Non-Point Source Management Plan for the District of Columbia, 2014

Reducing Polluted Runoff & Restoring the District's Waterways

September 22, 2014

Submitted by:

The District Department of the Environment

Watershed Protection Division

1200 1st St. NE 5thFlr.

Washington, DC 20002

Table of Contents

INTRODUCTION 6

I. The District's NPS Goals and Objectives 8

II. Strengthened Partnerships 10

District of Columbia Agencies 10

District Department of Transportation (DDOT) 11

Department of General Services (DGS) 11

Department of Parks & Recreation (DPR) 12

Office of Planning (OP) 12

District of Columbia Public Schools (DCPS) 12

Federal Agencies 12

Department of the Interior 13

U.S. Department of Agriculture (USDA) 13

U.S. Environmental Protection Agency (USEPA) 13

U.S. Geological Survey (USGS) 14

Non-Governmental Organizations 14

Metropolitan Washington Council of Governments (MWCOG) 14

Universities 14

Nonprofit Partners 14

III. Combination of Projects to Achieve Goals 16

District Department of the Environment (DDOE) 16

Regulatory Mechanisms 16

Watershed Protection Division (WPD) Responsibilities 23

Stormwater Management Division (SWMD) Responsibilities 24

Water Quality Division (WQD) 24

Toxic Substances Division 25

Non-Regulatory Mechanisms 26

Watershed Protection Division (WPD) 26

Stormwater Management Division (SWMD) 27

Department of Transportation 27

Department of General Services (DGS) 29

IV. Funding 30

Funding Sources 30
Regulatory Programs within DDOE 31
Federal Grant Programs 31
Capital Funds 32
Non-Federal Grant Programs 32
Funding Strategy 32
V. Watershed Prioritization 34
CWA Section 319 Watershed Implementation Plans (WIPs) 34
Key Impairments 34
Human Health 34
EcoSystem Integrity 35
Human Connectivity 35
Opportunism 35
Threats 36
VI. Implementation Measures 37
Stream Restoration 37
Anacostia Watershed 37
Rock Creek Watershed 39
Broad Branch Stream Daylighting 39
Oxon Run Watershed 40
Oxon Run 40
Environmental Education and Outreach 40
Pollution Prevention 42
Green Roof Rebate/Retrofit Program 42
RiverSmart Programs 43
Tree Planting 45
Trash Removal 45
Outreach on Pet Waste and Enforcement of Pet Waste Regulations 46
Integrated Pest Management and Nutrient Management 46
Storm Drain Marker Program 47
Low Impact Development Retrofit Program 47
Golden Triangle LID 47

Jay Street BioRetention Cells 47
Empowerhouse 47
Targeted Watershed Community Wide LID Projects 48
RiverSmart Washington 48
Hickey Run 48
Nash Run 48
Alger Park 49
Nonpoint Source Pollution Watershed Implementation Planning 49
VII. Program Management 50
VIII. Monitoring and Evaluation 54
Project Tracking 54
BMP Tracking Database 54
319 Reporting: Annual Report, GRTS, & the Watershed Tracker 54
NPDES Annual Report 55
Bay Program Report 55
Integrated Water Quality Report 55
Daily Programmatic Monitoring 55
RiverSmart Homes & Communities 55
RiverSmart Schools & Habitat Restoration Programs 56
Urban Forestry Administration 56
Green Roof Database 56
Staff Meetings 56
S.M.A.R.T Goals 56
In-Field Monitoring 56
BMP Inspections & Enforcement 56
Ambient Water Quality Monitoring 56
Habitat Restoration Monitoring 57
Project Specific Stream Monitoring 57
RiverSmart Surveys 57
DDOE NPS Management Plan Tracking Forms 58

INTRODUCTION

Background

In 1990, the Government of the District of Columbia established its Nonpoint Source (NPS) Management Program to address the control and prevention of nonpoint source pollution to the District of Columbia's surface and groundwaters and expedite the restoration of degraded water bodies. The NPS Management Program is part of a comprehensive District watershed management program that strives to meet the national environmental goal of clean waters that support healthy communities of fish, plants, and other aquatic life and benefit uses such as fishing and swimming. Financial support for the program primarily comes from federal *Clean Water Act* (CWA) §319(h) and 117(b), and the District Government. The NPS Management Program has continually evolved and expanded, thus making significant headway in restoring and protecting our watersheds and waterways

Because the District of Columbia is entirely urban, the NPS Management Program mainly targets the nonpoint source of urban runoff as identified in the District's approved *NPS Management Program Plan (1989, 2000)*. Other NPS program plans that the U.S. Environmental Protection Agency (USEPA) has approved are the District's Watershed Implementation Plans (WIPs) for the Anacostia River, Rock Creek, and Oxon Run. Non-point source pollutants addressed include nutrients, sediment, toxicants, pathogens, and hydrocarbons. The District Government has shown that urban runoff is one of the more important contributors to surface water impairment in the District and is working to protect and restore waterways accordingly.

All of the significant water bodies within the boundaries of the District of Columbia are monitored on a regular basis. Based on the monitoring activities, the water bodies are characterized for impairments and threats. The District Government prepares Section 305(b) reports as required by the federal *Clean Water Act*. The 2012 Section 305(b) Report described the District's water bodies as not supporting their swimmable (primary contact recreation) and fishable (fish consumption) uses. The District Government's standard for evaluating the primary contact use is the concentration of fecal coliform bacteria. Additionally, most District water bodies also fail to meet standards for secondary contact. The source of pathogens to the water bodies is urban runoff, storm sewers and combined sewer overflows. The fish consumption use is not supported because of the elevated levels of polychlorinated biphenyls (PCBs) in fish tissue. The likely conveyance system of PCBs and other contaminants found in fish is storm sewers and urban runoff. Depending on the location, groundwater and surface water interaction in the District occurs in both directions or in the direction of groundwater to surface only. Therefore, groundwater sources of contamination such as pesticide application, waste piles, and urban runoff must also be controlled by nonpoint source pollution management activities.

An almost ubiquitous source of pollutants to the District's water bodies is urban runoff/storm sewers. In addition, the District has developed Total Maximum Daily Loads (TMDLs) for water bodies not meeting

their swimmable and fishable designations. The common action needed on the listed water bodies is "the control of nonpoint source pollution."

The few water bodies that partially or fully support a designated use are also identified through the District's monitoring activities and the Section 305(b) process. These water bodies are threatened because of the 65% imperviousness of the city, the decaying infrastructure, their location, or occasional construction in their watersheds. It should be noted that land uses within the District are fixed and the foreseeable threats and impairments already exist because the District is already highly developed and land uses are not subject to future dramatic changes.

In 1995, the NPS Management Program developed a process to rank watersheds for NPS implementation in the District and determined that the Anacostia River and its tributaries should receive the highest priority. Since then, the District Government has dedicated considerable resources toward restoring the Anacostia River with the aim of making it swimmable and fishable by 2032. For more than 20 years, the District Government has used the watershed approach to raise awareness and pull together public and private sector resources to tackle the water quality problems of the Anacostia River. The District Government has taken significant steps forward toward in protecting and restoring our waterways but more progress work is needed.

The identification of impaired waters is an ongoing process. As new information becomes available from monitoring studies and other aquatic resource studies within the District, the new data will be used to reassess its waters and watershed, to refine and enhance its implementation plans and, if necessary, the NPS Management Program will develop new strategies. As the Section 305(b) process requires a biannual report and the District Government requires 5-year strategic plans, the NPS Management Program will use these as opportunities to assess the success of its implementation work plans.

The District's Nonpoint Source Management Program Plan is the guiding document that will move the District toward making its waterways fishable and swimmable. The plan gives a framework under which plans are developed, decisions are made, responsibilities are assigned, and implementation is prioritized. The District's plan is a comprehensive strategy for how nonpoint source pollution will be addressed and mitigated in the coming years. This plan will be updated a minimum of every five years to ensure it reflects progress toward restoring local waterbodies and improving water quality in waterways in the District.

I. The District's NPS Goals and Objectives

The District's Nonpoint Source Management Program Plan is based on the following short-term and long-term goals (10 to 20 years). These goals provide the continued framework for the District Government to continue to develop and enhance its successful NPS Management Program. A strategy to begin to fulfill these goals is provided at the end of this document in the chapter entitled *The Nonpoint Source Management Program Strategy*.

The goals for the District Nonpoint Management Plan are as follows:

A. Goal One: Support activities that reduce pollutant loads from urban runoff, construction activity, combined sewer overflows, and trash disposal, for the purpose of attaining present designated uses by 2025 and future designated uses by 2035.
   a. Objective 1a: To reduce pollutant loads in targeted watersheds
   b. Objective 1b: To review, permit, and inspect all BMPs installed in the District
   c. Objective 1c: To increase the number of water bodies meeting water quality standards

B. Goal Two: Support and implement activities that strive to restore and maintain healthy habitat, species diversity, and water flows to all of the tributaries of the Anacostia River by 2025, and to all surface waters of the District of Columbia by 2035, by restoring degraded systems and preserving healthy and threatened ones.
   a. Objective 1b: To restore 5 miles of stream by 2025 or 15% of the District's total stream/river length
   b. Objective 2b: To add 100 wetland acres by 2035 to the District
   c. Objective 3b: To preserve and protect all of the District's 380 acres of wetlands by 2035

C. Goal Three: Coordinate NPS Management Program efforts with other District, federal and private sector programs, and adjoining jurisdictions to provide the best delivery of services to prevent and control nonpoint source pollution in the District of Columbia with the resources available.
   a. Objective 1c: To work with local and regional partners on NPS management issues
   b. Objective 2c: To participate in partnership and planning meetings
   c. Objective 3c: To participate on Region 3 & Bay Program Technical Advisory Committees

D. Goal Four: Support programs that aim to prevent nonpoint source pollution from individual actions by carrying out effective information and education campaigns that reach at least 5,000 individuals each year to targeted audiences who live, work, teach, or visit in the District of Columbia and its watersheds.
   a. Objective 1d: To reach 1,000 school students annually with hands-on environmental education activities
   b. Objective 2d: To provide 5,000 school students annually with an overnight meaningful watershed experience
   c. Objective 3d: To install BMPs on 3 schoolyards per year

d. Objective 4d: To train 10 teachers annually through training that integrates hands-on watershed education with system-wide standards of learning

E. Goal Five: Implement programs that aim to increase nonpoint source pollution runoff practices on private property reaching at least 1,000 properties per year.
   a. Objective 1e: To audit 1,000 residential properties per year
   b. Objective 2e: To audit 150 multi-family and commercial properties per year
   c. Objective 3e: To plant 750 trees per year on private property
   d. Objective 4e: To plant 4,150 trees per year in public space
   e. Objective 5e: To install 1,000 rain barrels per year on residential homes
   f. Objective 5e: To install 100 rain gardens per year at residential homes

II. Strengthened Partnerships

The District Department of the Environment (DDOE) is not a landowning or landholding agency, thus strategic partnerships with both governmental and private entities are vitally important to make the agency's watershed protection and restoration work a success. DDOE has strong partnerships with all District Government agencies, which ensures that municipal projects around the District are implemented under the same vision of watershed protection and restoration. Secondly, DDOE works with federal partners, i.e. the National Park Service and the U.S. National Arboretum, to ensure that streams are adequately protected and prioritized for restoration efforts. And finally, DDOE collaborates with a wide array of private groups, both for-profit and nonprofit, to ensure that projects and programs and designed and implemented effectively.

District of Columbia Agencies

All District agencies operate as state, county, and municipal agencies in one thus expediting our 'state-wide' partnerships focused on nonpoint source management and watershed restoration. There are multiple avenues for agencies to coordinate work. In the summer of 2011, Mayor Vincent C. Gray announced a new initiative to make the District a leader in sustainability, while improving quality of life and creating new economic growth for all residents. In 2012, the Council of the District of Columbia adopted Mayor Gray's Sustainable DC Plan, which lays out a path forward to make the District the healthiest, greenest, most livable city in the nation over the next 20 years.

The Sustainable DC Plan aims to address the District's core urban challenges with innovative, forward-thinking solutions focused around sustainability in the areas of the built environment, energy, food, nature, transportation, waste, and water. The plan addresses current and future challenges to accomplish the following:

- create jobs and grow our economy while supporting local businesses;
- improve citywide health through clean air and water and access to healthy food and lifestyles;
- celebrate diversity and improve social equality through equal access to services and assistance for those who need it most; and
- protect our local environment and global climate for wildlife, ourselves and our future generations.

Specifically, the Sustainable DC Plan lays out several goals that focus both directly and indirectly on watershed protection and restoration efforts:

- Make 100% of District waterways fishable & swimmable
- Ensure that 75% of District landscapes capture stormwater for filtration or reuse
- Increase number of wetlands by 50%
- Expand tree canopy cover to 40%

While the Sustainable DC Plan casts a wide net of goals and initiatives to make the District the healthiest, greenest, and most livable city in the country, key components of the plan will require all District agencies to work together with a focus on nonpoint source pollution and overall watershed restoration. Below are descriptions of the key District agencies with whom DDOE will continue to partner to ensure that the District effectively mitigates nonpoint source pollutants and works toward achieving the goals described in the Sustainable DC Plan.

District Department of Transportation (DDOT)

- **Infrastructure Project Management Administration (IPMA):** IPMA manages the large DDOT roadway construction projects and plays a key role in planning and permitting low impact development (LID) work in the public space throughout the District. Most significantly DDOT, along with DCWATER, has partnered with DDOE to plan a large scale residential neighborhood LID retrofitting project on both private space and public property. With two implementation neighborhoods and one control neighborhood, the project will help evaluate the nonpoint source pollution improvements from WHAT?
- **Urban Forestry Administration (UFA):** UFA is responsible for establishing and maintaining a full population of healthy street trees within the District. UFA is a partner with DDOE and receives Municipal Separate Storm Sewer System (MS4) funding to plant trees in the public right-of-way targeted in the MS4 area of the District. Its operations are run by a team of arborists assigned to each of the District's eight wards and an in-house maintenance crew to handle some tree maintenance work. The large portion of its tree planting, removal, and maintenance are handled by a private contractor.

Department of General Services (DGS)

- **Sustainability & Energy Division:** Department of General Services' (DGS) Sustainability & Energy Division develops and executes multi-million dollar energy conservation and sustainability initiatives across the DGS portfolio. The Division also manages the District government's commodity acquisition ($91 million in FY2012) and all utility-related functions, stormwater controls and waste management for government facilities.

  The Division has aggressive energy, water, waste management and sustainability goals that will reduce the environmental impact of the District's real property assets. Some of the primary objectives are:

  - Reduced operating costs and improved asset value of DGS managed facilities and sites.
  - Healthy and productive occupants and visitors within DGS facilities.
  - Dynamic energy supply strategy that reduces costs and minimizes exposure to price volatility and increases renewable energy supply.
  - Design excellence that is restorative to the local environment.
  - Education of employees, students, building tenants and visitors on issues of sustainability.
  - Minimal embodied energy and lifecycle demand within the DGS portfolio.

DDOE and the Sustainability & Energy Division work together to ensure that new projects maximize their ability to capture stormwater and stormwater runoff

- **Contracting & Procurement (OCP):** OCP handles all contracts related to DDOE projects and that of projects on other District Government lands and properties, with the exception of DDOT properties and District of Columbia Public Library facilities. OCP is the District's lead office in handling all contract issues and thus ensuring that contracts are awarded in a fair, open, and transparent process.

Department of Parks & Recreation (DPR)

DPR provides quality urban recreation and leisure services for residents and visitors to the District of Columbia. DPR supervises and maintains area parks, community facilities, swimming pools and spray parks, and neighborhood recreation centers. The agency also coordinates a wide variety of recreation programs including sports leagues, youth development, therapeutic recreation, aquatic programming, outdoor adventure, camping, and senior citizen activities. Adaptive programs and facilities are available for persons with disabilities.

DDOE and DPR partner on a number of projects including but not limited to restoring streams on DPR land, installing LID practices at DPR facilities, supporting tree canopy expansion, and working together to include watershed education in DPR programs.

Office of Planning (OP)

OP performs planning for neighborhoods, corridors, districts, historic preservation, public facilities, parks and open spaces, and individual sites. In addition, OP engages in urban design, land use, and historic preservation review. OP also conducts historic resources research and community visioning, and manages, analyzes, maps, and disseminates spatial and U.S. Census data.

