District of Columbia's Stormwater Management Plan

Municipal Separate Storm Sewer System

NPDES Permit No. DC0000221

DEPARTMENT OF ENERGY & ENVIRONMENT

GOVERNMENT OF THE DISTRICT OF COLUMBIA
MURIEL BOWSER, MAYOR

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List of Acronyms and Abbreviations

AWS	Anacostia Watershed Society
BMP	Best Management Practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSS	Combined Sewer System
CWA	Clean Water Act
DCMR	District of Columbia Municipal Regulations
DCRA	Department of Consumer and Regulatory Affairs
DCHA	DC Housing Authority
DOEE	District Department of Energy and the Environment
DDOT	District Department of Transportation
DGS	Department of General Services
DOEE	Department of Energy & Environment
DPR	Department of Parks and Recreation
DPW	Department of Public Works
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FEMA	Federal Emergency and Management Agency
GAR	Green Area Ratio
GI	Green Infrastructure
GIS	Geographic Information System
GSA	General Services Administration
HSEMA	Homeland Security and Emergency Management Agency
IP	Implementation Plan
IPM	Integrated Pest Management
LID	Low Impact Development
MWEE	Meaningful Watershed Education Experience
MOCC	Mayor's Office of the Clean City
MOU	Memorandum of Understanding
MPD	Metropolitan Police Department
MS4	Municipal Separate Storm Sewer System
MWCOG	Metropolitan Washington Council of Governments
NOI	Notice of Infraction
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
OP	Office of Planning
OSSE	Office of the State Superintendent of Education
OUC	Office of Unified Communications
PROW	Public Right-of-Way
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
SRC	Stormwater Retention Credit

SWEEP	Solid Waste Education and Enforcement Program
SWMG	Stormwater Management Guidebook
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TWG	Technical Workgroup
UDC	University of the District of Columbia
WLA	Wasteload Allocation
WQD	Water Quality Division

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DISTRICT OF COLUMBIA

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

Stormwater Management Plan

1 INTRODUCTION

The Government of the District of Columbia (District) submits the Stormwater Management Plan (SWMP) to comply with Section 3 of the District of Columbia's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. DC0000221 (Permit), issued on May 23, 2018.

The Department of Energy & Environment (DOEE) compiled this SWMP with assistance and input from the District of Columbia Water and Sewer Authority (DC Water), the Department of Public Works (DPW), the District Department of Transportation (DDOT), and the Mayor's Office of the Clean City (MOCC).

1.1 Goals of the Revised Stormwater Management Plan

The Revised SWMP outlines the District's strategy for implementing a sustainable approach to managing stormwater runoff. This plan contains details of the District's current practices as of December 2020, as well as forecasts future implementation that is tied closely to the updated Stormwater Management Regulations and the draft Consolidated Total Maximum Daily Load (TMDL) Implementation Plan (IP).[1] The draft Consolidated TMDL IP includes a long-term, performance-based strategic plan for addressing TMDL Waste Load Allocations (WLAs) assigned to the District's MS4. The District anticipates that the TMDL IP's implementation schedule, and its associated interim milestones, will provide the basis for any numeric performance requirements in the next MS4 Permit. This will allow the District the flexibility to achieve the necessary pollutant load reductions in the most cost-effective manner possible.

1.2 Authorized Discharges

The MS4 Permit authorizes existing or new stormwater point source discharges to waters of the United States from the MS4 of the District. The MS4 Permit also authorizes the discharge of stormwater commingled with flows contributed by process wastewater, non-process wastewater, or stormwater associated with industrial activity, provided such discharges are authorized under separate NPDES permits. Nothing in the District's MS4 Permit prohibits the following discharge sources when properly managed so that water quality is not impaired and that the requirements of the Clean Water Act (CWA) and United States Environmental Protection Agency (EPA) regulations are met: clear water flows, roof drainage, dechlorinated water line flushing, landscape irrigation, diverted stream flows, rising groundwater, uncontaminated groundwater infiltration to separate storm sewers, uncontaminated pumped groundwater,

[1] The draft Consolidated Total Maximum Daily Load Implementation Plan will made available for a 90-day public comment period March 2022. The draft plan can be found at https://doee.dc.gov/service/public-notices-hearings.

discharges from potable water sources, foundation drains, air conditioning condensation, irrigation waters, springs, footing drains, lawn watering, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, street wash water, firefighting activities, and similar types of activities.

1.3 Limitations to Coverage

Section 402(p)(3)(B)(ii) of the Clean Water Act specifically prohibits non-stormwater entering the MS4 except for discharges authorized by a District's MS4 Permit or regulated by an individual NPDES permit.

2 FISCAL RESOURCES AND ANALYSIS

The District's Stormwater Permit Compliance Amendment Act of 2000 established a Stormwater Permit Compliance Enterprise Fund (Enterprise Fund) to provide revenue to implement and administer activities directly required by the MS4 Permit. The Enterprise Fund generates approximately $13,500,000 per year that is utilized to substantively fulfill the requirements of the MS4 Permit. This law also requires District agencies to maintain budget allocations that support baseline levels of effort for activities that control pollution from stormwater discharges from the MS4. This funding is derived from each agency's general obligation budget.

The Anacostia River Clean Up and Protection Act (Bag Law) of 2009 created the Anacostia River Clean Up and Protection Fund. This special-purpose revenue fund generates approximately $2,000,000 per year and is used to implement watershed education programs, stream restoration, trash capture projects, and to purchase and distribute reusable bags to District residents. Many of these activities also support the District's compliance with the MS4 Permit.

Additionally, DOEE administers the District's Clean Water Construction (CWC) program, which funds the design and construction of voluntary projects that provide clean water to District streams and rivers. The CWC funds are not used to meet minimum MS4 permit requirement, but instead used in support of MS4 program deliverables. The program requires a 45% local non-federal match and receives approximately $7.500,000 annually from EPA, of which approximately $2-3 million is provided to DC Water to fund infrastructure upgrades. The District often leverages the Enterprise Fund as the local match source. DOEE is expecting additional funds from the Infrastructure Investment and Jobs Act once funds are appropriated.

DOEE also is eligible to apply for EPA's Sewer Overflow and Stormwater Reuse Municipal Grants (OSG), which operates similarly to the CWC program. The OSG funds are used to support MS4 permit deliverables but are not used to meet minimum requirements. The program requires a 20% local non-federal match and the District's annual allotment is expected to be approximately $886,000.

2.1.1 Stormwater Fee and Billing

DOEE charges a stormwater fee to all developed properties in the District. Revenue from this fee is used to address the costs of complying with the District's MS4 Permit. The fee is charged based on impervious surface (ie areas such as roofs, driveways, patios, and parking lots). The

rate structure for the fee is based on an Equivalent Residential Unit (ERU), where one ERU is equal to 1,000 square feet of impervious area.

Residential properties are charged according to a tiered structure wherein larger single-family properties pay more in stormwater fees than smaller single-family homes. This tiered structure provides a more equitable distribution of the District's stormwater management costs among single-family properties. All other properties receive a charge based on their actual amount of impervious area, converted to ERUs. The monthly charge per ERU is $2.67.

No updates to the stormwater fee or its billing structure have been made in recent years. The multi-tiered residential billing structure and $2.67 per ERU rate were established in October of 2010. A Stormwater Fee Discount Program was established in July of 2013. Properties can receive a discount on their stormwater fee for voluntarily implementing practices to retain stormwater runoff, such as green roofs, bioretention, permeable pavement, and rainwater harvesting systems. Discounts are calculated based on total volume of stormwater retained, up to a maximum of 55% off the total Stormwater Fee.

2.1.2 Approval of Expenses and Reimbursement Process

A District agency seeking to obtain reimbursement from the Enterprise Fund submits a proposed budget before the beginning of each fiscal year. The administrator reviews the proposed activities and verifies that they are for compliance with the MS4 Permit. Upon approval, a Memorandum of Understanding (MOU) is prepared and executed for the transfer of funds from DOEE to the agency. As each activity is implemented, the agency submits an invoice to DOEE. Invoices are used to track progress and to reconcile expenditures at the end of each fiscal year. Beginning in FY 2009, procedures were put in place to allow a portion of the Enterprise Fund to be used for capital projects. The District's capital budget is available across fiscal years; allocation of capital funds will allow the requesting agencies to budget funds for projects that take longer than one year to complete, such as reconstruction of roads, equipment and retrofits.

