater Permit Compliance Enterprise Fund
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FY	Fiscal Year (October–September)
GAO	Government Accounting Office
GAR	Green Area Ratio
GIS	Geographic Information System
GPS	Global Positioning System
GRHC	Green Roofs for Healthy Cities
GSA	General Services Administration
HWD	District Department of the Environment Hazardous Waste Division
IPM	Integrated Pest Management

LID	Low Impact Development
MWEE	Meaningful Watershed Education Experience
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Infraction
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NWS	National Weather Service
OCC	Office of the Clean City
OCTO	Office of the Chief Technology Officer
OP	Office of Planning
O&M	Operation and Maintenance
Permit	National Pollutant Discharge Elimination System Permit
PROW	Public Right-of-Way
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
SRC	Stormwater Retention Credit
SWAP	Stormwater Advisory Panel
SWEEP	Solid Waste Education and Enforcement Program
SWM	Stormwater Management
SWMD	District Department of the Environment Stormwater Management Division
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TWG	Technical Working Group
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WLA	Wasteload Allocation
WPCCP	Water Pollution Control Contingency Plan
WPD	Watershed Protection Division
WQD	District Department of the Environment Water Quality Division

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DISTRICT OF COLUMBIA

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT ANNUAL REPORT

1 INTRODUCTION

1.1 Background

The Government of the District of Columbia (the District) submits this Annual Report on stormwater pollution control for fiscal year (FY) 2013 (October 1, 2012 through September 30, 2013). This report documents activities required to fulfill the requirements of the District of Columbia's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. DC0000221 (Permit), reissued on October 7, 2011 and modified November 9, 2012, as well as additional activities undertaken by the District's stormwater management program to reduce pollutant loadings from the MS4 to the Potomac and Anacostia Rivers and their tributaries.

The District Department of the Environment (DDOE) compiled this report with assistance and input from the District of Columbia Water and Sewer Authority (DC Water), the Department of Public Works (DPW), the District Department of Transportation (DDOT), and the Department of General Services (DGS).

1.2 Permit Administration

DDOE was designated by the District Department of the Environment Establishment Act of 2005, D.C. Official Code 8-151.01 *et seq*, as the MS4 Permit Administrator and assumed this responsibility in February of 2007. On February 13, 2009, the District submitted to the United States Environmental Protection Agency (EPA) Region III an application for renewal of its MS4 Permit. A draft of the District's next MS4 Permit was issued on April 19, 2010. The District submitted comments on the draft MS4 Permit for EPA's consideration on June 20, 2010. EPA issued the final permit on October 12, 2011 and became effective on January 22, 2012. On November 9, 2012, EPA finalized limited modifications to the MS4 Permit to (1) provide additional public notice and input on the permittee's development of the Consolidated Total Maximum Daily Load (TMDL) Implementation Plan; (2) clarify and provide accountability for specific water quality-related outcomes, specifically on the content and timelines for the Consolidated TMDL Implementation Plan; (3) clarify that the District is the sole permittee; and (4) clarify that the District needs to notify the public of a sanitary sewer system overflow.

Read more about DDOE's stormwater permit at the following links:

- MS4 Permit Administration, http://ddoe.dc.gov/service/separate-storm-sewer-system-ms4-permit

- MS4 Permit, http://www.epa.gov/reg3wapd/pdf/pdf_npdes/stormwater/DCMS4/FinalPermit2011/DCMS4permit2011.pdf

- Final Signed Limited Modification to the DC MS4 Permit, http://www.epa.gov/reg3wapd/pdf/pdf_npdes/stormwater/DCMS4/MS4FinalLimitedModDocument/FinalSignedDCMS4LimitedMod%2011_9_12.pdf

DDOE has executed independent MS4 MOUs with DPW, DDOT and DC Water. These MOUs specify activities to be implemented by the agencies as required under the Permit and specify reimbursement amounts for implementation of these activities. Copies of these MOUs are included in Appendix A of this report. DDOE also partners with the Department of Parks and Recreation (DPR), Office of General Services (DGS), and Office of Planning (OP) to implement Permit activities. An overview of District agency responsibilities for MS4 permit compliance is shown in Table 1.

Table 1 Agencies Responsible for District MS4 Permit Compliance

Responsible Agency	Compliance Activity
DDOE	MS4 program administration Source identification Wet/dry weather monitoring program Wet weather screening program Flood control projects review Construction management and plan review Pollutant control from hazardous waste sites Pesticide, herbicide, and fertilizer application Promoting LID practices Illicit discharge detection Sediment erosion control Inspection/enforcement
DC Water	Floatables reduction program Pollution prevention Operation and maintenance of sewer infrastructure Catch basin cleaning Illicit discharge detection

Responsible Agency	Compliance Activity
DPW	Street sweeping Seasonal leaf and holiday tree collection program Pollution prevention Household hazardous waste collection De-icing and snow removal Stormwater management at municipal waste transfer stations
DDOT	Pollutant reduction from vehicles and roadways Pollution prevention LID practices in public right-of-way
DGS	LID practices on District-owned properties Pollution prevention
DPR	LID practices in District parks and at District recreation centers Pollution prevention
OP	Planning for neighborhoods, public facilities, parks and open spaces, etc. Urban design and land use review

1.2.1 Legal Authority

The District developed and maintains the legal authority to control stormwater pollution within the MS4 drainage area.

The legal authority is established by the following laws and regulations:

- MS4 Program Activities: The Comprehensive Stormwater Management Enhancement Amendment Act of 2008, effective July 1, 2009 (D.C. Official Code § 8-151.51 et seq.); the District Department of the Environment Establishment Act of 2005, effective February 15, 2006 (D.C. Law 16-51, as amended; D.C. Official Code §§ 8-151.01 et seq. (2008 Repl. & 2012 Supp.)); the Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code §§8-103.01 et seq.(2008 Repl. & 2012 Supp.)), as amended;
- Soil and Sediment Control: The Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code 8-103.07 et seq. (2008 Repl. & 2012 Supp.)); the Soil Erosion and Sedimentation Control Act of 1977, effective Sept. 28, 1977 (21 DCMR §§ 500-507; 21 DCMR §§ 40-48);
- Illicit Discharge and Dumping: The Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code 8-103.07 et seq. (2008 Repl. & 2012 Supp.)), as amended;
- Plastic Bag Fee and Enforcement: The Anacostia River Clean-up and Protection Act, effective September 23, 2009 (D.C. Official Code §8-102 et. seq.);

- Coal Tar-Based Pavement Product Ban: Comprehensive Stormwater Management Enhancement Amendment Act of 2008, effective July 1, 2009 (D.C. Official Code § 8-151.81);
- DC Solid Waste Management and Recycling: Title 21 DCMR, Chapter 7, Chapter 8 and Chapter 20;

Additional legal authorities are discussed throughout the report where the activities are addressed.

The Rulemaking on Stormwater Management and Soil Erosion and Sediment Control along with the Stormwater Management Guidebook were finalized on July 19, 2013. An overview of the regulations is included in sections 2.1.1 and 2.2.3 of this report.

- To view information on the Rulemaking for the Stormwater Management and Soil Erosion and Sediment Control: http://green.dc.gov/node/610572

On July 19, 2013, DDOE also finalized the Stormwater Fee Discount Program, which DDOE has named RiverSmart Rewards. Additional information on RiverSmart Rewards is found in section 2.1.4 of this report.

- To view information on the rulemaking establishing the Stormwater Fee Discount Program: http://ddoe.dc.gov/node/324872

In FY 2013, the DDOE continued to draft regulations for the ban on coal tar. DDOE continues to enforce the coal tar ban program based on the legislation, the Comprehensive Stormwater Management Enhancement Amendment Act of 2008.

1.2.2 Stormwater Advisory Panel and Technical Workgroup

The goal of the Stormwater Advisory Panel (SWAP) is to improve water quality of the Anacostia and Potomac Rivers through strategic and collaborative implementation of shared responsibilities under the District's MS4 Permit. This is a cabinet-level group of District agencies with stormwater management responsibilities. The SWAP was established by the Comprehensive Stormwater Management Enhancement Amendment Act of 2009 and is chaired by DDOE's Director. SWAP provides a forum for coordinating agency stormwater responsibilities and executive decision-making to overcome obstacles and resolve disputes. The group is required to meet at least twice per year. The dates and attendance for the 2013 SWAP meetings are shown in Table 2.

In addition to SWAP meetings, the Technical Workgroup (TWG) is required to meet monthly to provide ongoing, staff-level coordination on stormwater issues.

Table 2 2013 SWAP Meetings and Attendance

SWAP Agencies	January 31, 2013 Number of Staff in Attendance	October 16, 2013 Number of Staff in Attendance
DDOE	13	13
DCWATER	2	3
DDOT	5	1
DPR	1	0
DGS	2	1
DPW	1	1
OP	1	2
OCA	n/a	1
Total	**25**	**22**

1.2.3 Program Funding and Implementation Costs

The District's Stormwater Permit Compliance Amendment Act of 2000 requires each agency to budget and fund costs for stormwater management activities that they were required to carry out prior to April 20, 2000. Those agencies continue to budget and fund those stormwater management activities listed in Table 1.

The Enterprise Fund

The District's Stormwater Permit Compliance Amendment Act of 2000 also established a Stormwater Permit Compliance Enterprise Fund (Enterprise Fund) to provide revenue to implement and administer activities directly required by the MS4 Permit. The Enterprise Fund generates approximately $13,000,000 per year that is utilized to substantively fulfill the requirements of the MS4 Permit. DDOE will continue current activities to manage stormwater pollution and encourage improved stormwater management techniques. This law also requires District agencies to maintain budget allocations that support baseline levels of effort for activities that control pollution from stormwater discharges from the MS4. This funding is derived from each agency's general obligation budget

The Anacostia River Clean Up and Protection Fund

The Anacostia River Clean Up and Protection Act (Bag Law) requires all District businesses selling food or alcohol to charge $.05 for each disposable paper and plastic carryout bag. The law allows businesses to keep $.01 (or $.02 if it offers a rebate when customers bring their own bag), and the remaining $.03 or $.04 is deposited in to the Anacostia River Clean Up and Protection Fund. This fund generates approximately $2,000,000 per year and is used to implement watershed education programs, stream restoration, trash retention projects, and to purchase and distribute reusable bags to District residents. Many of these activities also support the Districts compliance with the MS4 Permit.

MS4 Program Budget

The District expends Enterprise Funds and general obligation funds to fulfill its MS4 Permit obligations. DDOE budgets Enterprise Funds solely for activities that are specific to the MS4 Permit compliance. DDOE and other District agencies allocate general funds to complete baseline municipal activities that are necessary to control pollution in MS4 discharges, but are not sufficient to fully comply with the Permit requirements. The Enterprise Fund budget for FY 2014 provides for capital construction costs, operation and maintenance (O&M) of structural controls, and programmatic expansion of non-structural controls and programs. Table 3 provides a summary of the budget for FY 2014 MS4 Permit-required programs.

Table 3 FY 2014 Budget

Permit Section	Topic	FY 2014 Budget[1]
	General MS4 Permit Management	$5,445,000
4.1	Standard for Long-Term Stormwater Management	$250,000
4.1	Tree Canopy	$350,000
4.1	Impervious Surface Retrofits	$6,000,000
4.1	Green Roofs	$1,075,000
4.1	Green Landscape Incentives / RiverSmart	$200,000
4.2	Operation and Maintenance of Stormwater Capture Practices	$75,000
4.3	Management of District Government Areas	$550,000
4.3	Enhanced Street Sweeping	$100,000
4.4	Management of Commercial Institutional Areas	$100,000
4.5	Management of Industrial Facilities and Spill Response	$1,250,000
4.6	Stormwater Management for Construction Sites	$250,000
4.7	Illicit Discharges and Improper Disposal	$100,000
4.8	Flood Control Practices	$200,000
4.9	Public Education and Public Participation	$1,500,000
4.10	TMDL Wasteload Allocation Planning and Implementation	$700,000
4.10	Trash TMDL Implementation	$500,000
5.1	Revised Monitoring Program	$350,000
5.2	Interim Monitoring	$500,000
5.3	Monitoring and Analysis Procedures	$5,445,000
Total		$19,495,000

1 Budget include Enterprise and Bag Law funds that are directed towards MS4 activities. Additional budget is also provided by DDOE and sister agencies for baseline activities that support MS4 Permit compliance and have in been in place prior to FY2000.

2 STORMWATER CONTROL MEASURES

This Annual Report details the District's FY 2013 achievements in address the required provisions of the Permit.

2.1 Standards for Long-Term Stormwater Management

Table 4 includes program elements and strategies the District is required to submit to the EPA for review and approval. Table 5 details compliance with the Permit's numeric performance standards.

Table 4 Stormwater Management Program Submittal Dates

Element	Required Submittal Date	Actual Submittal Date
Anacostia River Watershed Trash Reduction Calculation Methodology	01/22/2013	01/22/2013
Tree Canopy Strategy	01/22/2013	01/22/2013
Catch Basin Operation and Maintenance Plan	07/22/2013	07/05/2013
Outfall Repair Schedule	07/22/2013	07/05/2013
Updated Stormwater Regulations	07/22/2013	07/19/13
Stormwater Retention Standards for Substantial Improvement Projects	07/22/2013	07/19/13
Off-Site Mitigation/ Fee-in-Lieu Program	07/22/2013	07/19/13
Stormwater Management Guidebook	07/22/2013	07/19/13
Retrofit Program	01/22/2014	01/22/2014

Element	Required Submittal Date	Actual Submittal Date
Revised Monitoring Program	05/09/2015	Ongoing
Consolidated TMDL Implementation Plan	05/09/2015	Ongoing
Revised Stormwater Management Program Plan for Public Comment	1/22/2015	Ongoing
Final Revised Stormwater Management Program Plan	01/22/2016	Ongoing

Table 5 Numeric Performance Standards and Compliance

Numeric Requirement	Time Period	FY 2013 Achievement	Achievements to Date
Retrofit 18,000,000 square feet of impervious surfaces	Permit term	980,497 square feet	1,679,047 square feet
Retrofit 1,500,000 square feet of impervious surfaces in the transportation right-of-way	Permit term	165,586 square feet	544,230 square feet
Plant 4,150 trees within the MS4 area (net increase)	Annually	4,319 trees	12,165 trees
Install 350,000 square feet of green roofs on District properties	Permit term	523,968 square feet	603,105 square feet
Remove 103,188 lbs of trash annually from the Anacostia River	By the fifth year of the permit	87,369 pounds	177,819 pounds

2.1.1 Standards for Stormwater Discharges from Development

In FY 2013, DDOE finalized the 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control (2013 Stormwater Rule). The new regulations were published in the D.C. Register on Friday, July 19, 2013.

The 2013 Stormwater Rule satisfies the requirements of the Permit, which requires the District to implement a 1.2-inch stormwater retention standard for land-disturbing activities, a lesser retention standard for substantial improvement projects, and provisions for regulated sites to satisfy these standards offsite. The 2013 Stormwater Rule also includes the Stormwater Retention Credit (SRC) trading program, which allows property owners to generate and sell SRCs by installing green infrastructure that has the capacity to retain stormwater and thereby reduce the runoff that harms District streams and rivers. More information on the SRC trading program can be found in sections 2.1.2 and 2.1.3 of this report.

- To view the 2013 Stormwater Rule and the 2013 Stormwater Management Guidebook (2013 SWMG): http://ddoe.dc.gov/swregs

After publication of the final rule, DDOE scheduled several training sessions for the public and for sister agencies. The first of these trainings were held in FY 2013, and continue into FY 2014.

DDOE held two full-day public sessions on general compliance. These sessions included an overview of minimum control requirements, site and BMP design, use of off-site retention, and the Maximum Extent Practicable (MEP) process for the Public Right-Of-Way (PROW). The trainings included a site design exercise where attendees planned the BMPs for a site to achieve compliance. In addition to the two public sessions, there was an internal DDOE session that covered the same material, as well as a brown bag lunch discussing the new regulations.

There was one public session on the use of off-site retention, the SRC trading program, and the stormwater fee discount program. This half-day session covered when off-site retention is allowed, as well as the two ways to meet off-site retention volume requirements (Offv): SRCs or payment of the In-Lieu Fee (ILF). The session also included a look at the interim database for the SRC and RiverSmart Rewards programs. The session included example calculations for certifying SRCs and applying for the RiverSmart Rewards discount. In addition to the public session, there was an internal DDOE session that covered the same material.

FY 2014 Goals: Additional trainings will continue to be held throughout FY 2014. These include one general compliance training, two SRC trainings, one on the MEP process for the PROW, and several trainings with sister agencies including two with DDOT and one each with DCRA, DGS, DHCD, and DC Water.

2.1.2 Code and Policy Consistency, Site Plan Review, Verification and Tracking

Code and Policy Consistency

To remove barriers to the implementation of the retention performance standards, the District has drafted and amended environmental legislation and regulations. DDOE has also designed the 2013 Stormwater Rule to work in concert with other sustainability initiatives in the District, including OP's development of Green Area Ratio requirements under the zoning code. Along with code and policy revisions, the District maintains a plan review erosion control program for new construction coupled with a field inspection program to ensure compliance with District erosion control and stormwater management regulations.

The Green Area Ratio

The Green Area Ratio (GAR) is a zoning regulation that integrates sustainable landscape elements into parcel site design to promote greater livability, ecological function, and climate adaptation in the urban environment. The GAR sets minimum lot coverage standards for landscaping and site design features in site construction. The GAR assigns a weighted score to a building site based on the types of landscape and site design features that are implemented and the amount of area the features cover. The minimum GAR score needed to reach compliance is determined based on the zoning district of the site. With limited exceptions, sites that require a Certificate of Occupancy must submit a GAR plan as part of the building permit application. These sites include new building construction, additions and interior renovations where the cost of work exceeds 100 percent of the assessed land value. The Green Area Ratio became effective on October 1, 2013. DDOE and the Office of Planning (OP) partnered to offer training sessions to the public and agency staff on October 3, 7, and 11, 2013, at the Department of Consumer and Regulatory Affairs (DCRA).

DDOE has provided training for over 100 members of the public and DC government staff and additional trainings are being scheduled. With input from OP, DCRA, and the Office of Zoning, DDOE developed a GAR brochure and web pages and is finalizing the GAR Guidebook. DDOE staff will be posted periodically at DCRA during the initial transition period to assist permit applicants and answer questions.

The GAR was highlighted at DCRA's 2nd Annual Green Building Symposium and Expo on September 24, 2013, at Gallaudet University. Staff from DDOE, OP, DGS and a local engineering firm held a panel discussion on the synergy between the GAR and the new stormwater regulations. DDOE hosted a table at this event, has distributed the brochure at DCRA and DDOE, promoted the website to stakeholders, and fielded related questions from the development community.

Green Building Act

The Green Building Act of 2006 requires all non-residential District public buildings to meet the U.S. Green Building Council's LEED certification standards for environmental performance at the "Silver" level or higher. District-owned or -financed residential projects 10,000 square feet or larger must meet or exceed the Green Communities certification standard. Beginning January 2012, all new private development projects 50,000 square feet or larger are required to meet LEED certification at the "Certified" level or higher.

Low Impact Development and Green Infrastructure Design Standards

In February 2013, DDOT released Draft Design Standards for Low Impact Development (LID) and Green Infrastructure (GI) for the ROW in the District. Design standards for vegetated systems, permeable pavement, and tree space design. The draft release contains design guidelines, drawings, and specifications. DDOT accepted public comments through April 18, 2013.

Low Impact Development Action Plan

DDOT completed the LID Action Plan to identify ways to increase and facilitate LID implementation in DDOT construction projects and public space permit projects.

- View the LID Action Plan at: http://ddot.dc.gov/DC/DDOT/Projects+and+Planning/Environment/Low+Impact+Development

Sustainable DC

Sustainable DC is the District of Columbia's major planning effort to make the District the most sustainable city in the nation. The Sustainable DC planning process is led by the DDOE and the Office of Planning (OP) with input and participation from District residents.

Mayor Gray has convened a Green Ribbon Committee of public, private and non-profit community leaders to review plan development from a range of perspectives and make sure the plan is beneficial to everyone who lives, works, or plays in the District.

The Mayor also convened a Green Cabinet composed of Agency Directors tasked with determining how District agencies can make the city more sustainable while advancing their core agency missions.

In April 2012, the input from all these groups was combined and analyzed to form *A Vision for a Sustainable DC*. This Vision set the path for the full *Sustainable DC Plan*, which explains how the District will achieve that vision.