DDOE and OP work together in numerous ways to help ensure that large scale neighborhood initiatives integrate watershed protection features into large scale plans. Having OP include watershed protection initiatives in large scale master plans helps to ensure that LID work will be integrated into the constructed projects. DDOE has also recently worked with OP to develop the Green Area Ratio that will help govern development in the District to ensure that a percent of area is kept 'green.'

District of Columbia Public Schools (DCPS)

DCPS is a school system that provides PK3-12 educational programming for 45,000 students. DDOE works with DCPS and the DC Office of the State Superintendent of Education (OSSE) to ensure that environmental education is integrated into classroom programming. Each year DDOE helps to train a select group of District teachers to help them better integrate watershed education lesson plans into their daily curriculum.

Federal Agencies

With large tracts of land throughout the District of Columbia, in particular waterway corridors, owned by the federal government, the District's relationship with its federal partner agencies is vitally important to ensure that nonpoint source pollutant is mitigated to the maximum extent practicable. The federal

presence in the District is dominated by large federal buildings in the central core of the District with large tracts of park space throughout the rest of the District.

Department of the Interior

- **National Park Service (NPS):** DDOE actively works and partners with several branches of the National Park Service in the National Capital Region to plan and implement restoration project, in particular, stream restoration projects as many of the District's stream miles lie on NPS owned and managed land.

- **U.S. Fish & Wildlife Service (USFWS):** DDOE and USFWS formally worked together to plan, design, and implement the 1.7 mile Watts Branch Stream Restoration project. In the near future, DDOE and USFWS will work together to monitor and evaluate the stream project to ensure that it is meeting its projected goals. No future projects are presently planned in partnership, but it is possible that DDOE and USFWS could partner in the future to share technical expertise, especially as it relates to stream restoration.

U.S. Department of Agriculture (USDA)

- **U.S. National Arboretum (the Arboretum):** DDOE is presently partnering with the Arboretum to implement and LID and stream restoration project on the Arboretum's grounds. The LID project will capture and filter stormwater from the parking areas near the Visitor's Center and the stream restoration project will take place on Springhouse Run, a tributary of the Hickey Run. DDOE and the Arboretum hope to replicate similar projects in future years.

- **National Resource Conservation Service (NRCS):** DDOE and NRCS have partnered to utilize NRCS' contracting services for such projects as the Watts Branch Stream Restoration Project, the Brent Elementary LID Project, and the MacFarland Middle School LID Project. While the current formal partnership will end soon, DDOE and NRCS will still partner to ensure the District can take advantage of NRCS' technical expertise as it relates to plants and soils throughout the District.

U.S. Environmental Protection Agency (USEPA)

DDOE and the USEPA have partnered for many years to ensure that the District of Columbia meets federal law and guidelines related to nonpoint source management. DDOE and several branches of the USEPA partner to ensure that the District is meeting all of its local and federal obligations as well as working in a manner that is in concert with regional and national efforts.

- **EPA Region 3-319 Program:** DDOE receives annual funds to implement our nonpoint source management projects and DDOE participates in annual conferences and meetings to stay up-to-date with the latest in NPS work around the Region.

- **EPA Region 3- MS4 Program:** In 2012, DDOE received a new Municipal Separate Storm Sewer System (MS4) Permit from the USEPA that allows the District to still operate its Separate Storm Sewer System provided it meets specific targets to mitigate the amount of stormwater and associated pollutants that flow into the District's piped network.

- **EPA Chesapeake Bay Program (the Bay Program) Watershed Implementation Plans (CB WIP) and broader CBP Goal Implementation:** DDOE receives funds from the Bay Program and also participates on numerous technical committees established by the Bay Program. The District is fully committed to implementing and meeting milestones of Phase I and II WIPs for the Chesapeake Bay. Technical committees are venues for regional partners to make collaborative decisions and create a unified direction for how to proceed in areas such as properly attributing load reductions to stream projects, evaluating the latest in scientific data on LID load reductions, and deciding best practices to improve and expand urban tree canopy cover. DDOE has an active and engaged presence on all Bay Program committees which adds value to such committees since the District is the only all-urban jurisdiction within the Bay Program's boundaries.

U.S. Geological Survey (USGS)

USGS presently operates several water monitoring stations around the District, with financial support from DDOE, that measure water height, flow, and various water quality parameters including but not limited to temperature, dissolved oxygen, and turbidity.

Non-Governmental Organizations

Metropolitan Washington Council of Governments (MWCOG)

In June 2006, the MWCOG Board adopted a resolution that established a new Anacostia Watershed Restoration Partnership (AWRP). The key elements of the AWRP are: (1) the Anacostia Watershed Restoration Leadership Council; (2) the Anacostia Watershed Steering Committee; (3) the Anacostia Watershed Comprehensive Restoration Plan; and (4) a reorganizaed Anacosita Watershed Restoration Committee. The Leadership Council is responsible for the adoption and periodic revisions to a Comprehensive Anacostia Watershed Restoration and Protection Plan, which quantifies the restoration goals, specifies an implementation timeline and provides explicit measurements of progress, with appropriate recognition and incorporation of related planning activities. DDOE is an active participate in all AWRP meetings and submits quarterly reports regarding the District's progress toward meeting its responsibilities within the Anacostia Watershed Comprehensive Restoration Plan.

Universities

Local universities, e.g. University of the District of Columbia, George Washington University, American University, Howard University, and the University of Maryland (College Park), participate in various aspects of DDOE's NPS work ranging from community design charettes to monitoring activities. While there is no formal ongoing partnership, DDOE partners with universities as mutually beneficial opportunities arise.

Nonprofit Partners

Nonprofit partners are vital to DDOE's work to reduce nonpoint source pollution. Most commonly, DDOE, through a competitive grant process, funds local nonprofits to increase youth education and awareness about watershed protection, implementation of LID projects, and rebate programs for LID

installations. Nonprofit partners provide a valuable service to communities throughout the District and DDOE will continue to partner with a wide array of nonprofits to help fulfill our NPS management obligations.

III. Combination of Projects to Achieve Goals

District Department of the Environment (DDOE)

The District Department of the Environment (DDOE) is the leading authority on energy and environmental issues affecting the District of Columbia. Specifically, DDOE is the District lead agency in implementing the Nonpoint Source Management Program and ensuring that nonpoint source management practices and rules are implemented District-wide for the improvement of our waterways. Using a combination of regulations, outreach, education, and incentives, our agency administers programs and services to fulfill our mission. DDOE works collaboratively with other government agencies, residents, businesses, and institutions to promote environmentally responsible behavior that will lead to a more sustainable urban environment.

DDOE has approximately 300 engineers, biologists, toxicologists, geologists, technicians, inspectors, environmental specialists, policy analysts, administrators, public outreach specialists, and support staff. Among staff responsibilities are issuing permits, monitoring environmental conditions, providing funding and technical assistance, assessing environmental risks, developing policies, inspecting facilities, enforcing environmental regulations, working with other entities to solve everyday environmental issues, and informing and educating the public on local environmental trends and their benefits.

The DDOE team promotes public and environmental health by implementing and enforcing District and federal laws and regulations. DDOE recognizes that strong and healthy communities are central to the District's economic prosperity, and work daily to protect the environment in which its people live, work and play. Within DDOE, the Natural Resources Administration houses four Divisions tasked with protecting and improving the watersheds and waterways of the District: the Watershed Protection Division (WPD); the Water Quality Division (WQD); the Stormwater Management Division (SWMD); and the Fisheries and Wildlife Division (FWD). Additionally, the Toxic Substances Division (TSD), located in DDOE's Environmental Services Administration, plays important role in ensuring that toxic substances are prevented from flowing into District waterways while also making sure that contaminated sites are remediated properly to prevent further environmental harm.

Under the umbrella of DDOE, there are both regulatory and non-regulatory mechanisms that focus on protection and restoration of streams. Because the District is at an advanced state of being built out, the regulatory environment has moved toward increasing the standards new development must meet to protect waterways. At the same time the non-regulatory mechanisms have a sharp focus on retrofitting existing developed facilities and areas while also implementing large scale restoration projects throughout the District to accelerate restoration. This section lays out the District's framework of regulatory and non-regulatory programs that the District is utilizing to meet its nonpoint source management goals.

Regulatory Mechanisms

1. Federal Clean Water Act §404: Issuance of permits to control the discharge of dredged or fill materials into waters of the U.S. Activities related to wetlands are also covered by this section

2. Title 21, Chapter 5 – Water Quality and Pollution: The provisions of this chapter shall be applicable to all sources of pollution affecting the Potomac River and its tributaries within the District of Columbia, including, but not limited to: pollution carried by stormwater runoff, sources of sediment wastes from vessels or other floating construction, and domestic and industrial waste.
    a. The purposes of this chapter shall be as follows:
        i. To prevent and control the pollution of the Potomac River and its tributaries;
        ii. To regulate land disturbing activities;
        iii. To prevent accelerated soil erosion and sedimentation;
        iv. To prevent sediment deposit in the Potomac River and its tributaries, including the District sewer system; and
        v. To control health hazards due to pollution of the Potomac River and its tributaries.
3. Title 21, Chapter 22 – Water Pollution Enforcement: The purpose of the rules in this chapter is to provide enforcement procedures for the water pollution control Act of 1984. These rules are developed pursuant to §§17, 18 and 19 of D.C. Law 5-188, the Water Pollution Control Act of 1984 and apply to the Act and the rules promulgated pursuant to the Act.
4. Title 20, Chapter 31 – Flood Hazard Rules: The purpose of this chapter is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by:
    a. Regulating uses, activities, and development which, acting alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;
    b. Restricting or prohibiting certain uses, activities, and development from locating within areas subject to flooding;
    c. Requiring all those uses, activities, and developments that do occur in flood-prone areas to be protected in order to prevent flood damage; and
    d. Protecting individuals from buying lands and structures which are unsuited for intended purposes because of flood hazards.
5. Title 21, Chapter 10 – Retail Establishment Carry Out Bags: The purpose of this chapter is to implement the provisions of the Anacostia River Clean Up and Protection Act of 2009, effective September 23, 2009 (D.C. Law 18-55; D.C. Official Code § 2-1226.51 *et seq*.). Except as provided in Section 1006, a retail establishment shall charge each customer making a purchase from the establishment a fee of five cents ($0.05) for each disposable carryout bag provided to the customer with the purchase. [Final Rulemaking published at 57 DCR 7208, 7209 (August 13, 2010).]
6. Title 21 Chapter 6 – Riparian Rights and Water Privileges: No structure shall be constructed, reconstructed, or repaired in any waters shoreward of the pierhead line unless the Mayor, pursuant to this chapter, issues a permit for the construction, reconstruction, or repair of the structure.
7. Water Pollution Control Act of 1984 (DC Law 5-188) The *D.C. Water Pollution Control Act of 1984*, D.C. Law 5-188, was enacted to regulate the restoration of the cleanliness and purity of District of Columbia waters and to protect the fish and aquatic life and their habitats. This allows the District to regulate any activities that may impact the waters of D.C. Stormwater management activities are regulated under § § 509-518 of this law.

Recent changes to District law that greatly improve the nonpoint source pollution abatement efforts of the District of Columbia are listed below:

a. Ground Water Standards, 21 DCMR Chapter 11, published at 40 DCR 4203, July 2, 1993. This chapter establishes narrative and numerical criteria for groundwater quality.
b. Water Quality Standards, 21 DCMR Chapter 11, published at 41 DCR 1075, March 4, 1994. This amendment allows for classification of District surface waters based on their current uses and future uses to which they will be restored.
c. Water Quality Monitoring Regulations, 21 DCMR Chapter 19, February 2, 1995. These rules were adopted to provide for accurate, consistent and reproducible water quality monitoring data for decision making purposes.

Delegation of Authority under the *D.C. Water Pollution Control Act*, Mayor's Order 98-50 dated April 15, 1998, superseded Mayor's Order 87-278, 12/11/87. This order transferred regulatory authority to the Department of Health when Ground Water Quality Division was assigned to that administration.

8. Water Quality Standards for Surface Waters (21 DCMR Ch. 11, Effective February 1, 2010): The following standards apply to surface waters in the District: This chapter establishes the Water Quality Standards (WQS) for the waters of the District of Columbia, as authorized by section 5 of the Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code § 8-103.04).

For the purposes of the water quality standards, the surface waters of the District shall be classified on the basis of their (i) current uses, and (ii) future uses to which the waters will be restored. Water quality standards are divided into three types of criteria for their designated uses: 1) Fully supporting – for any pollutant, standard exceeded in <10% of measurements meaning pollutants were not found at levels of concern; 2) Not supporting – for any one pollutant, standard exceeded in > 10% of measurements meaning pollutants were found at levels of concern; and 3) Not assessed – meaning the water body was not assessed in a manner which could determine if it met its designated use. The categories of beneficial uses for the surface waters of the District shall be as follows:

Categories of Uses that Determine Water Quality Standards	*Classes of Water*
Primary contact: recreation	***A***
Secondary contacts: recreation and aesthetic enjoyment	***B***
Protection and propagation of fish, shellfish, and wildlife	***C***
Protection of human health related to consumption of fish and shellfish	***D***
Navigation	***E***

The surface waters of the District are designated for beneficial use classes according to the categories delineated in subsection as follows:

CLASSIFICATION OF THE DISTRICT'S WATERS

	USE CLASSES	
Surface Waters of the District	***Current Use***	***Designated Use***
Potomac River	B, C, D, E	A, B, C, D, E
Potomac River tributaries (except as listed below)	B, C, D	A, B, C, D
Battery Kemble Creek	B, C, D	A, B, C, D
C & O Canal	B, C, D, E	A, B, C, D, E

CLASSIFICATION OF THE DISTRICT'S WATERS

	USE CLASSES	
Surface Waters of the District	***Current Use***	***Designated Use***
Rock Creek	B, C, D, E	A, B, C, D, E
Rock Creek tributaries	B, C, D, E	A, B, C, D, E
Tidal Basin	B, C, D, E	A, B, C, D, E
Washington Ship Channel	B, C, D, E	A, B, C, D, E
Oxon Run	B, C, D	A, B, C, D
Anacostia River	B, C, D, E	A, B, C, D, E
Anacostia River tributaries (except as listed below)	B, C, D	A, B, C, D
Hickey Run	B, C, D	A, B, C, D
Watts Branch	B, C, D	A, B, C, D
Wetlands	C, D	C, D

9. Ground Water Quality Standards (21 DCMR §§ 1150-1158): Sections 1150 through 1158 shall describe the following categories:
    a. Classes of groundwaters within the District;
    b. Establish criteria to protect the designated uses;
    c. Establish the concepts of Enforcement Standards and Early Warning Values; and
    d. Provide groundwater monitoring requirements.
10. Water Quality Research Grant Regulations (21 DCMR Ch. 13): This chapter shall establish the procedures for issuing grants to universities and institutions pursuant to §13 of D.C. Law 5-188, the "Water Pollution Control Act of 1984."
11. Submerged Aquatic Vegetation (SAV) Regulations (21 DCMR Ch. 14): The purpose of this chapter is to provide for the management of submerged aquatic vegetation. This chapter is promulgated under §4 of D.C. Law 5-188, the Water Pollution Control Act of 1984, D.C. Code §6-923 (1995 Repl. Vol.).
12. Water Quality Monitoring Regulations (21 DCMR Ch. 19): The purpose of this chapter is to provide for accurate, consistent and reproducible water quality monitoring data for decision making purposes. This chapter shall apply to ambient surface and groundwater quality monitoring, special monitoring studies, compliance monitoring, monitoring required as a part of a permit, or to modify a permit, and self-monitoring of discharges
13. 2013 Stormwater Management and Soil Erosion and Sediment Control: The District's newly adopted Stormwater Rule (July 2013) sets the stage for maximizing stormwater capture, retention, and reuse for all future development on disturbed areas of greater than 5,000 square feet. The new stormwater regulations will not only regulate new developments but create incentives for property owners throughout the District to retrofit existing properties in order to improve the environment and have cash incentives to do so.
    a. **Summary of Stormwater Regulations:** These amendments will provide greater protection for the Anacostia and Potomac Rivers, Rock Creek and their tributaries. They will improve equity in the allocation of the burden of stormwater management, and they will promote sustainable development within the District.