2.1.3 Stormwater Management Budget

The District relies on a number of sources to fund its Stormwater Management Program. The primary source of funding is the Stormwater Enterprise Fund, which receives revenue from the District's stormwater fee. DOEE budgets Enterprise Funds solely for activities that are specific to MS4 Permit compliance that go beyond baseline activities that occurred prior to 2000. These costs include program management, monitoring, capital construction costs (not otherwise required by regulation), operation and maintenance (O&M) of structural controls, and non-structural controls and programs. In addition, DOEE and other District agencies allocate general funds to complete baseline municipal activities that are necessary to control pollution in MS4 discharges, such as DPW's street sweeping program, DC Water's catch basin and inlet cleaning, and DDOT Urban Forestry Division's tree planting and green infrastructure maintenance.

DOEE also manages the Anacostia River Clean Up and Protection Fund, which is funded by the District's five-cent disposable bag fee. These funds are used to implement educational, trash capture, and stream restoration projects throughout the Anacostia River watershed. Many of

these projects overlap with the District's stormwater management and MS4 permit compliance efforts.

Finally, the Enterprise Fund in conjunction with EPA's Clean Water State Revolving Fund (CWSRF) are used to fund capital construction projects to improve water quality. A significant portion of the District's annual allotment of funds goes to stormwater green and grey infrastructure projects, with the remaining paying for wastewater treatment improvements at DC Water's Blue Plains Advanced Wastewater Treatment facility. In addition to the District's typical annual allotment, DOEE anticipates significant additional funding to be available from the CWSRF due to the 2021 Infrastructure Investment and Jobs Act.

The approximate amount of funding available from each of these sources for stormwater management activities projected for the next five years is detailed in Table 1. Amounts are approximate and may vary throughout the life of the MS4 Permit.

Table 1: Projected Five-Year Budget for MS4 Permit Activities

Funding Source	2023	2024	2025	2026	2027
Stormwater Enterprise Fund	$13,500,000	$13,500,000	$13,500,000	$13,500,000	$13,500,000
Anacostia River Clean Up and Protection Fund	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000
Clean Water State Revolving Fund Construction Grants	$3,100,000*	$8,000,000	$8,000,000	$8,000,000	$8,000,000
Sewer Overflow and Stormwater Reuse Municipal Grants	$886,000	$886,000	$886,000	$886,000	$886,000
Additional SRF funds via Infrastructure Investment and Jobs Act	$8,800,000	$10,200,000	$11,100,000	$12,000,000	$12,000,000
Total	$28,286,000	$29,686,000	$30,586,00	$31,486,000	$31,486,000

*DOEE has committed approximately $5,000,000 of its annual allotment from 2023 to DC Water. Allotments to DC Water for subsequent years have not been determined yet.

3 LEGAL AUTHORITY

3.1 The District of Columbia

The District of Columbia was created in 1791 and has served as the capital of the United States since 1800. Since January 2, 1975, the District has been governed by an elected Mayor and an elected Council in accordance with powers delegated to them by Congress in the District of Columbia Home Rule Act, Pub. L. 93-198, 87 Stat. 774 (Dec. 24, 1973) (D.C. Official Code §1-201.01 et seq.). The District is a unique governmental entity that combines state, county, and municipal characteristics. The Home Rule Act requires the Mayor to prepare and submit to the DC Council an annual budget. However, with limited exceptions, the District may not obligate or expend funds absent annual Congressional appropriation; since, under Article 1, Section 8, Clause 17 of the United States Constitution, Congress retains plenary legislative authority over the District as the nation's capital. Additionally, Congress reviews all legislation passed by the DC Council before it can become law and retains authority over the District's budget. The Home Rule Act provides that no act passed by the DC Council and approved by the Mayor or through veto override shall take effect until after 30 legislative days (for acts of civil matters) or 60 legislative days (for acts of criminal matters) after transmittal to Congress. During such periods, Congress may disapprove an act of the DC Council by enacting a joint resolution of Congress.

3.1.1 Stormwater Management Program Administration

DOEE was designated by the District Department of the Environment Establishment Act of 2005, D.C. Law 16-51 (effective Feb. 15, 2006), as amended (D.C. Official Code § 8-151.01 *et seq.*), as the MS4 Permit Administrator, D.C. Official Code § 8-151.03(b)(2), and assumed this responsibility in February of 2007. DOEE's name was changed from District Department of the Environment (DDOE) to Department of Energy and Environment (DOEE) in 2015, Mayor's Order 2015-191 (dated July 23, 2015). DOEE's Water Quality Division (WQD) administers the District's MS4 Permit and coordinates compliance activities among District agencies.

3.2 Adequate Legal Authority

The District has adequate legal authority to control pollutants from entering the storm sewer system; prohibit illicit discharges and illegal dumping; control discharges from construction and industrial activities; carry out inspections and enforcement activities; and require compliance with local law and regulations. This section describes the statutory and regulatory framework to perform functions required by the MS4 Permit.

3.2.1 Control the Quality of Stormwater Discharged to the MS4

The District has the legal authority to control the quality of stormwater discharged from the MS4 drainage area based on the following laws and regulations:

- **MS4 Program Activities**: Comprehensive Stormwater Management Enhancement Amendment Act of 2008, D.C. Law 17-371 (effective July 1, 2009) as amended (D.C. Official Code § 8-151.51 *et seq.*); the District Department of the Environment

Establishment Act of 2005, D.C. Law 16-51 (effective Feb. 15, 2006), as amended (D.C. Official Code § 8-151.01 *et seq.*).

- **Control of Pollutants to the Waterways and Sewers**: The Water Pollution Control Act of 1984, D.C. Law 5-188 (effective Mar. 16, 1985), as amended (D.C. Official Code § 8-103.01 *et seq*.).
- **Soil and Sediment Control**: The Water Pollution Control Act of 1984, D.C. Law 5-188 (effective Mar. 16, 1985), as amended (D.C. Official Code 8-103.07 *et seq*.); Soil Erosion and Sedimentation Control Act of 1977, D.C. Law 2-23; 24 DCR 792 (effective Sept. 28, 1977), as amended by the Soil Erosion and Sedimentation Control Amendment Act of 1994, D.C. Law 10-166; 21 DCMR §§ 500-15 (effective Aug. 26, 1994). These laws control the reduction of pollutants from construction sites.
- **Post Construction Stormwater Management**: 21 DCMR §§ 500 to 545, 546, 547, 552, and 599.
- **Solid Waste Management and Recycling**: 21 DCMR Chapters 7, 8, and 20.
- **Governance of the Water and Sewer Authority**: Water and Sewer Authority Establishment and Department of Public Works Reorganization Act of 1996, D.C. Law 11-111 (effective Apr. 18, 1996), as amended (D.C. Official Code § 34-2201 *et seq*.).
- **Green Infrastructure:** Green Building Act, D.C. Law 16-234 (effective Mar. 8, 2007), as amended (D.C. Official Code § 6-1451.01 *et seq*); Green Construction Code, effective March 28, 2014 (12 DCMR § 101.4.9) (2017 District of Columbia Green Construction Code [2012 edition of the International Green Construction Code® published by the ICC as amended by the District of Columbia Construction Codes Supplement of 2017 (DCMR 12K, Green Construction Code Supplement)].
- **Coal Tar-Based Pavement Product Ban:** Comprehensive Stormwater Management Enhancement Amendment Act of 2008, D.C. Law 17-371 (effective July 1, 2009), as amended (D.C. Official Code § 8-153.01).
- **Limitations on Products Containing Polycyclic Aromatic Hydrocarbons Amendment Act of 2018**, D.C. Law 22-278 (effective Mar. 29, 2019) (D.C. Official Code 8-153.01)
- **Plastic Bag Fee and Enforcement:** The Anacostia River Clean-up and Protection Act, D.C. Law 18-55 (effective Sept. 23, 2009) (D.C. Official Code § 8-102.01 *et. seq*.); the Department of Consumer and Regulatory Affairs Civil Infractions Act of 1985, D.C. Law 6-42 (effective Oct, 5, 1985) as amended (D.C. Official Code § 2-1801.01 *et seq*.).
- **Miscellaneous Statutory Provisions:** Authority is provided under various statutory provisions that enable the Mayor to control pollutant discharges in addition to the above-mentioned laws. For instance, District law provides authority for the Mayor to enter into agreements with other jurisdictions for drainage of the sewer system, D.C. Official Code § 2-207.01 (Maryland); D.C. Official Code § 2-207.02 (Virginia).