In January 2013, Mayor Gray signed the Sustainable DC Act into law. The legislation promotes initiatives like energy efficiency and renewable energy, urban beekeeping, keeping dangerous chemicals out of our rivers, protecting children from toxic exposure, and aiding in energy assistance for low-income and elderly residents.

Site Plan Review, Verification and Tracking

In FY 2013, DDOE developed a database to manage the SRC Trading and RiverSmart Rewards (RSR) programs. Both programs require participants to submit application materials which DDOE may approve or disapprove. In addition, per stormwater management regulations DDOE must track each development sites' discounts and use of SRCs or in-lieu fee (ILF) to meet Offv obligations. Finally, the SRC trading program requires an SRC registry to support price discovery and aid in connecting sellers with buyers and vice versa. Database functions support these and other program needs. Public users may then complete online versions of the following forms and applications:

- Application for Certification of Stormwater Retention Credits;
- Application for Transfer of Stormwater Retention Credit Ownership;
- Application to Use Stormwater Retention Credits for Off-Site Retention Volume;
- Notification of In-Lieu Fee Payment to Meet Off-Site Retention Volume;

- Application to Retire Stormwater Retention Credits; and
- RiverSmart Rewards Standard Application.

After completing applications, public users submit them electronically to DDOE. The database notifies DDOE of new applications. Staff review and make a decision to approve or disapprove each application and the database notifies public users of DDOE's decision. For approved applications for SRC certification, DDOE generates a range of SRC serial numbers and lists them with seller contact information and an asking price in the SRC Registry (octo.quickbase.com/db/behzxhhv3). The Registry also lists contact information for public users who want to buy SRCs. Buyers and sellers may contact each other to negotiate trades. Upon reaching a trade agreement, participants apply to transfer SRCs. If the SRCs are available for sale, DDOE transfers the SRCs between user accounts. The Registry reports SRC information in real time.

After a month of internal testing, DDOE made a beta-version of the database available for public testing in September 2013. Eight public users from the building industry, environmental groups, and engineering and law firms tested and provided feedback on database functions and use. DDOE is incorporating their edits and plans an open release in early FY 2014.

2.1.3 Off-Site Mitigation and/or Fee-in-Lieu

The 2013 Stormwater Rule provides regulated sites with flexible options for meeting regulatory requirements. Under the rule, each major regulated project faces a stormwater retention volume (SWRv) based on either the 0.8 or 1.2 inch storm. After they achieve half of their SWRv onsite, regulated sites may use Stormwater Retention Credits (SRCs) purchased from the private market or pay in-lieu fee (ILF) to meet any remaining retention obligation. Program details are contained in Section 527 and Sections 530 through 534 of the 2013 Stormwater Rule and Chapters 6 and 7 of the 2013 Stormwater Management Guidebook.

In FY 2013, DDOE made significant progress in implementing the SRC and ILF programs. Staff finalized sections on the SRC trading and ILF programs prior to issuing the 2013 Stormwater Rule and Guidebook on July 19, 2013. DDOE also developed a database with public-facing forms and reports to support online applications, approval and disapproval notifications, tracking of SRCs and ILF payments, and the SRC Registry. Other implementation activities in FY 2013 included:

- Developing an SRC website with program information and links to the database and SRC Registry;
- Establishing a special purpose revenue fund for ILF revenue through the Fiscal Year 2014 Budget Support Act;
- Convening a legal workgroup to develop model templates for trading contracts between SRC buyers and sellers;
- Developing a poster and brochures for outreach; and
- Developing a Request for Applications to identify a third-party nonprofit partner to stimulate SRC supply by purchasing SRCs on behalf of the District Government.

DDOE also provided several trainings on the SRC and ILF programs, including:

- Three Use of Off-Site Retention and Generation of SRCs public sessions;
- Three General Compliance public sessions, which included a description and explanation of participation in the SRC trading program;
- One General Compliance internal session; and
- One brownbag on the 2013 Stormwater Rule including the SRC trading and ILF programs.

DDOE expects interest in the SRC trading and ILF programs to increase through FY 2014. Under the transition plan for the 2013 Stormwater Rule, stormwater management plans submitted prior to January 15, 2014 must demonstrate compliance with existing regulations. As regulated sites begin to face retention requirements, they will likely consider SRCs or ILF payment as compliance options. DDOE continues efforts to stimulate supply to meet demand, such as connecting potential buyers and sellers and guiding sites with eligible retention capacity through the process to certify SRCs.

2.1.4 Green Landscaping Incentives Program

The District is using a series of stormwater incentive programs to help single-family residents and commercial properties, multi-family residences, schools and churches plan and implement stormwater retrofit projects and increase planted areas. District incentive programs are:

- RiverSmart Homes
- RiverSmart Schools
- RiverSmart Communities
- RiverSmart Rooftops
- Rain Barrel Rebate
- Shade Tree Rebate
- Rain Garden and Installation of Pervious Pavers Rebate
- Bloomingdale Sewershed Rain Barrel-Cistern Program
- Stormwater Retention Credit Trading
- RiverSmart Rewards

RiverSmart Homes

The District recognizes the importance of targeting homeowners for pollution reduction measures because residential property is the largest single land use type in the city and is the slowest of all construction areas to be redeveloped. Since 2008, DDOE has been implementing RiverSmart Homes aimed at single family homes. The program started with eight demonstration sites—one in each ward of the city. It then expanded to a pilot program in the Pope Branch watershed of the city. The RiverSmart Homes Program is now mature and has been operating citywide since summer of 2009.

FY 2013 accomplishments include the following:

- Installed 776 rain barrels
- Planted 775 shade trees
- Installed 111 rain gardens
- Implemented BayScaping at 128 properties
- Installed pervious pavers at 30 properties
- Conducted 1,010 installations audits
- To view information on the RiverSmart Homes Program: http://ddoe.dc.gov/riversmarthomes

RiverSmart Schools

DDOE's RiverSmart Schools Program works with schools to install LID practices to control stormwater. These practices are specially designed to be functional as well as educational in order to fit with the school environment. Additionally, schools that take part in the RiverSmart Schools program receive teacher training on how to use the sites to teach to curriculum standards and how to properly maintain the sites.

- To view information on the RiverSmart Schools Program: http://green.dc.gov/service/riversmart-schools

In FY 2013 DDOE completed the construction of four (4) RiverSmart Schools projects. Some highlights of these projects are:

SEED School

- Retrofitted 940 square feet of compacted field to a bioretention garden that captures 11,300 square feet of stormwater runoff;
- Installed a 500 gallon cistern that capture runoff from the student dormitory building that will use to water the bioretention; and
- Completed an outdoor classroom courtyard on the campus with seating for 15 students.

Phelps High School

- Removed asphalt to create 1,066 square feet of bioretention in the faculty parking lot; and
- Installed a 500 gallon cistern that capture rooftop runoff for watering plants in the courtyard.

DuPont Park Adventist School

- Installed 500 square feet rain garden with pollination plants on the low point of the early childhood field area.

Kelly Miller Middle

- Installed an additional 550 square feet of reforestation of fruit trees and raised bed gardening; and
- Engaged volunteers on DCPS Beautification Day to conduct basic maintenance/weeding of the garden to prepare the outdoor classroom for the upcoming school year.

RiverSmart Communities

The RiverSmart Communities program offers technical and financial assistance to multifamily residential properties, houses of worship, commercial properties, embassies and universities to install practices such as rain gardens, BayScaping, pervious pavement, and rain cisterns to control stormwater pollution, Figure 1. Properties city-wide can apply for a rebate of up to 60% of the project cost for stormwater retrofits. Properties in priority watersheds can apply for design/build assistance and will be required to pay a smaller copayment, approximately 20% of the project cost.

Figure 1 River Smart Communities Rain Garden Installation

FY 2013 accomplishments are summarized in Table 6.

- View information RiverSmart Communities at http://ddoe.dc.gov/service/riversmart-communities

Table 6 RiverSmart Communities Projects

Property Name	Watershed	Sewer System	Treatment Area (square feet)	Cistern volume (gallons)	Rain Garden Area (square feet)	Bayscaping	Permeable Pavement Area (square feet)	Impervious Surface Removal (square feet)
Mayfair Mansions	Anacostia	CSS	1,200	1,500		700		
Richardson Place Dwellings	Anacostia	CSS	1,000	750				
Kalaroma Mews	Rock Creek	CSS	6,000				5,500	
Harvard Mews	Anacostia	CSS	7,000				7,000	
Fairfax Village	Potomac	MS4	11,000					11,000
St Pauls	Anacostia	CSS	5,300			430	500	

Property Name	Watershed	Sewer System	Treatment Area (square feet)	Cistern volume (gallons)	Rain Garden Area (square feet)	Bayscaping	Permeable Pavement Area (square feet)	Impervious Surface Removal (square feet)
Meadowbrook Phase I	Potomac	MS4	2,800			250	500	
Meadowbrook Phase II	Potomac	MS4	2,500			175	1,075	
Deanwood Station Condominiums	Anacostia	MS4	4,617			270	1,400	
First Baptist Church of Minnesota Avenue	Anacostia	MS4	2,600			210	840	
Total			**44,017**	**2,250**	**1,335**	**5,015**	**12,700**	**11,000**

RiverSmart Rooftops

The District offers rebates for new green roofs on existing buildings of any size and new construction projects that add a green roof that exceeds their requirements for a stormwater management permit. The Green Roof Rebate Program provides base funding of $7 for every square foot of planted area– or – up to $10/square foot in targeted sub-watersheds. Based on District stormwater management priorities, DDOE has selected eight (8) areas on which to focus. The targeted sub-watersheds are:

1. Bloomingdale drainage areas
2. Dumbarton Run
3. Hickey Run
4. Nash Run
5. Oxon Run
6. Pope Branch
7. Texas Avenue Tributary
8. Watts Branch

The 2013-2014 Green Roof Program is administered by the Anacostia Watershed Society for DDOE with funds from the Anacostia River Clean Up and Protection Fund and the Stormwater Enterprise Fund.

- To view information on DDOE's Green Roof Rebate Program: http://www.anacostiaws.org/programs/stewardship/green-roofs

Rain Barrel Rebate

Property owners who purchase and install a rain barrel from a pre-approved rain barrel list are able to apply for rebate. Until January 2013 the rebate amount depended on the volume of the rain barrel. Rain barrels with a capacity of 75 gallons or more were eligible for a $100 rebate and rain barrels with a capacity of 74 gallons or less were eligible for a $50 rebate. Currently, the rebate structure is $1.00 per gallon captured in the rain barrel. Rain Barrel Rebate Installations for FY 2013 are found in Table 7.

Table 7 FY 2013 Rain Barrel Rebate Installations

Rain Barrel Rebate Program			
Rain Barrel Model	Manufacturer	Capacity per Barrel (gallons)	Number of Barrels
Aquabarrel Abe	Aquabarrel	80	1
Earth Minded Rain Station	Aquabarrel	60	3
RiverSafe	RiverSides	132	2
Terra Cotta Rain Wizard	Good Ideas	50	5
Savanna Rain Saver	Good Ideas	55	1
Rainbox	Aquabarrel	75	7
Castilla	Algreen	50	4
DG 55	DG Organic Gardeners	55	8
Earth Minded Rain Station	Aquarbarrel	45	1
Salsa II	Fiskar	58	1
Stoneware Rainwater Urn	Rescue	85	1
Rainwater HOG 75	Rainwater HOG	75	5
Rainwater HOG 51	Rainwater HOG	51	6
	Total		**45**

The Rain Barrel Rebate Program includes outreach to advertise the program through traditional channels and through innovative approaches (e.g., partnerships with local hardware stores). Homeowners are eligible to receive up to two rebates per property. The Rain Barrel Rebate Program is administered by the nonprofit organization, DC Greenworks, and paid for through the Enterprise Fund and the Anacostia River Clean Up and Protection Fund.

- To view information on the Rain Barrel Rebate Program: www.ddoe.dc.gov/service/riversmart-homes-rain-barrels

Bloomingdale Sewershed Rain Barrel-Cistern Program

The Bloomingdale Sewershed Rain Barrel - Cistern Program offers eligible residents located in the Bloomingdale Sewershed a free rain barrel or cistern to help reduce stormwater runoff that can flow from their properties into the streets and add to flooding in the area. The program is available to single-family homes, condominiums, co-ops, apartments, locally-owned businesses, and houses of worship within the Bloomingdale Sewershed. The Bloomingdale Rain Barrel-Cistern Program is funded by DC Water and managed by DDOE.

- To view information on the Bloomingdale Rain Barrel-Cistern Program: http://green.dc.gov/service/bloomingdale-sewershed-rain-barrel-cistern-program

Shade Tree Rebate

The Shade Tree Rebate Program provides rebates to individuals who purchase and plant a tree on residential or commercial private property. Small and medium canopy trees are eligible for rebates up to $50 per tree and select species noted for their large canopy and environmental benefits qualify for rebates up to $100 per tree.

In FY 2013, 238 trees were planted through the Shade Tree Rebate Program.

- To view information on the Shade Tree Rebate: http://ddoe.dc.gov/service/riversmart-rebates

The Rain Garden, Pervious Paver, and Impervious Surface Removal Rebate Program

The Rain Garden, Pervious Paver, and Impervious Surface Removal Rebate Program is for single-family homeowners in the District. The rebate is based on how many square feet of impervious area a property owner is treating with the rain garden or pervious pavers/impervious surface removal. Impervious areas can either be rooftops or areas that are covered in concrete, asphalt, or other impervious surfaces. The rebate reimburses homeowners $1.25 per impervious square foot treated. The minimum square footage that a property owner must treat is 400 square feet, which would total a $500 rebate. The maximum rebate is $1,000 or treating 800 square feet or more of impervious surface. FY 2013 accomplishments are summarized in Table 8.

- To view the Rain Garden, Pervious Paver, and Impervious Surface Removal Rebate application package: http://ddoe.dc.gov/publication/rain-garden-pervious-paver-and-impervious-surface-removal-rebate-application

Table 8 FY 2013 Rain Garden, Pervious Paver, and Impervious Surface Removal Rebate Program Accomplishments

Project Contractor	Rain Garden Installations	Surface Removal Installations	Pervious Pavers Installations	Installation Date	Area Treated (sq/ft)
First Impressions Hardscapes		x	x	11/16/2012	870
First Impression Hardscapes			x	1/3/2013	600
Hanlon Design Build		x		4/4/2013	720
Bona Terra		x		6/24/2013	400
Capital Hardscapes		x	x	6/24/2013	720
Shorb	x				
DC Greenworks			x	6/26/2013	547
First Impression Hardscapes			x	7/10/2013	1898
First Impression Hardscapes		x	x	6/24/2013	692.5
First Impression Hardscapes		x	x	7/10/2013	983
Shorb			x		
First Impressions Hardscapes		x	x	8/27/2013	800
Total					8230.5

Stormwater Retention Credit Trading

The Stormwater Retention Credit (SRC) Trading Program is an innovative market-based program for managing stormwater in the District of Columbia. The SRC Trading Program allows property owners to generate and sell SRCs by installing green infrastructure that has the capacity to retain stormwater and thereby reduce the runoff that harms District streams and rivers. An SRC is worth one gallon of retention for one year, and regulated development sites buy and use SRCs to meet their regulatory requirements for retaining stormwater runoff. Information on the FY 2013 implementation of the SRC Trading Program can be found in Section 2.1.2 and 2.1.3 of this report.

- To view information on the Stormwater Retention Credit Trading Program: http://ddoe.dc.gov/src

RiverSmart Rewards

RiverSmart Rewards is DDOE's Stormwater Fee Discount Program. It offers a discount of up to 55% off the DDOE Stormwater Fee charged on a property's water and sewer utility bill. In order to be eligible for a discount, a property must manage stormwater using retention Best Management Practices (BMPs), such as rain gardens, rain barrels, pervious paving, green roofs, bioretention, and stormwater harvest/reuse systems. Discounts are calculated based on the volume of stormwater retained by eligible BMPs. The maximum discount of 55% is provided when a property manages the 1.2" storm event, and the discount is scaled back proportionately for properties that manage less stormwater.

- To view information on RiverSmart Rewards: http://ddoe.dc.gov/riversmartrewards

2.1.5 Retrofit Program for Existing Discharges

Retrofit Plan

DDOE submitted the District's draft Retrofit Plan on January 22nd, 2014. This plan details performance measures for how DDOE will calculate performance measures for retrofit projects. DDOE's approach is multi-layered and recognizes the different levels and types of treatment provided by various stormwater controls. To achieve 18,000,000 square feet of treatment, the District is implementing a wide range of stormwater management controls. Since many of these projects will be large, multi-year capital projects, the amount achieved each year will vary and cannot readily be broken down into an annual goal. DDOE is on track to meet the 18,000,000 square foot performance goal with current pace of redevelopment under the 2013 Stormwater Rule.

Figure 2The District's First Green Alley

Impervious Surface in the District

The District covers 39,202 acres with a total of 16,997 acres of impervious cover (see Tables 9 and 10). In FY 2013, the District retrofitted a total of 980,497 square feet of impervious surface (see Table 11).

Table 9 Total District Land Area by Watershed

Watershed	Land Area (square feet)	Land Area (acres)
Anacostia River	768,246,713	17,637
Potomac River	518,360,312	11,900
Rock Creek	421,040,752	9,666
Total	**1,707,647,777**	**39,203**

Table 10 Total District Impervious Cover by Watershed

Watershed	Impervious Surface* (acres)	Impervious Surface (square feet)	Percent Impervious Surface
Anacostia River	7,868	342,734,924	44.6
Potomac River	5,463	237,976,429	45.9
Rock Creek	3,666	159,678,779	37.9
Total	**16,997**	**740,390,132**	**43.4**

Table 11 Completed Retrofit Projects in FY 2013

Projects	Number of Practices	Impervious Surface Retrofitted (square feet)	Stormwater Runoff Retained (gallons)
Projects in the PROW	NA	165,586	2,411,716
Green Roofs	21.00	505,293	9,866,317
RiverSmart Homes Rain Barrels	776.00	157,152	3,068,539
RiverSmart Homes Rain Gardens	111.00	48,169	940,544
RiverSmart Homes Bayscaping	128.00	26,787	390,145
RiverSmart Homes Permeable Pavers	30.00	6,278	122,583
RiverSmart Schools Cisterns	2	NA	NA
RiverSmart Schools Bioretention	2	2,416	47,174
RiverSmart Communities Cisterns	2.00	NA	NA
RiverSmart Communities Rain Gardens	5.00	1,204	23,525
RiverSmart Communities Bayscaping	5.00	4,525	88,373
RiverSmart Communities Permeable Pavers	3.00	11,461	223,797

Projects	Number of Practices	Impervious Surface Retrofitted (square feet)	Stormwater Runoff Retained (gallons)
RiverSmart Communities Impervious Surface Removal	1.00	8,579	167,516
RiverSmart Impervious Surface Removal Rebates	17.00	6,419	125,340
Rain Barrel Rebate	45	9,113	177,939
DC Water Permeable Pavers	1	1,401	27,359
DC Water Green Roofs	2	26,110	509,841
Total	**1,151**	**980,497**	**18,190,715**

[1]RiverSmart Homes rain barrels are assumed to treat 210 sf of rooftop area to the 1-inch level.
[2] RiverSmart Homes rain gardens assumed to retain 1 inch of runoff from 450 sf of impervious surface.
[3] RiverSmart Homes permeable pavers assumed to retain 1inch from retrofitted surface area.
[4] RiverSmart Schools cisterns are 500 gallons.
[5] Green roof calculations assume a 4-inch roof depth and 25 percent porosity for all roofs, for an assumed 1-inch retention capacity.
[6] RiverSmart Schools bioretention cells assumed to retain 1inch from impervious parking lots.

For FY 2013, the following project types were counted towards meeting our retrofit performance standard:

Impervious Surface Removal in the Public Right-of-Way

DDOT's Impervious Surface Removal Project has focused on increasing the green space within the PROW of DDOT roadways. This was accomplished through a combination of practices including tree box expansion, tree box creation, continuous strip creation, and large area greening.

Green Median Renovation

Existing medians that are finished with a hardscape such as brick, concrete or, pavers were renovated by removing this impervious surface, and replacing with a turf or mulched surface and planting street trees. These changes to the streetscape resulted in reductions to the amount of stormwater entering the sewer system and ultimately the District's waterways. The increase in planting locations resulted in an expansion in the Urban Tree Canopy.

- View information about DDOT's Green Median and Impervious Surface Removal Projects: http://ddot.dc.gov/DC/DDOT/On+Your+Street/Urban+Forestry/ARRA+Projects+to+Enhance+Urban+Tree+Canopy+and+Increase+Green+Infrastructure.