        The amendments will significantly improve protection for District water bodies by effectuating a fundamental shift in the management of stormwater runoff within the District. Unlike the existing approach in which the fundamental goal of stormwater management is simply to manage the timing and quality of stormwater conveyed into the public sewer infrastructure, these amendments require the retention of stormwater volume on site with a menu of stormwater management practices through which stormwater is absorbed by the soil, infiltrated into the ground, evapotranspired by plants, or stored ("harvested") for use on site. This more closely approximates the "sponginess" of the natural environment, where rainwater is captured by foliage, absorbed into the soil, and infiltrated into groundwater reserves.

        These amendments improve the equity of how the impacts of stormwater runoff and the burden of stormwater management are distributed in the District. Over the years, inadequate stormwater management has become a leading cause of the severe degradation of District water bodies such as the Anacostia and Potomac Rivers and Rock Creek. This degradation diminishes the value of these public resources for residents, visitors, and businesses in the District of Columbia, and it necessitates the

use of public resources to pay the costs of managing stormwater and remedying its impacts.

These amendments more equitably allocate the costs of stormwater management by requiring properties undergoing major development or redevelopment to do more to reduce the stormwater runoff from their property. The idea that these costs should be reflected in the costs of developing properties is in keeping with the established principle of environmental policy and economics that external environmental costs should be internalized into the costs of a transaction. By making the shift to the retention-based approach in these amendments, regulated development will become a major driver behind the long-term effort to retrofit impervious surfaces in the District and, ultimately, to restore health to the District's water bodies.

Enhancing sustainability in the District is another important objective, and Mayor Vincent C. Gray has released a sustainability plan that will help the District achieve this vision. These amendments are designed to support that vision not only by improving protection for District water bodies, but also by providing that protection while maximizing flexibility and cost-savings for regulated sites. Notably, these amendments allow regulated sites the option of achieving a portion of their stormwater retention requirement off site, but still within the District, without having to first prove that on-site retention is infeasible. Sites that opt to use off-site retention have two (2) off-site options: use of Stormwater Retention Credits (SRCs), which can be purchased from the private market, or payment of an in-lieu fee to DDOE.

In addition to the flexibility and cost-savings that these off-site provisions allow, they also enhance sustainability's triple bottom line of social, economic, and environmental impacts via the installation of more retention BMPs in more parts of the District than would otherwise be achieved under a strict on-site retention approach. The preamble to the proposed rule provided an overview of the benefits to District water bodies that may result from the increase in retention BMPs (available via www.ddoe.dc.gov/swregs). To summarize, this increase has the potential to significantly reduce the volume of stormwater runoff into District water bodies and to capture a greater share of the dirtiest "first flush" volume carrying pollutants to our water bodies. By shifting the installation of retention BMPs from areas draining into the tidal Anacostia and Potomac Rivers to areas draining into the District's relatively vulnerable tributary water bodies, these off-site retention provisions are also likely to result in more protection for the District's most vulnerable water bodies. Socioeconomically, an increase in retention BMPs should increase the number of green jobs in the District, including low-skill and moderately skilled installation, operation, and maintenance jobs, as well as relatively high-skilled design and engineering jobs.

The increase in retention BMPs also provides aesthetic, health, and ancillary environmental benefits to the District. Finally, it is worth pointing out that DDOE sees the off-site provisions in these amendments as having the potential to result in a relatively large amount of retention BMPs being installed in less affluent parts of the District, meaning that these amendments also have the potential to improve environmental justice outcomes in the District.

These amendments also contain other provisions to provide flexibility to regulated sites and promote sustainable development in the District. To facilitate retention on

site, the amendments allow a regulated site to exceed the retention requirement in one area ("over-control") in order to compensate for retention that falls short in another area on the site. Additionally, on-site retention can also be achieved via direct drainage to a Shared Best Management Practice (S-BMP) that may serve multiple sites. Finally, although a site draining into the combined sewer system must retain a minimum volume of stormwater from the entire site, it has the flexibility to over-control without having to meet minimum requirements for retention or treatment in individual drainage areas on the site.

Watershed Protection Division (WPD) Responsibilities

WPD is largely responsible for enforcing the above regulations responsible for keeping nonpoint source pollution out of our waterways and restricting certain activities near waterways. Two branches within WPD work together on the regulatory responsibilities within the Division to protect our watersheds from soil erosion and nonpoint source pollution and to implement restoration projects:

- **Technical Services Branch:** The mission of the Technical Services Branch is to protect the health, safety, and welfare of the residents of the District of Columbia by managing land-disturbing activities to prevent accelerated soil erosion and sediment deposition in the Potomac and Anacostia Rivers and their tributaries. The branch develops and implements programs in stormwater management, erosion and sediment control, and floodplain management in support of the regulation of land-disturbing activities. The major functions of the Technical Services Branch are:
    - Review construction and grading plans for stormwater management, erosion and sediment control, and floodplain management.
    - Coordinate the permit review process with the Department of Consumer and Regulatory Affairs (DCRA) and the DC Water and Sewer Authority (DC WATER).
    - Review environmental impact screening forms (EISFs) and environmental impact studies.
    - Develop and upgrade stormwater management, erosion and sediment control, and floodplain management regulations, and guidance manuals.
    - Provide information on flood zones in support of the National Flood Insurance Program (NFIP).
    - Coordinate floodplain management activities with the DC Homeland Security and Emergency Management Agency (HSEMA) and the Federal Emergency Management Agency (FEMA).
    - Review geotechnical reports.
    - Review soil percolation test reports.
    - Provide information on soil types and characteristics.
    - Provide technical assistance on stormwater management, erosion and sediment control, and floodplain management issues.

- **Inspection and Enforcement Branch:** The mission of the Inspection and Enforcement Branch is to coordinate, facilitate, manage, and plan activities to protect the water quality and aquatic resources in the Potomac and Anacostia watersheds. The branch develops and implements an efficient and effective inspection and enforcement program in support of the regulation of land-disturbing activities. The specific functions of the Inspection and Enforcement Branch are:
    - Conduct inspections of soil erosion and sediment control and stormwater management facilities at construction sites for compliance with the regulations.

- Review and approve "As-Built" plans of stormwater management facilities submitted to the District for compliance with design standards and specifications.
- Investigate soil erosion, water drainage and related complaints and take the necessary action(s) to resolve them.
- Conduct preventive maintenance inspections of stormwater management facilities to ensure proper functioning of these facilities.

Stormwater Management Division (SWMD) Responsibilities

SWMD negotiates and administers the Municipal Separate Storm Sewer System (MS4) permit issued to three District agencies (Department of Public Works, DDOT, and DDOE) and DC WATER by the USEPA under the National Pollutant Discharge Elimination System (NPDES), and oversees their activities to ensure that permit compliance activities are prioritized, budgeted and implemented.

DDOE seeks to reduce stormwater runoff pollution by going beyond the activities required in the District's NPDES Permit, more commonly referred to as an MS4 Permit. SWMD is responsible for managing the most recent District NPDES Permit . In February 2007, DDOE assumed the initial responsibility for the District's stormwater administration, and now has in place a vigorous stormwater program as overseen by the SWMD in conjunction with all its sister agencies. DDOE works together with its sister District agencies in two group settings: the Stormwater Advisory Panel (a group of all District agency directors and the City Administrator) and the Technical Working Group, which meets monthly to keep current on activities that effectively reduce stormwater throughout the District.

Water Quality Division (WQD)

WQD restores and protects the surface and groundwaters of the District through setting and enforcing water quality standards, monitoring and assessing the quality of the waters and aquatic resources, and developing and implementing policies to protect and restore the water quality and aquatic resources. WQD was established under the authorities of the DC Water Pollution Control Act and the federal Clean Water Act (CWA). WQD services include:

- **Drinking Water Testing:** WQD provides total chlorine and total coliform tests for drinking water.
- **Water Quality Permits and Certifications:** 1) As required under Section 401 of the federal Clean Water Act, WQD provides Water Quality Certification for draft NPDES permits. The USEPA Region 3 is the permitting authority for the NPDES program in the District of Columbia; and 2) Under Section 404 of the Clean Water Act, WQD certifies dredge and fill permits issued by the U.S, Army Corps of Engineers.
    - WQD also issues 401 Certification for USEPA general permits requiring compliance by the District of Columbia.
    - WQD also certifies individual water quality NPDES permits issued by USEPA.

  The Water Quality Division also reviews Well Permit applications for approval.

WQD Program Components:

- **Water Quality Control:** The Water Quality Control component fulfills the function of policy planning as well as regulatory control of surface water, groundwater and wetlands. In addition, it conducts special studies on pollutant fate and transport to identify probable sources and impacts, river/stream sediment and water column quality not covered by ambient monitoring, wet weather

nonpoint source runoff quantity and quality, and discharge-related facility inspections. It also tracks permit violations.

- **Water Quality Monitoring:** Water Quality Monitoring functions encompass water body assessment; collection of ambient water quality data; periodic fish tissue analysis for parameters of concern such as PCBs, chlordane, and DDT; periodic submerged aquatic vegetation survey; and bioassessment of wetlands and river fringes.
- **Environmental Laboratory**: The Environmental Laboratory is charged with the analysis of samples for a variety of chemical parameters.

Toxic Substances Division

TSD works to ensure that toxic substances around the District are handled in proper manner and that contaminated sites are protected and remediated properly to ensure the safety of the environment and the health of the general population.

Anacostia Sediment Project: Over the past 15 years, actions taken by the Anacostia Watershed Restoration Committee (AWRC), Anacostia Watershed Toxics Alliance (AWTA), environmental and business groups, and numerous individual citizens have resulted in substantial progress toward the restoration of the sediment in the Anacostia River. To complement and supplement the existing efforts, DDOE has drafted a statement of work (SOW) for conducting a remedial investigation and feasibility study (RI/FS) of the Anacostia River sediments. Elevated concentrations of hazardous substances, including polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), lead and other trace elements, and pesticides are all present in sediment throughout the river, posing a risk to aquatic organisms and to humans. The purpose of the SOW is to identify the existing sources of sediment contamination in the Anacostia River, evaluate the nature and extent of contamination in the sediments in the tidal portion of the Anacostia River and conduct a feasibility study to develop and evaluate potential remedial actions designed to eliminate unacceptable risk to human health and the environment.

Currently, cleanup work is underway at multiple locations on the lower Anacostia River. At most of these sites, the cleanup will address the portion of sediments within a defined area around the site. This SOW will build on the work already underway at these sites. The links to the websites associated with few of these projects are provided below:

- Pepco Benning Road Facility Plans and Deliverables- (http://ddoe.dc.gov/page/pepco-benning-road-facility-plans-and-deliverables)
- The National Park Service (NPS) is currently pursuing following cleanup projects which can be found at the following links.
    - Kenilworth Park Landfill Site- (http://www.nps.gov/nace/parkmgmt/kpls.htm)
    - Poplar Point Site- (http://www.nps.gov/nace/parkmgmt/poplarpoint1.htm)
    - Washington Gas- East Station Site- (http://www.nps.gov/nace/parkmgmt/washingtongas.htm)

Non-Regulatory Mechanisms

The District Government implements non-regulatory programs and projects in order to expand efforts to reduce nonpoint source pollution across the District. While WPD's Planning and Restoration Branch leads the effort, there are numerous District programs and projects also moving forward toward healthier watersheds, streams, and rivers. Over the last decade, the District has seen an increase in LID projects by orders of magnitude compared to the previous decade and with the adoption of new stormwater regulations the expansion of LID practices around the District should once again expand greatly over the next decade.

Watershed Protection Division (WPD)

WPD leads the District's effort to expand community knowledge it has developed an extensive Environmental Education Program, using nationally accredited curricula, to educate District teachers, students, and residents about the benefits of environmental stewardship. The WPD also assesses the health of watersheds and habitats and sponsors activities that re-create wetlands or restore stream buffers with trees.

- **Planning and Restoration Branch**: The mission of the Planning and Restoration Branch is to conserve the soil and water resources of the District of Columbia and to protect its watersheds from pollution through education and outreach, stream and habitat restoration, innovative stormwater management and watershed planning. Activities funded involve education and community outreach, habitat restoration, and the demonstration of best management practices. The branch manages both the District's Chesapeake Bay and Nonpoint Source Management implementation grants from the USEPA. The specific functions of the Planning and Restoration Branch are:
    - To encourage pollution prevention by carrying out information and education campaigns and increasing involvement in cleanup efforts in the Anacostia River, neighborhood watersheds, and the Chesapeake Bay.
    - To sponsor activities that protect and restore river, stream, and wetland habitats in the District, increase the District's and Chesapeake Bay watershed's ecological diversity, and protect the health, welfare, and safety of District residents.
    - To fund, manage and implement several incentive programs including:
        - RiverSmart Homes: The RiverSmart Homes program offers incentives to homeowners interested in reducing stormwater pollution from their properties. RiverSmart Rooftops: The RiverSmart Rooftops program provides a cost share rebate to property owners installing green roofs on their buildings.
        - RiverSmart Schools: The RiverSmart Schools program offers schools both teacher training and assistance with installing outdoor classrooms that help reduce stormwater runoff.
        - RiverSmart Communities: The RiverSmart Communities program is an extension of the RiverSmart Homes program to multi-family residences such as condominiums, co-ops apartments, and houses of worship.
        - RiverSmart Rebates: In addition to RiverSmart Homes, there are a series of rebates for trees, rain barrels, rain gardens, and impervious surface removal. Any District single family homeowner is eligible to apply for the rebates, and homeowners that have already participated in the can also take advantage of the rebates.

Stormwater Management Division (SWMD)

As part of its regulatory responsibility to fulfill the District's NPDES permit, SWMD is helping to incentivize the installation of LID practices around the District. SWMD partners with other District agencies to maximize their ability to capture runoff through LID retrofits and offers funds for new construction projects that will capture in rainfall in excess of a 1.2" storm. Additionally, the SWMD offers rebates and subsidies to private property owners to retrofit their properties with LID features to capture stormwater runoff.

While DDOE plays a lead role in managing and coordinating District efforts to restore watersheds and waterways, there are several key agencies with large portfolios that are essential to ensuring the District meets goals within this Non-point Source Management Plan. DDOT and DGS carry large portfolios, both of which contain large tracts of impervious cover where the District needs to make stride to reduce the volume of runoff thus reduce the associated pollutant load that will enter our waterways from their land areas. Below are brief summaries of what programs the respective agencies have in place that make them relevant to the NPS Management Program Plan.

Department of Transportation

Urban Forestry Administration (UFA): UFA is the District's lead agency in protecting and enhancing the District tree canopy with a specific focus on street trees. UFA has a variety of programs aimed at planting, nurturing, and protecting street trees in all eight Wards with the goal of creating a healthy tree canopy throughout the District. UFA has a variety of programs focused on the District's trees:

- **Street Tree Planting:** Every year the Urban Forestry Administration plants approximately 4,150 trees in the public right of way. A significant amount of work goes into getting these trees in the ground. This work includes identifying open tree boxes, removing dead trees from tree boxes, creating new tree box locations, determining appropriate species for the tree boxes, and prepping the tree boxes for tree installation. UFA also reviews site plans for new development as part of public space permit reviews to maximize tree planting by the private sector.

  Street Tree Preservation: In addition to the work that the UFA does in managing street tree planting, it also works hard to maintain the District's existing tree canopy in the right of way. This work, although often unnoticed, requires a great deal of effort. UFA's tree maintenance work includes the following activities:

  - Pruning trees to keep them healthy and remove dangerous limbs;
  - Injecting American Elms to keep Dutch Elm Disease at bay;
  - Expanding tree boxes for trees that have outgrown their location;
  - Managing tree/power line interactions to keep trees healthy and power service secure;
  - Watering newly planted trees to ensure their survival;

- Removing dead, dying, or hazardous street trees; andCitywide storm and emergency response.

- **Canopy Keeper Program:** It is difficult to maintain the number of new trees the District is planting in the right-of-way. Newly planted trees are especially vulnerable to drought and summer heat in their first two years. To help these trees survive and to protect the District's investment, UFA has started an adopt-a-tree program called Canopy Keepers. Through this program, UFA provides residents who sign an agreement to mulch and water a street tree with free watering bags and instructions on how to properly maintain their tree.

- **Impervious Surface Reduction Project:** Prior studies have shown that, in rain events, large amounts of water run quickly over impervious surfaces and enter the CSO a high rate of speed, frequently leading to combined sewer overflows that empty into the District's waterways. The Impervious Surface Reduction Project removes concrete and other impervious surfaces around tree boxes in the area of the District served by the CSO to mitigate runoff that causes overflows. By removing impervious surfaces, UFA increases the soil area for root expansion, intercepts stormwater runoff, and can plant larger canopy tree species that provide increased environmental benefits.