Additionally, DC Water has authority to enter into contracts with the District, the United States, Maryland, or Virginia, or their political subdivisions, other public entities, or private entities for goods and services as needed to achieve its purposes, D.C. Official Code § 34-2202.03(10). D.C. Official Code § 6-501 *et seq.* provides authority for the Mayor to control development to minimize flood hazards. Building Permits are required for new construction or development in the Special Flood Hazard Areas (SFHA). All development projects in SFHA must comply with the Title 12 DCMR - DC Construction Codes (Managed by DCRA) and 20 DCMR Chapter 31 - Flood Hazard Rules (Managed by DOEE).

3.2.2 Control of Pollutants from Industrial Activity to MS4

The District has regulatory authority to control industrial discharge activity to the MS4. The authority is provided by the District's Water Pollution Control Regulations, 21 DCMR Chapter 5, and the District's Pretreatment Regulations in 21 DCMR Chapter 15.

- **Control Discharges to the Wastewater System:** 21 DCMR Chapter 15 provides extensive regulatory authority to control discharges to the wastewater system. The regulations provide that any sewers designated as storm sewers are included in the Wastewater System Control Regulations. Section 1502 requires each significant industrial user to apply for a permit, and §§1503 -1507 specify the controls over the permittee. Additionally, 21 DCMR Chapter 5 provides adequate inspection and monitoring authority.
- **Limits Phosphorus and Nitrogen Fertilizer Use:** The Anacostia River Clean Up and Protection Fertilizer Act of 2012, D.C. Law D.C. 19-262 (effective Apr. 20, 2013), §§ 201-207 (D.C. Official Code § 8-104.01 *et seq.*), limits phosphorus and nitrogen fertilizer use.
- **Coal Tar Use Limitations:** Under the Comprehensive Stormwater Management Enhancement Amendment Act of 2008, D.C. Law 17-371 (effective July 1, 2009), as amended (D.C. Official § 8-153.01), the sale, use, or permitting the use of coal tar pavement products on property in the District of Columbia is prohibited. Violators of this ban are subject to a daily fine of up to $2,500.
- **Pesticide and Fertilizer Control:** The Pesticide Operations Act of 1977, D.C. Law 2-70 (effective April 18, 1978) (D.C. Official Code § 8-411(a)); the Pesticide Education and Control Amendment Act of 2012, D.C. Law 19-191 (effective Oct. 23, 2012) (D.C. Official Code § 8-431 *et seq.*); the Anacostia River Clean Up and Protection Fertilizer Act of 2012, D.C. Law D.C. 19-262 (effective April 20, 2013) (D.C. Official Code § 8-104.01 *et seq.*).
- **Cleanup of Contaminated Properties:** The Brownfields Revitalization Amendment Act of 2010 (Brownfields Act), D.C. Law 18-369 (effective April 8, 2011) (D.C. Official Code § 8-631.01*et seq.*).

3.2.3 Prohibition of Illicit Discharges to the MS4

The Water Pollution Control Act of 1984, D.C. Law 5-188 (effective March 16, 1985) (D.C. Official Code 8-103.07 *et seq.*), prohibits the discharge of pollutants to the waterbodies without a

District permit or federal permit. It also places restrictions on the quantity of materials discharged and prohibits the discharge of used motor oil to the MS4.

3.2.4 Control of Spills, Dumping, or Disposal of Materials to the MS4

- **Prohibit Illicit Discharge and Dumping:** The Water Pollution Control Act of 1984, D.C. Law 5-188 (effective March 16, 1985) as amended (D.C. Official Code 8-103.07 *et seq*); Water Quality and Pollution Regulations, 21 DCMR Chapter 5; the Illegal Dumping Enforcement Act of 1994, D.C. Law 10-117 (effective May 20, 1994) as amended (D.C. Official Code § 8-901 *et seq*.).
- **Trash and Litter Control:** Anti-Littering Amendment Act of 2008, D.C. Law 17-314 (effective March 20, 2009); the Anacostia River Clean-up and Protection Act, D.C. Law 18-55 (effective September 23, 2009) (D.C. Official Code § 8-102 et. seq.).
- **Prohibition on the use of Expanded Polystyrene Food Service Products:** Title IV, Subtitle A of the Sustainable DC Omnibus Act of 2014, D.C. Law 20-142 (effective Dec. 17, 2014) as amended by Polystyrene Food Service and Loose Fill Packaging Prohibition Amendment Act of 2019, D.C. Law 23-76 (effective Apr. 16, 2020) (D.C. Official Code § 8-1531 *et seq.*) restricts the use of polystyrene food and beverage service containers by a food service entity and prohibits the sale of expanded polystyrene products.
- **Sustainable Solid Waste Management Amendment Act of 2014**, D.C. Law 20-154 (effective Feb. 26, 2015), as amended by "Zero Waste Omnibus Amendment Act of 2020", D.C. Law 23-211 (effective Mar. 16, 2021) (D.C. Official Code § 8-1031.01 *et seq*.).
- **Illegal Dumping from Tankers or Motor Vehicles:** The "Illegal Dumping Enforcement Act of 1994", D.C. Law 10-117 (effective May 20, 1994) as amended (D.C. Official Code §8-901 *et seq*.) gives the Mayor the authority to regulate all illegal dumping "into or on any land or water" of the District of Columbia from motor vehicles. The statute also prohibits the disposal of any waste "in or upon any street, lot, park, public place …"

3.2.5 Interagency Agreements and Coordination

The District utilizes several mechanisms to ensure that coordination across all District agencies, including DC Water, with responsibility to implement MS4 Permit provisions occurs. Each agency has separate and distinct areas of responsibility within the District government, see Table 2. Pursuant to D.C. Official Code § 1-301.01(k), DOEE is authorized to enter into Memoranda of Understanding (MOUs) for orders placed with other District agencies at actual cost.

An interagency MOU, dated December 2000, sets forth each agency's compliance responsibilities, see Attachment 1. In 2007, DOEE executed additional independent MOUs with other relevant District agencies to implement the additional responsibilities required to comply with the District's MS4 Permit (see Attachment 1). An overview of District agency responsibilities for MS4 permit compliance is shown in Table 2.

DOEE coordinates the District's MS4 Technical Workgroup (TWG) where sister agencies discuss MS4 permit deliverables and work updates. The TWG meets monthly to provide ongoing, staff-level coordination on stormwater issues. District agency staff also communicate regularly outside of the TWG to facilitate the transfer of funds, provide technical assistance, implement stormwater management and green infrastructure (GI) projects, and coordinate other permit compliance activities.

In addition to the TWG meetings, DOEE's Director holds regular meetings with DPW and DGS directors. These meetings provide opportunities to coordinate compliance with the District's MS4 permit at a high level.

The Stormwater Administration[2], which includes all applicable DOEE branches and divisions, works with several regional organizations, such as the USEPA Chesapeake Bay Program, Interstate Commission on the Potomac River Basin (ICPRB), and the Metropolitan Washington Council of Governments (MWCOG), to address shared environmental concerns.