Green Alleys

DDOT's Green Alley Projects are designed to reduce the quantity and improve the quality of stormwater within the District's PROW.

Green Roofs

Details of the District's green roof installations are outlined in Section 2.1.7 of this report.

RiverSmart Programs

Details of the District's RiverSmart installations are outlined in Section 2.1.4 of this report.

Other Retrofit Projects

This year marked the beginning of several LID installations through DC Water's Clean Rivers "Low Impact Development Retrofit at DC Water Facilities" project. LID projects were installed at the Anacostia Water Pumping Station (bioretention and pervious pavers), East Side Pumping Station (green roof), and Fort Reno Resevoir (green roof and permeable pavers). DC Water completed construction of a green roof over the Blue Plains Security and Visitor's Center.

Retrofit Projects in the Public Right-of-Way

FY 2013, DDOT retrofitted 165,586 square feet of impervious surface, Table 12.

FY 2014 planned retrofit projects in the PROW include bumpouts, curbside bioretentions, curbless roads and green alleys. In addition, DDOT's ongoing programs will continue:

- RiverSmart Washington
- LID Retrofit for Roadways
- Bloomingdale Flooding Mitigation
- Green Alleys

Table 12 Completed Retrofit Projects in the PROW

Site Name	Sewershed	Watershed	LID Type	Size (square feet)	Size (acres)
DDOT - Completed Projects					
Remove Impervious Surface - 2013	CSO	City-wide	Remove paving - Add green space	81,624	1.874
Penn. Ave ramp to MD-295	MS4	Anacostia	Bioretention	7,405.2	0.17
Bloomingdale - Bioretention at T St	CSO	Anacostia	Bioretention	15,246	0.35
Bloomingdale - Green Alley	CSO	Anacostia	Permeable Pavement	10,454.4	0.24

Site Name	Sewershed	Watershed	LID Type	Size (square feet)	Size (acres)
34th and Tunlaw	CSO	Potomac River	Bioretention	7,776	0.179
Private - Completed Projects					
Consolidated Forensic Lab	MS4	Potomac River	Streetside Bioretention Planters	7,400	0.17
NPR Headquarters	CSO	Anacostia	Streetside Bioretention	19,500	0.448
318 Eye St NE	CSO	Anacostia	Bioretention Planters	16,180	0.371
Total				**165,586**	**3.801**

Volume and Pollutant Reductions

DDOE calculated the potential pollutant load and volume reductions achieved through the DC Retrofit Program. Table 13 details the runoff reductions from retrofit projects in the District.

In addition to stormwater runoff volume reductions, DDOE estimated potential pollutant load reductions resulting from these retrofit projects for bacteria (i.e., fecal coliform), nitrogen, phosphorus, suspended solids, copper, lead, zinc, and trash, as shown in Table 14. Load reduction estimates for conventional pollutants are based on BMP removal efficiencies contained in the 2005 TMDL Wasteload Allocation (WLA) Implementation Plans for the Rock Creek and Anacostia Watersheds. Load reductions for trash are based on the trash loading coefficients developed for the Anacostia Trash TMDL. These methodologies will be revisited and updated as the District begins to develop its Consolidated TMDL Implementation Plan. For example, estimates for fecal coliform will be updated to estimate *E. coli*. BMP pollutant removal efficiencies will be updated as necessary for other pollutants of concern, as well. Finally, while the Permit's retrofit requirements direct the District to estimate pollutant load reductions for cadmium, there are no established TMDLs in the District for cadmium. Also, the waters of the District are not listed as impaired by cadmium.

Table 13 Stormwater Retained from Retrofit Projects

Watershed	Impervious Surface Retrofitted (square feet)	Impervious Surface Retrofitted (acres)	Runoff Retained (gallons)
Anacostia	717,924.13	16.48	13,676,879.69
Rock Creek	105,318.40	14.90	2,056,440.01
Potomac	73,167.90	1.68	1,353,380.43
City Wide	81,624.00	1.87	1,188,832.24
Total	**978,034.43**	**34.94**	**18,275,532.37**

Table 14 Pollution Load Reduction from Retrofit Projects

Watershed	Fecal Coliform (MPN/ year)	TN (pounds / year)	TP (pounds / year)	TSS (pounds/ year)	Copper (pounds/ year)	Lead (pounds/ year)	Zinc (pounds/ year)	Trash (pounds/ year)
Anacostia	$7.54X10^{10}$	142.40	8.61	5,484.30	1.32	1.98	11.54	487.25
Rock Creek	$1.13X10^{10}$	20.89	1.06	804.54	0.15	0.29	1.69	71.48
Potomac	$7.45X10^{9}$	14.51	1.04	558.94	0.17	0.20	1.18	49.66
City Wide	$3.92X10^{9}$	1.99	0.82	187.06	0.11	0.00	0.22	0.00
Total	**$9.45X10^{12}$**	**179.79**	**11.54**	**7,034.84**	**1.75**	**2.47**	**14.63**	**608.39**

Federal Facilities

The District does not have jurisdiction over federal lands to require the installation of structural retrofits to control stormwater pollutants that originate on federal lands. However, the District partners with many federal agencies to control stormwater runoff and to protect the Chesapeake Bay.

The EPA Chesapeake Bay Program is active in overseeing all other jurisdictions as they implement the Bay-wide TMDL. They also oversee the Watershed Implementation Plans (WIPs) being implemented by each state and the District of Columbia. The DC WIP outlines all the BMPs and actions that each federal agency committed to perform on their District properties. Many federal agencies have reported making substantial progress on these BMPs, with only a few agencies reporting they lack budget for the activities listed.

Additionally, the District worked with federal agencies, EPA Region III, and the Bay Program to develop and sign an MOU, which commits the signatories to work with DDOE on stormwater-related activities, particularly the items outlined in the WIP.

District-Owned Properties

DDOE continues to work with the DGS Office of Sustainability and Energy Management to identify retrofit project opportunities, as well as to incorporate LID into new construction. DGS staff participates in monthly MS4 TWG meetings, and the Director of DGS is a member of the SWAP.

FY 2014 Goals: DC Water will continue construction activities under the Low Impact Development Retrofit at DC Water Facility Project. The planned projects in FY 2014 include installing 15 bioretention facilities in the Bloomingdale neighborhood, installing bioretention at the Anacostia Water Pumping Station, and installing a green roof and pervious pavers at the Fort Reno Reservoir.

DDOE will continue to fund and install LID throughout the District through various programs. Additionally, DDOE will track and report retrofit installations and progress towards meeting the District's performance goal of retrofitting 18,000,000 square feet of impervious surface.

2.1.6 Tree Canopy

Tree Canopy Plan

In January 2013, DDOE and DDOT's Urban Forestry Administration (UFA) published the District's Draft Urban Tree Canopy Plan for public comment in the D.C. Register. In March 2013, DDOE and UFA had a conference call with EPA Region III where EPA provided initial feedback to the plan. During this conference call EPA Region III stated that they would also provide written comments. The District agreed to respond to EPA and other stakeholder comments by incorporating appropriate changes to the Draft Urban Tree Canopy Plan and creating a response document to each comment received. To date the District has not received formal comments from the EPA and no changes have been made to the draft plan.

- To view the Draft Urban Tree Canopy Plan: http://ddoe.dc.gov/treecanopyplan.

Tree Planting in the District

In an effort to improve air and water quality, reduce the urban heat island effect, and offset greenhouse gas emissions, the District has adopted a 40 percent tree canopy goal. Currently, UFA plants and maintains the District's street trees. DDOE, with help from nonprofit partners such as Casey Trees and Washington Parks and People, plants trees on private, federal, and other District lands.

- To view information about UFA's Tree Planting Program: http://dc.gov/DC/DDOT/Services/Tree+Services/Tree+Planting
- To view information about DDOE's Shade Tree Rebate Program: http://green.dc.gov/service/riversmart-homes-shade-tree-planting

Table 15 details DDOE and its partner's tree planting efforts in FY 2013. Figure 3 is a map of UFA's tree plantings in the MS4 area.

Research estimates that street tree annual survival rates ranged from 94 to 97 percent. Based on this research the District is assuming a 5 percent mortality rate. Using this assumption, the District has achieved a net increase of 9,066 trees FY 2013.

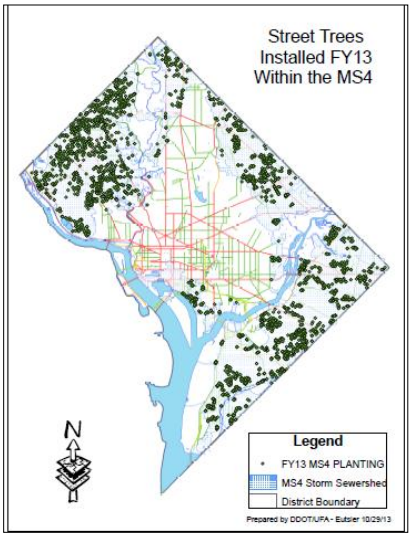

Figure 3 Street Tree Planting in FY 2013

Table 15 Trees Planted by Program for FY 2013

Program	Trees Planted Districtwide	Trees Planted in MS4 Area
RiverSmart Homes Tree Planting	773	510
Casey Trees Tree Planting	1,195	NA
UFA Districtwide Tree Planting	7,000	3,705
Tree Rebates	238	157
Stream Restoration Tree Planting	0	0
National Park Service Tree Planting	unknown	unknown
Washington Parks and People Tree Planting	74	
Pepco Tree Program	264	174
Total Trees Planted	**9,544**	**4,546**
Net Trees Planted	**9,066**	**4,319**
Estimated Annual Stormwater Volume Reduction (gallons)	11,727,999	5,587,164

1 5% tree mortality rate
2 1 inch of rainfall per acre is equal to 27,000 gallons of stormwater
3 Assumed 39.7 inches of average rain fall per year
4 CWP credits a 10% reduction in stormwater from tree cover

According to the 2012 Tree Report Card (the most recent report) by Casey Trees, the District tree canopy has currently been assessed at 36 percent, which translates into an A- grade for Tree Coverage when weighed against the District's 40 percent canopy goal. The Report Card also gives the District an A+ grade because District partners planted above the target of 8,600 trees. DDOE and UFA are currently building capacity to track tree mortality and replacement tree survival. This will help the District meet its tree canopy goals.

FY 2014 Goals: For FY 2014, DDOT has committed to plant 7,500 street trees across all eight Wards. Through its RiverSmart Homes and Tree Rebate programs, DDOE anticipates the planting of over 1,000 trees on private property in the District. Finally, DDOE will be undertaking two stream restoration projects which will also involve planting hundreds of trees.

Additionally, as part of Sustainable DC initiative the District will begin implementing tree-planting plans for schoolyards and public parks. The Sustainable DC Act of 2013 requires payment to immediately offset the destruction or removal of a tree. This change will allow the District Government to plant replacement trees on public space throughout the city to more rapidly replace lost trees and help achieve the citywide 40% tree canopy goal.

2.1.7 Green Roof Projects

The District continues to aggressively retrofit existing rooftops and install new green roofs on District building. In FY 2013, the District installed:

- 523,968 square feet of green roofs Districtwide

- 416,674 square feet of green roofs were installed in the MS4 area
- 27,656 square feet of green roofs through the RiverSmart Rooftops Program

DDOE continues to track green roof projects. This database contains projects that are regulated through the submission of plans because they are over 5,000 square feet in area, RiverSmart Rebate projects, and other subsidized green roof projects. DDOE is regularly updating the database as additional green roofs are installed and verified through our inspection program. Table 16 has a detailed summary of District green roof installations in FY 2013.

Table 16 Summary of District Green Roof Installations Completed in FY 2013

Sewer System	Watershed	Ownership	Funding Source	Project Type	Size (Square Feet)
CSS	Anacostia	Private	Private	new	32,500
CSS	Anacostia	Private	Private	new	17,258
CSS	Anacostia	Private	Private	new	4,460
CSS	Anacostia	Private	Green Roof Rebate Program	new	4,062
CSS	Anacostia	Private	Private	new	3,446
CSS	Anacostia	Private	Private	new	1,690
CSS	Anacostia	Private	Private	new	1,156
MS4	Anacostia	Federal	Federal	new	260,000
MS4	Anacostia	Federal	Federal	new	140,000
MS4	Potomac	Embassy	Green Roof Rebate Program	new	10,098
CSS	Potomac	Private	Green Roof Rebate Program	retrofit	4,602
CSS	Anacostia	Private	Green Roof Rebate Program	retrofit	1488
CSS	Anacostia	Private	Green Roof Rebate Program	retrofit	800
CSS	Anacostia	Private	Private	retrofit	600
CSS	Anacostia	Private	Green Roof Rebate Program	retrofit	230
CSS	Rock Creek	Private	Green Roof Rebate Program	retrofit	220
CSS	Rock Creek	Private	Green Roof Rebate Program	retrofit	195
CSS	Anacostia	Private	Green Roof Rebate Program	retrofit	194

CSS	Anacostia	Private	Private	New	10,393
CSS	Anacostia	Private	Private	New	3,500
	Anacostia	Private	Private	Retrofit	6,576
CSS	Anacostia	Private	Private	New	20,500
				Total	523,968

Structural Assessment

DGS continues implementing the Smart Roof Initiative which includes structural assessments of existing District-owned buildings to see if they can be retrofitted with cool, green, or solar roofs.

In FY 2014, DGS has recommended that six District buildings be retrofitted with a green roof: Cardoza High School, Merrit Police Station, Bundy School, Stuart Hobson, Eastern High School, and DC Armory.

FY 2014 Goals: DDOE will continue tracking, inspecting and funding green roof installations throughout the District of Columbia. DGS and DDOE will continue to report on the progress of the green roof structural assessment grant and meeting the green roof numeric requirement of the MS4 Permit.

2.2 Operation and Maintenance of Retention Practices

2.2.1 District-Owned and Operated Practices

DDOE updated operation and maintenance protocols as well as training programs for District-owned on-site retention practices. These include maintenance needs, inspection frequencies and tracking. DDOE is in the process of creating a new data base that will serve as the primary tracking and reporting system for all stormwater management practices in the District. DDOE inspectors are now using Toughbooks in the field and Watershed Protection Division continues to work on automating inspection forms for all inspection and enforcement operations as a move toward a totally paperless process. This is expected to streamline regulatory operations by allowing inspectors to have a complete inspection history of any site while in the field, including inspections related to other media.

The District is expanding educational training for District agency employees, particularly with regard to Stormwater Pollution Prevention techniques and good housekeeping training.

2.2.2 Non-District-owned and Operated Practices

DDOE continues to track practices on private property in the District from its plan review database. The review database contains projects that are regulated through the submission of stormwater management plans because they have disturbed over 5,000 square feet. The updated plan review database will more effectively track BMP installations, maintance, and other relevant information to reflect the fundamental change to a retention-base regulatory structure of the new 2013 Stormwater Rule. Section 4.1.2 of this report details the database to manage the Stormwater Retention Credit (SRC) trading and RiverSmart Rewards (RSR) programs, which

DDOE is treating as an interim database. There are plans to incorporate these programs into the larger plan review database and tracking system.

2.2.3 Stormwater Management Guidebook and Training

On July 19, 2013 DDOE released the 2013 Stormwater Management Guidebook (2013 SWMG), which provides technical guidance on complying with the 2013 Stormwater Rule. The SWMG is available at ddoe.dc.gov/swregs. The website contains a link to a downloadable version of the entire SWMG, as well as PDF versions of each chapter and each BMP section within Chapter 3 and each individual Appendix. The webpage also contains a link to downloadable versions of several spreadsheets developed to assist with determining project compliance, and calculating SRCs that a project could earn. The available spreadsheets include the "General Retention Compliance Calculator" tool, a series of worksheets for the application and review of the proposed Maximum Extent Practicable (MEP) for the reconstruction of existing PROW, and an SRC Calculator to be used by SRC trading program participants.

After publication of the 2013 Stormwater Rule, DDOE held several training sessions for the public and for sister agencies. Details of the trainings can be found in section 2.1.1 of this report.

- Information and schedules for upcoming Stormwater Guidebook training: http://green.dc.gov/node/619262

FY 2014 Goals: DDOE has committed to ensuring that interested stakeholders have the opportunity to participate in training sessions and will continue to add trainings based on stakeholder and public interest.

2.3 Management of District Government Areas

2.3.1 Sanitary Sewage System Maintenance Overflow and Spill Prevention Response

DC Water continues to implement an effective response protocol for overflow events. This protocol includes:

- Investigating complaints received within 24 hours of the incident report as outlined in the DC Water Emergency Command Center procedures and required by the DC Water All-Hazard Initial Response Actions Plan (2010).
- Responding within two hours to overflows for containment. Instructions on overflow response is located in the DC Water Sewer Emergency Containment Plan (2013) and DC Water All-Hazard Initial Response Actions Plan (2010).
- Notifying appropriate sewer and public health agencies within 24 hours when the sanitary sewer overflows to the MS4. Agencies are notified within 24 hours (per permit requirements) as identified in the DC Water Sewer Emergency Containment Plan (2013), DC Water Crisis Communication Plan, and the DC Water All-Hazard Initial Response Actions Plan (2010).
- Notifying the public in a timely and effective manner in the event of a discharge into the MS4 that may adversely affect public health. The procedures for notification are contained in the DC Water Crisis Communication Plan.

2.3.2 Public Construction Activities Management

The District continues to comply with the construction and development requirements outlined in the MS4 Permit. Details of the construction management program are found in Section 2.6 of this report.

2.3.3 Vehicle Maintenance / Material Storage Facilities / Municipal Operations

Pollution Prevention

DDOE increased efforts to provide assistance to District agencies, including material storage facilities and equipment storage, in developing Stormwater Pollution Prevention Plans (SWPPPs) to better address spills and contingencies at their facilities. DDOE hired a pollution prevention coordinator to provide compliance assistance for sister agencies. To date, the coordinator's efforts have focused on building a framework for ongoing municipal pollution prevention efforts, including improved training materials and updating SWPPPs. The coordinator has also focused on identifying points of contact within District agencies and establishing better relationships with those contacts while working with them to identify areas of improvement in their agencies.

In FY 2013, DGS submitted a draft SWPPP that will be finalized in FY 2014. DC Water and DPW began updating existing SWPPPs to reflect facility changes. While the process of developing the SWPPPs continues, DDOE is moving forward with increased compliance assistance training and inspections of municipal facilities.

For agencies that already have SWPPPs, such as DPW and DC Water, DDOE is working to assist agencies with updates to the plans and with implementation.

District Fleet

DPW elected to purchase alternative fuel vehicles (AFVs) to reduce particulate vehicle emissions that contribute to stormwater runoff, Table 17.

Table 17 District Alternative Fuel Vehicles Fleet

Vehicle	Number of DPW Maintained Vehicles
Biodiesel	923
E85	647
Natural Gas	154
Hybrid	107
Total	**1,831**

FY 2014 Goals: DDOE will establish a schedule to inspect municipal vehicle maintenance, material storage, and operations facilities. DDOE will work with District agencies to finalize or update SWPPPs for DGS, DC Water, DCHA, DPW, and DDOT. DPW will continue to maintain and purchase additional AFVs as needed.

2.3.4 Landscape and Recreation Facilities Management, Pesticide, Herbicide, Fertilizer and Landscape Irrigation

Pesticides

The Pesticide Education and Control Amendment Act of 2012 (PECA) became effective on October 23, 2012, requiring DDOE, among other things, to issue rules classifying pesticides used in the District, restricting pesticide applications and providing exemptions, prescribing annual reporting requirements, setting pesticide registration fees, and establishing integrated management principles. DDOE is drafting implementing regulations for PECA, these will outline Integrated Pest Management (IPM) and pesticide applications.

Training and Certification

DDOE's Pesticide Management Program trains commercial applicators in the legal and safe appliance of pesticides and herbicides. Commercial applicators must receive a certification through the program to legally apply pesticides and herbicides in the District. DDOE's Toxic Substance Division is responsible for developing, updating, and administering examinations to qualified applicants for certification as pesticide applicators in The District of Columbia.

DDOE's Hazardous Materials Branch tracks certified pesticide applicators throughout the District. In FY 2013, 1,372 applicators were certified.

Inspections

DDOE's Toxic Substance Division is also responsible for regulating worker protection, ensuring compliance of both District and Federal laws, and inspections of workplaces, worksites, and retail establishments that sell, store, or use pesticides within the District.