  DDOE and UFA are increasing the size of existing tree boxes and linking them to create expanded planting strips. In areas where it is not appropriate to plant trees, UFA proposes to create grassed swales. When appropriate, this project will also include curb cuts to transform tree boxes into infiltration tree planters.

- **Green Medians Project:** The goal of this project is to demonstrate potential opportunities to reduce the amount of impervious surface in the District and increase stormwater retention by greening existing medians. Impervious concrete will be removed from selected paved medians within the combined sewer system (CSS) area and retrofitted with amended soils, structural soils, and drought tolerant low maintenance plants. Soil retrofits will have a standard depth of three feet. When appropriate, this project will capture stormwater from District streets and allow it to flow and infiltrate into grass swales.

Infrastructure Project Management Administration (IMPA): IMPA has a group that solely focused on the integration of LID practices into DDOT projects. This team, with financial support from DDOE-SWMD, works to maximize LID opportunities in large and small scale public space projects initiated by DDOT.

- **Green Streets:** IMPA has been awarded several grants to work on 'Green Street' projects that aim to maximize stormwater capture and tree canopy expansion in major roadway redevelopment project. Such projects have both short and long-term environmental and economic benefits and are the model of how smart design should be utilized in all future roadway projects.

- **Green Alleys:** The District's Green Alley Projects are designed to reduce the quantity and improve the quality of stormwater within the city's right-of-way (ROW). DDOT is implementing these projects in partnerships with DDOE funding from the American Recovery and Reinvestment Act of 2009. Although alleys constitute a significant portion of impervious surface, most do not have stormwater controls, such as water quality catch basin or grate inlets. To mitigate this, Green Alleys use sustainable design and LID techniques that

reduce the amount of stormwater and pollutants entering the sewer system by increasing water infiltration and treatment on site.

Department of General Services (DGS)

Established in October 2011, DGS manages all District facilities and land areas with the responsibility of construction, maintenance, and general upkeep. DGS also manages contracting services for work to be performed on most District owned properties and facilities. In order the properly integrate NPS Management Program Plan goals and programs into the large portfolio that DGS handles, DDOE regularly meets with DGS staff to plan projects, prioritize implementation, and to assess and evaluate completed projects. With the adoption of the Sustainable DC Plan and the adoption of the new Stormwater Regulations, DGS will bear a large responsibility to making the goals and regulations come to fruition on District owned and managed properties moving forward.

IV. Funding

Nonpoint source pollution is a complex and massive problem whose correction is equally complicated and expensive. Pollutants originate from a variety of sources and their control may require financing unique to the pollutant source. Contaminants impacting the environment are also different in significance and magnitude. Certain toxic pollutants are more harmful than others and require immediate attention. It is also crucial to take into account the laws and regulations impacting the management of nonpoint source pollution. Some federal funds such as federal §319(h) *Clean Water Act*, have restrictions in their use. NPDES requirements for the Municipal Separate Storm Sewer System (MS4) are extensive enough to demand a specifically dedicated funding source. Because of these types of concerns, securing and expending the needed resources to manage nonpoint source pollution require careful planning. The District of Columbia is unique as it is a city that is treated as a state under most circumstances. The District is also home to many federal facilities, and so has a unique relationship with the Federal Government. This latter condition adds another variable to the financing of the city's nonpoint source problems.

The District's Nonpoint Source Management Program was established as part of the Department of Consumer and Regulatory Affairs. In January 1998, the program along with the other environmental programs was transferred to DOH EHA. In 1999, the Environmental Health Administration developed a five-year strategic plan. The plan calls for improved services including better financial accountability. More recently, in 2006, the District Department of the Environment was created thus taking over all responsibilities related to the District nonpoint source management program and its financial responsibilities.

The District's Watershed Protection Division prepares annual work plans under its §319(h) and §117(a) of the federal *Clean Water Act* for watershed projects. These projects include financial details, milestones, and deliverables. These projects are city-wide but are generally concentrated in the Anacostia watershed and target nonpoint sources such stormwater runoff. Every effort is made to insure that annual work plans are implemented and reporting requirements, including financial ones are met. However, DDOE does not work on its own, and so is not exempt from the larger financial management constraints of the city. The Grants Tracking and Reporting System has been established and is utilized for semi-annual online reporting of program and project progress. Efforts to upgrade and utilize the system effectively are underway. The Watershed Protection Division continues to work with USEPA and the city's financial officers to improve the fiscal operations of the program's federal grant funds and District matches.

Funding Sources

Funding for nonpoint source pollution management comes from the following programmatic areas: DDOE regulatory programs, federal programs, District of Columbia capital funds, and District of Columbia agencies outside of the authority of the DDOE such as DDOT or DCWATER. DDOE bears most legal and financial responsibilities for the management and implementation of the District's NPS Program and shall continue to do so for the foreseeable future.

Regulatory Programs within DDOE

1. **Fees for Plan Review of Stormwater Management and Sediment Control Plans:** Regulatory programs are those required collectively by the District of Columbia and federal laws and regulations. A number of local regulations deal with nonpoint source management. Soil erosion control regulations address the control of pollution resulting from construction. Stormwater management regulations deal with contaminants during and after completion of construction. The District reviews construction plans for compliance with these regulations and applicants are assessed a fee for plan review. This fee structure was outdated and did not reflect the actual cost of the review. In 2013, with the adoption of the District's new stormwater regulations, the Watershed Protection Division updated its fee structure to reflect actual costs to reflect comparable fee structures of neighboring jurisdictions. The collected fees are kept in a separate account and are dedicated to stormwater management and soil erosion control programs (319 funds do not go to support the fee generated portion of DDOE's NPS work).
2. **Municipal Separate Storm Sewer System:** The management of the Municipal Separate Storm Sewer System (MS4) permit under NPDES is a major regulatory program. The USEPA issued the most recent permit in 2011 to the city. Requirements of the permit are broad and demand considerable funding to implement. Different components of the permit will be implemented by different agencies necessitating negotiation and careful planning. DDOE will work with and reach agreements with DDOT, DGS, DC Housing Authority, DC Public Libraries, and DCWATER who are members of the workgroup that will determine the responsibility of each agency under the permit. A large component of responsibilities will lie with both DDOT and DGS who are major landholding District agencies. The funding which comes from the impervious surface fee on District water bills will be allocated proportionately to the responsible agencies to implement permit requirements.
3. **Floodplain Management:** In 2010, with the adoption of new floodplain maps DDOE began collecting fees associated with the review of projects that are in a FEMA designated floodplain area. This fee helps cover review costs but is not a source of revenue for floodplain management programs or implementation.
4. **Bag Bill:** In 2010, the District adopted 'bag tax' for plastic bags used at grocery stores and other stores. This fee or tax per bag is 5 cents with 1 or 2 cents going to the business owner and 3 or 4 cents going to the District. Funds generated from the bag tax are used for trash reduction strategies around the District and for overall watershed protection projects.

Federal Grant Programs

1. **Clean Water Act (CWA):** The non-regulatory programs dealing with nonpoint source pollution management are diverse. A majority of these programs are cost share efforts with federal grant programs. The two grants that are the primary source of funding for nonpoint source control in the District are §319(h), nonpoint source implementation, and Chesapeake Bay Program implementation grant under §117(b) of the federal *Clean Water Act*.
2. **Clean Water State Revolving Fund (CWSRF):** DDOE receives and issues CWSRF grants to agencies and groups in the District, including NPS programs, to fund water quality protection projects for wastewater treatment, nonpoint source pollution control, and watershed and estuary management. DDOE has utilized this funds to invest in NPS projects over the years and it is a valuable resource to assist with funding larger scale restoration projects.
3. **Chesapeake Bay Program (CBP):** CBP gives multi-year grants to DDOE to assist with programs that will focus on the restoration of the Chesapeake Bay and strive toward meeting Chesapeake Bay TMDL goals.

Capital Funds

1. **District Capital Funds:** The District will target Capital Funds for specific projects.

Non-Federal Grant Programs

1. **Sustainable DC Grants:** As part of Mayor Gray's Sustainable DC Plan the District offers grants to District agencies and local nonprofits to implement projects that strive toward meeting the goals laid out within the plan. Presently, DDOE is working with multiple District agencies & nonprofit partners to implement a project to increase tree canopy throughout the District by working on larger District properties.
2. **National Fish & Wildlife Federation Grants (NFWF):** NFWF annually, through federal and private funds, offers grants throughout the Chesapeake Bay watershed to fund large scale projects focused on overall Chesapeake Bay restoration efforts. In recent years DDOE has been awarded NFWF funds to support projects such as the Watts Branch Stream Restoration Project with targeted upland tree planting, the RiverSmart Washington project, and the Nash Run Stream Restoration Project.

Funding Strategy

Resources managed by the Watershed Protection Division are limited given the awesome task of protecting and restoring the District's waterways. However, DDOE has managed to strategically and successfully manage pollution control programs and implement small and large-scale restoration projects. Available resources do require that DDOE limit itself to approximately one major restoration project per year given the higher implementation costs in a city. DDOE funds both construction projects that are primarily demonstration in nature and those that are larger scale stream or wetland restoration projects. When a large-scale project comes up for funding, Watershed Protection Division funds are used to leverage other available resources. An example is the Watts Branch Stream Restoration project where DDOE used 319 funds, Capital Funds, and NFWF funds to ensure that the $3.4 million project was able to be implemented without a project budget shortfall.

Limitations on local and federal funding create challenges for the Nonpoint Source Management Program. Because the DDOE has limited local funds for nonpoint source management, its ability to secure federal funds that require a nonfederal match is curtailed as well. To deal with this issue the Nonpoint Source Management Program pursues a two-fold approach: 1) secures funds from nonfederal stakeholders, and 2) collects fees for services provided. As shown in this plan there are programs and projects that are outside of the Nonpoint Source Management Program's jurisdiction but contribute indirectly to the control and prevention of nonpoint source pollution. Examples include the sewer line repair work and the tree maintenance program. The budgets for these activities are not within the scope of this plan. However, it should be said that if a comprehensive cost benefit analysis were to be undertaken, the actual amount of funds going into nonpoint source pollution prevention and control would be much greater.

The restoration of the Anacostia River is the District's highest priority yet all of the District's water bodies suffer from impairments thus the NPS program cannot singularly focus its projects and its funding on the Anacostia. Over the last several years, with the adoption of the Anacostia, Rock Creek, and Oxon

Run WIPS, DDOE has been able to more strategically plan and implement projects in all three watersheds however, the Anacostia still gets the most attention and resources. The water quality problems of the Anacostia are complex and relate directly to the stormwater sewer /CSO systems which the USEPA define as a point source problem under NPDES and the pollutant inputs from the upper watershed in Maryland. Reducing the pollutant loads just from the District's sewer system is a multibillion dollar public works project and not within the scope of this nonpoint source plan. However, this plan does address pollution prevention and supports projects that help reduce the amount of pollution entering the sewer system. It also addresses streambank erosion and other forms of direct runoff into the smaller tributaries. The District has a proven track record over the last decade that our NPS programs and projects are effective and impactful. Over the next 10-20 years we look forward to making continued progress in protecting our watersheds while also working towards restoring them.

V. Watershed Prioritization

The District city/state-wide has three main watersheds with approved 319 WIPS (Anacostia, Oxon Run, & Rock Creek) and one drainage area (direct Potomac drainage) that does not have a WIP. The Watershed Protection Division focuses it energy, effort, and resources primarily on the three watersheds with approved WIPs when developing restoration projects. Given that all water bodies suffer from some form of impairment the District is not at a point where it can protect 'healthy' watersheds, however, the District does allocate considerable focus and resources in our NPS program is to prevent further degradation. First and foremost DDOE focuses on the water bodies with impairments and approved TMDLs as a starting point for prioritizing watershed efforts. This prioritization is important for restoring District water bodies and improving water quality in the Chesapeake Bay.

The specific factors that influence our watershed prioritization are listed below:

CWA Section 319 Watershed Implementation Plans (WIPs)

The first step the District undertakes in prioritizing which watershed to work is to focus on the areas where the District has approved WIPs thus our first level priority areas are the Anacostia watershed, the Rock Creek watershed, and Oxon Run. These WIPs cover over 75% of the land area in the District, ensuring that 319 funding is spent only in areas with approved watershed plans. In an effort to more greatly focus resources so that water quality improvements can be realized, DDOE targets certain subwatersheds for more intensive work. These subwatersheds are typically areas where numerous factors line up that allow DDOE to implement several restoration projects and stormwater retrofits. By concentrating its resources, DDOE hopes to see the delisting of streams for several impairments.

The WIPs are also great guides and teaching tools to help other agencies and nonprofit partners know why the District focuses in certain areas and what type of work needs to be implemented. WIPs allow DDOE and partner agency to see specific projects within geographic areas so that when they are planning future projects they have a guide for implementation practices to meet TMDL goals. The WIPs are useful watershed restoration guide manuals or 'menus' for restoration for the District that takes a proactive approach to delisting water bodies.

Key Impairments

Addressing the key impairments in local watersheds is a driving factor in our watershed prioritization and implementation practice selection. DDOE works with the 319 program to target specific impairments in watersheds with approved WIPs. Using the recommended practices laid out in the WIPs, DDOE seeks to implement those practices in a manner which will lead to water body's delisting. Given that all District water bodies are listed for one or multiple types of impairments some of the consideration factors below help to assist in make sound decisions for moving forward with project work in District watersheds. DDOE's combined in-stream and upland work targeting impairments helps us concentrate efforts and resources in the targeted watersheds.

Human Health

The second consideration is to focus on areas where human health considerations are pressing. In particular, DDOE and DCWATER have worked together for many years to look at streams that have active sewer lines in them to make sure that the lines are safe and that stream conditions don't present a threat to the sewer lines. In addition to fecal coliform, other pollutants listed on the District's TMDL list

can come from sewerlines and thus sewerline leaks. Given the immediate threat that a sewerline leaks pose to human health its areas where lines are in degraded states that DDOE and DCWATER seek to prioritize work. DDOE and DCWATER will continue to partner to ensure that stream projects where sewer lines are in need of repair are prioritized to ensure a meaningful and last improvement to human health conditions along the streams.

EcoSystem Integrity

The third consideration in prioritizing our watershed work is to determine the ecosystem integrity of a watershed and to predict the ecosystem potential post-restoration. Many District streams, while suffering from impairments, do provide vital habitat corridors to aquatic and terrestrial species. Concentrated restoration efforts can both reduce impairments to the streams and rivers but they can also enhance the habitat benefits both in-stream and within the streams riparian corridor. Similarly, bioretention cells and tree plantings in upland areas can serve a dual purpose of preventing pollutants from reaching the water bodies while also providing upland habitat areas for native animal species. Additionally, trees, rain gardens, and other LID practices used to reduce upland runoff also serve functions such as groundwater recharge, increased shade to cool water temperatures, and reduce the volume and velocity of stormwater entering the streams. By focusing on ecosystem restoration in-stream and upland the District not only makes headway toward delisting streams but ancillary benefits arise to the entire watershed.

Human Connectivity

DDOE weighs making a connection to the communities that live near and affect the given waterway. Human connection to waterways can take place in many ways such as recreation, fishing, aesthetics, trails, opportunities for outdoor education, or other factors. DDOE looks to prioritize projects within watersheds where links can be made between the people who live in a watershed and the specific projects needed to restore the watershed. DDOE's suite of RiverSmart programs makes links between homeowners, renters, teachers, students, and nonprofits with the protection and restoration of nearby water bodies. These programs, through education, outreach, and small scale implementation projects, help District citizens see what they can do in their yard or schoolyard can help their watershed. This process of connecting people to their watershed also helps build a network of stewards for the protection of water bodies over the long-term.

By implementing LID projects on school grounds DDOE is then able to train teachers on watershed education hands-on activities, work with students to see how their classroom learning relates to projects on the school ground, and provides a year round example of good watershed practices. DDOE seeks to not just implement good projects but sees great value in making a connection between citizens and their environment thus helping to adjust attitudes and behaviors.

Opportunism

Because DDOE does not own land its partnerships with landowning agencies play a key role on whether DDOE can focus work in a particular watershed, especially for large scale restoration projects. Often access to property and/or projects other agencies prioritize require that DDOE also concentrate efforts in a particular watershed. DDOE needs to work collaboratively with other agencies on all projects thus, should DDOT or DCWATER or NPS want to embark on a project in or near a stream, DDOE must consider whether or not to focus resources toward that project to enhance any projected environmental enhancement.