Table 2: Agencies Responsible for District MS4 Permit Compliance

Responsible Agency	Compliance Activity
Department of Energy and Environment (DOEE)	MS4 program administration Source identification MS4 outfall monitoring Flood control projects review Construction management and plan review Climate resiliency planning Pollutant control from hazardous waste sites Pesticide, herbicide, and fertilizer application Promoting Green Infrastructure (GI) practices Education and outreach Illicit discharge detection elimination Soil erosion and sediment control Inspection/enforcement Stormwater training Water quality and TMDL establishment Regulation and policy creation and analysis Clean Water Construction Grant Program administration
DC Water	Floatables reduction program Pollution prevention Operation and maintenance of sewer infrastructure Catch basin cleaning Illicit discharge detection

2 There is established within the Department of Energy and Environment a Stormwater Administration ("Administration"), pursuant to § 8-151.03(b)(2). The Administration shall be responsible for monitoring and coordinating the activities of all District agencies, including the activities of the District of Columbia Water and Sewer Authority ("DC WASA"), which are required to maintain compliance with the Stormwater Permit. The Director shall designate a Stormwater Administrator to manage the Administration.

Department of Public Works (DPW)	Street sweeping Seasonal leaf and holiday tree collection program Pollution prevention Household hazardous waste collection De-icing and snow removal Stormwater management at municipal waste transfer stations Waste management Education and outreach
District Department of Transportation (DDOT)	Pollutant reduction from vehicles and roadways Pollution prevention Education and outreach GI practices in the public right-of-way (PROW)
Department of General Services (DGS)	GI practices on District-owned properties Pollution prevention
Department of Parks and Recreation (DPR)	GI practices in District parks and at District recreation centers Pollution prevention
Office of Planning (OP)	Planning for neighborhoods, public facilities, parks, and open spaces Urban design and land use review

3.2.6 Compliance with Regulations and Statutes

District laws and regulations authorize the Stormwater Administration and other District agencies who function as co-applicants to the MS4 Permit to control water pollution in the District's waters. See above Table 2 Agencies Responsible for District MS4 Permit Compliance.

The Stormwater Administration ensures compliance with District laws and regulations to protect and restore the environmental health of the watersheds in several ways. The Stormwater Administration works with DOEE programs to:

- Review construction and grading plans for stormwater management, erosion and sediment control, and flood plain management.
- Inspect construction sites for compliance with the District of Columbia sediment control and stormwater management laws and regulations.
- Inspect Best Management Practices (BMPs) to ensure they are adequately maintained.
- Investigate citizen complaints relating to soil erosion and drainage problems and recommends appropriate solutions.
- 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.
- Sponsor activities that protect and restore river, stream, and wetland habitats in DC, increase the DC and Chesapeake Bay watershed's ecological diversity, and protect the health, welfare, and safety of our residents.

- Sponsor teacher training workshops in environmental education using nationally accredited environmental curriculums, that provide teachers with continuing education credits, and provide students with meaningful environmental experiences through the Anacostia River. Environmental Fair and other outdoor experiences.
- Educate youth about the environment, while seeking to promote environmental stewardship through environmental education and outreach.

The Water Pollution Control Act (the Act), D.C. Official Code 8-103.01 *et seq*., establishes the main framework for regulating discharges of pollutants to the MS4. The Act authorizes the regulation of construction and establishes the basic structure for regulating District waters including: monitoring for compliance; permitting certain discharges; establishing terms of permits; providing enforcement procedures; establishing the effect of federal permits; providing for public hearings on permits; establishing special requirements for treatment facilities; permitting for industrial discharges; prohibiting certain discharges from watercraft; establishing the location of discharges; recognition of reduction of pollutants; restrictions on quantity of materials discharged; prohibiting discharge of used motor oil to sewers; contingency planning for environmental emergencies; accounting for revenues and expenses of pollutant removal; making available funds for future years; and spill prevention and cleanup planning for onshore or offshore facilities.

The Mayor may subpoena pertinent information under D.C. Official Code §8-103.15(a) and may conduct reasonable inspections of pertinent facilities and activities under D.C. Official Code §8-103.15(a-b).

The Mayor can require compliance through various penalties enunciated in D.C. Official Code § 8-103.16. Violations of the subchapter or the regulations promulgated pursuant to it are a misdemeanor. Any person found guilty of a misdemeanor or under this subchapter shall be fined at least $2,500 and no more than $25,000 per violation per day or imprisoned for no more than one year, or both.

The Act also provides fines if the individual was previously convicted under this section, (the fine is to be no less than $2,500 and no more than $50,000 per day of violation, and no more than 2 years imprisonment). The Act provides for express authority to enforce, D.C. Official Code §8-103.17. This provision of the D.C. Official Code allows the Mayor to order compliance with this subchapter "by use of any measure or combination of measures, authorized by this subchapter."

The Mayor may seek an injunction under §8-103.18(a) in court of competent jurisdiction and/or a civil penalty of no more than $50,000 per violation or $250,000 for willful violation under §8-103.18(b).

By Mayor's Order 2006-61 (Jun. 14, 2006), the authority of the Mayor to administer and enforce the provisions of the Water Pollution Control Act was delegated to the Director, District Department of the Environment (now Director, Department of Energy and Environment).

In addition, under the Wastewater Control Subchapter (D.C. Official Code § 8-105.01 through § 8-105.15), DC Water has similar administrative and enforcement authority. D.C. Official Code

§ 8-105.08 allows the Mayor and DC Water to inspect pertinent sites. D.C. Official Code § 8-105.11 authorizes the DC Water to seek appropriate civil action to secure a temporary restraining order, a preliminary or permanent injunction, or declaratory or other appropriate relief to restrain, minimize, halt, or eliminate the violation of, or attempted violation of wastewater control requirements. The penalty for violating this subchapter is a fine of up to $10,000 per day (D.C. Official Code § 8-105.14).

The District's penalty provisions under the Illegal Dumping Enforcement Act, D.C. Official Code §8-901 *et seq*., give the Mayor the authority to seek criminal penalties from $5,000 to $10,000 and incarceration for up to 90 days for misdemeanor violations, and fines of up to $40,000 and imprisonment for 5 years for felony violations. Alternatively, the Mayor can seek a civil fine of up to $10,000 per violation, or up to $40,000 per violation for knowing disposals of hazardous waste. In addition to these penalties, the Mayor can seize any vehicle used in the discharge of waste and can charge the violator three (3) times the cost of the clean-up, and the Mayor "may deny, revoke or not renew the business license, permit or motor vehicle registration" of any person who has violated the law.

3.2.7 Inspection and Monitoring for Compliance and Noncompliance with Permit Conditions

The District has adequate authority to carry out all necessary inspection, surveillance and monitoring procedures. Pursuant to the Act, the inspector may inspect and monitor facilities, discharges, activities, equipment, waters, and other items pertinent to the regulation of the quality of District waters. The inspection shall be reasonably calculated to ensure compliance, (D.C. Code § 8-103.15). Pursuant to D.C. Official Code §8-103.04, District waters must "regularly monitor[ed]" for compliance with water quality standards, while D.C. Official Code § 8-103.06(b)(5) requires monitoring of discharge permits. DOEE is authorized to "inspect and monitor facilities, discharges, activities, equipment, waters and other items pertinent to the regulation of the quality of the waters of the District" (D.C. Official Code §8-103.15(b)). DC Water is also given authority to "enter upon or through any premises for purpose of inspection" to determine compliance with the Wastewater System Control Act, (D.C. Official Code § 8-105.08).

The Water Pollution Control Regulations, 21 DCMR §§ 500 - 599, provide further inspection and enforcement provisions. Sections 504-506 provides authority for the District to inspect all sites involved in land disturbing activities for sedimentation and erosion problems. Section 504 allows inspection of any site where artificial or natural erosion may be occurring. 16 DCMR § 4010 outlines the schedule of fines for all soil erosion and sediment control and stormwater management infractions.

When a violation occurs, DOEE may pursue an administrative action to compel compliance and/or issue penalty, or may refer a case for judicial civil action to the District Office of the Attorney General, D.C. Official Code § 8-103.18. DOEE may also refer violations to the EPA's Criminal Investigation Division.