DDOE conducts inspections of retailers, wholesalers, and distributors of pesticide products not registered in the District or with the EPA, pesticides suspected of being shipped or distributed in violation of the District Pesticide Operations Act, pesticides displayed for sale in a manner to endanger human health and for pesticides that have been suspended or cancelled by the EPA.

Monitoring

The District waters are tested regularly for the presence of pesticides, herbicides, and fertilizers. Pesticides are monitored as part of DDOE's overall wet and dry weather stormwater sampling and analysis program.

FY 2014 Goals: DDOE will work with relevant sister agencies to include Integrated Pest Management as part of their overall SWPPPs.

2.3.5 Storm Drain System Operation and Management and Solids and Floatables Reduction

The District continues to conducts routine catch basin cleaning and repair activities and floatables removal.

Catch Basin Cleaning and Outfall Repair

There are approximately 25,000 catch basins located within the public right-of-way in the District. Approximately 19,674 catch basins are in the MS4 area, with the remainder in the CSO area. DC Water conducts the operation and maintenance of pipes and conduits carrying stormwater flow and does not differentiate between the two systems for maintenance purposes and works to keep all catch basins clean.

FY 2013 catch basin cleaning and repair activities:

- DC Water cleaned 36,956 catch basins
- DC Water repaired 366 catch basins

The number of catch basins cleaned and repaired has remained relatively constant since FY 2004. Figure 4 shows the ten-year trend for the cleaning and repair of the District catch basins.

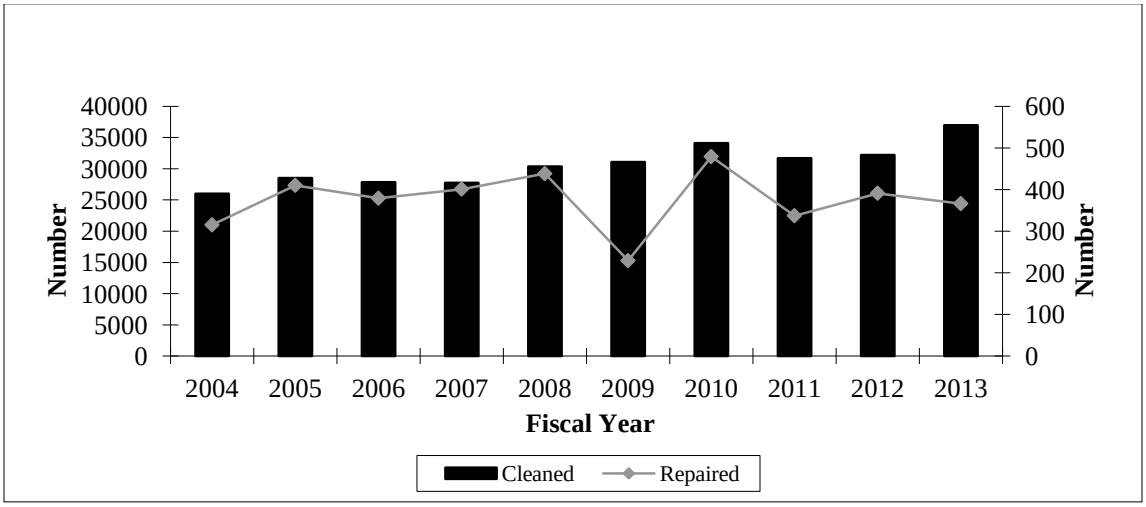

Figure 4 Number of Catch Basins Cleaned and Repaired

As required by the MS4 Permit, in July 2013 DDOE and DC Water submitted an Optimal Plan for Catch Basin Cleaning, Inspection, and Repair Report and an Outfall Repair Schedule and Report to EPA Region III. These documents were posted to the DC Register for public comment and submitted to EPA for review and approval. Upon EPA approval of the deliverables, the District will begin implementing the recommendations of the plans.

- To view information about DC Water's catch basin repair and cleaning activities: http://www.dcwater.com/wastewater_collection/catch_basin.cfm.

- To View the Optimal Catch Basin Cleaning, Inspection, and Repair Report: http://ddoe.dc.gov/draftcatchbasinreport
- To View the Draft Outfall Repair Schedule and Report: http://ddoe.dc.gov/draftoutfallreport

Floatables Reduction

DC Water continues to conduct the floatables reduction program utilizing skimmer boats on the Potomac and Anacostia Rivers. Activities to remove floatable debris and trash from the rivers as well as accumulated trash on river banks continue five days a week using skimmer boats and support boats. In FY 2013, DC Water removed 410 tons of debris. Figure 5 shows the 11-year trend of floatables tonnage removed from the District's rivers.

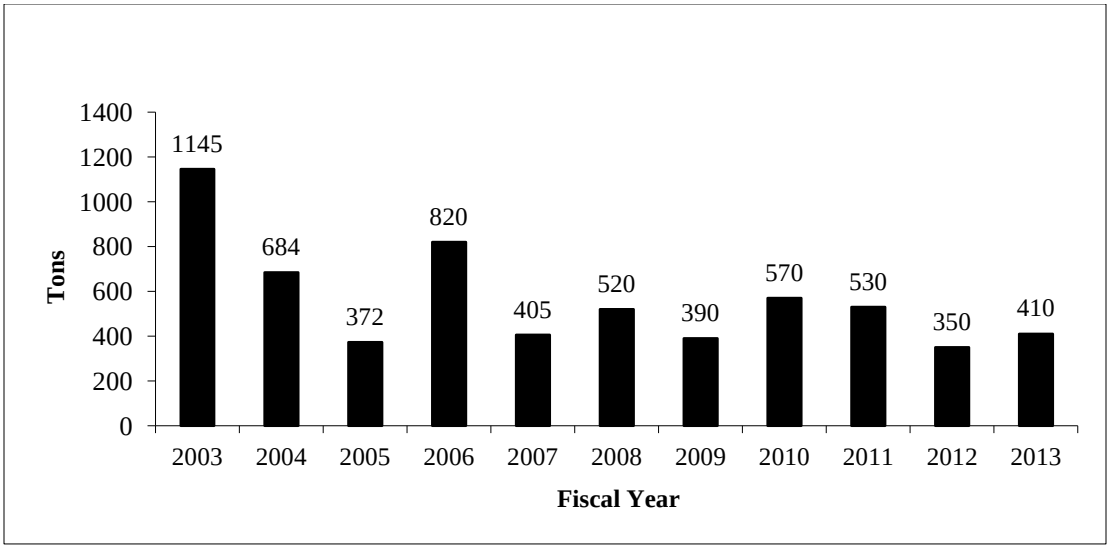

Figure 5 Floatables Removed

Trash TMDL Compliance

The District continues to comply with the Anacostia River Trash TMDL. Implementation activities can be found in section 2.10.1 of this report.

FY 2014 Goals: DC Water will continue to conduct the floatables reduction program on the Potomac and Anacostia River. Catch basin cleaning and outfall repair activities will also continue.

2.3.6 Streets, Alleys, and Roadways

Street Sweeping

DPW is responsible for street sweeping activates in the District. DPW uses two basic methods to clean and sweep streets: mechanical street sweeping and litter vacuum personnel, complimented by truck crews that clean streets where the density of parked cars prohibits the effectiveness of mechanical cleaning.

Table 18 illustrates the 13-year trend of street sweeping and litter receptacle activities.

- To view information about DPW's Street Sweeping Program: http://dpw.dc.gov/page/street-and-alley-cleaning

Table 18 DPW Street Sweeping and Debris Collection Activities

Fiscal Year	Streets Swept (miles)	Alley Segments Swept	Number of Litter Receptacles Cleaned	Litter and Debris Collected (tons)
2001	34,000	8,751	4,000	3,400
2002	74,490	16,400	4,000	8,920
2003	102,181	41,238	4,050	9,516
2004	103,163	13,354	4,050	9,346
2005	91,649	20,897	4,050	7,755
2006	72,468	3,781	4,200	6,632
2007	68,189	5,944	4,324	6,388
2008	64,955	4,181	4,445	7,411
2009	62,972	3,550	4,445	7,883
2010	87,837	2,397	4,445	7,834
2011	80,489	2,842	4,600	7,872
2012	82,240	3,647	4,600	6,851
2013	88,705	5,543	5,000	6,509

Snow and Ice Removal

The District implements its snow removal and de-icing program to ensure safe passage on its roadways using de-icing materials that provide the minimum impact practicable to the stormwater runoff from snow and ice that enters the MS4. In FY 2012, DPW assumed responsibility for the District's snow removal and de-icing program, which had previously been coordinated through DDOT. In FY 2013, The District received 2.5 inches of snow and mobilized various levels of resources for snow removal trucks 20 times based on weather predictions.

De-icing Activities
The District continues to research and utilize the most efficient and environmentally friendly de-icing products. The main tool utilized by DPW for snow and ice control is sodium chloride (rock salt).

DPW expanded the liquid pretreatment of bridges and roadways to include agricultural products, such as beet juice, which helps to melt snow and ice. This allows DPW to treat the roads and bridges before the precipitation and provides a safer roadway surface. The goal of the beet juice pretreatment is to reduce salt usage and find alternatives for de-icing products or additives, to reduce corrosion on bridges and equipment, and protect the environment. DPW has 12 liquid spray trucks, 300 pieces of snow removal equipment, and a computerized brine making machine that mixes the materials. The District has 60,000 gallons of storage capacity.

Training
Yearly, the District conducts a Snow Plow Driver Training Program that stresses the importance of sensible salting and proper calibration of spreaders. This program consists of a classroom training that every District snow plow driver must attend.

Salt Storage Capacity
The District operates five salt storage facilities that contain 38,000 tons of rock salt. At all of the facilities, the runoff is controlled by a stormwater management facility to reduce the amount of pollutants. Four of the five facilities are located within the MS4 area.

The locations of the four facilities inside the MS4 area are (1) Potomac Avenue and R Street SW, (2) 3815 Fort Drive NW, (3) 401 Farragut Street NE, and (4) underneath the Key Bridge. All District salt dome storage facilities are constructed with stormwater BMP structures for load discharge reductions.

Snow Storage
If the District needs to haul snow due to major snow falls, DPW would utilize Lots 6, 7 and 8 of Robert F. Kennedy Memorial (RFK) Stadium, located in Ward 7. The District utilizes a strategy to minimize the impact of snow removal and stockpiling operations. This includes sweeping the storage area prior to the snow event, installing silt fence along the downside of the parking lots, and keeping catch basins clean and open.

FY 2014 Goals: DPW is continuing to expand the use of liquid applications, Snow Plow Driver Training Program, and use of Automated Vehicle Location (AVL) technology to better manage District resources. Additionally, DPW is piloting 25 ceramic rubber plow blades for better snow plowing capacity. With more efficient plowing technology DPW will be able to reduce the use of salt to remove snow. The District is also completing the construction of a new modern salt storage facility at Ft. Reno in Ward 3.

2.3.7 Infrastructure Maintenance / Pollution Source Control Maintenance

DDOE's Inspection and Enforcement Branch (IEB) of the Watershed Protection Division (WPD) is a critical component of the MS4 Program. IEB staff conduct inspections for erosion and

sediment control and by conducting construction inspections of sites regulated by the District's stormwater management regulations. The IEB also conducts maintenance and operation inspections of stormwater retention Best Management Practices (BMPs) to ensure good repair and function of these facilities. Data on these inspection efforts is presented in Section 2.4.2.

2.3.8 Public Industrial Activities Management / Municipal and Hazardous Facilities

DDOE continues to update industrial facility location data in a Geographic Information System (GIS), based on field verification for 60 facilities within the MS4 service area that are part of NPDES, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and/or Resource Conservation and Recovery Act (RCRA) databases). DDOE has prepared a database that includes facilities in the District that are registered with Federal and state regulators because they generate, store, or have released hazardous materials.

The US EPA issues the NPDES permits in the District. The list of facilities is included in Appendix A.4 and can also be found at http://www.epa.gov/reg3wapd/npdes/dcpermits.htm.

Resource Conservation and Recovery Act Inspections

Inspection and monitoring of hazardous waste facilities is the responsibility of DDOE's Hazardous Waste Division (HWD). HWD has procedures in place to investigate sites and spills, and its inspectors report spills to DDOE's WQD or DC Water for further water quality investigation. HWD reported 3 spills in FY 2013.

In accordance with the Permit, the District tracks industrial facilities within the District that are subject to regulation under the CERCLA. There are 33 CERCLA sites or facilities with an NPDES permit within the District. CERCLA status is not permanent; as the sites are cleaned up, they are moved off the active list. The list includes private and Federal sites.

DDOE continues to conduct inspections to determine compliance with hazardous waste regulations. DDOE conducted inspections at RCRA Large Quantity Generator (LQG), Small Quantity Generator (SQG), and Conditionally Exempt Small Quantity Generator (CESQG) facilities, Table 19. HWD conducted 50 inspections in FY 2013.

Table 19 Hazardous Waste Generators in The District

Generator Type	Quantity
RCRA LQGs	34
RCRA SQGs	79
CESQGs	795

FY 2014 Goal: The District will continue to identify and monitor hazardous waste from industries and businesses within the District through the use of inspections and investigations in water quality.

2.3.9 Emergency Procedures

The District maintains an illicit discharge and emergency response program designed to detect and eliminate illicit discharges. DDOE, with the support of DC Water and DPW, conduct activities related to illicit discharge detection and elimination.

DDOE staff continued to investigate illicit discharge complaints. DDOE personnel conduct detailed investigations of each complaint. Often DDOE is able to respond immediately by sending personnel into the field. Depending on the characteristics of the discharge described, DDOE might alternatively refer the case to a more appropriate District agency (e.g., in the case of water main breaks or other sewer infrastructure problems DC Water is contacted to resolve the problem). Depending on the extent and source of the discharge, federal entities such as EPA, U.S. Coast Guard or NPS may be called upon for assistance with sample analysis, investigation, or containment.

DDOE responded to 80 incidents in the District. The causes of these incidents are:

- Container or system failure (12)
- Container damage (6)
- Fire or explosion (8)
- Illegal dumping (16)
- Vadalism or malicious act (4)
- Sewage overflow (2)
- Improper connection (4)
- Lack of maintenance (6)
- False call or nothing was found (5)
- Improper storage (2)
- Illegal demolition (2)
- Dye testing (1)
- Overflow or overfill (4)
- Biological growth or contamination (4)
- Unknown source or cause (4)

FY 2013 Goals: The District will continue to perform compliance and enforcement activities in accordance with EPA and District regulations. DDOE personnel will continue to investigate potential illicit discharges in response to reports by citizens or government personnel.

2.3.10 Municipal Official Training

The District continues to implement a training program for District staff who manage, investigate or work on stormwater practices regularly attend relevant trainings.

Examples of trainings held in FY 2013 include:

- DDOE pollution prevention coordinator earned certifications in Qualified Compliance Inspector of Stormwater and the Qualified Preparer of Stormwater Pollution Prevention Plans.
- Members of the monthly MS4 technical workgroup attended EPA and Center for Watershed Protection webinars.
- DDOE held pollution prevention trainings with District facility staff.
- DDOE engineers attend refresher trainings to improve the efficiency and effectiveness of plan review.
- DDOE conducted a pollution prevention auto workshop for auto service and repair shop employees. DGS and DPW employees were invited to attend.
- DDOE Inspection and enforcement staff attend the regular MS4 Inspector Training.

In 2013, DDOE staff began a pollution prevention program that consisted of on-site training for District agency staff. The goal of the effort is to conduct small group training sessions at the facilities where the staff work. This training will provide an opportunity for District agency staff to better understand how pollution prevention efforts are directly related to their daily work space.

2.4 Management of Commercial and Institutional Areas

2.4.1 Inventory of Critical Sources and Source Controls

DDOE continues to maintain a database of critical sources of stormwater pollution. DDOE Watershed Protection Division (WQD) maintains a database of construction sites in the District and WQD maintains a database of critical sources such as auto repair shops, dry cleaners, car washes, and other facilities.

2.4.2 Inspection of Critical Sources

DDOE has an inspection and enforcement program for critical sources within the MS4 area of the District as required under Section 4.4.1.1 of the MS4 Permit.

DDOE WQD identified 143 critical sources within the District's MS4 area during FY 2013. This includes 81 auto repair shops, 22 dry cleaners, 4 car washes, and 36 facilities that have been deemed a critical source by the District.

DDOE regularly inspects existing stormwater management facilities to ensure that they are in proper working order. It also inspects BMPs to ensure they are adequately maintained. In addition, the DDOE Inspection and Enforcement Branch is responsible for investigating citizen complaints relating to soil erosion and drainage problems, and recommending appropriate solutions. Figure 6 shows the trend in the number of stormwater management facilities inspected each year.

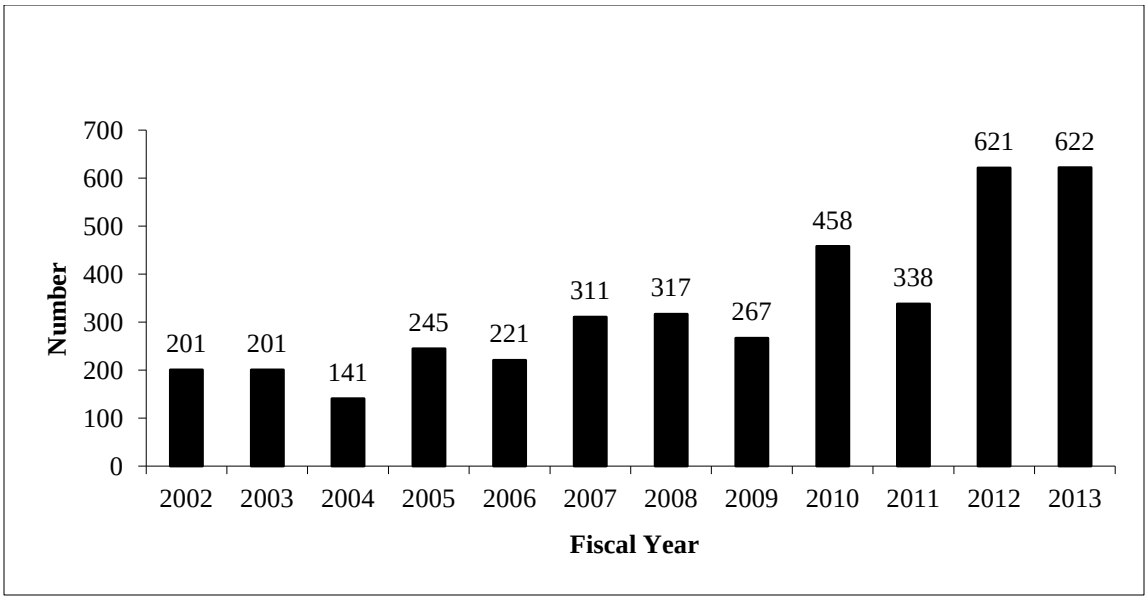

Figure 6 Number of Stormwater Management Facilities Inspected

2.4.3 Compliance Assurance

DDOE continues to perform compliance and enforcement activities in accordance with the MS4 Permit. Along with the inspection activities described in the above section, DDOE inspectors have conducted 622 post-construction inspections to ensure proper functioning of these facilities. If a facility is out of compliance, an inspector issues a Notice of Violation (NOV) with a corrective action plan. Corrective actions outlined in the NOV should clarify the nature of the alleged violation for the benefit of the facility. Corrective actions and deadlines are determined by enforcement staff, in compliance with the law and based upon relevant information. DDOE inspectors perform follow-up inspections after the corrective action deadline on the NOV. If the facility does not comply with the corrective measures required in the NOV, the inspector issues a Stop Work Order is issued.

FY 2014 Goals: The District will continue to perform compliance and enforcement activities in accordance with District regulations and as required by the MS4 Permit.

2.5 Management of Industrial Facilities and Spill Prevention

The management plan for stormwater pollution control from industrial facilities emphasizes the tracking of facilities through a database system, the monitoring and inspection of industrial facilities, and the District's spill prevention and response program.

DDOE WQD continues to maintain a database of 143 facilities in the MS4 area in the District, with 11 sites with individual or site-specific Federal NPDES stormwater permits. Section 2.3.8 and 2.4.2 of this report contain additional details.

2.6 Management of Construction Activities

DDOE maintains a plan review erosion control program for new construction, which coupled with a field inspection program, ensures compliance with the District erosion control regulations. DDOE's Technical Services Branch reviews construction and grading plans for stormwater management, erosion and sediment control, and flood plain management considerations. As required by EPA, all new construction in the District must have SWPPPs that "identify all potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges from the construction site."