Threats

DDOE explores various threats to watersheds and waterways as part of our project prioritization. In an urban environment there is a wide array of threats to watersheds and in some cases there are areas where stream conditions create threats to adjacent areas. Be it sewer leaks, stream bank erosion that threats property, or some other type of threat to the watershed DDOE does consider the severity of threats in prioritizing work to undertake. While no entity wants to operate reacting to immediate threats to water quality, the reality is that threats exist and DDOE to the best of its abilities stays ahead of threats to ensure that water quality health is not compromised or degraded.

DDOE seeks to restore the Districts watersheds in a systematic and strategic manner but might not follow the same path for each watershed project undertaken. DDOE weighs various factors to prioritize not only which watersheds to prioritize work but to also prioritize projects within watersheds. The prioritization process DDOE follows involves an assessment of the threat, opportunities, ecosystem integrity, impairments, human connectivity and health considerations across watersheds. Once DDOE explores all relevant factors programs and projects are implemented with a focus on making all the District's waterways swimmable and fishable.

VI. Implementation Measures

The Planning and Restoration Branch of DDOE, Watershed Protection Division, sponsors and conducts non-regulatory programs and activities that protect and restore river, stream, and wetland habitats in the District and increase the ecological diversity of the District of Columbia and Chesapeake Bay watersheds.

With the goal of changing personal behaviors to achieve the goal of fishable and swimmable waterways the Watershed Protection Division educates community members about nonpoint source pollution and how their actions contribute to it. Additionally, the Planning and Restoration Branch tests and develops innovative approaches to urban nonpoint source pollution reduction, increases acceptance and implementation of Low Impact Development (LID), and provides support and financial incentives for citizens wishing to implement LID and pollution prevention techniques.

Some of this non-regulatory work includes:

- Wetland and river habitat creation and restoration programs
- Technical advice on the application of Low Impact Development (LID) and innovative Best Management Practices (BMPs) technology
- Grants to fund LID retrofits
- Education and outreach programs
- RiverSmart Rooftops program (Green roof incentive program)
- RiverSmart Homes program
- RiverSmart Schools program
- RiverSmart Communities program
- Pollution prevention programs

Stream Restoration

Stream restoration is the act of modifying the existing channel of a stream in an attempt to improve the environmental health and habitat of the waterway. All District streams face similar threats from urbanization due to high stormwater flows from impervious surface runoff. The erosion we see in urban streams is the stream's way of adjusting to accommodate the new (geological) flow regime it is experiencing. Stream restoration attempts to create a new channel that is in stasis with the flows it experiences. DDOE has a robust stream restoration program that will continue over the next several decades with a focus on improving water quality and enhancing habitat conditions in all District streams and rivers.

In recent years, DDOE initiated designs for upcoming stream restoration projects, expanded two existing projects, completed several others and began post restoration monitoring on the completed projects. All told the Watershed Protection Division completed and began post restoration monitoring on over 11,000 linear feet of restored stream reaches in the District and has over 10,000 linear feet of stream reaches in the design process to be restored in the coming years.

Anacostia Watershed

Nash Run Stream Restoration

In FY2012, DDOE and its contractor neared completion on designs for a 1400 linear foot stretch of restoration work on Nash Run that will restore the stream, replace and enlarge an undersized culvert along the stream, and install a floatable trash trap at the upstream end of the project reach where the stream daylights from a stormsewer outfall. The Nash Run restoration project is expected to commence in

FY2014 and when complete will be a tremendous improvement to the surrounding neighborhood and the Anacostia River. The restoration project will reduce bank erosion, improve stream connectivity to its floodplain, increase the riparian cover along the stream, and significantly reduce trash and debris in the Anacostia River.

Springhouse Run Stream Restoration

Springhouse Run is a remnant of one of the original tributaries to Hickey Run, a tributary of the Anacostia River, with a drainage area of approximately 100 acres. The majority of the tributary is stable, although it is highly altered and armored in most areas. The armoring has resulted in a stream with poor habitat value and very limited ability to trap sediment and uptake nutrients.

The Watershed Protection Division is coordinating the design of a stream and habitat restoration for Springhouse Run. The stream will be reconnected to its historic floodplain and its sinuosity will be restored. This project reach measures approximately 1,600 feet in length and lies entirely within the U.S. National Arboretum. In FY2012, in collaboration with the National Arboretum, DDOE expanded the scope of the project to include additional stream sections in the upstream portion of the project reach.

An additional component of this project is to construct bioretention facilities in the parking areas near the Arboretum Visitor Center. This project is being funded in part with EPA 319 funds. DDOE expects the project to commence in late FY2013 and it will be completed in FY2014.

Hickey Run Stream Restoration

While presently no funds have been allocated for the Hickey Run Stream Restoration Project this is a priority stream restoration project for both the District and the Arboretum. The channel is in a culvert in some area and the banks are severely eroded in others. Having recently installed a trash, sediment, oil, and grease BMP at the Hickey Run outfall in 2011, DDOE believes that the next step would be to undertake a full stream restoration project in the 5,000 stretch of Hickey Run that runs through the Arboretum's property.

Watts Branch Stream Restoration

The Watts Branch Stream Restoration Project was completed in early FY2012 and for the remainder of the year DDOE monitored the project to determine its effectiveness at achieving its design objectives. Similar to other restored stream reaches DDOE is using a combination of activities to monitor the restoration project. Restoration monitoring consists of photographic and vegetative surveys, and geomorphic assessments. DDOE previously awarded a grant to the Metropolitan Washington Council of Governments (MWCOG) to monitor macroinvertebrates in Watts Branch pre and post-restoration. In addition, DDOE staff members are presently collecting water quality samples in storm events and comparing the pollution loads with those of the non-restored Oxon Run.

Pope Branch Regenerative Stormwater Conveyances

Having completed the Pope Branch Regenerative Stormwater Conveyances (RSCs) in FY2011, DDOE is presently monitoring the Pope Branch RSCs as part of our ongoing post-project monitoring protocols. These projects have remained stable throughout the year. Monitoring at these sites is less rigorous because there is much less flow to these RSCs than those at Milkhouse Ford and Bingham Run.

Pope Branch Stream Restoration and Sewer Line Replacement

Located in southeast Washington, DC, Pope Branch is a 1.6-mile first-order tributary of the Anacostia River. The entire stream lies within DC city boundaries. The primary land uses of the 250-acre

watershed are parkland and residential lands. Pope Branch is listed on the 303d List for bacteria, organics, and metals. The primary sources of pollutants are stormwater runoff from yards, streets, and parking lots as well as an aging sanitary sewer that runs along the stream.

This project has multiple components, all of which will work toward improving the water quality of Pope Branch. DDOE, DC Water, and the District Department of Parks and Recreation have partnered on a stream restoration and sewer replacement project in the Pope Branch tributary of the Anacostia River. Located in Southeast, Pope Branch parallels Massachusetts and Pennsylvania Avenues in Southeast Washington and lies in a watershed that is predominantly single family homes. Due to high volume and velocity stormwater flow that enter the stream, substantial bank erosion has compromised the stream banks and has exposed the sewer line in several areas. Additionally, DDOE has funded the construction of several LID stormwater retrofits to begin addressing the issue of untreated stormwater runoff in this subwatershed. DDOE has worked with a small citizens group, the Pope Branch Park Restoration Alliance, to help organize neighborhood activities such as trash clean ups.

In anticipation of DC Water starting the project in FY 2014 DDOE recently awarded MWCOG a grant to do both pre and post monitoring out at Pope Branch for several factors including water quality, storm flow, bacterial source tracking, and macroinvertebrates. The monitoring by MWCOG combined with the monitoring to be conducted by DDOE staff post restoration will help demonstrate the effectiveness of the proposed restoration design technique.

Alger Park Stream Restoration

In FY2013 contracted to produce conceptual designs for a stream restoration project within Alger Park and capture and treat stormwater from the surrounding contributing sewershed area. This project aims to restore a 1,600 feet stretch of one of the most degraded stream valleys in the District through a comprehensive approach to managing stormwater upland and restoring the receiving water body to a state of improved water quality, bank stability, and enhanced habitat features. DDOE plans to move forward with DDOT to produce 100% designs and begin monitoring work FY2014 and move forward with implementation soon thereafter.

Rock Creek Watershed

Bingham Run and Milkhouse Ford Regenerative Stormwater Conveyances

DDOE constructed two regenerative stormwater conveyance systems in FY2011in first order tributaries of Rock Creek named Bingham Run and Milkhouse Ford. With the restoration projects completed in the previous year, staff members regularly monitor the restoration sites to ensure that they functioned as designed. Monitoring activities included vegetative surveys, photographic surveys, and geomorphic surveys. Survey work will help DDOE demonstrate the effectiveness and stability of this type of stream restoration technique while accumulating documentation to prove their effectiveness and understand their weakness.

Broad Branch Stream Daylighting

The goal of this project is to daylight a 1,600 foot portion of Broad Branch, a tributary to Rock Creek in Northwest DC. Daylighting a stream is the act of restoring to the open air some or all of the flow of a previously covered creek, or stormwater drainage. Daylighting this section of the Rock Creek watershed will improve water quality at the location and downstream water quality by exposing water to sunlight, air, soil, and vegetation, all of which help process and remove pollutants. The main focus of the project is the daylighting of a tributary to Broad Branch, a tributary of Rock Creek in the District of Columbia. Restoration components include main stem channel restoration using natural channel design, the

restoration of several eroded tributary gullies using regenerative stormwater conveyance design, and several upland LID projects to slow and filter runoff from adjacent roadways. Having completed a lengthy design process DDOE anticipates completing the project in FY2014. This project is being funded with EPA 319 funds.

Oxon Run Watershed

Oxon Run

DDOE and partner agencies which include DDOT, NPS, and DCWATER are exploring the possibility of restoring the Oxon Run stream channel that runs through the District. This stream restoration project would involve the removal of a 1 mile long concrete trapezoidal channel, stabilize upstream and downstream banks that are highly erosive, restore adjacent sewer lines, and reduce fish barriers. While still in the planning stages this project would be a substantial environmental improvement for the Oxon Run watershed and would add several acres of riparian corridor and wetlands to the District.

Environmental Education and Outreach

The DDOE, Watershed Protection Division, sponsors and conducts environmental education and outreach activities targeted to teachers, environmental educators and students throughout the District. These programs and resources include the following efforts.

Conservation Education (Project Learning Tree, Project WET, and Project WILD)

These internationally recognized programs are utilized to train educators in innovative techniques for exploring a wide range of environmental concepts with students and teaching critical thinking skills that lead to environmental stewardship (grades K-12).

Teacher Training Workshops

Teacher-training workshops in environmental education can provide teachers with continuing education credits through accredited environmental curriculums that support the DCPS teaching and learning standards and provide students with meaningful environmental education experiences via outdoor activities and events. Most recently in FY2012 these workshops included:

- In November 2011, WPD staff assumed the role of Project Learning Tree State Coordinator. In this capacity, WPD has been able to increase its delivery of Project Learning Tree workshops for teachers and environmental educators.
- As part of two professional development days organized by DCPS, WPD trained 17 6-12th grade DCPS teachers in Project Learning Tree's K-8 Curriculum Guide. WPD staff also partnered with a nonprofit organization to host a PLT PreK-8 Curriculum workshop at Bancroft Elementary School in December 2011, reaching 15 teachers and educators. Staff also trained the entire preschool staff (16 teachers) at St. Columba's School in the Early Childhood curriculum.
- For the first time, PLT curriculum training was also integrated into the RiverSmart Schools Teacher Training, which reached 37 teachers. Teachers learned how to use activities in the guide when planning lessons for their future outdoor classroom spaces.

DC Environmental Literacy Plan

On July 2, 2012, Mayor Vincent C. Gray submitted the state Environmental Literacy Plan to the Council of the District of Columbia. Like other states across the country, the development of the District's state Environmental Literacy Plan (ELP) was mandated by legislation, 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 applicant schools to install Low Impact Development (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.

District of Columbia Environmental Education Consortium (DCEEC)

DDOE helps to organize a network of environmental educators throughout the city so that ideas and resources can be shared among them. The D.C. 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 FY2012 DDOE and DCEEC hosted their 5th Annual D.C. Teacher's Night at the U.S. Botanical Gardens on September 20, 2012. Over 150 teachers registered and around 90 attended and learned about environmental programming from approximately 30 exhibitors representing local environmental and science education organizations. The teachers met with local environmental educators for connection 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 first 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.

Growing Healthy Schools Week celebrates school gardens and farm to school programs throughout the District. During the week, school staff worked with local nonprofits, 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 via van and bicycle as part of this week.

The Anacostia Environmental Youth Summit

This annual outdoor event offers District school children a variety of educational experiences designed to promote in them a conservation and stewardship ethic toward their watersheds, the Anacostia and Potomac Rivers, and the Chesapeake Bay. The fair also provides additional resources to District teachers interested in enriching their curriculum through environmental studies. In 2012, the summit took place on Friday, May 4, 2012. In total the summit included 11 DCPS schools, 38 teachers, 470 students, and 16 exhibitors. Students took part in activities on and off the water and learned about human behaviors and the connections between the health of their watersheds and the Bay. The District plans to host the summit in years to come as it's a valuable hands-on program that link students to the Anacostia River in a very personal and effective way.

Meaningful Watershed Educational Experiences (MWEEs)

As part of DDOE's sub-grant program several initiatives were funded for nonprofit partners to create meaningful watershed educational experiences for hundreds of District young people on an annual basis. Recent outcomes include:

- Alice Ferguson Foundation (AFF), with DDOE funding, successfully conducted 13 overnight field-study trips for 293 4th and 5th grade students at Hard Bargain Farm from May 2011 through June 2012. AFF provided 20 MWEE hours for 352 students and 4 follow-up hours for 189 students.
- AFF with DDOE funding provided Trash-Focused MWEE for Third-Fifth graders at Burville ES (114 students), Houston ES (68 students), Kimball ES (39 students), Anne Beers ES (116 students), and Aiton ES (52 students). They provided 389 MWEE hours.
- Living Classrooms of the National Capital Region worked with all of the 3rd, 4th, and 5th grade classes at two schools, River Terrace ES (40 students) and Kimball ES (90 students). They provided 398 MWEE hours and 20 hours of follow-up for 913 4th and 5th grade students.

The District plans to continue to implement the MWEE program and increase its reach. In the coming years DDOE plans to expand the program so that all 5th graders in Wards 7 & 8 have an overnight watershed experience. This new goal will ensure that 1,500 students in the District's most underserved communities have access to a MWEE to better make the connection between the natural environment and their classroom learning.

Pollution Prevention

The Planning and Restoration Branch offers grants and directly oversees programs that reduce nonpoint source pollution through direct action and through outreach to District residents, businesses, and visitors. These programs and resources include the following efforts.

Green Roof Rebate/Retrofit Program

Historically, the District has offered a rebate for installation of a new green roof or the retrofit of an existing roof. Programs offered through DDOE provided varying rebate amounts with varying constraints. In 2012, DDOE restructured this rebate program to offer a single application process and set dollar rebate of $5 per square foot regardless of the roof size. For 2013, the rebate program will continue

to offer a single application process with a rebate of $5 per square foot. DDOE anticipates continuing to offer rebates to incentivize the installation of more green roofs throughout the city.

In 2012, the District added 427,794 square feet of green roof to its portfolio. These projects were funded both publicly and privately, and DDOE's rebate program funded 27,287 square feet, or approximately six percent of all green roofs installed District-wide in 2012. The District looks to continue this program to ensure that the District expands green roof coverage throughout the District.

RiverSmart Programs

RiverSmart Homes Program

Since 2008 DDOE has developed a Low Impact Development (LID) retrofit program 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 program is now mature and has been open city-wide since summer of 2009.

Through this program, DDOE performs audits of homeowner's properties and provides feedback to the homeowners on what LID technologies can be safely installed on the property. The city also offers up to $1,600 to the homeowner to help cover the cost of installation of any LID the homeowner chooses. Currently the program offers five different landscaping items including shade trees, native landscaping to replace grass, rain gardens, rain barrels and permeable pavement.

The District has recognized the importance of targeting homeowners for pollution reduction measures because the residential property is the largest single land use in the city and is the slowest of all construction areas to be redeveloped. The program has continued in popularity with an average of 100 homeowners signing up a month.