Administrative Civil Enforcement Actions include but are not limited to,

1. Site Compliance Directive or Corrective Action
2. Cease and Desist Orders
3. Notice of Violation
4. Enforcement Notice or Notice of Infraction
5. Opportunity to Confer or Resolve Violation
6. Show Cause Order
7. Administrative Order
8. Administrative Fines

Judicial Civil Enforcement Actions include but are not limited to,

1. Consent Agreement
2. Final Order
3. Show Cause Order
4. Injunctive Relief Order
5. Temporary Injunction
6. Judicial Civil Fines

The District's Civil Infraction Schedule of Fines (Schedule of Fines) categorizes a substantial number of environmental regulations DOEE is authorized to enforce by administrative fines. Violation classifications are made according to the nature and severity of the violations and their potential to impact human and environmental health. Under the Schedule of Fines, Class 1 and Class 2 violations are considered the most egregious and serious violations. Class 3 violations contain mixed minor/serious violations, and Class 4 and Class 5 are generally minor violations.

3.2.8 Additional Legal Authority Needed

The District does not require any additional legal authority to implement and administer the MS4 Permit at this time.

4 SOURCE IDENTIFICATION

The District has compiled a database of the MS4 infrastructure and outfalls, and has completed an assessment of significant changes due to land use activities, population estimates, runoff characteristics, major structural controls, landfills, publicly owned lands, and industries. The District will continue to compile and submit information about pollution sources, including significant changes in the identification and mapping of District MS4 outfalls identified as "major" or "other," and significant changes affecting the District MS4.

4.1 Outfalls

An outfall is the end point where a municipal separate storm sewer system discharges from a pipe, ditch or other discrete conveyance to receiving waters. Receiving waters in the District are the Potomac River, Anacostia River, Rock Creek, and their tributaries. According to EPA regulations, a *major outfall* is defined as an MS4 outfall that discharges from a single pipe with an inside diameter of at least 36 inches (40 CFR §122.26(b)(5)). The term also includes (i) discharges from a single conveyance other than a circular pipe serving a drainage area of more than 50 acres, or (ii) MS4s that receive stormwater from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), from an outfall that discharges from a single pipe with an inside diameter of 12 inches or more, or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more).

4.1.1 Field Verification and Outfall Mapping

The outfall inventory and GIS data are updated as new outfalls are constructed, legacy outfalls are newly identified in the field, or outfalls are decommissioned and closed. Currently, DOEE identifies 575 outfalls within the District, *see* Table 3. The current inventory of MS4 outfalls is included in Attachment 2. A map of known outfalls is found in Figure 1. Figure 1 is also available as an online map. As the inventory of outfalls is verified and refined, the outfall inventory will continue to be updated.

Table 3: Outfalls in the District of Columbia

Watershed	Number of Outfalls
Anacostia	196
Potomac	209
Rock Creek	170
Total	575

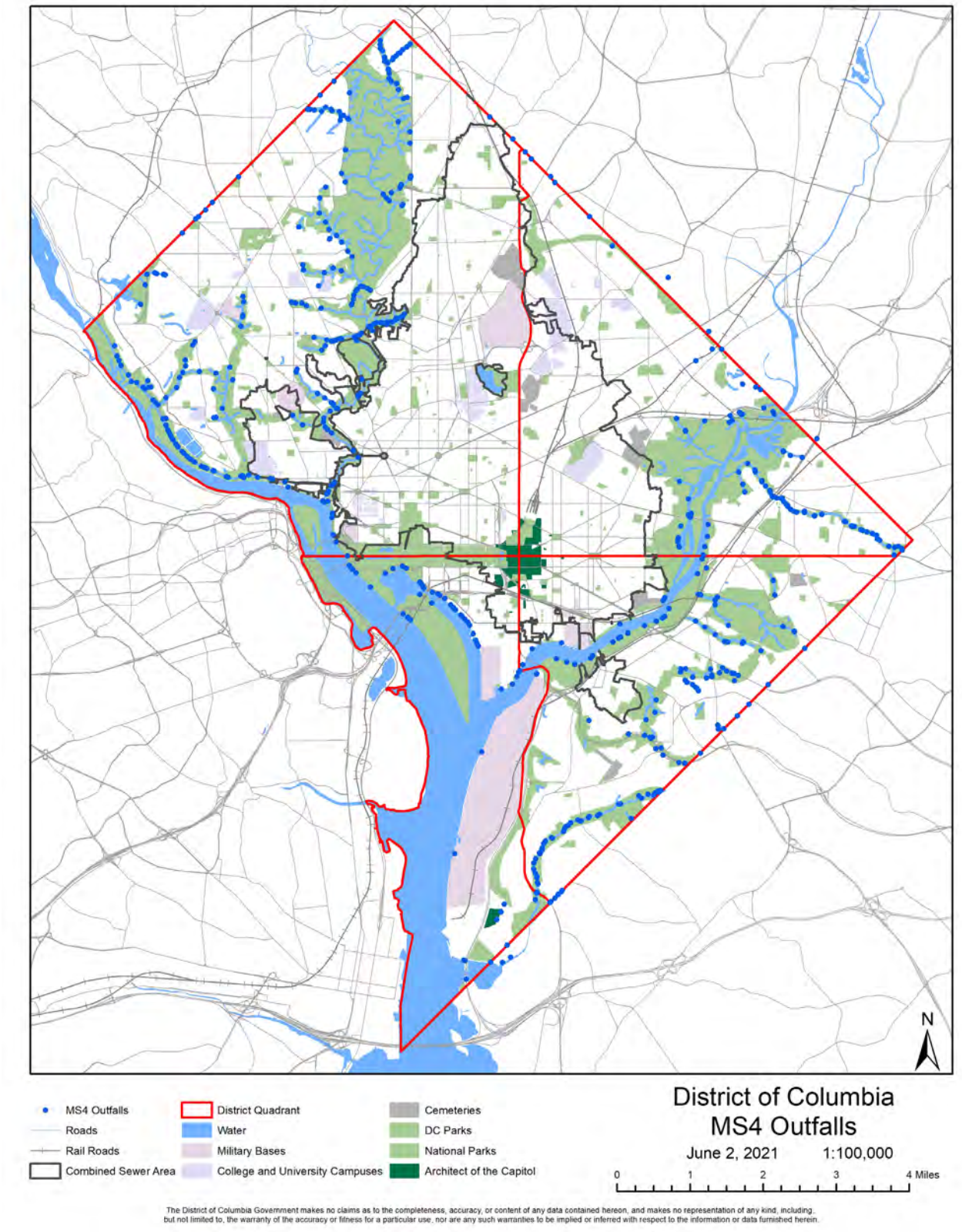

Figure 1: Known MS4 Outfalls in the District of Columbia

4.2 Land Use Activities

4.2.1 Population and Population Growth

The population of the District of Columbia was 689,545 people as reported by the US Census Bureau in the 2020 Census of Washington, DC. The population reported in the 2010 Census was 601,723 people, meaning the District has gained approximately 87,822 people, a 14.6 percent increase, since 2010. Additional details of the 2020 U.S. Census for the District can be found at http://www.census.gov/.

4.2.2 Land Use Activities

The District is highly urbanized with little available land for green field development. New development and redevelopment are subject to the District's stormwater and erosion and sediment control regulations and review by DOEE. Figure 2 details the land use types in the District of Columbia. Figure 3 maps the land cover in the District and Figure 4 maps the parks, open land, and public lands within the District. These maps can be found on our online map application.