In FY 2013, Technical Services Branch accomplished the following:

- Reviewed 1,688 stormwater management plans (SWM) and erosion and sediment control plans (ESC)
- Approved 1,625 SWM plans and ESC plans

The Watershed Protection Division's Inspection and Enforcement Branch inspects construction sites throughout the District to make sure they are in compliance with District erosion and sediment control and stormwater management regulations. DDOE also regularly inspects existing stormwater management facilities to ensure that they properly maintained and in working order. In addition, the Inspection and Enforcement Branch is responsible for investigating citizen complaints relating to soil erosion and drainage problems, and recommending appropriate solutions.

In FY 2013, the Inspection and Enforcement Branch accomplished the following:

- Conducted 5,767 inspections at construction sites for enforcement of erosion and sediment control and stormwater management regulations
- Issued 124 enforcement actions, including stop work orders and civil infractions

DDOE conducts site inspections and calculates loading estimates from construction sites within the District. Figure 7 shows the 13-year trend of the construction inspection program. Figure 8 shows the 13-year trend of annual enforcement actions. Note that each time DDOE personnel visit a construction site it is logged as an inspection. As a result individual construction projects are often inspected numerous times.

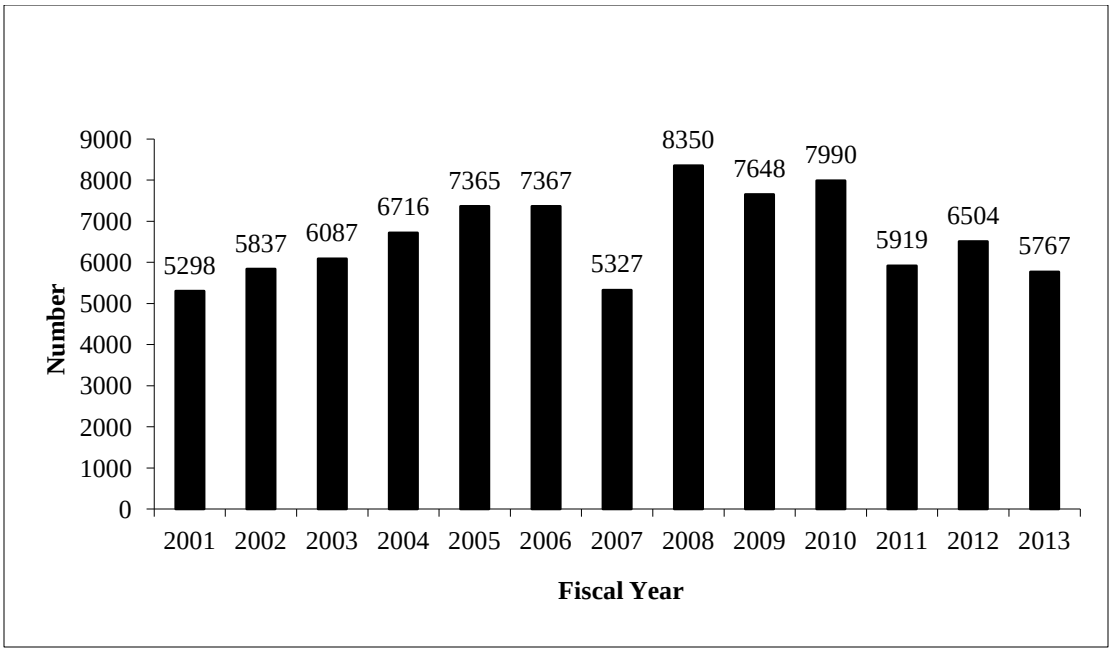

Figure 7 13-Year Trend in Inspections

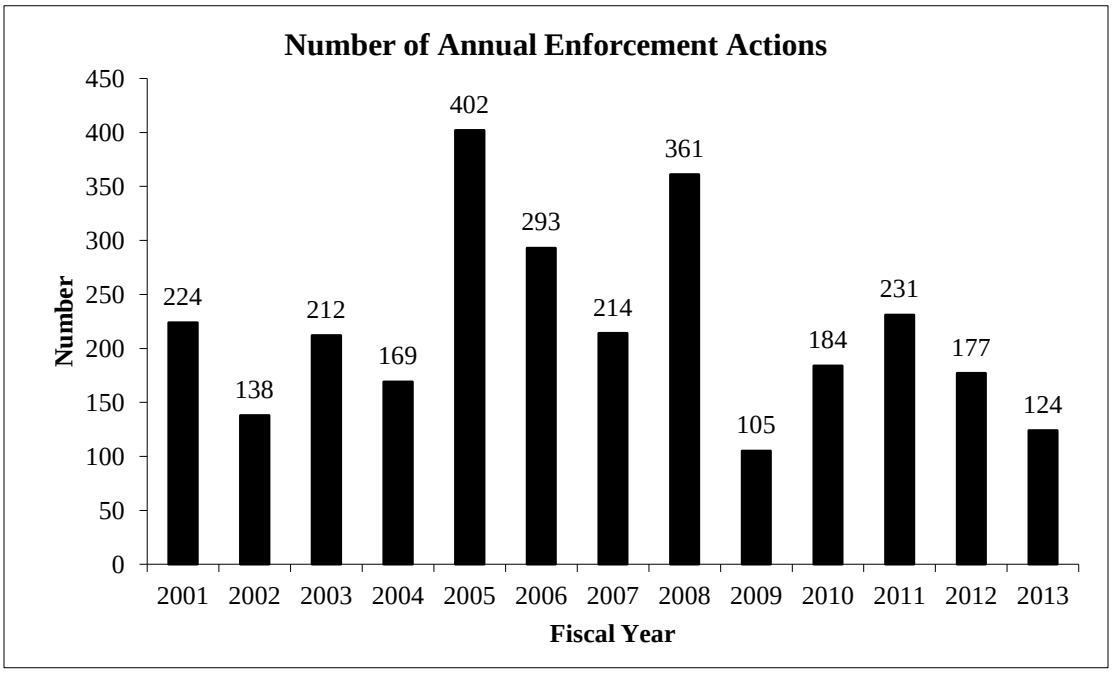

Figure 8 13-Year Trend in Enforcement Actions

Training

Educational training and compliance assistance for construction site operators is conducted during the site inspection process. This training includes distribution of the District's 2013

Stormwater Management Guidebooks and the Erosion & Sediment Control Handbook and addresses particular needs and questions of the operators.

FY 2014 Goals: The District will continue to review and approve SWM plans and to provide staff refresher training to continually improve efficiency for review and provision of technical assistance. The District will continue to provide educational materials to construction site operators and to enforce the inspection procedure guidelines.

The District will continue inspections of commercial, residential, and road construction projects for the maintenance and implementation of erosion control devices and stormwater retention BMPs. DDOE will continue to track SWM facilities inspected and their BMPs its database system.

2.7 Management of Illicit Discharges and Improper Disposal

The District maintains an illicit discharge program designed to detect and eliminate illicit discharges within the District. DDOE, with the support of DC Water and DPW, conducts activities related to illicit discharge detection and elimination.

Outfall Inventory

In FY 2013, the District began evaluating the existing MS4 infrastructure and outfall location data. This process included the identification and verification of new MS4 outfalls, and the removal from the inventory of MS4 outfalls that were not confirmed during the course of field inspection. The effort to identify new outfalls and remove undiscovered or duplicate outfalls will continue through FY 2014. Outfalls that have been field verified are presented by watershed location in Table 20.

Towards the end of FY 2013, DC Water completed a comprehensive outfall assessment survey. Based upon this outfall identification survey, and a DDOE review of topographic maps and aerial imagery, it is anticipated that 196 MS4 outfalls will be verified over the course of several years. Of these 196 potential new outfalls, 54 are expected to be found in the Anacostia River watershed, 87 in the Potomac River watershed, and 55 in the Rock Creek watershed. This identifies 415 outfalls as being located in the MS4 area.

Table 20 MS4 Outfalls Identified by Watershed

Watershed	Number of Outfalls
Anacostia River	147
Potomac River	131
Rock Creek	122
Total	**415**

Illicit Discharge Enforcement

DDOE investigates illicit discharges and enforces the District's Water Pollution Control Act regulations in accordance with the District's water quality standards.

In FY 2013, DDOE staff conducted:

- 52 illicit discharge investigations
- 80 emergency responses
- 163 targeted facility inspections
- 178 outfall inspections

As a result of investigations and inspections, DDOE issued 240 compliance requests in FY 2013 and worked with all facilities to obtain compliance. Detailed information on the targeted facility inspections and illicit discharge investigations are provided in Appendix A.3.

FY 2014 Goals: The District will continue to investigating illegal dumping complaints, overgrown lots, trash can litter, and other sanitation violations; continue the program to detect illicit discharges, and to prevent improper disposal into the storm sewer system. DDOE personnel will continue to investigate potential illicit discharges in response to reports by citizens or government personnel.

Motor Vehicle Fluids and Autobody Repair

In FY 2013, DDOE continued to offer the Environmental Compliance & Technical Assistance for Auto Service and Repair Shops workshop to managers, owners, and employees of gasoline stations, repair shops, and maintenance garages. This sector has significant direct impact on the quality of District waters.

- To view information and presentation materials on the Environmental Compliance & Technical Assistance for Auto Service and Repair Shops Workshop: http://ddoe.dc.gov/event/environmental-compliance-and-technical-assistance-auto-service-and-repair-shops
- Visit DDOE's website for pollution prevention information for the autobody/ autoservice industry: http://ddoe.dc.gov/service/environmental-issues-auto-repair-and-maintenance.

Illegal Dumping

DPW's Solid Waste Education and Enforcement Program (SWEEP) seeks to maintain clean private and public spaces by investigating illegal dumping complaints, overgrown lots, trash can litter and overflow, and other sanitation violations.

- To view information on DPW SWEEP program: http://dpw.dc.gov/service/solid-waste-education-and-enforcement-sweep

In FY 2013 DPW's SWEEP accomplished:

- 10,479 Responses to request for action from SWEEP
- 3,612 Number of requests for action for illegal dumping
- 101 illegal dumping violations

Littering Enforcement

In December 2008, the Council of the District of Columbia passed the Anti-Littering Amendment Act of 2008. The legislation provided new tools to support the enforcement of littering. The Act also established a new violation for littering from a vehicle. It provides that "No person shall dispose or cause or allow the disposal of litter from a vehicle upon any public or private property. Litter shall include all rubbish, waste matter, refuse, garbage, trash, debris, dead animals, or other discarded materials of every kind and description." (DC Municipal Regulations § 18-2221.6). The penalty for the offense is a $100 fine.

MPD issued 33 tickets for littering from a vehicle and 70 littering NOVs.

Pet Waste

DDOE continues to implement its education and outreach program entitled "Scoop Your Pet's Poop." This program is designed to inform citizens of their legal obligation to manage their pet's waste and to explain the reasons why it is important to do so.

In FY 2013, DDOE printed 10,000 pet waste educational flyers and hands them out at outreach events with a focus on Department of Health events and offices. DDOT is currently installing aluminum signs at targeted locations citywide and upon request.

Household Hazardous Waste

The District continues to provide household hazardous waste (HHW) collection and seasonal leaf collection. During FY 2013, DPW operated monthly HHW drop-off sites at the Ft. Totten Transfer Station. Each Saturday, residents are able bring their HHW materials and unwanted electronics for proper disposal. Appendix A.5 contains details of the Districts HHW collection in FY 2013.

FY 2013 DPW HHW, leaf collection, and holiday collection accomplishments:

- 137 tons of unwanted electronics for processing
- 54,595 total pounds of HHW
- 22,300 gallons of Flammable Liquid (Paints, Roofing Tar, Driveway Sealers, etc)
- 8,400 pounds of waste pesticides solids (Insecticides)
- 8,000 pounds of flammable aerosols
- 86.50 tons of holiday trees
- 5,833 tons of leaves

FY 2011 Goals: The District will strive to increase the number of citizens participating in the HHW and leaf collection programs through public education and the continuation of HHW collection at a transfer station on a monthly basis.

Coal Tar Ban Enforcement

During FY 2013, the District continued to enforce its prohibition on the sale, use, and permitting of coal tar based pavement products.

In FY 2013 DDOE staff:

- Conducted 152 inspections
- Issued 2 NOVs

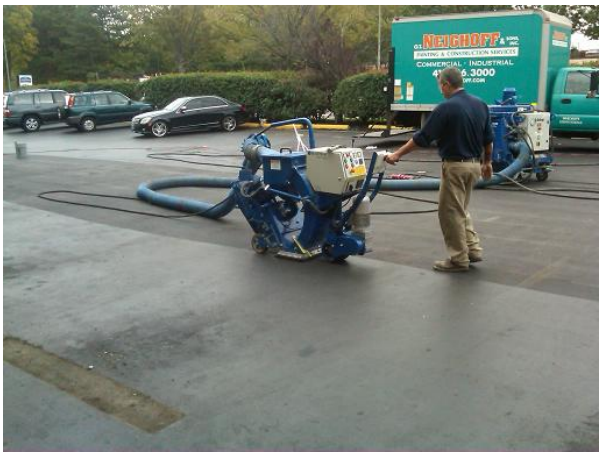

Figure 9 Coal Tar Remediation Site

When coal tar is confirmed on a site, DDOE requires that the coal tar pavement product is removed with a shot blast machine, which uses steel beebees, or "shot," to pulverize the sealant layer on the lot (Figure 9). The machines are equipped with a HEPA filter and vacuum to eliminate ambient dust release.

In FY 2013, DDOE required coal tar remediation at 3 sites. These sites were:

- 5,280 sf driveway
- 11,080 sf parking lot
- 11,000 sf parking lot

DDOE maintains a tipline for citizens to report properties they suspect are in violation of the District's ban on coal tar pavement products.

- To view information on the District's coal tar ban: http://ddoe.dc.gov/coaltarban

Coal tar education and outreach efforts are reported in Section 2.9.4 of this report.

FY 2014 Goals: DDOE will continue coal tar ban enforcement efforts and continue to draft regulations for the implementation of the ban on coal tar.

Anacostia Clean Up and Protection Act Enforcement

In FY 2013, the District continued to implement the Bag Law, which requires all District businesses selling food or alcohol to charge $.05 for each disposable paper or plastic carryout bag.

Since the law's inception, DDOE has distributed 19,218 reusable bags to District residents. In addition, DDOE maintains a tipline for citizens to report a business they suspect to be in violation of the Bag Law.

In FY 2013, DDOE staff:

- Conducted 587 inspections
- Issued 226 NOVs
- Issued 34 NOIs
- Distributed 8,015 reusable bags to District residents in FY 2013

Bag Law education and outreach efforts are reported in Section 2.9.4 of this report.

FY 2014 Goals: DDOE will continue compliance education and enforcement efforts for the Bag Law Program. These activities are funded for FY 2012 at levels of service consistent with historical needs.

- View information about the Bag Law at http://green.dc.gov/bags
- View the Bag Law tipline at http://green.dc.gov/baglawtip

2.8 Flood Control Projects

Impervious Analysis

The District of Columbia adopted the Flood Insurance Rate Maps (FIRM), issued by the Federal Emergency Management Agency (FEMA), on September 27, 2010. There have been no major changes in floodplains areas since the effective 2010 FIRM. After a major FIRM revision, for example for the area behind the Potomac Park Levee System after the completion of the 17th Street levee construction, DDOE will update the impervious surface analysis of floodplains in the District.

Review in Compliance with the District's Flood Hazard Rules:

FY 2013 Flood Control accomplishments:

- 285 flood zone determinations were processed for various developers as part of the permitting process by DDOE
- 39 Environmental Impact Screening Forms were reviewed and 5 were approved for compliance with the District's Flood Hazard Rules (20 DCMR, Chapter 31), and the District's Environmental Policy Act (DC Law 8-36)
- 2,607 Erosion & Sediment Control (ESC), Stormwater Management (SWM) and Floodplain Management (FPM) Plans were reviewed and approved for compliance with the District's Flood Hazard Rules (20 DCMR, Chapter 31).

DC Flood Risk Management

DDOE, OP, the D.C. Homeland Security and Emergency Management Agency (HSEMA), the U.S. Army Corps of Engineers (USACE), the Federal Emergency Management Agency

(FEMA), the National Park Service (NPS), the National Oceanic and Atmospheric Administration's National Weather Service (NWS), the U.S. Geological Survey (USGS), DC Water and the Washington Metropolitan Area Transit Authority (WMATA) have developed an interagency team at the District level to help coordinate, collaborate, and develop and implement solutions to the District's flood priority problems. The goal is to leverage information and resources, improve public risk communication, and create a mechanism to collaboratively solve flood risk issues.

Representatives from Federal and District agencies have met every two months since April 2012, to better prepare for floods along the Potomac River. Following Hurricane Sandy, these agencies created a Post-Hurricane Sandy lessons-learned document. Their efforts have made improvements in flood monitoring, flood forecasting, inundation mapping, and awareness. The DC Flood Risk Management Team (Team), or soon-to-be DC Silver Jackets Team, is focusing on all types of potential flooding in the District. The Team is currently developing an MOU, with a formalized mission, objectives, organization, memberships, agency roles, and responsibilities.

- To view information on The District of Columbia Silver Jackets Team: http://www.nfrmp.us/state/factDC.cfm

The major goals of the Team include:

- Update and revise the existing 2006 Flood Emergency Manual for Washington, DC and Vicinity;
- Ensure that the construction, certification, and accreditation of the Potomac Park levee system are complete;
- Obtain funding for completing the design and construction of the Potomac Park levee system improvement to the authorized 1:500 chance-per-year protection;
- Increase flood risk awareness in the District;
- Provide multi-agency expert advice to the District Emergency Operations Center (EOC) during a flood event;
- Improve flood forecasting and communication of predicted flood depths throughout the District before a flood event; and
- Improve hurricane storm surge flood modeling, forecasting, and emergency response.

Bloomingdale/LeDroit Park Flooding

Four intense rainfall events at the end of FY 2012 caused stormwater and combined sewage to flood the residential neighborhoods of Bloomingdale and LeDroit Park. During the severe storms, residents reported flooding of their basements which occurred from either sewer backups, overland flow, or both.

Following these rain events, Mayor Gray formed The Mayor's Task Force on the Prevention of Flooding in Bloomingdale and LeDroit Park. The Task Force submitted a report in December

2012. The report included 25 recommendations to mitigate flooding in these neighborhoods (in the following categories):

- Engineering
- Regulation
- Code Revision
- Operation and Maintenance

Short term:

District agencies have developed several programs providing home engineering consultations and flood proofing; rebates for backwater valves to prevent sewage from backing up into basements; and a rain barrel and green infrastructure program to absorb rainwater before it gets into the stormwater and sewer systems.

Medium term:

DC Water is implementing significant engineering projects in the medium term, though they are a slight departure from the original report. Originally, the plan called for transforming two cells of the abandoned sand filtration facilities at McMillan Reservoir to capture six million gallons of stormwater before it could enter the combined sewer system. These are underground, concrete storage facilities that were once used to filter drinking water and would hold the stormwater during intense rains. When the rains subside, and there is enough space in the pipes, this stormwater would be fed back into the District's sewer system and be conveyed to Blue Plains for treatment. However, after further investigation, it was determined that several hospital centers in that area were found to have combined sewer systems, and not separate systems as previously believed. Since only stormwater and not sewage is to be stored in these cells, only one cell will be used. Its capacity will be increased and additional capacity will be added by 2014 through bioretention cells (raingardens) and in-line storage on First Street NW.

Additionally, a tunnel will be built under First Street, NW, running from Rhode Island Ave and First Street, to the southwest corner of the McMillan site. When construction is complete in 2016, this tunnel (called the First Street Tunnel) will hold stormwater during intense rainstorms, after which a temporary pumping station will deliver the stormwater up into the sewer system to be treated at Blue Plains. In 2022, the tunnel will connect to the DC Water Clean River Project tunnels and the pump station removed.

Long term:

In 2011, DC Water began construction on the massive $2.6 billion Clean Rivers Project to build large storage tunnels from Blue Plains all the way up to the Northeast Boundary district. DC Water is changing the alignment of the system to provide better drainage for the affected area. In response to the recent flood incidents, DC Water has accelerated project plans to reach the Northeast Boundary sooner than originally scheduled, so that in 2022 the tunnel system to the south will meet up and tie into the First Street tunnel. At that time the lift station can be removed as drainage will be achieved through gravity.