Most recent annual accomplishments include having:

- Installed 739 rain barrels
- Planted 488 shade trees
- Installed 162 rain gardens
- Implemented BayScaping at 198 properties
- Replaced impervious surfaces with green space or pervious pavers at 23 properties.
- Conducted 1,040 audits

In the coming years DDOE plans to continue the RiverSmart Homes program in an effort to match or exceed recent totals on an annual basis for the coming decade.

In addition the RiverSmart Homes program and DDOE holds annual contractor trainings for any local landscape contractor to become a RiverSmart Homes contractor. Two trainings are conducted annually with contractors completing the indoor classroom and outdoor hands on rain garden build.

Rain Barrel Rebate Program

Property owners who purchase and install a rain barrel from an approved rain barrel list are able to apply for rebate. Rebate amount depends on the volume of the rain barrel. Rain barrels with a capacity of 75 gallons or more are eligible for a $100 rebate and rain barrels with a capacity of 74 gallons or less are eligible for a $50 rebate. The rebate program includes conducting outreach to advertise the program

through traditional channels and through innovative approaches, e.g. partnerships with local hardware stores. The rain barrel rebate program is administered by a nonprofit organization called DC Greenworks. DC Greenworks verifies that the requested rebates are in the District and that the rain barrels were actually installed. Homeowners are eligible to receive up to two rebates per property.

Rain Garden, Pervious Paver, and Impervious Surface Reduction Rebate

Any single family homeowner in the District of Columbia is eligible for the Rain Garden, Pervious Paver, and Impervious Surface Reduction Rebate, including homeowners who have already received funding through the RiverSmart Homes program. The rebate is based on how many square feet of impervious area is treated with the rain garden or pervious pavers/impervious surface removal. Impervious areas can either be rooftops or areas that are covered in concrete, asphalt, etc. The rebate will reimburse homeowners $1.25 per impervious square foot treated. The minimum square footage 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. The rebate debuted in April 2012 and since that time eight rebates have been issued treating 4,262 square feet of impervious area.

RiverSmart Communities Program

The RiverSmart Communities program is an extension of the RiverSmart Homes program to multi-family residences such as condominiums and co-ops, businesses, houses of worship, etc. The current program, RiverSmart Homes, targets private, single-family homeowners to encourage the use of five specific stormwater BMPs (rain gardens, BayScaping, pervious pavement, rain barrels, and shade trees) to control nonpoint source pollution on their property. The RiverSmart Communities Program aims to implement similar practices on a larger scale that is more appropriate for the increased runoff area often seen on larger developments.

The RiverSmart Communities program has received sixty applications from cooperative, condominium, apartments and churches. Ten sites were awarded funding in its first full year and DDOE plans to continue and expand this program in the years to come. Below is a sample of projects from the FY12 and FY13 years as an example of program outputs.

Table 1 - 2012 RiverSmart Communities Projects

Watershed	BMP	Property Name	Status	Treatment area (sf.)
Potomac	Rain garden	McLean Gardens	Completed May of 2012	400
Anacostia	Cistern and BayScaping	Logan Condominiums	Completed July of 2012	2,000
Potomac	Rain garden	Washington Metropolitan Church	Completed July of 2012	1,500
Anacostia	Cistern and BayScaping	Mayfair Mansions	Completed December 2012	1,000
Anacostia	Cistern	Richardson Place Dwellings	Under Construction	1,000
Rock Creek	Permeable pavement	Kalorama Mews	Completed December 2012	6,000
Anacostia	Permeable pavement	Harvard Mews	Completed December 2012	7,000

Potomac	Asphalt removal	Fairfax Village	Completed January 2013	11,000
Anacostia	Rain garden	St. Paul's	Completed December 2012	5,300
Potomac	Two rain gardens	The Westchester	Rebate-March 2013-Build	36,253
Oxon	Rain garden	Meadowbrook	Construction starting 2-4-13	4,800

The RiverSmart Communities program has been an extremely successful program in just a short period of time and DDOE plans to continue this program and expand it so that more multi-family and commercial facilities have the opportunity to manage runoff on their sites.

Tree Planting

The District of Columbia has been called "The City of Trees." It has a tree canopy cover of 35 percent, which is high for a dense urban environment, but is lower than the canopy cover has been historically – even when the city had a higher population density. In an effort to improve air and water quality, reduce the urban heat island effect, and offset greenhouse gas emissions, the city has adopted a 40 percent tree canopy goal. In FY2012, DDOE and the Urban Forestry Administration (UFA) drafted an Urban Tree Canopy Plan to achieve the canopy goal. Through his Sustainability Plan Mayor Gray has called for achieving the canopy goal by 2032. To achieve that goal the District will need to plant an average of 10,800 trees annually (an increase of 25 percent over current efforts). Currently, UFA, which maintains the city's street trees, plants an average of 4150 trees annually.

DDOE, with help from nonprofit partners such as Casey Trees and Washington Parks and People, plants trees on private, federal, and other District lands. DDOE in partnership with multiple agencies and nonprofit partners will continue to implement programs and projects that protect, enhance, and expand the District's tree canopy.

Trash Removal

In 2010, the District and the State of Maryland promulgated a TMDL for trash for the Anacostia River. As part of TMDL development, nonpoint source loads for trash were developed. These loads were calculated based on stream and shoreline transect sampling performed by the Anacostia Watershed Society, through a grant from DDOE. All nonpoint source loads were attributed to illegal dumping in the TMDL. For the District's portion of watershed, an annual load allocation totaling 20,048 lbs was assigned.

Some of the tools the District are applying to meet the goals of the trash TMDL include: 1) education and outreach; 2) stream and shoreline clean-ups; and 3) new regulations and enhanced enforcement. In 2010 the District awarded a grant to the Alice Ferguson Foundation (AFF) to develop an anti-littering education and outreach campaign. DDOE will continue to distribute and advertise anti-littering messages developed through the grant including bus stop posters, bus advertisements, brochures, and bumper stickers. DDOE will continue with its anti-littering educational efforts by providing grants to a nonprofit to continue this work targeting the Anacostia watershed. As part of that grant, the nonprofit will perform follow-up surveys to assess the effectiveness of the campaign.

Every year, thousands of pounds of trash are removed from the District's shorelines and stream banks from volunteers. DDOE has supported the AFF Potomac Watershed Clean-up and the Anacostia

Watershed Society, Anacostia Earth Day Clean-up since their inception. In FY2012, AFF received a grant from the National Geographic FieldScope program to develop a clean-up tracking database. This on-line GIS will allow AFF, and other partners, to track the results of all of the volunteer clean-ups that take place in the Potomac River watershed on an annual basis. DDOE plans to use data collected by AFF to report to EPA and others on the success of local clean-ups.

Lastly, the District has implemented several innovative policies that have helped curb trash from entering local waterways. First, in January of 2010, the District promulgated the Anacostia Clean-up and Restoration Act, or Bag Law, which required a $0.05 fee be placed on all disposable plastic bags used with sale of food and alcohol in the District. DDOE found in a previous study that plastic bags were one of the largest sources of trash in the Anacostia River.

The DC Metropolitan Police Department (MPD) has expanded a littering enforcement program into Wards 5 and 7. Under this new program, DC police can ticket anyone they see carelessly discarding litter in the city. This enforcement effort complements previously established programs designed to reduce litter from moving vehicles and illegal dumping.

Outreach on Pet Waste and Enforcement of Pet Waste Regulations

DDOE has developed educational materials including colorful fliers and videos that inform citizens of their legal obligations to manage pet waste. These materials are regularly distributed at public events such as community meetings/fairs, environmental events, pet registration days, and community cleanup days. In addition, this information is distributed door to door in communities where storm drain marking is taking place. These educational materials are also available on the DDOE website. DDOE has piloted a targeted outreach effort in the NoMA Business Improvement District (NoMA BID). The NoMA BID installed educational pet waste all around the North of Massachusetts area.

DDOE will eventually reach all 8 wards with its signs and fliers. DDOE will also work with realtors throughout the city to include fliers into new homeowner packets, instructing them of the mandatory pick up law. The Department of Health (DOH) and Metro Police Department are the 2 primary enforcers for this law, since DDOE lacks any authority to issue fines. DOH report that they issues hundreds of fines every year, and DDOE has worked closely with them to find the rat 'hot spots' to target pet waste outreach. Hopefully, this targeted effort will reduce the spread of public health diseases, such as leptospirosis which can occur between dogs, rats, and humans. Pet waste not only degrades water quality, but it is also a public health issue.

Integrated Pest Management and Nutrient Management

DDOE has developed an education and outreach program on Integrated Pest Management (IPM) and Nutrient Management. DDOE's program on Integrated Pest Management (IPM) and Nutrient Management is intended to inform the public on the proper use and disposal of pesticides and on the use of safer alternatives. The program provides education and outreach activities designed to property owners and managers about environmentally sound practices with regard to the use of pesticides in the yard or garden and the introduction of "good" pests into the landscape. Through DDOE's Nutrient Management Program, the property owners receive education regarding the proper amount of fertilizer to use on a lawn. In addition to fertilizer use, this program addresses the proper way to mow, the proper use of mulch, and the effects of applying too much mulch. Furthermore, the DDOE 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. A part of this program involves the use of IPM. In FY2012 DDOE certified 1,377 commercial pesticide applicators. This program will continue over the ensuing years.

Storm Drain Marker Program

DDOE Watershed Protection Division installed 671 storm drain markers in 2012 throughout the District of Columbia with private citizens, youth groups, individuals from various volunteer groups and DCPS school groups. Over the last five years DDOE with community partners has installed thousands of storm drain markers throughout the city so that residents and visitors learn where not just stormwater but the associated pollutants will end up without proper management practices. DDOE will continue to implement this program in the

Low Impact Development Retrofit Program

Low Impact Development Practices are focused on four main practices: cistern installation, establishment of bioretention cells, retrofit of vegetated (green) roofs and installation of pervious pavers. DDOE implements LID projects in targeted watershed throughout the District through several mechanisms to ensure the projects are completed in a timely and cost-effective manner. DDOE uses three main avenues to install LID retrofit projects: 1) grants to low nonprofits for them to construct but also so they can help increase public education on LID through the installation of these projects; 2) direct contracting of the installation; and 3) through and MOU with a partner agency to ensure that LID is a component of a larger infrastructure project.

Over the last decade and for the decade to come DDOE has and will continue to fund the installation of LID retrofits throughout the District in targeted watershed. Additionally, with the adoption of new stormwater regulations the District anticipates that the private sector will also now look to begin investing in LID retrofitting on private land in order to meet components of their stormwater requirements for new constructions. Some examples of some but not all LID retrofit projects are below:

Golden Triangle LID

DDOE/WPD partnered with the Golden Triangle Business Improvement District (BID) to install a bioretention cell at a busy downtown intersection (the corner of Connecticut Avenue, NW and Rhode Island Avenue, NW). Although not treating large stormwater volumes, the project has been a huge success from a public education standpoint. Furthermore this demonstration project developed new potential restoration and retrofit partnerships with the various city BIDs. The Golden Triangle BID anticipates installing another project featuring bioretention in the public right-of-way.

Jay Street BioRetention Cells

Another major LID project from FY2011 was the completion of the ARRA funded Jay St. Project. Six bioretention cells were installed treated over 56,000 sq ft of roadway in NE DC in the Watts Branch watershed. DDOE worked with the National Park Service and the District Department of Transportation to address a long-standing roadway flooding issue. The project not only has addressed the flooding issue but also now treats a significant amount of stormwater that previously discharged directly into nearby Watt Branch.

Empowerhouse

Continuing the theme of small stormwater projects that deliver powerful outreach and education messages was the completion of the Empowerhouse – a collaborative, public-private effort to build two affordable

solar powered homes. The homes, which were displayed on the National Mall as a part of the Solar Homes Decathlon, were later installed in a low income community on the banks of Watts Branch. The project took first place for affordability at the Solar Decathlon and thousands of visitors saw not only their energy efficient features but also their sensitive stormwater design. The stormwater features include rain gardens that filter stormwater from the property and a cistern that captures water from the rooftop for grey water reuse – saving the homeowners hundreds of dollars annually on their water bill. Furthermore the properties treat not only their own stormwater but also accept stormwater from the public right of way through curb cuts in the roadway leading to rain gardens. This project involved DDOE, Vika (a private development firm), Groundwork Anacostia, Habitat for Humanity, DC Housing and Community Development, and students from Parsons, the New School and Stevens Institute of Technology.

DDOE will continually support LID retrofit projects in targeted watershed and throughout the District to help increase the amount of impervious area that can be treated through an array of LID practices. In watersheds, such as Watts Branch, the combined efforts of DDOE and other agency funded LID projects coupled with a large scale habitat restoration projects will have long-term beneficial effects on the District goal of delisting waterways to make them swimmable and fishable.

Targeted Watershed Community Wide LID Projects

DDOE has initiated several targeted watershed project where program staff focus time, energy, and resources to specific sub-watersheds in the District. Initially, DDOE will be targeting 3 subwatersheds of the Anacostia River (Hickey Run, Nash Run, and Texas Ave) and two sub-watersheds/drainage areas of Rock Creek (the RiverSmart Washington Project & Dumbarton Oaks). DDOE will report annually through our 319 Annual Report as to how work in our targeted watersheds is making progress toward delisting certain pollutants from the 303(d) list for those watersheds. DDOE will also be examining and assessing the effectiveness of various outreach efforts in these watersheds to help plan better for additional targeted watershed efforts in future years.

RiverSmart Washington

The RiverSmart Washington project will be installing practices to reduce stormwater volume runoff in two neighborhoods in northwest Washington. These practices include permeable paving in alleys, roads, and parking lanes, and rain gardens in tree box areas and curb bumpouts. The stormwater flow will be monitored and measured to calculate the stormwater runoff reduction.

Hickey Run

DDOE over the next several years will be concentrating energy and effort toward the Hickey Run watershed in the District's Ward 5 with the long-term goal of restoring one of the District's larger tributaries to the Anacostia River. DDOE has set a 2014 target of having 25% of private residences in the watershed, roughly 375 homes with RiverSmart Homes practices installed. Additionally, DDOE is nearing design completion of a stream restoration project for Springhouse Run, a tributary of Hickey Run. DDOE expects that the focused effort on upland LID work and the Springhouse Run restoration work will be precursor projects to the larger scale Hickey Run stream restoration project.

Nash Run

DDOE will be implementing a stream restoration project on a 1300ft stretch of stream on Nash Run, a tributary of the Anacostia River. Though 25% of the drainage area to Nash Run is in Maryland, DDOE

will be reaching out to area residents and property owners focused on increasing the number of single family homes and commercial properties with LID practices installed on them. DDOE will be implementing a stream restoration project for Nash Run and will use that project as to galvanize support from private property owners to install LID practices throughout the watershed. DDOE will similarly target Nash Run to reach all private residences with information on our RiverSmart programs and have 25% of private homes install LID practices.

Alger Park

Similar to the RiverSmart Washington project, DDOE and its partners, will retro-fit private homes and public space areas in the Hillcrest neighborhood in the District's Ward 7 and couple the project with in-stream restoration work. This project with extensive monitoring will demonstrate the water quality and ecological benefits of a combined in-stream and upland approach to nonpoint source runoff and stream restoration.

DDOE has worked with residents of the neighborhood to develop targets for the sub-watershed and expect that the combination of public space and private space LID installations will help achieve the reductions necessary to meet TMDL targets for several of the Texas Ave. tributary's listed pollutants. DDOE expects to reach 100% of homeowners in the sub-watershed with information about the RiverSmart Homes program; audit 50% of the homes; and have at least 2 practices on 25% of the homes in the sub-watershed.

Nonpoint Source Pollution Watershed Implementation Planning

The District Department of Environment, Watershed Protection Division, is responsible for watershed management planning within the District of Columbia. The Division manages these activities in accordance with its mission to conserve the soil and water resources of the District of Columbia and to protect its watersheds from nonpoint source pollution.

By strengthening its existing programs and continuing to seek innovative solutions for reducing nonpoint source pollution in an urban setting the District of Columbia continues to move steadily toward reaching the goals outlined in its Nonpoint Source Pollution Watershed Implementation Plans.

VII. Program Management

In order to meet the goals of the District's Nonpoint Source Management Plan DDOE has established goals, objectives, timelines, and assigned responsibilities to ensure methodical pursuit of swimmable and fishable waterways. These goals provide the continued framework for the District to continue to develop and enhance its successful NPS Management Program. Over the last ten years DDOE has developed a suite of programs and projects that will guide the District's work over the coming decades. DDOE will have set and regimented objectives that will allow the Department and EPA to adequately track progress toward NPS goals. A strategy to begin to fulfill these goals is provided at the end of this document in the chapter entitled *The Nonpoint Source Management Program Strategy*.