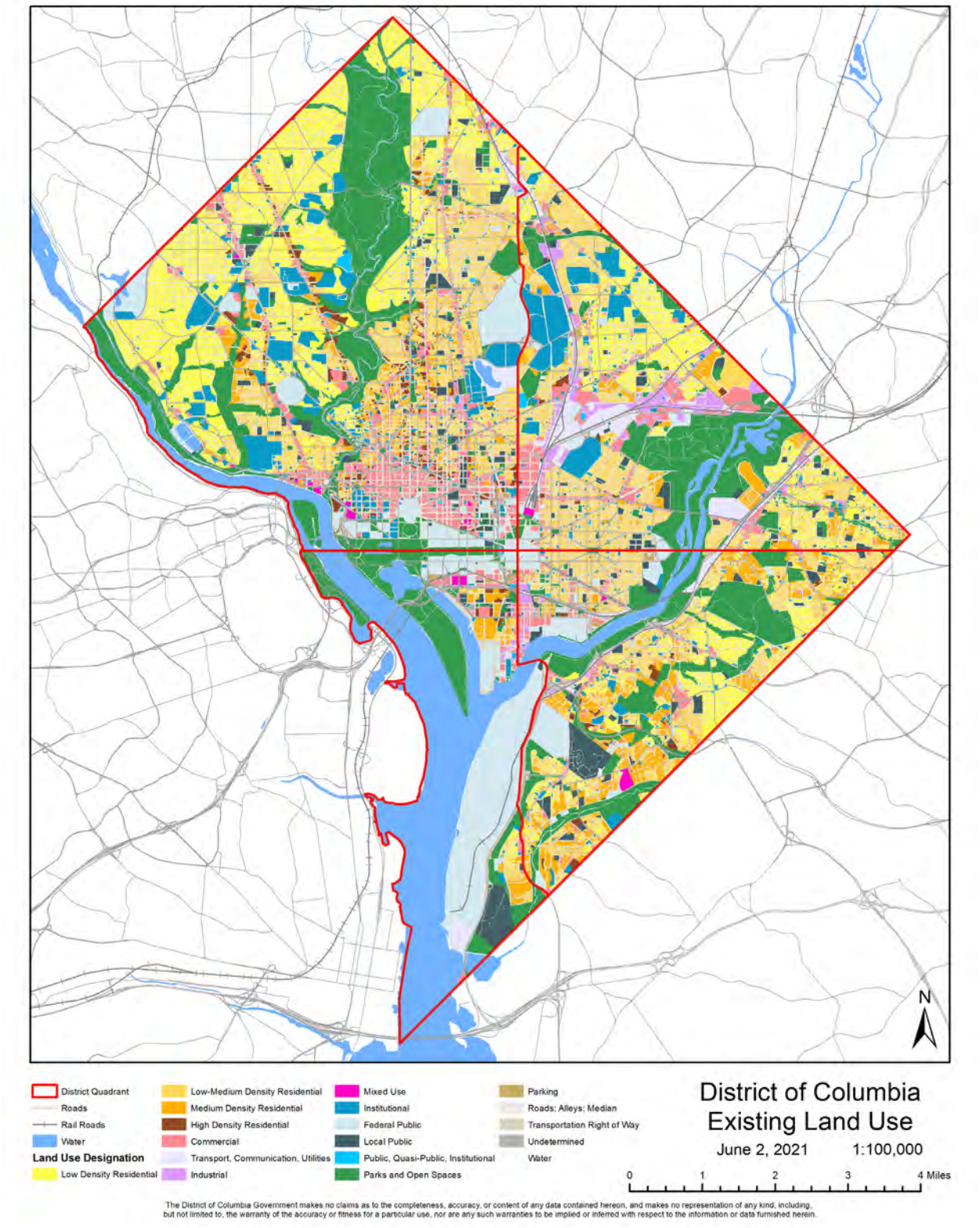

Figure 2: Existing Land Use in the District of Columbia

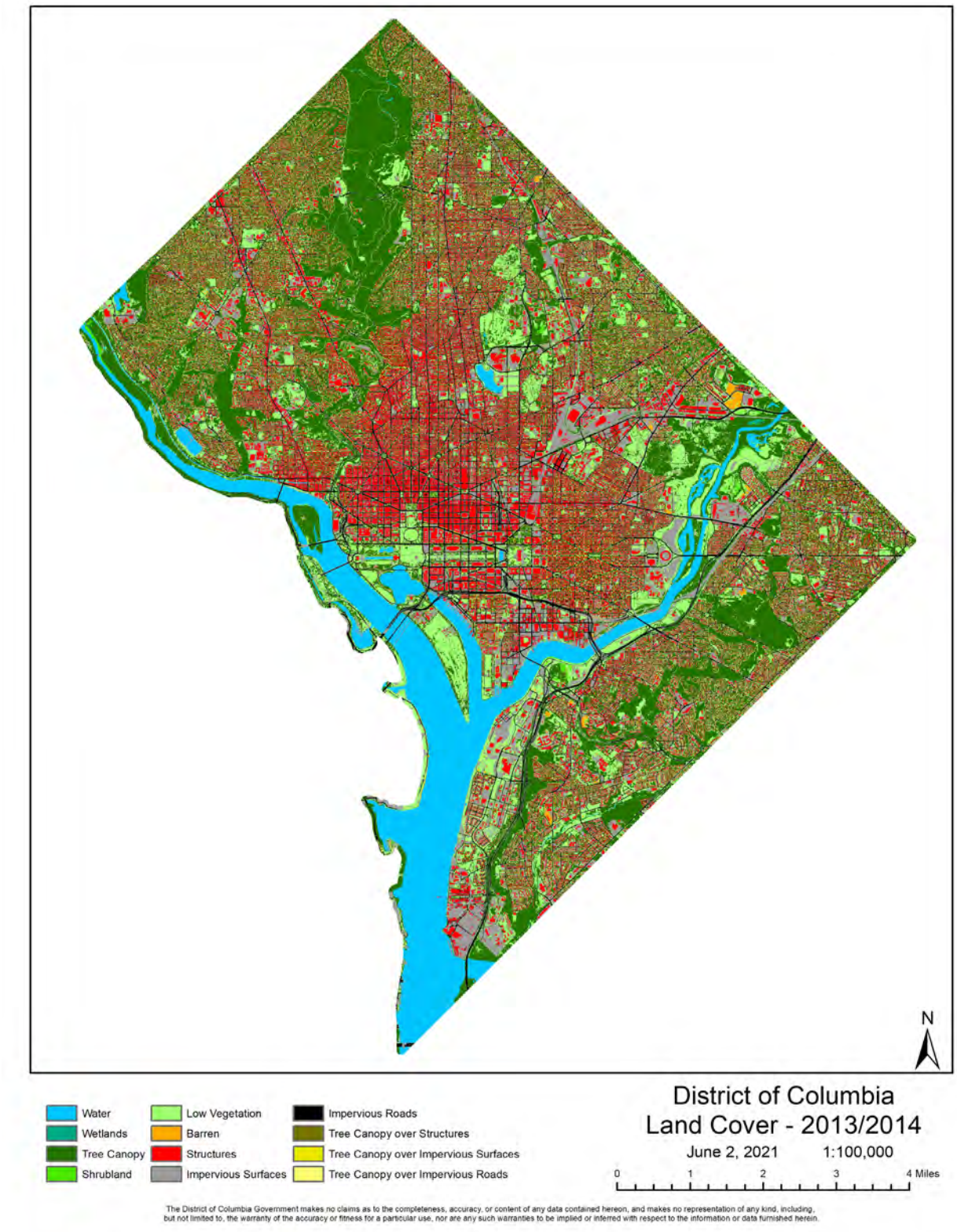

Figure 3: Land Cover in the District of Columbia

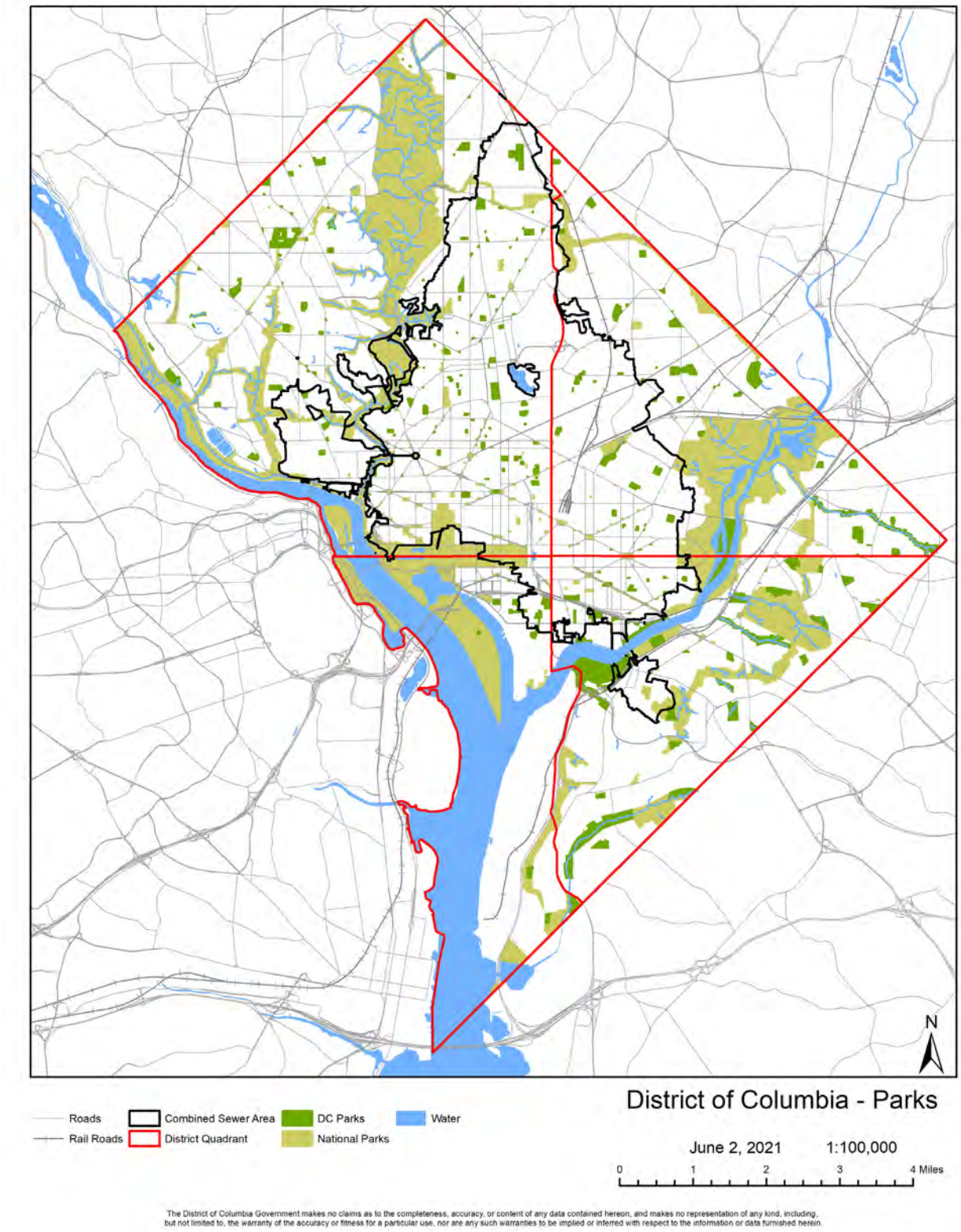

Figure 4: Parks and Open Space in the District of Columbia

4.2.3 Runoff Characteristics

The District uses runoff coefficients published by the Chesapeake Stormwater Network (CSN 2008), as shown in Table 4. The District's Consolidated TMDL Implementation Plan uses composite runoff coefficients for each area modeled. The composites are developed by weighting the relative presence of each soil and land cover type and the appropriate runoff coefficients.

Table 4: Reference Runoff Coefficients from Schueler (1987)

	Impervious Land Cover Types (all)	Turf	Forest
HSG A Soils	0.95	0.15	0.02
HSG B Soils	0.95	0.20	0.03
HSG C Soils	0.95	0.22	0.04
HSG D Soils	0.95	0.25	0.05

The composite runoff coefficient for each watershed or TMDL segment will change over time as the composition or proportion of land cover changes over time. Those changes are captured when updates are made to the Consolidated TMDL Implementation Plan Modeling Tool (IPMT). Impervious cover maps used for generating composite runoff coefficients showed an increase in impervious area of roughly 4% within the District between 2008 and 2018. Updates to the TMDL IPMT will be reflected in the draft TMDL Implementation Plan to be published in March 2022.

4.3 Sources of Discharge to the MS4

DOEE maintains an inventory of critical sources of potential stormwater pollution. This inventory includes industrial, commercial, institutional, municipal, and federal facilities within the MS4 area. Commercial and institutional facilities identified within this database include automotive repair facilities, automotive fueling stations, automotive wash facilities, dry cleaners, and other facilities deemed sources of stormwater pollution. While the inventory captures most facilities under the preceding classifications, the inventory also captures facilities that fall within the following specific regulatory designations:

- Municipal Solid Waste Facilities within the MS4,
- Resource Conservation and Recovery Act,
- Small Quantity Generator (RCRA-SQG),
- Large Quantity Generator (RCRA- LQG), &
- Hazardous Waste Treatment Storage and Disposal Facilities (RCRA-TSDF),
- Emergency Planning and Community Right-to-Know Act (EPCRA) – Tier 2 Facilities storing hazardous material within the MS4; and,
- Federal Water Pollution Control Act (Clean Water Act) – Facilities covered by National Pollution Discharge Elimination System (NPDES) permits issued by EPA.

4.3.1 MS4 Facilities

The current critical source inventory includes 242 commercial and industrial facilities. This includes 95 automotive repair and fueling facilities, 13 motor vehicle washing facilities, 25 dry cleaners, and 109 other facilities that have been deemed a critical source by the District.

4.3.2 Municipal Solid Waste Facilities within the MS4