- To view information on the establishment of the Mayor's Task Force on the Prevention of Flooding in Bloomingdale and LeDroit Park: http://oca.dc.gov/release/mayor-vincent-c-gray-establishes-flood-prevention-task-force-bloomingdale-and-ledroit-park
- To view the Final Report of the Mayor's Task Force on the Prevention of Flooding in Bloomingdale and LeDroit Park: http://oca.dc.gov/node/415132
- To view a summary of recommendation from the Task Force: http://www.dcwater.com/workzones/bloomingdale/TaskForceRecommendations.pdf

2.9 Public Education and Participation

2.9.1 Education and Outreach

In FY 2013, DC Water, DDOT, DPW, and DDOE conduct public education activities related to stormwater pollution. The stormwater pollution control public education program entails a mixture of programs targeting:

- Teachers and students
- Businesses
- District employees
- Homeowners and property managers
- Developers and engineers
- General public

2.9.2 Measurement of Impacts

In FY 2013, DDOE issued a grant to the Alice Ferguson Foundation (AFF) to conduct on-line behavioral surveys, trash counts and visual behavioral studies in neighborhoods in the Anacostia watershed. Through these studies, the foundation is gathering data on how much the Anti-Littering Campaign has affected littering behavior.

DDOE partnered with the AFF, the Anacostia Watershed Society, and OpinionWorks to conduct a comprehensive study measuring the impact of the District's Bag Law on disposable bag consumption rates. The study sought to assess the public's experience with the Anacostia River Clean Up and Protection Act. The study found that four-out-of-five District residents are using fewer bags. The study also found that residents reported using about 10 disposable bags per week before the law but just four disposable bags per week after the law. In addition, the study found that more than three-quarters of businesses are providing fewer bags to their customers, resulting in 50% fewer bags being purchased by businesses since the law took effect on January 1, 2010. The study also found that both residents and businesses are seeing substantially fewer plastic bags as litter in the District. In fact, two-thirds of both residents and businesses reported seeing fewer bags in the form of litter around their neighborhoods and properties.

2.9.3 Recordkeeping

DDOE continues to track and record stormwater related public education and outreach activities through the WPD database. Items the WPD database tracks are:

- District youth receiving environmental education
- District teachers receiving environmental education training
- Agency staff receiving training
- Watershed meetings attended
- Environmental events attended

2.9.4 Public Involvement and Participation

District education, outreach and public involvement programs include the following efforts:

DC Environmental Literacy Plan

On July 2, 2012, Mayor Vincent C. Gray submitted the Environmental Literacy Plan to the Council of the District of Columbia. Like other states across the country, the development of the District's Environmental Literacy Plan (ELP) was mandated by the DC Healthy Schools Act of 2010. Passed by the DC Council, the Healthy Schools Act and its 2011 amendments seek to improve the health and wellness of all District students. The legislation addresses nutrition, health education, physical education and physical activity, Farm-to-School programs, and school gardens. Additionally, the law acknowledges that creating and sustaining an environmentally-friendly school environment and integrating environmental education into the schools' curriculum are essential to the health and wellness of students, as well as the health of the local environment and community.

The Act directed DDOE to draft an Environmental Literacy Plan in conjunction with other District education agencies and stakeholders. WPD staff led this two-year effort to create a road map that will lay the foundation for District-wide implementation and integration of environmental education into the K-12 curriculum. The plan includes:

- Relevant teaching and learning standards adopted by the State Board of Education
- Professional development opportunities for teachers
- How to measure environmental literacy
- Governmental and nongovernmental entities that can assist schools; and
- Implementation of the plan.

DDOE continues to collaborate with DC Public Schools, DC Office of the State Superintendent of Education, DC Public Charter School Board, DC State Board of Education, DC Department of Parks and Recreation, the University of the District of Columbia, the DC Environmental Education Consortium, and other community stakeholders to implement this plan.

RiverSmart Schools

RiverSmart Schools works with DC Public Schools (DCPS), charter schools, and private schools to install LID practices to control stormwater. These practices are specially designed to be functional as well as educational in order to fit with the school environment. Additionally, schools that take part in the RiverSmart Schools program receive teacher training on how to use the sites to teach to curriculum standards and how to properly maintain the sites. See section 2.1.4 for additional details.

RiverSmart Schools is managed by DDOE's WPD. In FY 2013 RiverSmart Schools accomplished the following:

- Provided 40 teachers with a four-day workshop on RiverSmart Schools site usage and programming.
- Conducted 22 classroom visits and provided 15 boat trips to support integration of watershed lessons for the RiverSmart Schools project at each participating school.
- Engaged students, teachers, and volunteers in Community Work Days to construct and maintain Schoolyard Conservation Sites. 100 youth from four schools participate in five community work days.

District of Columbia Environmental Education Consortium (DCEEC)

DDOE organizes a network of environmental educators throughout the city so that ideas and resources can be shared among them. The DC Environmental Education Consortium (DCEEC) provides opportunities for networking, event coordination, and program partnering among its members. The members provide environmental expertise, professional development opportunities, curricula and resources, and hands-on classroom and field studies to District schools.

In October 2013, DDOE and DCEEC hosted the 6th Annual D.C. Teacher's Night at the U.S. Botanical Gardens. Over 150 teachers registered and around 90 attended and learned about environmental programming from approximately 40 exhibitors representing local environmental and science education organizations. The teachers met with local environmental educators who connected them with environmental education opportunities both inside and outside the classroom. Participants also took part in hands-on experiments and left with lesson plans for their classrooms.

This year the District held its 2nd annual Growing Healthy Schools Week, which is the fusion of DC School Garden Week and DC Farm to School Week. Growing Healthy Schools Week highlights the interrelated goals of these two former weeks and reflects the components of the recent Healthy Schools Act, which encourages linkages between farm-to-school and school garden programs.

During the week, school staff worked with local non-profits, farms, and chefs to coordinate inspiring activities aimed at engaging the broader community, increasing environmental literacy, building program capacity, and connecting students to their food. DDOE and the DC Schoolyard Greening Committee of DCEEC coordinated the School Garden Tour.

In addition, DDOE and DCEEC conducted a School Garden Tour for the North American Association for Environmental Education Annual Conference in October 2013, which featured at least one RiverSmart School site.

The Anacostia River Environmental Education Fair

This year marked the first Anacostia Environmental Youth Summit, which elevates the Anacostia River Environmental Fair into a city-wide showcase that spotlights youth voice, demonstrates environmental literacy, and encourages stewardship for the Anacostia and Potomac Rivers and the Chesapeake Bay. On May 31, 2013, 25 exhibitors and over 400 students participated in this event in Anacostia Park.

Meaningful Watershed Educational Experiences (MWEEs)

DDOE funded non-profit partners to create meaningful watershed educational experiences for hundreds of District young people. Outcomes include:

- AFF provided a trash-focused MWEE for 3rd through 5th graders at Burville Elementary (114 students), Houston Elementary (68 students), Kimball Elementary (39 students), Anne Beers Elementary (116 students), and Aiton Elementary (52 students). This included 284 MWEE hours.
- Living Classrooms of the National Capital Region worked with 3rd, 4th, and 5th grade classes at two schools, River Terrace Elementary (40 students) and Kimball Elementary (90 students). They provided 398 MWEE hours and 20 hours of follow-up for 913 4th and 5th grade students.

In March 2013, DDOE published a Request for Applications to continue and/or expand the following projects that will reach more youth:

- Overnight MWEE
- Trash-focused MWEE

Storm Drain Markers

In FY 2013, WPD installed 230 storm drain markers with the help of private citizens, youth groups, individuals from various volunteer groups and DCPS school groups throughout the District of Columbia.

RiverSmart Washington

RiverSmart Washington is a multi-agency project to install LID neighborhood wide on public and private lands to measure volume reduction. There are two project areas in the Rock Creek Watershed: the MacFarland site, in the Petworth neighborhood and located in the combined sewer system, and the Lafayette site, in the Chevy Chase neighborhood and located in the MS4. FY 2013 outreach efforts are detailed in Table 21.

Green Alleys

DDOT continued conducting outreach and education to the communities surrounding several Green Alley projects.

Bloomingdale Neighborhood Project

In FY 2013, DDOT started a program to mitigate flooding in the Bloomingdale neighborhood. DDOT conducted a number of public outreach events as part of this program, see Table 21 for details.

Table 21 DDOT Outreach Efforts

Date	Location	DDOT Project	Outreach Accomplishments
Oct. 27, 2012	LeDroit Park neighborhood	Bloomingdale	Walk-through at site with residents hosted by DDOT
Nov. 3, 2012	Mt. Bethel Baptist Church	Bloomingdale	Community meeting hosted by DDOT for Bloomingdale residents
Nov. 13, 2012		Normanstone	Community meeting about project
Nov. 15, 2012	T St & Rhode Island Ave on-site	Bloomingdale	Meeting with resident, Mr. Garcia, regarding T St bioretention planting maintenance
Nov. 19, 2012	Bloomingdale neighborhood	Bloomingdale	Community meeting with resident group (ANC or Civic Association)
Feb. 26, 2013	Ft Davis Civic Association	LID Retrofits – Q St and Fort Dupont	Discuss traffic-calming LID project with residents at civic association meeting
Mar. 18, 2013	Petworth Library	RiverSmart Washington	Discuss RiverSmart Washington MacFarland site plans with residents
Mar. 20, 2013	Chevy Chase Library	RiverSmart Washington & Green Alley - Rittenhouse	Discuss RiverSmart Washington Lafayette site plans and Rittenhouse green alley plans with residents
May 17, 2013	DDOT	Bloomingdale	Press release announcing major mark in Bloomingdale project
May 22, 2013	Hardy Recreation Center	Q Street Green Alley	Discuss 65% design plans of the Q St green alley with the residents in the area
May 23, 2013	Ashley Terrace	Green Alley - Ashley Terrace	Walk-through of alley with residents and representatives for the CM firm

Date	Location	DDOT Project	Outreach Accomplishments
Sept. 22, 2013	MacFarland site neighborhood	RiverSmart Washington	Walk-through attended by DDOT & DDOE, hosted by Rock Creek Conservancy
Sept. 15, 2013	Lafayette site neighborhood	RiverSmart Washington	Walk-through attended by DDOT & DDOE, hosted by Rock Creek Conservancy

Coal Tar Ban

In May 2013, DDOE sent 13,885 postcards (Figure 10) to property owners with paved surfaces. DDOE worked with DC Water to publish an article in the "What's on Tap" water bill newsletter: http://www.dcwater.com/news/publications/WOT_NOV_2012_web_R01.pdf.

2013 Coal Tar Ban Program accomplished:

- Reached approximately 130,000 customers
- Reached over 30 different neighborhood listservs across all 8 wards of the city.
- Included an update about the ban in Councilmember Bowser's July 10, 2013 constituent newsletter
- Blog post about the ban on a contractor's website

Figure 10 Coal Tar Ban Postcard

Bag Law

FY 2013 Bag Law Program accomplishments include:

- DDOE partnered with the Department of Motor Vehicles (DC DMV) to promote the District's commemorative Save the River license plate. As a result of this partnership, DC DMV service centers display a short video about the commemorative license plate to residents waiting for licensing services. The video is also available on DDOE's website at http://green.dc.gov/service/support-anacostia-river-cleanup-and-protection-fund
- Distributed 8,015 reusable bags
- Conducted a presentation on the Bag Law at the World Bank in March 2013
- Conducted four trainings with food vendors in August 2013 on the Bag Law regulations at DCRA.

Integrated Pest Management/Nutrient Management

DDOE continues to implement the Integrated Pest Management/Nutrient Management program. Educational materials, such as brochures and videos that provide suggestions on proper lawn

fertilization, disposal of household waste, and application of pesticides and herbicides, were distributed to gardeners, homeowners and teachers. The materials were primarily distributed through the Environmental Resource Center at environmental events where the target audience is teachers and District residents.

Clean Marina

DDOE and NPS of the National Capital Region partner with marinas in the District to educate the public on environmentally responsible boating practices. The Clean Marina Program encourages marina, boatyard, and boat club operators, as well as the boating public, to reduce pollution through their daily operations and through encouraging boaters to do the same. In FY 2013, DDOE recertified two marinas. Most marinas will be recertified in FY 2014 due to the bi-yearly recertification requirement. Additionally, DDOE continued to implementing the Clean Marina Partner Program. No new partners joined in FY 2013 but several are expected to partner in FY 2014.

- To view more information on DDOE's Clean Marina Program: http://ddoe.dc.gov/service/environmental-issues-marinas

Proposed Rulemaking on Stormwater Management and Soil Erosion and Sediment Control

Details about the 2013 Stormwater Rule and Guidebook can be found in Sections 2.1.1 of this report.

Trash and Litter

A major component of DDOE's public education activities in FY 2013 related to anti-littering and trash prevention efforts. Trash education and outreach activities are detailed in section 2.10.1 of this report.

Website and Social Media

DDOE websites and social media sites:

- www.ddoe.dc.gov
- https://twitter.com/DDOE_DC
- https://www.facebook.com/DC.DDOE
- http://www.youtube.com/user/DDOEPublicInfo

FY 2013 Goals: The District periodically evaluates existing public education materials and revise or develop additional materials as necessary. DDOE will continue to update, add to, and refine the website and social media outreach to display all relevant information including reports, accomplishments, and outreach materials.

2.10 Total Maximum Daily Load Wasteload Allocation Planning and Implementation

2.10.1 Anacostia River Watershed Trash TMDL Implementation

The District uses the following tools to remove at least 103,188 pounds of trash per year by 2017:

- In-stream and end-of-pipe best management practices (e.g. trash traps)
- Stream clean-up activities
- Street sweeping environmental hotspots
- Education and outreach
- Regulatory approaches (e.g. Bag Fee)

Below is a description of the progress made to date with each of the following practice categories.

In-Stream and End-of-Pipe Best Management Practices

The District has implemented several innovative design solutions for removing trash from local waterways. In 2008, the District provided a grant to the Anacostia Watershed Society to design and install a custom trash trap in Nash Run, a tributary to the upper Anacostia. The first Bandalong Litter Trap™ was installed near the mouth of Watts Branch, another tributary to the Upper Anacostia, in spring 2009. Two additional Bandalongs, one at an MS4 outfall in southwest DC and an additional trap in Watts Branch at the DC/MD border, were installed in winter 2012.

Figure 11 Installation of Booms Around ECC Dock in Southwest DC

The District issued several grants in 2013 to Groundwork Anacostia River DC and the Anacostia Watershed Society to continue maintaining the Kenilworth Park Bandalong and the Nash Run trash trap, respectively. In addition, the District provided new grants to the Earth Conservation Corps and the Anacostia Watershed Society to install new trash collection devices in the Anacostia River watershed. The Earth Conservation Corps installed a series of booms around the docks at their headquarters in southwest DC, Figure 11. The booms have essentially transformed the entire dock into a giant trash trap. This trap will collect trash from an MS4 outfall which drains a small sewershed in southwest DC next to the Washington Nationals Baseball Stadium. In addition, trash from the mainstem Anacostia River will also be captured.

The Anacostia Watershed Society's project will include installation of a custom designed trash trap at an MS4 outfall along the Anacostia River. The outfall is located within a large wetland restoration project located adjacent to River Terrace Park. Due to a delay in permitting with the National Park Service, the "River Terrace Trap" has not yet been installed. DDOE expects this to happen in Spring 2014. Once installed, this device will capture trash from one of the District's largest hotspot sewersheds.

The District is continuing to maintain the Hickey Run stormwater BMP located at an MS4 outfall along New York Ave NE. This large BMP is designed to collect oil, grease, sediment and trash from the outfall before it enters Hickey Run. The device was originally designed to capture 10,000 pounds of trash, but the District only takes credit for 2,000 lbs of trash toward the trash WLA due to the wet weight of trash collected. The District is working to modify the existing maintenance contract with a service provider to more accurately assess the amount of trash collected by the device.

Figure 12 below shows the location of the "hot spot" sewersheds and corresponding trash trap. To date, the District has installed trash traps in three of the six hotspot sewersheds draining to the Anacostia River.

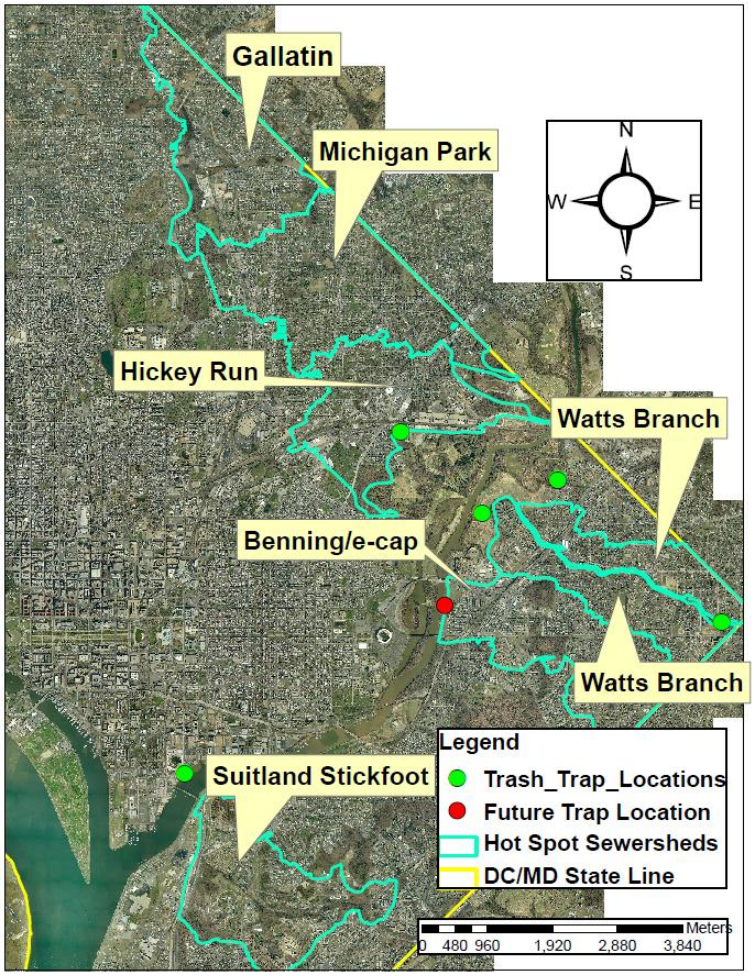

Figure 12 Location of 'Hot Spot' Sewersheds and Trash Traps

Stream Clean-Up Activities

The District sponsors several clean-up events on an annual basis throughout the Anacostia watershed. Examples include DDOE All-Hands events, the Alice Ferguson Foundation's Potomac Trash clean-up and the Anacostia Watershed Society annual Anacostia River Earth Day clean-up. In 2013, the Alice Ferguson Foundation received a grant from the National Geographic Society's FieldScope program to create an online Geographic Information System (GIS). The total amount of trash collected at each cleanup event in the District, plus the discounts described in the previous Annual Report, can be found in Appendix A.6

Street Sweeping Environmental Hotspots

DPW continued to implement the enhanced street sweeping program in FY 2013. DDOE funded DPW to develop an enhanced street sweeping program for the District. The purpose of this project was to make street sweeping more efficient, which created extra time per month to sweep streets identified as environmental hotspots by DDOE.

Education and Outreach

In FY 2013, DDOE provided a grant to AFF to launch the Trash–Free Potomac Anti-Littering Campaign across the District's portion of the Anacostia watershed. This campaign included the materials developed by AFF during their original work in the Deanwood neighborhood in Northeast DC, Figure 13. AFF is working with local businesses, community and recreation centers, schools and other District government agencies to post materials from the campaign.

Figure 13 Example of Outreach Material

As part of the grant, AFF will be conducting on-line behavioral surveys, trash counts and visual behavioral studies along blocks in neighborhoods in the Anacostia watershed. Through these studies, the foundation will be gathering data on how much the campaign has affected littering behavior. AFF and DDOE will be working closely together to use the data gathered to develop a load reduction efficiency for education and outreach.

Regulatory and Enforcement Approaches

DDOE continued to enforce the District's Bag Law. Section 2.7 of this report provides details on the number of enforcement measures taken in 2012. In 2013, the Alice Ferguson Foundation completed a study of the effectiveness of the Bag Law on influencing littering behavior. Section 2.9.2 of this report details the major findings of the survey. One of the findings stated that 50% of the businesses in the District are reporting a 50% reduction in bag purchases. Using that finding, DDOE developed an efficiency for implementing the law.

First, using data collected for the 2008 Anacostia Trash Reduction Plan (for a copy go to: http://green.dc.gov/publication/2008-anacostia-river-trash-study) DDOE calculated a baseline for the number of plastic bags found in the mainstem Anacostia River and its tributaries. Transect monitoring conducted for that plan found 1.25 bags per linear foot of stream and 0.11 bags per linear foot of river. DDOE estimates that there is approximately 62,156 feet of stream and 44,469 feet of river within the District's portion of the Anacostia watershed. Altogether, DDOE estimates that, as baseline, there were 82,431 bags in the Anacostia River and its tributaries before the bag law was implemented.