The goals for the District Nonpoint Management Plan are as follows:

1) Goal One: Support activities that reduce pollutant loads from urban runoff, construction activity, combined sewer overflows, and trash disposal, for the purpose of attaining present designated uses by 2025 and future designated uses by 2035.
    a. Objective 1a: To reduce pollutant loads in targeted watershed
        i. Milestone 1: Install LIDs in targeted watersheds (DDOE, DGS, DDOT, NPS)
            1. Measure: # of BMPs, area treated, volume treated, estimated load reductions
        ii. Milestone 2: Monitor water quality of all District streams (DDOE)
            1. Measure: water quality parameters
        iii. Milestone 3: Produce annual report of state of the District's waterways (DDOE)
            1. Measure: # of reports developed

    b. Objective 1b: To review, permit, and inspect all BMPs installed in the District
        i. Milestone 1: Review all erosion & sediment and stormwater permit applications (DDOE)
            1. Measure: # of plans reviewed, # of plans approved
        ii. Milestone 2: Inspect all permitted BMPs (DDOE)
            1. Measure: # of Sites inspected, # of sites in compliance
        iii. Milestone 3: Keep a tracking database of permitted BMPs (DDOE)
            1. Measure: # of new annual entries

    c. Objective 1c: To increase the number of water bodies meeting water quality standards
        i. Milestone 1: Install LIDs in targeted watersheds (DDOE, DGS, DDOT, NPS)
            1. Measure: # of BMPs, area treated, volume treated, estimated load reductions
        ii. Milestone 2: Monitor District streams for water quality improvements
            1. Measure: water quality parameters
        iii. Milestone 3: One annual water quality improvement
            1. Measure: Calculated or measured reduction in water quality impairment

2) Goal Two: Support and implement activities that strive to restore and maintain healthy habitat, species diversity, and water flows to all of the tributaries of the Anacostia River by 2025, and to all surface waters of the District of Columbia by 2035, by restoring degraded systems and preserving healthy and threatened ones.
    a. Objective 2a: To restore 5 miles of stream by 2025
        i. Milestone 1: To restore 2 miles of stream by 2020 (DDOE)
            1. Measure: Miles of stream restored
        ii. Milestone 2: Restore additional 3 miles of stream by 2025 (DDOE)
            1. Measure: Miles of stream restored

    b. Objective 2b: To add 100 wetland acres by 2035 bringing the total acres of wetlands in the District from 280 acres to 380 acres
        i. Milestone 1: Increase wetland acres by 12% (50 acres) by 2025 (DDOE, NPS, USACE)
            1. Measure: Acres of wetlands restored
        ii. Milestone 2: Increase wetlands by additional 12% (50 acres) by 2035 (DDOE, NPS, USACE)
            1. Measure: Acres of wetlands restored

    c. Objective 2c: To protect all the District's tidal wetlands by 2035
        i. Milestone 1: Identify and document all District wetlands (DDOE, NPS, USACE)
            1. Measure: # of wetlands located; total wetland acres
        ii. Milestone 2: Updated wetland regulations (DDOE, USACE)
            1. Measure: # of updated regulations
        iii. Milestone 3: Protect District wetlands from degradation, encroachment, or destruction (DDOE, USACE)
            1. Measure: acres of wetlands protected

3) Goal Three: Coordinate NPS Management Program efforts with other District, federal and private sector programs, and adjoining jurisdictions to provide the best delivery of services to prevent and control nonpoint source pollution in the District of Columbia with the resources available.
    a. Objective 3a: To work with local and regional partners on NPS management issues
        i. Milestone 1: Partner with District agencies for NPS projects (DDOE, DGS, NPS, MWCOG)
            1. Measure: # of partnership projects annually

    b. Objective 3b: To participate in partnership and planning meetings (DDOE, MWCOG, NPS, EPA-319, EPA-CBP)
        i. Milestone 1: Participate on regional committees or planning meetings
            1. Measure: # of meetings; # of joint committees annually
        ii. Milestone 2: Demonstrate two programmatic partnership success stories annually
            1. Measure: # of successful partnerships
    c. Objective 3c: To participate on Region 3 & Bay Program Technical Advisory Committees (DDOE, EPA-319, EPA-CBP)
        i. Milestone 1: Join technical committees
            1. Measure: # of committees participating on annually

4) Goal Four: Support programs that aim to prevent nonpoint source pollution from individual actions, by carrying out effective information and education campaigns that reach at least 5,000 individuals each year to targeted audiences who live, work, teach, or visit in the District of Columbia and its watersheds.
    a. Objective 1d: To reach 1000 school students annually with hands-on environmental education activities (DDOE, DCPS)
        i. Milestone 1: Reach 1000 school students in the first year (DDOE, DCPS)
        ii. Milestone 2: Reach 6000 school students by 2020 (DDOE, DCPS)
        iii. Milestone 3: Reach 11,000 school students by 2025 (DDOE, DCPS)
        iv. Milestone 4: Reach 21,000 school students by 2035 (DDOE, DCPS)
            1. Measure: # of students participating in hands on environmental education
    b. Objective 2d: To reach support 5000 school students annually having an overnight meaningful watershed experience
        i. Milestone 1: Reach 5000 school students in the first year (DDOE, DCPS)
        ii. Milestone 2: Reach 25500 school students by 2020 (DDOE, DCPS)
        iii. Milestone 3: Reach 55,000 school students by 2025 (DDOE, DCPS)
        iv. Milestone 4: Reach 105,000 school students by 2035 (DDOE, DCPS)
            1. Measure: # of students participating in overnight meaningful watershed experience
    c. Objective 3d: To install BMPs on 3 schoolyards per year
        i. Milestone 1: Install BMPs at 3 schoolyards in first year (DDOE, DGS)
        ii. Milestone 2: Install BMPs at 18 schoolyards by 2020 (DDOE, DGS)
        iii. Milestone 3: Install BMPs at 63 schoolyards by 2035 (DDOE, DGS)
            1. Measures: # of BMPs installed; acres treated; volume captured; estimated load reductions
    d. Objective 4d: To train 10 teachers annually thru training that integrate hands-on watershed education with system-wide standards of learning
        i. Milestone 1: Train 10 teachers in year one (DDOE, DCPS)
        ii. Milestone 2: Train 60 teachers by 2020 (DDOE, DCPS)
            1. Measure: # of teachers trained
        iii. Milestone 3: Have watershed education fully immersed in standards of learning that outside trainings are no longer necessary by 2025 (DDOE, DCPS, OSSE)
            1. Measure: Incorporation of watershed education into curriculum

5) Goal Five: Implement programs that aim to increase nonpoint source pollution runoff prevention practices on private property reaching at least 1000 properties per year.
    a. Objective 1e: To audit 1000 residential properties per year
        i. Milestone 1: 1000 audits annually (DDOE)
        ii. Milestone 2: 6000 audits by 2020 (DDOE)
        iii. Milestone 3: 11,000 audits by 2025 (DDOE)
        iv. Milestone 4: 21,000 audits by 2035 (DDOE)
            1. Measure: # of residential homes audited
    b. Objective 2e: To audit 150 multi-family and commercial properties per year

i. Milestone 1: 150 audits annually (DDOE)
ii. Milestone 2: 900 audits by 2020 (DDOE)
iii. Milestone 3: 1,650 audits by 2025 (DDOE)
iv. Milestone 4: 31,150 audits by 2035 (DDOE)
    1. Measure: # of multi-family and commercial properties audited

a. Objective 3e: To plant 500 trees per year on private property
    i. Milestone 1: 500 trees planted in first year (DDOE, Nonprofits)
    ii. Milestone 2: 3,000 trees planted by 2020 (DDOE, Nonprofits)
    iii. Milestone 3: 5,500 trees planted by 2025 (DDOE, Nonprofits)
    iv. Milestone 4: 11,500 trees by 2035 (DDOE, Nonprofits)
        1. Measures: # of trees planted on residential properties, estimated canopy expansion/acreage of canopy; survivability rate
b. Objective 4e: To plant 4,150 tree per year in public space
    i. Milestone 1: 4,150 trees planted annually (UFA, DGS, DDOE)
    ii. Milestone 2: 24,900 trees planted by 2020 (UFA, DGS, DDOE)
    iii. Milestone 3: 45,650 trees planted by 2025 (UFA, DGS, DDOE)
    iv. Milestone 4: 87,150 trees planted by 2035 (UFA, DGS, DDOE)
        1. Measures: # of trees planted in public space; survivability rate; estimated canopy expansion/acreage of canopy
c. Objective 5e: To install 850 rain barrels per year on residential homes
    i. Milestone 1: 850 rain barrels installed annually (DDOE, Nonprofits)
    ii. Milestone 2: 5,100 rain barrels installed by 2020 (DDOE, Nonprofits)
    iii. Milestone 3: 17,850 rain barrels installed by 2035 (DDOE, Nonprofits)
        1. Measures: # of rain barrels installed; estimated volume of rainwater captured
d. Objective 5e: To install 100 rain gardens per year at residential homes
    i. Milestone 1: Install 100 rain gardens per year (DDOE, Nonprofits)
    ii. Milestone 2: Install 500 rain gardens by 2020 (DDOE, Nonprofits)
    iii. Milestone 3: Install 1000 rain gardens by 2025 (DDOE, Nonprofits)
    iv. Milestone 4: Install 2000 rain gardens by 2035 (DDOE, Nonprofits)
        1. Measures: # of rain gardens installed; area treated; volume captured; estimated pollutant load reduction

The goals laid out by DDOE as part of the Nonpoint Source Management Plan are both ambitious and achievable. Fulfilling these goals and meeting the objectives above will put the District on a course toward swimmable and fishable waterways. By meeting objectives of tree plantings which are the most cost effective form of BMP the District will be adding 197,000 new trees to the city in an effort to expand the canopy from 35% to 40%. The environmental and quality of life benefits will be enormous when nearly 200,000 trees are added to what is already commonly known as the ‘City of Trees.’

By meeting goals related to public space and private space LID installations the District will make a substantial contribution to reducing not just the pollutant loads entering the waterways but reducing the

volume of water that also contributes to further degradation in our streams and rivers. The District's goals, objectives, and milestones are clear, precise, and achievable which will keep efforts focused on making the District's waterways swimmable and fishable by 2032.

VIII. Monitoring and Evaluation

Over the course of the next decade DDOE will monitor the programs and projects within the NPS Management Plan to evaluate progress toward meeting goals and objectives. DDOE will coordinate efforts to ensure that programs and projects receive annual scrutiny to make adjustments when necessary to stay on course for meeting objectives or to reassess and adjust objectives given on the ground conditions. With a new NPDES Permit, the adoption of new and more stringent stormwater regulations, and the adoption of the Mayor's Sustainable DC Plan all components of DDOE's NPS program will have heavier workloads with the increase in mandated projects. As such the below system of monitoring and evaluation will be the bedrock for staying on top of and ahead of the District's NPS goals. In addition, the NPS management plan provides key opportunity to track NPS implementation with Chesapeake Bay Watershed Implementation Plan (CBWIP) 2 year milestones. This includes BMPs on District lands and federal lands as committed in the District's CBP WIP.

Project Tracking

BMP Tracking Database

The BMP database hosts all information about BMPs installed in the District. BMPs are first entered into the system when permits are applied for the given project or BMP. From that point on all plan reviews, inspections, and corrective actions taken on the BMP is documented in the database. This system allows DDOE to track the type of BMP installed, the area it treats, the estimated load and volume reductions, and the state of condition of the BMP. This system is essentially the cradle to grave tracking system for all BMPs in the District.

The database also gives DDOE an opportunity to track progress toward meeting TMDLs for each of the District's water bodies as the database geocodes all BMPs which can then be attributed to a specific watershed. As such the database allows DDOE implementation projects (stream restoration, LIDs, trees, etc.) to marry with regulated projects so that watershed progress is tracked and coordinated properly. The database allows DDOE to see what's going on in one watershed from the regulated community to determine if additional work is needed from its implementation projects.

319 Reporting: Annual Report, GRTS, & the Watershed Tracker

As mandated by DDOE's 319 grant from the EPA, DDOE semi-annually reports on implementation projects progress and annually on the cumulative efforts through the District on an annual basis. This online system helps DDOE keep track of 319 funded projects and is an online tool for tracking the long term goals, through the Tracker, of meeting TMDLs for specific watersheds. Given the multiyear nature of 319 grants it also allows DDOE to plan accordingly of how to focus financial resources and projects in future years.

The annual report is a holistic narrative document where DDOE reports on its achievements within its NPS program. This report directly addresses whether or not the District meets its annual NPS objectives

and provides, through its development, time for NPS staff to assess the effectiveness of programs and make adjustments for the upcoming year. DDOE will continue to track and document its NPS work through the annual report and through GRTS in the coming years.

NPDES Annual Report

As part of the District's NPDES permit DDOE must submit to the EPA an annual report documenting progress toward fulfilling the permit obligations. The annual report both tracks progress and provides an opportunity to reassess permit requirements if real world conditions merit changes. This permit is updated every 5 years and thus the annual reports also help track progress annually but lay groundwork for future permit requirements.

Bay Program Report

Annually, the District reports to the Chesapeake Bay Program about its progress toward meeting Chesapeake Bay TMDL goals. Similar to some of the tracking and reporting done in the 319 Report this report helps the District look at the bigger picture of how its on the ground implementation work not only helps the District's water bodies but also how it helps the Chesapeake Watershed and provides consistency with the DC WIP for the Bay. This report integrates an array of projects from around the District that might not be included in the 319 report such as the street tree plantings performed by UFA. In addition, the NPS management plan provides key opportunity to track NPS implementation with Chesapeake Bay Watershed Implementation Plan (CBWIP) 2 year milestones. This includes BMPs on District lands and federal lands as committed in the District's CBP WIP.

Integrated Water Quality Report

Every two years, the Water Quality Division submits a report to the EPA about the state of the District's water's which documents the District progress toward meeting TMDL goals for the District's water bodies. This report identifies all the tracking, monitoring, and analysis performed by WQD to come up with the results of the report. DDOE uses this report to help track how our regulated and implementation projects are making progress toward water quality goals.

Daily Programmatic Monitoring

RiverSmart Homes & Communities

All of DDOE's implementation projects have a monitoring component to them. The RiverSmart Homes and RiverSmart Communities programs all utilize ArcMap to keep a database on all of the facilities audited, what the recommended installations are, and what the installed LID practices are. This database allows DDOE to map and assess where areas where projects have been installed to assess need for future targeted outreach or other program adjustments as might be needed. Because most RiverSmart Homes and RiverSmart Communities projects don't trigger the stormwater regulations these projects are not normally tracked through the District's BMP Database therefore this database is a supplement to the overall BMP tracker.

The RiverSmart Homes and RiverSmart Communities programs also meet on a regular basis to discuss programmatic goals and assess roadblocks. The team sets yearly goals of how many homes it should audit which is then broken up with monthly targets per team member. This system keeps the team on track both with the number of audits it performs but also with meeting the installations targets as well.

RiverSmart Schools & Habitat Restoration Programs

The RiverSmart Schools and Habitat Restoration Program have yearly goals and targets that the team strives to meet each year. While not tracked through a database the team works to achieve implementation targets each year. With the onset of the new management plan, the Habitat Restoration Program will have more concrete objectives than in years past.

Urban Forestry Administration

Similar to other databases, UFA is able to annually track through geo-referencing sites, where street trees need to be planted, where street trees have been planted, the type of trees planted, and the total number of trees planted annually. This database and map allows UFA to understand where trees are needed and also allows their contractors to plant in a more efficient manner by being able to target set areas at a time.

Green Roof Database

As the District aggressively moves to install more green roofs around the District, DDOE created a green roof database to specifically track green roofs installed around the District. This database tracks both the permitted green roofs that are both installed with or without District funds. In an effort to have the highest percentage of green roof coverage of any city in the nation this database tracks both the size and the location of the green roofs to get a more clear picture of the square feet of green roofs in the District.

Staff Meetings

All Divisions within DDOE with a role in nonpoint source management have systems in place to have regularly scheduled staff meetings. Staff meeting allow time for either entire Branches or entire Divisions to learn about upcoming goals and projects and to offer assessments and feedback for how to make beneficial programmatic changes.