There are no active landfills within the District. Two solid waste transfer stations, Benning Road and Fort Totten, are owned and operated by the District. Four privately owned solid waste transfer facilities and two privately owned construction and demolition facilities also operate within the District. The Benning Road and Fort Totten stations accept a limited variety of materials collected by commercial and institutional haulers. Haulers must be licensed and certified with the DC Department of Consumer and Regulatory Affairs and are required to pay fees, based on material type and tonnage being transferred, by credit card. District residents can dispose of solid waste, household hazardous waste, and unwanted electronic equipment at the Fort Totten Transfer Station. The majority of trash, yard waste, and associated materials collected residentially or commercially at the agency's transfer stations are disposed of at Fairfax County's Energy Resource Recovery Facility in Lorton, Virginia. Recycling materials are taken to a nearby Maryland facility where they are sorted and processed to be reused as raw materials.

4.3.3 Hazardous Waste - Treatment, Storage, and Disposal Facilities (TSDF)

The District's only active regulated hazardous waste treatment, storage, and disposal facility (TSDF) is the U.S. Naval Research Laboratory (NRL). Hazardous Waste TSDFs are permitted under Resource Conservation and Recovery Act (RCRA) to treat hazardous waste, store hazardous waste until treated or disposed, or permanently contain hazardous

waste. NRL is located in the MS4 in southwest Washington, DC. The EPA identification number for NRL is DC8170024311.

4.3.4 Hazardous Waste - Very Small Quantity Generators (VSQG), Small Quantity Generators (SQG) and Large Quantity Generators (LQG)

As of December 2021, there were 84 LQGs, 40 SQGs, and 901 VSQGs within the District. DOEE utilizes EPA's national database to maintain site and inspection data on these facilities. DOEE staff conducts inspections to verify compliance with environmental protection regulations and DCRA surveys neighborhoods to detect businesses that are not properly licensed. Common hazardous waste generators in DC include hospitals, universities, automotive repair shops, and dry cleaners.

The quantity of waste generated per month determines the generator status of the facility and which regulations are applicable. VSQGs generate less than 100 kg/month of hazardous waste per month, less than 1 kg/month of acute hazardous waste and less than or equal to 100 kg/month of acute spill residue or soil. SQGs generate more than 100 kilograms, but less than 1000 kilograms of hazardous waste per month. LQGs generate 1,000 kilograms per month or more of hazardous waste, more than 1 kilogram per month of acutely hazardous waste, or more than 100 kilograms per month of acute spill residue or soil.

Any business that will generate hazardous waste including used oil is required to register as a generator with DOEE and pay a fee to obtain an EPA Identification (ID) number. This unique number is used to track hazardous waste from "cradle to grave". Once a facility obtains an EPA ID number, it should be used on shipping documents such as hazardous waste manifests and for final disposal of the waste.