Next, DDOE applied several of the reduction factors used to discount some of the other various practices that are being counted towards meet the MS4 trash commitment. 82,431 bags is first multiplied by 50.8% since that is the area of the District which lies within the MS4. Next, that product is multiplied by 50%, since 50% of the businesses in the District are reporting a 50%

reduction in bag purchases. That gives 20,937 bags which are being prevented from reaching the Anacostia River and it's tributaries. That equates to 272 lbs per year which is the product of 20,937 lbs X 0.013 lbs (i.e. standard weight of a plastic grocery bag).

Table 22 below displays the current progress made by the District at reducing 103,188 lbs of trash per year from reaching the Anacostia River.

Table 22 Annual Trash Load Reduction Tracking

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
Trash Traps	Marvin Gaye Park Bandalong	1,935	39	Annual average taken from empirical data collected between December 2011 & November 2013. The average amount of trash collected during this time period is multiplied by 2% since that is the approximate proportion of the Watts Branch watershed which lies within District and drains to the trash trap.
	Kenilworth Bandalong	3,329	3,329	Annual average taken from empirical data collected between January 2012 and November 2013. No reduction factors are being applied since the entire drainage area above this trap lies within the District.
	Nash Run Trash Trap	2,061	1,546	Annual average taken from empirical data collected between 2009 and 2013. The total amount collected is then multiplied by 75% since that is the approximate proportion of the Nash Run watershed that lies within the District and drains to the trash trap.
	Hickey Run BMP	10,000	2,000	Based on assumed efficiency of 100 percent design capture of device. A reduction factor of 20 percent was applied since glass and plastic bottles may not have been emptied of water.
	James Creek Bandalong	263	263	Annual average taken from empirical data collected between January 2012 and November 2013. No reduction factors have been applied since the entire drainage area for this

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
				practice lies within the District.
	Earth Conservation Corps Trash Booms	100	100	Amount collected from trap in 2013. No reduction factors have been applied since the entire drainage area for this practice lies within the District.
Roadway and Block Cleanups	Adopt-A-Block Program	NA	NA	Collaborating with Office of the Clean City to collect empirical cleanup data.
Sweeping Environmental Hotspots	Sweeping Environmental Hotspots	144,768	72,384	The total area of roadways within the environmental hotspots (e.g. blocks found to contain high trash amounts)2 was calculated. That area was then multiplied by 50% because roughly half of the roadway (the middle of the road) is swept in these areas because they are unsigned. That area is then multiplied by the trash loading coefficient of 31.12 lbs/acre developed for the TMDL. That total mass in pounds is then multiplied by 16 since the DC Department of Public Works (DPW) is supposed to sweep environmental hotspots (i.e. blocks with high amounts of trash) twice per month, 8 months out of the year. That result is then multiplied by 50% because not all hotspots may always be swept.

2 - The environmental hotspots which are swept differ from the "hotspot" sewersheds mentioned earlier. The environmental hotspots swept represent a series of blocks found to contain very high amounts of trash.

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
Clean-Up Activities	Clean-Up Events	33,577	563	Based on empirical data collected during the 2013 Alice Ferguson Foundation Potomac Watershed Wide Cleanup (Anacostia watershed sites) and the 2013 Anacostia Watershed Society Earth Day Clean-Up. A reduction factor of 16.5% is applied since this the proportion of the Anacostia watershed which lies within the District. A second reduction factor of 50.8 % is applied to account for the District's portion of the Anacostia served by the MS4. A third reduction factor of 20% is applied to account for the fact that not all plastic and glass bottles collected may have been emptied of water before bagged.
	Skimmer Boats	820,000	6,873	Based on the total amount of material collected by DC Water skimmer boats in 2013. The total amount is first multiplied by 16.5 %, which represents the proportion of the watershed that lies within the District. A second reduction factor of 50.8 % was applied to account for the area of the District's portion of the watershed served by the MS4. A third reduction factor of 50 % was applied since not all material collected by the skimmer boats may have been trash. Finally, a fourth reduction factor of 20 percent was applied since not all plastic and glass bottles collected were emptied of water.
Education and Outreach	Watershed Wide Anacostia Campaign	NA	NA	Efficiency being assessed.
	Trash MEWEEs	NA	NA	Efficiency being assessed.
Regulatory	Bag Law	1,072	272	DDOE currently estimates (based on data collected for the development of the Anacostia

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
Approaches				Watershed Trash Reduction Plan) that there are 82,431 bags in the river and tributaries. This amount is first multiplied by 50.8%, since this is the proportion of the Anacostia River served by the MS4. The amount is then reduced by 50% because according to a recent survey report, 50% of businesses in the District report a 50% reduction in bag purchases. Finally, the total number of bags is then multiplied by 0.013 lbs, which is the standard weight for a plastic bag.
Total (pounds)		**1,017,105**	**87,369**	

Trash TMDL Implementation Strategy

In December of 2013, DDOE released a draft Anacostia River trash TMDL implementation strategy to local stakeholders for an informal public input period. The document released is a derivative of the strategy and load reduction calculation methodology provided to EPA in the last Annual Report. Several changes were made to make the discounts applied to all practices more uniform. As a result, the efficiency of several practices were reduced. However, DDOE is not taking more credit for practices than was previously presented in the 2012 Annual Report. The informal public input period for the draft strategy will last from December 19th, 2013 to January 31st, 2014.

FY 2014 Goals: DDOE expects the new River Terrace trash trap discussed above to be installed by the Anacostia Watershed Society in the Spring of 2014. This will be the third hotspot sewersheds to be retrofitted with trash traps in the District. In addition, the education and outreach grant with the Alice Ferguson Foundation will also be fully implemented in 2014. There were significant delays to implementing both of these grants and several of our other grant projects because of the October 2013 federal government shutdown. However, all grants have been fully implemented at the time of the writing of this report, and DDOE is looking forward to seeing new reductions which will be counted towards meeting our MS4 permit commitments.

2.10.2 Hickey Run TMDL Implementation

The Terre Kleen (TK45), installed in Hickey Run on October 26, 2011, is being monitored on a weekly basis. Additionally, every three months the BMP is cleaned of trash and sediment, and oil

absorbent socks are replaced. The contract for monitoring and maintance is through DGS and managed by DDOE. In 2012, the U.S. Geological Survey installed a stream gage just downstream of the BMP.

- To view gage data, including height, temperature, conductivity, and turbidity: http://waterdata.usgs.gov/dc/nwis/uv/?site_no=01651770&PARAmeter_cd=00065,00060,62620

201 Goals: A restoration project for Springhouse Run, a tributary to Hickey Run, is currently underway. Final designs will be submitted at the end of calendar year 2013, with construction expected to begin in the summer of 2014. The project includes the installation of five bioretention facilities to treat stormwater in the U.S. National Arboretum visitor parking lot, which drains directly to Hickey Run.

2.10.3 Consolidated TMDL Implementation Plan

DDOE secured contractor support to assist in the development of the TMDL Implementation Plan and held a project kickoff meeting in July 2013. Since then, the project team has:

- Assembled a stakeholder committee to participate in and assist with the development of the plan, comprised of District and Federal agencies, the business community, and environmental organizations. The stakeholder committee was convened for a project kickoff meeting on August 26, 2013;
- Began preparation of the Quality Assurance Project Plan that outlines standard operating procedures, minimum data requirements, personnel, and responsibilities to ensure data quality is maintained throughout the project;
- Compiled an inventory of TMDLs developed for the District, identifying all waterbodies and pollutants that will be included and addressed in the plan, with references to the source document, modeling methodology, and data sources;
- Conducted a literature review to identify required information about BMPs and load reduction estimation methods and strategies, including cost and maintenance information; and
- Started development of a TMDL Implementation Plan Methodology, which outlines necessary activities and technical work needed to complete the plan.

Progress on the Consolidated TMDL Implementation Plan will continue in FY 2014 as DDOE works to complete and submit the plan by the May 11, 2015 Permit deadline.

3 MONITORING AND ASSESSMENT CONTROLS

3.1.1 Revised Monitoring Program Development Status

A key component of the Consolidated TMDL Implementation Plan is the revised monitoring program framework. The high-level objectives of the revised monitoring program include:

- Estimating wet weather pollutant loading for the parameters identified in the permit (e.g., E. coli, total nitrogen, total phosphorus, TSS, select metals, and trash);

- Evaluating health of receiving waters;
- Identifying pollution sources; and
- Tracking performance toward compliance with TMDL wasteload allocations

In FY 2013, the project team began an analysis of monitoring needs and requirements along with a review of the existing monitoring programs. After these tasks are completed, a crosswalk comparison of monitoring needs and existing components will be performed to identify gaps. Preliminary findings show that the following enhancements would improve the monitoring program:

- Better identification of impairment sources;
- Accurately measuring progress toward delisting waters, such as Oxon Run;
- Informing restoration efforts to verify they have a measureable impact on improved water quality; and
- Providing feedback to planners to adjust implementation strategies as new information becomes available.

3.1.2 Interim Monitoring

DDOE awarded the contract to Apex Companies, LLC (Apex) for the purposes of interim sampling and analysis work. Apex finalized the Quality Assurance Project Plan (QAPP). Sampling is proceeding under the interim sampling provisions. However, due to circumstances beyond DDOE's control DDOE is requesting a brief reporting extension for the monitoring sections of the MS4 Permit, section 5.1 and 6.2.1.b. Sampling in FY 2013 was limited due to issues with site access and qualifying rainfall events. DDOE will submit sampling and analysis results for the wet weather sampling events reported on EPA Form 3320-1 to EPA via NetDMR at the conclusion of the annual sampling.

Monitoring Stations

Samples were collected from locations the interim monitoring requirements included in the Permit, Table 23.

Table 23 Monitoring Stations

Watershed	Site	Location	Drainage Area (Acres)
Anacostia River	A1	Anacostia High School/Anacostia Recreation Center – corner of 17th St. and Minnesota Ave. SE	252
	A2	Gallatin & 14th St.,NE-across from the intersection of 14th St. and Gallatin St. in a large outfall	662
Potomac	B1	Walter Reed (Fort Stevens Drive)	23

Watershed	Site	Location	Drainage Area (Acres)
River	B2	Soapstone Creek (Connecticut Avenue and Albemarle Street)	320
Rock Creek	C1	Battery Kemble Creek-49th and Hawthorne Streets, NW.	11
	C2	Oxon Run-Mississippi Avenue and 15th Street, SE	43

3.1.3 Trash Monitoring

In 2013, DDOE awarded a grant to the Anacostia Watershed Society (AWS) to conduct stormwater monitoring for trash at six outfalls throughout the District. Several of the stormwater monitoring stations included in the MS4 permit possessed outfalls were too large to allow for trash monitoring. Working with EPA Region III, DDOE and AWS were able to identify three of the stormwater monitoring stations included in the 2012 MS4 permit as being feasible for trash monitoring. These stations, along with the land use composition for their respective sewersheds, included:

- **Walter Reed-Fort Stevens Drive** (16th Street and Fort Stevens Road, N.W. at an outfall) in the Rock Creek Watershed with a low, medium, and high density residential land use type;
- **Battery Kemble Creek** (49th and Hawthorne Streets, N.W. at an outfall) in the Potomac Watershed with a low density residential land use type;
- **Oxon Run** (Mississippi Avenue and 15th Street, S.E. into Oxon Run at an outfall) in the Potomac Watershed with a medium density residential, institutional, commercial and open space land use type.

An additional three locations located solely within the Anacostia River watershed were selected in collaboration with EPA Region III and AWS. These three locations were previously monitored during the development of the Anacostia Trash TMDL. These stations will provide data on other types of land use not addressed in the three stations above required by the MS4 permit. These stations included:

- **McDonald's** (Minnesota Avenue NE and Nannie Helen Burroughs Ave NE at an outfall) in the Anacostia Watershed with an industrial, commercial, and residential land use type;
- **Benning Road** (Benning Road NE and Anacostia Avenue NE at an outfall) in the Anacostia Watershed with a commercial and industrial land use type;
- **New York Avenue** (New York Avenue NE and South Dakota Avenue NE interchange stormwater pond outfall) in the Anacostia Watershed with a transportation right-of-way land use type.

Many of the stations are located on National Park Service property. In order to monitor these sites, Special Use Permits from the National Park Service had to be obtained by DDOE. There were significant in delays in the issuance of these permits. The process was further exacerbated by the October 2013 federal government shutdown. As of the writing of this report all permits have been issued. All three annually required wet samples have been obtained for at least two of the stations. DDOE expects that all required samples for 2013 should be obtained by early summer 2014. Once the dataset is compiled, DDOE will issue an addendum to the 2013 Annual Report to EPA Region III which will feature all of the required data.

3.1.4 Area and Source Identification Program

The District is highly urbanized, with little available land for further development. The MS4 drainage area contains approximately 26,500 acres, which is two-thirds of the District. The Combined Sewer System (CSS) drainage area encompasses approximately 12,640 acres, which is one-third of the District. All new development and redevelopment of existing areas is subject to the District's stormwater management regulations with a review by DDOE. The land use and impervious area must be indicated on all stormwater management plans submitted to DDOE for review and inspection. No single development plan reviewed to date has sufficient land area to make a significant impact to the MS4 system. The cumulative impacts of the proposed and new developments have not resulted in a significant change for the existing land use activities in the portion of the District served by the MS4. Table 30 provides the existing land use by planning area in the District (MS4 and CSS).

Table 24 Acres of Existing Land and Water Use by Planning Area

	Planning Area											
Land Use Type	Capitol Hill	Central Washington	Far northeast & southeast	Far southeast & southwest	Lower Anacostia waterfront/near southwest	Mid city	Near northwest	Rock creek east	Rock creek west	Upper northeast	Citywide	Percent (%)
Public Rights-of-Way	759	899	1,338	906	477	628	716	1,311	1,760	1,223	10,018	25
Single Family Detached Homes	6	0	775	164	7	15	84	919	2,324	641	4,936	13
Single Family Attached Homes/ Row Homes	520	10	641	328	30	497	340	606	290	611	3,874	10
Low-Rise Apts.	43	10	436	555	106	136	110	85	185	189	1,856	5
High-Rise Apts.	4	26	20	44	26	59	65	25	109	25	402	1
Commercial	97	448	129	63	122	144	220	106	170	296	1,795	5
Industrial	5	16	12	5	42	21	6	16	0	295	418	1

Land Use Type	Planning Area											
	Capitol Hill	Central Washington	Far northeast & southeast	Far southeast & southwest	Lower Anacostia waterfront/near southwest	Mid city	Near northwest	Rock creek east	Rock creek west	Upper northeast	Citywide	Percent (%)
Local Public Facilities	72	47	154	441	47	54	75	131	67	102	1,110	3
Federal Facilities (excl. parks)	47	481	4	1,067	409	1	1	412	283	76	2,781	7
Institutional	42	67	71	117	22	142	249	163	659	730	2,262	6
Permanent Open Space	296	678	1,321	729	533	141	354	878	2,011	1,038	7,980	20
Rail, Utilities Communication,	1	36	223	74	11	97	6	83	4	321	857	2
Vacant	66	58	179	188	51	36	33	22	111	99	843	2
Total Land	**1,958**	**2,776**	**5,305**	**4,687**	**1,884**	**1,971**	**2,259**	**4,757**	**7,982**	**5,645**	**39,225**	**100**
Water	117	509	135	1,791	1,295	46	239	19	313	89	4,554	
Total Land and Water	**2,075**	**3,284**	**5,440**	**6,474**	**3,179**	**2,017**	**2,498**	**4,776**	**8,288**	**5,735**	**43,766**	

3.1.5 Trend Analysis

A trends analysis presented technical limitation due to differences sampling event temporal variations, drainage characteristics, and pollutants analyzed under the 2000-2012 period and the current interim monitoring. For example, in the Anacostia River watershed, nine (9) monitoring stations were sampled on four separate rotations during the periods of 2001–2002, 2005–2006, 2008-2009 and 2011–2012. Under the current interim monitoring plan only two (2) sites in the Anacostia River watershed, and two (2) sites from each of the Potomac and Rock Creek watersheds, are sampled on continuous annual basis. In addition, while data for over one hundred forty (140) parameters were collected at each sampling event under the previous permit, only a dozen are collected under the interim monitoring plan. Given the limitations, a possible pattern can be established using currently available data suited for comparison. For this purpose, a comparison of the 2011-2012 and 2013 data for the two Anacostia River watershed sites was made. As depicted in Figure 14, the comparison shows slight increase in Total Nitrogen, Total Phosphorous, Lead and Zinc concentrations. Total Suspended Solids, Copper, and Fecal Coliform show a decrease. The apparent increase in Cadmium is due to a single sample reported above the Reporting Limit.

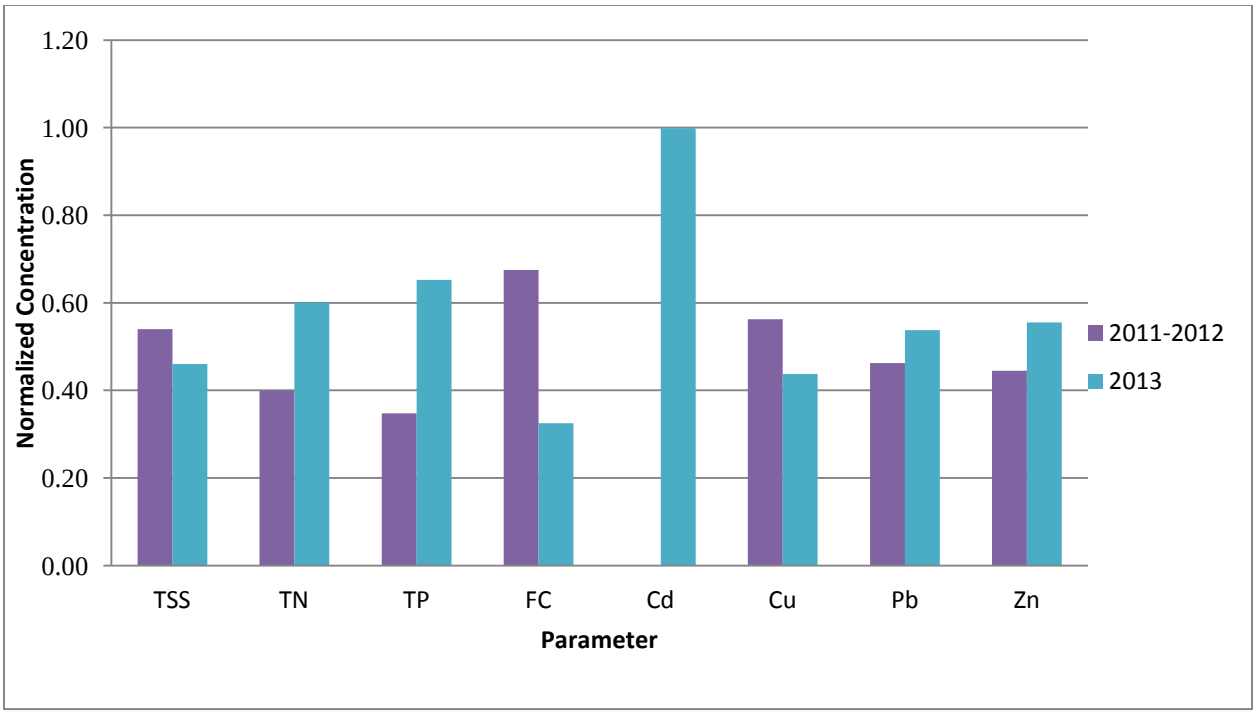

Figure 14 Water Quality Trends in the Anacostia River Watershed Sites

4 MODELING

A revised TMDL model integrated with DDOE's new BMP tracking database is an essential component of the Consolidated TMDL Implementation Plan. Since 2001, TMDLs in the District have been developed using a variety of land-based loading and hydrodynamic models, at differing spatial scales, using best available model inputs at the time a particular TMDL was developed. These models and model inputs have been documented, compiled, and inventoried so that they can be reconciled with the model that will be used for the Consolidated TMDL Implementation Plan. Also, DDOE has continued to update and refine the GIS data layers for MS4 outfalls and the delineation of their sewersheds. These layers inform and contribute to the ongoing development of a new GIS layer for the contributing area of each TMDL waterbody.