S.M.A.R.T Goals

All District government employees operate under a human resources tracking system where annual professional goals are set between an employee and the manager. All goals need to be SMART (Specific, Measurable, Achievable, Realistic, and Timely). These goals are tied to performance outcomes under the domain of individual staff members so that staff take responsibility for the successful implementation of programs and projects.

In-Field Monitoring

BMP Inspections & Enforcement

DDOE's WPD Inspection and Enforcement Branch monitors all permitted BMPs in the District to ensure that they are functioning properly and thus playing their role in reducing pollutant loads in local water bodies.

Ambient Water Quality Monitoring

DDOE's Water Quality Division monitors all of the District's streams to assess water quality throughout the District. The team monitors all streams on a regular schedule at regimented locations for each stream. This constant monitoring program gives DDOE good information to track the progress of water quality in the District.

Habitat Restoration Monitoring

The Habitat Restoration Program both pre and post-restoration of streams and wetland implements both a geomorphic and photographic survey of project areas. This system of surveying allows DDOE to track the project's success from pre-restoration to 5 years post restoration. This system of project monitoring allows DDOE to evaluate whether stream banks have been stabilized, whether vegetation has taken hold, and whether aquatic and terrestrial species are once again using streams and wetlands for habitat.

Project Specific Stream Monitoring

In addition to DDOE's standard monitoring protocol for certain stream restoration project DDOE also, usually through grants or contracts to third parties, implements macroinvertebrate sampling and water quality sampling that includes but is not limited to flow, temperature, TSS, N, P, and Bacteria. This pre and post-restoration monitoring, while costly and time consuming does help the District determine the more finite water quality outcomes of large scale restoration projects.

RiverSmart Surveys

In addition to tracking the 'outputs' of the RiverSmart suite of programs staff also make annual visits to selected installation sites to make sure that the practices are functioning as designed. Since most of these projects are not permitted it they do not require a maintenance program as permitted LID projects do. Therefore, RiverSmart staff members make site visits to installation sites to make sure that projects are all working according to installation.

Through a combined approach of regular program tracking and annual reporting DDOE has numerous systems and structures in place to monitor and evaluate the programs and projects that comprise the District's NPS efforts. The goals, objectives, and milestones laid out in the Program Management section of this plan give each program within DDOE a clear benchmarks to meet on an annual basis to assess if and how it will achieve its long-term NPS goals.

DDOE NPS Management Plan Tracking Forms

The following forms will be used to track progress toward the District's five goals articulated in the 2014 NPS Management Plan.

DDOE Non-Point Source Mangement Plan

Tracking Sheet

GOALS	OBJECTIVES	MILESTONES	2014	2015	2016	2017	2018	2019	2020	2020 Goal	% of 2020 Goal achieved
Goal One: Support activities that reduce pollutant loads from urban runoff, construction activity, combined sewer overflows, and trash disposal, for the purpose of attaining present designated uses by 2025 and future designated uses by 2035.	Objective 1a: To reduce pollutant loads in targeted watershed	Milestone 1: Install LIDs in targeted watersheds (DDOE, DGS, DDOT, NPS)	# of BMPs Installed								
			Area Treated								
			Volume Treated								
			Load Reductions								
		Milestone 2: Monitor water quality of all District streams (DDOE)	# of streams monitored								
			pollutants monitored								
		Milestone 3: Produce annual report of state of the District's waterways	# of reports								
	Objective 1b: To review, permit, and inspect all BMPs installed in the District	Milestone 1: Review all erosion & sediment and stormwater permit applications (DDOE)	# of permits reviewed								
			# of permits approved								
		Milestone 2: Inspect all permitted BMPs (DDOE)	# of sites inspected								
			# of sites in compliance								
		Milestone 3: Keep a tracking database of permitted BMPs (DDOE)	Total # of BMPs								
			# of new BMPS								
	Objective 1c: To increase the number of water bodies meeting water quality standards	Milestone 1: Install LIDs in targeted watersheds (DDOE, DGS, DDOT, NPS)	# of BMPs Installed								
			Area Treated								
			Volume Treated								
			Load Reductions								
		Milestone 2: Monitor District streams for water quality improvements	# of stream monitored								
			pollutants monitored								
		Milestone 3: One water quality improvement	Measured or calculated water quality improvement								

GOALS	OBJECTIVES	MILESTONES	2014	2015	2016	2017	2018	2019	2020	2020 Goal	% of 2020 Goal Achieved
Goal Two: Support and implement activities that strive to restore and maintain healthy habitat, species diversity, and water flows to all of the tributaries of the Anacostia River by 2025, and to all surface waters of the District of Columbia by 2035, by restoring degraded systems and preserving healthy and threatened ones.	Objective 2a: To restore 5 miles of stream by 2025	Milestone 1: To restore 2 miles of stream by 2020 (DDOE)	Miles of stream restored								
										2	
		Milestone 2: Restore additional 3 miles of stream by 2025 (DDOE)	Miles of stream restored								
										NA	
	Objective 2b: To add 100 wetland acres by 2035 bringing the total acres of wetlands in the District from 280 acres to 380 acres	Milestone 1: Increase wetland acres by 50 acres by 2025 (DDOE, NPS, USACE)	Acres of wetland created								
										70	
		Milestone 2: Increase wetlands by an additional 50 acres by 2035 (DDOE,	Acreas of wetland created								
										NA	NA
	Objective 2c: To protect all the District's wetlands by 2035	Milestone 1: Identify and document all District wetlands (DDOE, NPS, USACE)	# of wetlands identified								
										NA	NA
			total wetland acres								
										NA	NA
		Milestone 2: Updated wetland regulations (DDOE, USACE)	# of updated regulations								
										NA	NA
		Milestone 3: Protect District wetlands from degradation, encroachment, or	acres of wetlands protected								
										NA	NA

GOAL	OBJECTIVES	MILESTONES	2014	2015	2016	2017	2018	2019	2020	2020 Goal	% 2020 Goal Achieved.
Goal Three: Coordinate NPS Management Program efforts with other District, federal and private sector programs, and adjoining jurisdictions to provide the best delivery of services to prevent and control nonpoint source pollution in the District of Columbia with the resources available.	Objective 3a: To work with local and regional partners on NPS	Milestone 1: Partner with District agencies for NPS projects (DDOE,	# of partnership projects annually								
	Objective 3b: To participate in partnership and planning meetings (DDOE, MWCOG, NPS, EPA-319, EPA-CBP)	Milestone 1: Participate on regional committees or planning meetings	# of meetings								
			# of joint committees annually								
		Milestone 2: Demonstrate two programmatic partnership successes	# of successful partnerships								
	Objective 3c: To participate on Region 3 & Bay Program Technical Advisory Committees (DDOE, EPA-319, EPA-CBP)	Milestone 1: Join technical committees	# of committees participating on annually								

GOAL	OBJECTIVES	MILESTONES	2014	2015	2016	2017	2018	2019	2020	2020 Goal	% 2020 Goal Achieved.
Goal Four: Support programs that aim to prevent nonpoint source pollution from individual actions, by carrying out effective information and education campaigns that reach at least 5,000 individuals each year to targeted audiences who live, work, teach, or visit in the District of Columbia and its watersheds	Objective 1d: To reach 1000 school students annually with hands-on	Milestone 1: Reach 1000 school students in the first year (DDOE,	**# of students participating in hands on environmental education**								
	Objective 2d: To reach support 5000 school students annually having an	Milestone 1: Reach 5000 school students in the first year (DDOE,	**# of students participating in overnight meaningful watershed experience**								
	Objective 3d: To install BMPs on 3 schoolyards per year	Milestone 1: Install BMPs at 3 schoolyards annually (DDOE, DGS)	**# of BMPs installed**								
			acres treated								
			volume captured								
			estimated load reductions								
	Objective 4d: To train 10 teachers annually thru training that integrate hands-on watershed education with system-wide standards of learning	Milestone 1: Train 10 teachers annually (DDOE, DCPS)	**# teachers trianed**								
		Milestone 2: Have watershed education fully immersed in	**Incorporation of watershed education into curriculum**								

GOAL	OBJECTIVES	MILESTONES	2014	2015	2016	2017	2018	2019	2020	2020 Goal	% 2020 Goal Achieved.
Goal Five: Implement programs that aim to increase nonpoint source pollution runoff prevention practices on private property reaching at least 1000 properties per year.	Objective 1e: To audit 1000 residential properties per year	Milestone 1: 1000 audits annually (DDOE)	**# of residential homes audited**								
	Objective 2e: To audit 150 multi-family and commercial properties per	Milestone 1: 150 audits annually (DDOE)	**# of multi-family and commercial properties audited**								
	Objective 3e: To plant 750 trees per year on private property	Milestone 1: 750 trees planted in first year (DDOE, Nonprofits)	**# of trees planted on residential properties**								
			estimated canopy expansion/acreage of canopy								
			survivability rate								
	Objective 4e: To plant 8,600 tree per year in public space	Milestone 1: 8,600 trees planted annually (UFA, DGS, DDOE)	**# of trees planted in public space**								
			survivability rate								
			estimated canopy expansion/acreage of canopy								
	Objective 5e: To install 900 rain barrels per year on residential homes	Milestone 1: 900 rain barrels installed annually (DDOE, Nonprofits)	**# of rain barrels installed**								
			estimated volume of rainwater captured								
	Objective 5e: To install 100 rain gardens per year at residential homes	Milestone 1: Install 100 rain gardens per year (DDOE, Nonprofits)	**# of rain gardens installed**								
			area treated								
			volume captured								
			estimated pollutant load reduction								

Targeted Watershed: Texas Ave

GOAL	OBJECTIVES	MILESTONES	2014	2015	2016	2017	2018	2019	2020	Total thru	2020 Goal	% 2020 Goal Achieved.
Texas Ave Goal 1: To reduce in-stream bank erosion by reducing upland run-off and by stabilizing and enhancing in-stream conditions to reduce the watershed's pollutants loads to the Anacostia River & the Chesapeake Bay	Objective 1: To stabilize and enhance the habitat conditions in a 1530ft. stretch of stream that is a tributary to the Texas Ave.	Milestone 1: To survey and assess the watershed and stream valley to	**# reports developed**									
											1	
		Milestone 2: To develop a design report with recommendations for	**Design Reports Developed**									
											1	
		Milestone 3: To develop 100% plans for stream enhancement work	**Stream Restoration Plan Sets Developed**									
											1	
	Objective 2: To maximize treatment and storage of impervious run-off in the public space of the 35 acre watershed that drains into Alger Park	Milestone 1: To survey and assess the upland areas of the watershed	**# survey reports developed**									
			1								1	
		Milestone 2: To develop design plan sets for LID work in the public space	**# of LID plan sets developed**									
			1								1	
		Milestone 3: To install LID projects in public space in areas throughout the watershed	**# of LIDs installed**									
			acres treated									
			estimated load reductions									
			calculated volume reductions									
	Objective 3: To maximize treatment and storage of impervious run-off on private property in the 35 acre watershed that drains into Alger Park	Milestone 1: To reach homes in the watershed with information about	**# of homes reached with information**									
			132	0	0	0	0	0	0		132	
		Milestone 2: To audit homes in the watershed	**# of homes audited**									
		Milestone 3: To plant trees on private property	**# of trees planted**									
			estimated reduction volume									
		Milestone 4: To install rain barrels on private property	**# of rain barrels installed**									
			estimated volume reduction									
			estimated load reduction									
		Milestone 5: To install permeable pavers on private property	**# of projects installed**									
			area treated									
			estimated volume reduction									
			estimated load reduction									

Targeted Watershed: Hickey Run

GOAL	OBJECTIVES	MILESTONES	2014	2015	2016	2017	2018	2019	2020	Total thru	2020 Goal	% 2020 Goal Achieved.
Hickey Run Goal 1: To reduce in-stream bank erosion by reducing upland run-off and by stabilizing and enhancing in-stream conditions to reduce the watershed's pollutants loads to the Anacostia River & the Chesapeake Bay	Objective 1: To maximize treatment and storage of impervious run-off on private property in the 600 acre watershed that drains into the Anacostia River	Milestone 1: To reach all homes in the watershed with	# of homes reached with information									
		Milestone 2: To audit homes in the watershed	# of homes audited									
		Milestone 3: To plant 300 trees on private property	# of trees planted									
			estimated reduction volume									
		Milestone 4: To install 100 rain barrels on private property	# of rain barrels installed									
			estimated volume reduction									
			estimated load reduction									
		Milestone 5: To install 10 permeable paver projects on private property	# of projects installed									
			area treated									
			estimated volume reduction									
			estimated load reduction									
	Objective 2: To maximize treatment and storage of impervious run-off in the public space of the 600 acre Hickey Run watershed	Milestone 1: To survey and assess the upland areas of the	# survey reports developed									
		Milestone 2: To develop design plan sets for LID work in the	# of LID plan sets developed									
		Milestone 3: To install LID projects in public space in areas throughout the watershed	# of LIDs installed									
			acres treated									
			estimated load reductions									
			calculated volume reductions									
	Objective 3: To stabilize and enhance the habitat conditions in a 1600ft. stretch of stream (Springhouse Run) that is a tributary to Hickey Run.	Milestone 1: To survey and assess the watershed and stream valley to establish	# reports developed									
		Milestone 2: To develop a design report with recommendations for optimal restoration work	Design Reports Developed									
		Milestone 3: To develop 100% plans for stream enhancement work	Stream Restoration Plan Sets Developed									
		Milestone 4: Issue a contract for stream restoration work	Restoration Contracts Issued									
		Milestone 5: Implementation of stream restoration work	Feet of Stream Length Restored									
		Milestone 6: Riparian Plantings along stream banks	Acres of Riparian Plantings									
			Number of Trees Planted									
	Objective 3: To stabilize and enhance the habitat conditions of the main stem of Hickey Run a 5000ft tributary of the Anacostia River.	Milestone 1: To survey and assess the watershed and	# reports developed									
		Milestone 2: To develop a design report with	Design Reports Developed									
		Milestone 3: To develop 100% plans for stream enhancement	Stream Restoration Plan Sets Developed									
		Milestone 4: Issue a contract for stream restoration work	Restoration Contracts Issued									
		Milestone 5: Implementation of stream restoration work	Feet of Stream Length Restored									
		Milestone 6: Riparian Plantings along stream banks	Acres of Riparian Plantings									
			Number of Trees Planted									

Targeted Watershed: Nash Run

GOAL	OBJECTIVES	MILESTONES	2014	2015	2016	2017	2018	2019	2020	Total thru	2020 Goal	% 2020 Goal Achieved.
Nash Run: To reduce in-stream bank erosion by stabilizing and enhancing in-stream conditions to reduce the watershed's pollutants loads to the Anacostia River & the Chesapeake Bay	Objective 1: To stabilize and enhance the habitat conditions of the main stem of Nash Run a 1400ft tributary of the Anacostia River.	Milestone 1: To survey and assess the watershed and stream valley to establish baseline conditions	# reports developed									
		Milestone 2: To develop a design report with recommendations for optimal restoration work	Design Reports Developed									
		Milestone 3: To develop 100% plans for stream enhancement	Stream Restoration Plan Sets Developed									
		Milestone 4: Issue a contract for stream restoration work	Restoration Contracts Issued									
		Milestone 5: Implementation of stream restoration work	Feet of Stream Length Restored									
		Milestone 6: Riparian Plantings along stream banks	Acres of Riparian Plantings									
			Number of Trees Planted									
	Objective 2: To maximize treatment and storage of impervious run-off in the public space of the 448 acre watershed that drains into Nash Run	Milestone 1: To survey and assess the upland areas of the	# survey reports developed									
		Milestone 2: To develop design plan sets for LID work	# of LID plan sets developed									
		Milestone 3: To install LID projects in public space in areas throughout the watershed	# of LIDs installed									
			acres treated									
			estimated load reductions									
			calculated volume reductions									
	Objective 3: To maximize treatment and storage of impervious run-off on private property in the 448 acre watershed that drains into Nash Run	Milestone 1: To reach homes in the watershed with	# of homes reached with information									
				0	0	0	0	0	0			
		Milestone 2: To audit homes in the watershed	# of homes audited									
		Milestone 3: To plant trees on private property	# of trees planted									
			estimated reduction volume									
		Milestone 4: To install rain barrels on private property	# of rain barrels installed									
			estimated volume reduction									
			estimated load reduction (target pollutant)									
		Milestone 5: To install permeable pavers on private property	# of projects installed									
			area treated									
			estimated volume reduction (target pollutant)									
			estimated load reduction									