In FY 2013, the project team started development of a TMDL Implementation Plan Methodology document, which will identify modeling requirements, the model framework, and describe the methods used to calculate runoff volume, loads, and load reductions anticipated by the implementation of stormwater and pollution reduction strategies. The methodology proposed includes a baseline analysis that specifies how differences between new and old models will be resolved, characterizes current conditions (differences since initial model development), and projects future development scenarios in the District.

A Appendix

A.1 Memorandum of Understanding

A.2 Coal Tar Program Outreach Material

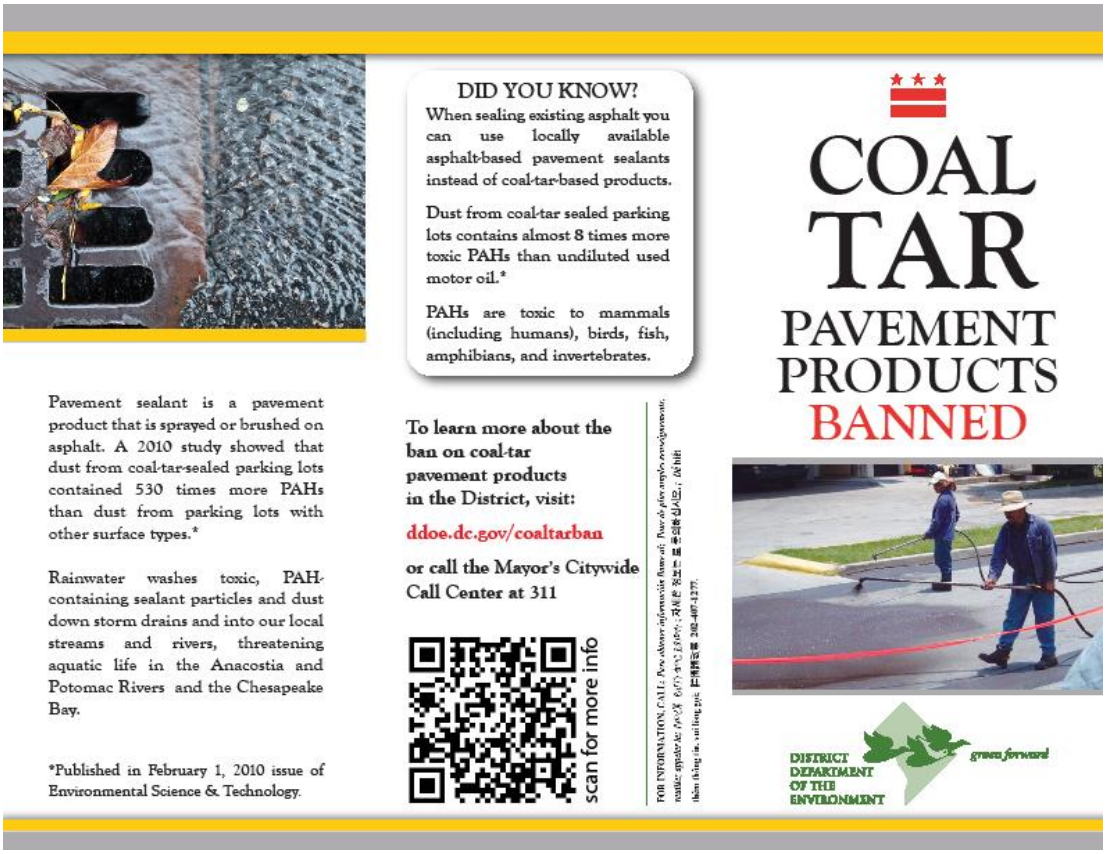

Figure 15 Coal Tar Ban Brochure

District Residents,

It's now the prime time for sealing driveways and parking lots. But, please be aware of the District's ban on coal-tar-sealant products. Effective July 1, 2009, it is illegal to sell, use or permit to be used on your property coal-tar pavement products. Violators are subject to a daily fine of $2,500 and are responsible for the removal costs of banned products from surfaces coated after this date. Alternative sealant products that are asphalt based are permitted. However, before you decide to seal, the ban does prohibit mixed products that contain both asphalt and coal tar.

Coal tar pavement products contain high concentrations of polycyclic aromatic hydrocarbons (PAHs), a suspected carcinogen and highly toxic chemical with known harmful impacts on humans and animals. Concentrations of toxic PAHs in coal tar pavement products are about 1,000 times higher than in alternative asphalt-based products. Rainwater washes toxic, PAH-containing sealant particles and dust down storm drains and into our local streams and rivers, threatening aquatic life in the Anacostia and Potomac Rivers and the Chesapeake Bay.

What you need to know:

- DO NOT USE or ALLOW contractors to use coal tar sealants
- DEMAND the use of a less toxic asphalt-based sealer instead
- REPORT any business that you suspect is in violation of the ban by calling 202-407-1277 or submitting a tip to ddoe.dc.gov/coaltartip

To learn more about the ban, please visit ddoe.dc.gov/coaltarban or contact Kate Judson with the District Department of the Environment at 202-407-1277 or kate.judson@dc.gov.

Sincerely,

Kate Judson
Environmental Protection Specialist
Stormwater Management Division
DDOE

Figure 16 Letter to District Residents on Coal Tar Ban

Figure 17 Postcard on Coal Tar Ban

A.3 List of Water Quality Division Illicit Discharge Investigations

Location	Watershed	Issue
Perry St and 22nd St., NE	Anacostia	DC Water water main break
Walter Reed Army Medical Center	Rock Creek	Water leaking
500 N St., NW	Potomac	Discharge from a water pond to the Potomac River
US National Arboretum	Anacostia	Discharge of oil to Hickey Run
11th Street Bridge Project	Anacostia	Dumping concrete debris to the river
6300 Georgia Ave., NW	CSO	Dumping the gook from the car wash out at the street
Beech St., and 32nd St., NW	Rock Creek	Possible Sanitary Sewer Overflow (SSO)
3 DC Village Lane, SW (Monumental Concrete)	Potomac	Discharge of a substance possibly gasoline
3883 Connecticut Ave., NW	Rock Creek	Potential illicit discharge from behind building
2750 32nd Street, NW	Rock Creek	Discharge of dirty water to catch basin on street
9th St., and New York Ave., NE	CSO	Abandonment of yard pipe
1601 South Capitol St., SW (Superior Concrete)	Anacostia	
5069 Jay St., NE	Anacostia	Water coming out from the ground cases dangerous icy condition
1150 22nd St., NW (Ritz Carlton)	CSO	Discharge of sewage to storm sewer
4600 block of Kenmore Dr., NW	Potomac	Dumping chemical to the storm sewer system

Location	Watershed	Issue
Suitland Parkway and Irving St. NE	Anacostia	Sanitary sewer overflow (SSO)
Calvert St., NW	Rock Creek	
National Arboretum	Anacostia	Sewage smell
808 Otis Pl, NW	CSO	Paint dumping on the sidewalk
1100 Maine Ave., SW (Jimmy's Grill)	Potomac	Discharge of soapy water and grease
Water Reed Medical Center	Rock Creek	Discharge of oily water from steam tunnel vault
Water Reed Medical Center	Rock Creek	Non-stormwater discharge to MS4
1400 35th Street, SE (Pope Branch)	Anacostia	Sanitary Sewer Overflow (SSO)
2201 Channing St., NE	Anacostia	Oily substance discharge to the public space
1300 Maine Ave., SW	Anacostia	Discharge of Septic Material
Water Reed Army Medical Center	Rock Creek	Discharge of water from building cooling lines to MS4
1711 1st St., SE (Super Salvage)	Anacostia	Improper handling of waste materials
3209 Dubois Pl, SE	Anacostia	Illegal dumping of used oil
2040 West Virginia Ave., NE (Tony Auto Repair)	Anacostia	Water discharge to the public space
Pope Branch	Anacostia	Sanitary Sewage discharge to the Stream (Sanitary Sewer Overflow (SSO))
1220 Mount Olivet Rd., NE (Abe's Transportation)	Anacostia (CSO)	Water discharge to the public space

Location	Watershed	Issue
4900 Nash St., NE	Anacostia	Discharge of grease to storm sewer
Intersection of 9th St, and Maine Ave., SW	Anacostia	Sewage dumping from tour buses
2159 Dunmore Lane	Potomac	Sanitary Sewer Overflow (SSO)
1911 Gale St., NE	Anacostia	Illegal dumping in alley
2225 Lawrence Ave., NE (Rogers Brothers Trash Transfer)	Anacostia	
The yards and DC Water O Street Pump Station, SE	Anacostia	Water pollution
1705 C Street, SE	CSO	Black substance coming out from the drainage pipe
5929 East Capitol St., SE	Anacostia	High pH and cloudy discharge from outfall 280
1300 block of 14th St., and Rhode Island Ave., NW	CSO	Cooking oil discharge to the storm drain
Outfall ID# 952 and 953	Rock Creek	Discharge of red substance
1523 Elliot St., NW	Potomac	Discharge of water to back alley
Route 50 and Anacostia River	Anacostia	
4810 Quarles St., NE	Anacostia	Potential illicit connection
Branch Broad Rd., and 27th St., NW	Rock Creek	Sanitary Sewer Overflow (SSO)
4319 3rd St., SE	Anacostia	Discharge of Sewage water
Pope Branch	Anacostia	Sanitary Sewer Overflow (SSO)
1100 Maine Ave., NW (Jesse Taylor Seafood)	Potomac	Barge was listing to one side, potentially store liquid or solid waste

Location	Watershed	Issue
3259 P St., NW	CSO	Power washing the white paint strip
Dead end at south end of Observatory Circle	Rock Creek	Discharge oil at Dumbarton Oaks stream
4016 Calvert St., NW	Rock Creek	Heating oil dumping to the ground
North end of parking lot close to Benning Road	Anacostia	RFK Stadium parking lot paint dust

A.4 District Facilities Listed under CERCLA or having and NPDES Permit

Permit Number	Facility Name	Type	Issue date
DC0021199	D.C. WASA (BLUE PLAINS)	Major	8/31/2010
DC0022004	GenOn Potomac River Generating Station (formerly Mirant)	Major	4/20/2000
DC0000221	MS4 -Government of the DC	Major	10/7/2011
DC0000094	PEPCO-Potomac Electric CO	Major	6/19/2009
DC0000019	WASH Aquedeuct-Dalecarlia Plant	Major	10/20/2008
DC0000248	JFK Center for Performing Arts	Minor	7/25/2007
DC0000345	National World War II Memorial	Minor	4/5/2010
DC0000141	Naval Station Washington	Minor	12/23/2009
DC0000175	Super Concrete	Minor	11/25/2008
DC0000361	Walter Reed Army Medical Center	Minor	7/23/2008
DC0000337	Washington Metro Authority	Minor	4/20/2012
DC0000035	GSA West Heating Plant	Minor	4/25/2012

A.5 Household Hazardous Waste Collection

Event Date (month)	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	Totals
PARTICIPATION (number of cars)	350	275	296	276	234	234	305	342	383	406	458	551	**4,110**
WASTE CATEGORY	**TOTAL GALLONS OR POUNDS**												**TOTAL**
Lab Pack Waste Propane(Recycling) Unit Pounds	200	200	200	0	200	0	200	200	200	200	200	200	**2,000**
Lab Pack Waste Fire Extinguishers (Unit Pounds)	0	200	200	0	0	0	200	200	200	200	200	200	**1,600**
Lab Pack Waste Flammable Solid (Unit Pounds)	0	0	0	0	0	0	0	200	0	0	200	0	**400**
Bulk Waste Flammable Liquid (Gas, Thinners, Solvents, Automotive Products, Kerosene, Paint) unit gallons	550	550	350	550	440	450	750	275	660	495	880	825	**0**
Lab Pack Waste Flammable Liquid (Paints, Roofing Tar, Driveway Sealers) unit gallons	1800	1100	1300	2500	1900	1500	2000	1700	1600	2100	2000	2800	**22,300**
Lab Pack Waste Oxidizers (Pool Chemicals, Household Cleaners) unit pounds	0	400	600	200	0	0	200	400	200	400	200	400	**3,000**
Lab Pack Organic Peroxides (Treatment)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Lab Pack Waste Pesticides Liquid (Insecticides) unit pounds	1000	400	800	1000	800	600	1200	400	800	600	800	400	**8,800**
Lab Pack Waste Pesticides Solid (Insecticides) unit pounds	1200	400	800	800	800	400	1600	400	400	400	800	400	**8,400**
Lab Pack Waste Corrosive Acid (Household Cleaners, Photographic Supplies, Battery Fluid) unit pounds	0	200	400	200	400	400	200	200	200	200	200	400	**3,000**
Lab Pack Waste Corrosive Basic (Household Cleaners, Photographic Supplies, Battery Fluid) unit pounds	1400	800	1400	1600	1400	1200	1400	400	1600	1000	1600	800	**14,600**
Lab Pack Waste Toxic unit pounds	0	0	0	0	0	0	0	400	0	0	0	0	**400**
Lab Pack Mercury Light Bulbs (fluorescent bulbs & mercury lamps) unit pounds	275	1000	450	700	650	450	0	0	100	200	500	0	**4,325**
Lab Pack Rechargeable Batteries (Recycling)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Lab Pack Non Regulated Dry Cell Batteries (AA, A, C & D) unit pounds	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Asbestos (Secure Landfill)	0	400	600	600	0	0	0	0	0	0	0	0	**1,600**
Lab Pack Mercury unit pounds	0	0	10	10	5	0	10	200	15	20	200	0	**0**
Bulk Non-Regulated Motor Oil unit gallons	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Event Date (month)	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	Totals
PARTICIPATION (number of cars)	350	275	296	276	234	234	305	342	383	406	458	551	**4,110**
WASTE CATEGORY	**TOTAL GALLONS OR POUNDS**												**TOTAL**
Bulk Non-Regulated Antifreeze unit gallons	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Car Batteries (Recycling)	0	0	0	0	0	0	0	0	0	0	0	3	**3**
Propane Tanks	0	0	0	0	0	0	0	0	0	0	0	2	**2**
Lab Pack FlammableAerosols unit pounds	800	600	600	600	600	600	1200	600	600	600	600	600	**8,000**
PROJECT SUBTOTAL													
Total Drums	45	49	55	63	55	44	66	47	55	46	67	58	**650**
Total Gallons	2,350	2,050	2,250	3,650	2,340	1,950	2,750	2,375	2,260	2595	2,880	3,625	**31,075**
Total Pounds	4,875	4,200	5,460	5,110	4,855	3,650	6,210	3,200	4,315	3820	5,500	3,400	**54,595**

A.6 Trash Clean-up Event Summary

Entity	Date	Location	Watershed	Number of Volunteers	Bags of Trash	Bottles & Cans (pounds)	Tires (pounds)	Large Litter Items (pounds)	Gross Total Weight (pounds)
Anacostia Watershed Society	4/21/2013	Anacostia Community Boathouse	Anacostia River	23	300	0	0	300	600
Anacostia Watershed Society	5/5/2013	Anacostia Metro Stop	Anacostia River	1	250	0	0	25	275
Anacostia Watershed Society	4/6/2013	Fairlawn Ave SE & Pope Branch Park	Anacostia River	18	625	0	75	725	1425
Anacostia Watershed Society	4/6/2013	Horton's Kids Community Center	Anacostia River	85	1525	1150	275	150	3100
Anacostia Watershed Society	4/20/2013	Joint Base Anacostia Bolling	Anacostia River	165	4125	0	75	20	4220
Anacostia Watershed Society	4/20/2013	Kenilworth Aquatic Gardens	Anacostia River	137	2675	0	125	425	3225
Anacostia Watershed Society	4/20/2013	Kingman & Heritage Islands	Anacostia River	185	3675	0	250	100	4025
Alice Ferguson Foundation	4/6/2013	Kingman Park Neighborhood	Anacostia River	9	325	50	0	165	540
Alice Ferguson	4/13/2013	Orr Elementary	Anacostia River	55	350	500	75	175	1100

Entity	Date	Location	Watershed	Number of Volunteers	Bags of Trash	Bottles & Cans (pounds)	Tires (pounds)	Large Litter Items (pounds)	Gross Total Weight (pounds)
Foundation		School							
Anacostia Watershed Society	4/20/2013	River Terrace/Anacostia Fringe Wetland	Anacostia River	42	875		75	567	1517
Anacostia Watershed Society	4/20/2013	Seafarer's Yacht Club	Anacostia River	225	7500		50	6000	13550
Alice Ferguson Foundation	4/6/2013	Glover Archibold Park	Rock Creek	16	275	25	25	180	505
Alice Ferguson Foundation	4/13/2013	Glover Archibold Park	Rock Creek	15	500	0	0	100	600
Alice Ferguson Foundation	4/6/2013	Pierce Mill	Rock Creek	41	375	375	0	250	1000
Alice Ferguson Foundation	4/6/2013	Luzon Branch/Rock Creek Park	Rock Creek	20	975	50	25	0	1050
Alice Ferguson Foundation	4/`6/2013	16th St and Holly St NW	Rock Creek	24	325	75	25	200	625
Alice Ferguson Foundation	4/6/2013	Rosemount - Mt. Pleasant	Rock Creek	30	1650	0	0	500	2150
Alice Ferguson Foundation	4/6/2013	Carter Barron	Rock Creek	25	325	0	25	200	550

Entity	Date	Location	Watershed	Number of Volunteers	Bags of Trash	Bottles & Cans (pounds)	Tires (pounds)	Large Litter Items (pounds)	Gross Total Weight (pounds)
Alice Ferguson Foundation	4/6/2013	Kalorama/Taft Bridge Site	Rock Creek	32	2150	800	125	400	3475
Alice Ferguson Foundation	4/6/2013	Rock Creek Parkway at Shoreham Dr	Rock Creek	26	250	200	0	450	900
Alice Ferguson Foundation	4/6/2013	Fenwick Tributaries to Rock Creek	Rock Creek	50	3750	0	25	300	4075
Alice Ferguson Foundation	4/5/2013	Bend in Rock Creek below Carter Barron	Rock Creek	15	200	0	50	0	250
Alice Ferguson Foundation	4/6/2013	National Zoo	Rock Creek	19	500	0	50	50	600
Alice Ferguson Foundation	4/6/2013	Pinehurst Tributary/Rock Creek Park	Rock Creek	24	325	75	25	200	625
Alice Ferguson Foundation	4/6/2013	Broad Branch	Rock Creek	40	1125	0	75	50	1250
Alice Ferguson Foundation	4/6/2013	Melvin Hazen	Rock Creek	15	200	50	0	0	250
Alice Ferguson Foundation	4/6/2013	Piney Branch - Mt. Pleasant	Rock Creek	20	175	75	25	35	310

Entity	Date	Location	Watershed	Number of Volunteers	Bags of Trash	Bottles & Cans (pounds)	Tires (pounds)	Large Litter Items (pounds)	Gross Total Weight (pounds)
Alice Ferguson Foundation	4/6/2013	Oregon Avenue	Rock Creek	15	525	0	25	0	550
Alice Ferguson Foundation	4/6/2013	Mouth of Rock Creek	Rock Creek	47	1075	700	25	1095	2895
Alice Ferguson Foundation	4/6/2013	Rock Creek Park Picnic Area No.22 (Ross Dr NW and Joyce Rd NW)	Rock Creek	20	350	0	0	20	370
Alice Ferguson Foundation	4/6/2013	Soapstone Valley	Rock Creek	30	600	0	1	470	1071
Alice Ferguson Foundation	4/6/2013	Piney Branch - Crestwood	Rock Creek	70	1875	750	0	10	2635
Alice Ferguson Foundation	4/6/2013	Fletchers Cove	Potomac River	70	500	0	100	450	1050
Alice Ferguson Foundation	4/6/2013	Washington Canoe Club	Potomac River	60	1075	700	0	1095	2870

Entity	Date	Location	Watershed	Number of Volunteers	Bags of Trash	Bottles & Cans (pounds)	Tires (pounds)	Large Litter Items (pounds)	Gross Total Weight (pounds)
Alice Ferguson Foundation	4/6/2013	Theodore Roosevelt Island	Potomac River	66	1250	0	125	75	1450
Alice Ferguson Foundation	4/6/2013	C&O Canal Park - Georgetown	Potomac River	9	1000	0	0	300	1300

Summary	Total
Total collected from Rock Creek Watershed (lbs)	25,736
Total collected from Potomac River Watershed (lbs)	6,670
Total collected from Anacostia River Watershed (lbs)	33,577
Total number of volunteers engaged throughout year	1,744
Total Annual Load Reduced (lbs)	65,983