4.3.5 Emergency Planning and Community Right-to-Know Act (EPCRA)

The Emergency Planning and Community Right-to-Know Act (EPCRA) is Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), often referred to as SARA Title III. Within the District of Columbia, the District Homeland Security and Emergency Management Agency (HSEMA) functions as both the State Emergency Response Commission (SERC) and local emergency planning committee (LEPC). The District of Columbia requires all Tier II reports to be submitted through the HSEMA Online Tier II Manager database. See Attachment 3 for DC sites in the CERCLIS database.

4.3.6 The National Pollutant Discharge Elimination System (NPDES)

The industrial facilities identified by the database covered under NPDES individual and general permits are inspected as part of DOEE's NPDES Inspection and Enforcement program. The database includes 48 facilities covered by the 2008 NPDES Multi-Sector General Permit, 5 Major Individual NPDES Permitted facilities, and 7 Minor Individual NPDES Permitted facilities. Table 5 details the facilities with NPDES Permit coverage in the District.

Table 5: NPDES Permits Issued for the District of Columbia

Permit No.	Facility Name	Type	Effective Date	Expiration Date
DC0021199	D.C. Water and Sewer Authority Wastewater Treatment Plant at Blue Plains	Major	08/26/2018	08/25/2023
DC0000221	D.C. Municipal Separate Storm Sewer System (MS4)	Major	06/22/2018	06/21/2023
DC0000094	Potomac Electric CO (PEPCO), Benning Service Station	Major	06/01/2021	05/31/2026
DC0000019	Washington Aqueduct Water Treatment Plant	Major	06/01/2021	105/31/2026
DC0000248	JFK Center for Performing Arts	Minor	03/01/2022	02/28/2023
DC0000345	National World War II Memorial	Minor	07/03/2018	07/02/2023
DC0000141	Washington Navy Yard	Minor	10/01/2020	01/31/2027
DC0000175	Bardon Concrete (d/b/a Aggregate Industries, aka Super Concrete)	Minor	10/01/2020	09/30/2025
DC0000337	Washington Metropolitan Area Transit Authority (WMATA) Mississippi Avenue Pumping Station	Minor	12/11/2018	12/10/2023
DC0000370	Lincoln Memorial Reflecting Pool	Minor	06/03/2018	06/02/2023
DC0000035	GSA West Heating Plant	Minor	09/11/2018	09/10/2023

4.3.7 Verification and Updates

Information for this database is collected using periodic site verification and desktop spatial analysis. Updates to the database include, but are not limited to, location, facility name, description of operations, contact person(s) and contact information. Field verified information undergoes further GIS analysis to determine what sewershed and particular outfalls are located in the area of the facilities. The database framework also allows for relating compliance inspection information for each facility. The database can be searched based on services, possible potential pollutants, outfalls, sub-watersheds, wards, and zip codes. DOEE will continue to update the database.

5 DISCHARGE CHARACTERIZATION

This section addresses the requirements for reporting the physical and chemical characteristics of the discharge from the municipal stormwater sewer system in the District. These requirements are set forth in 40 CFR §122.26(d)(2)(iii), Characterization Data. The District has been monitoring the Anacostia River, Potomac River, and Rock Creek watersheds, and their tributaries, for over two decades prior to the issuance of the first MS4 Permit in 2000. Water quality within these watersheds guided the discharge characterization element of the initial MS4 Permit.

The data gathered for discharges from the MS4s are used to:

- Quantify the pollutant concentration and loads;
- Evaluate the effectiveness of Best Management Practices (BMPs) as well as identify stormwater control priorities;
- Identify sources of pollutants;
- Establish an effective monitoring program; and,
- Help predict the impact of discharges from the MS4 on receiving waters known to be impaired.

5.1 Summary of Regulatory Requirements

MS4 Permit Section Part 4 discusses quantitative and qualitative data requirements for the collection of stormwater discharges at the selected outfall monitoring stations. These outfalls were selected as representative of commercial, industrial, and residential land use activities as described in 40 CFR §122.26(d)(2)(iii)(A). Criteria for discharge sampling at these sites are specified in the following regulations:

- Acceptable storm conditions [122.26(d)(2)(iii)(A)(1)]
- Sampling Protocol [122.21(g)(7)]
- Analytical parameters [122.26(d)(2)(iii)(A)(3)]
- Narrative descriptions and results of the three required sampling rounds are provided [122.26(d)(2)(iii)(A)(2)]

Event mean concentrations (EMC) were determined from analyses of flow weighted composite samples collected from the designated monitoring points. Section 5.5.1 provides estimates of the annual pollutant load of cumulative discharges during a storm event, as required in 40 CFR §122.26(d)(2)(iii)(B). Seasonal pollutant loads were also calculated. The District MS4 NPDES Permit, Section 4.1.2, provides a proposed schedule for estimating the seasonal pollutant load and representative EMC for constituents found in the discharge at the nine proposed monitoring sites. Requirements for the estimated schedule are prescribed in 40 CFR §122.26(d)(2)(iii)(C).

5.2 Potential Impacts of Stormwater Runoff

Pollutants entering the waters of the District through its MS4 impact both the small streams of the District and their receiving waters, i.e., the Potomac River, the Anacostia River, and Rock Creek, and their tributaries. This section contains a list of the water bodies in the District that receive discharges from the MS4 system. All of these water bodies have been inventoried and

assessed in DOEE's 2020 Integrated Report with the following characterization of use support: "The evaluation found that none of the District's monitored waters are supporting all of their designated uses, and they generally do not support uses by humans and aquatic life." The Integrated Report provides further detail on the specific pollutants of concern that have been identified for each water body.

Additionally, the following water bodies have approved TMDLs for one or more pollutants of concern and are included in the 2015 Consolidated TMDL Implementation Plan currently being updated by DOEE:

Anacostia River

- Fort Chaplin Tributary
- Fort Davis Tributary
- Fort Dupont Tributary
- Fort Stanton Tributary
- Hickey Run
- Kingman Lake
- Lower Beaverdam Creek
- Nash Run
- Pope Branch
- Texas Avenue Tributary
- Watts Branch

Potomac River

- Battery Kemble Creek
- C&O Canal
- Dalecarlia Tributary
- Foundry Branch
- Oxon Run
- Tidal Basin
- Washington Ship Channel

Rock Creek

- Broad Branch
- Dumbarton Oaks Tributary
- Fenwick Branch
- Klingle Valley Run
- Luzon Branch
- Melvin Hazen Tributary
- Normanstone Creek
- Pinehurst Branch
- Piney Branch
- Portal Branch
- Soapstone Creek

Sampling and analysis under the terms of the MS4 Permit, and through elements of a long term monitoring program, provide valuable information regarding actual pollutant impacts within the District. Potential impacts of stormwater runoff are discussed at length in EPA's *Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems*, 1993. Specific degradation effects depend on the characterization of the MS4 discharge into the waters of the District, pollutants affecting the beneficial use of the waters, and the quantity and quality of runoff as dictated by rainfall patterns and local land use.

5.3 Use of the Characterization Data

Characterization data is used to identify the source of pollutants and predict the impact of stormwater runoff on the receiving water. It informs the mitigation measures that must be in place, and helps to evaluate the effectiveness of such measures. The current monitoring program

identifies nine monitoring locations split between three watersheds, Rock Creek, Potomac River, and Anacostia River. Each year the District submits, via NetDMR, the characterization data for each monitoring location. The sampling plan is consistent with the monitoring requirements set forth at 40 CFR §122.26 (d) (2) (iii).

5.4 Quantitative Data Requirements

Data collection and analysis procedures for discharge from the MS4 at the monitoring stations is conducted in accordance with Section 4.1.3 and 4.2 of the District's MS4 NPDES Permit.

For other pollutants, discrete samples are collected during the storm event and flow weight composites are conducted at the laboratory. Stormwater samples are collected using automatic samplers when a designated level of flow is reached in the monitoring station pipe. The automatic samplers are programmed to collect flow proportioned composite samples.

At the completion of the sampling period, the storm event is assessed to determine if the criteria has been met. If the storm meets the designated criteria, the collected samples are packed in ice at the end of the three-hour sampling period (or shortly thereafter, so as to not exceed the holding time for the parameter to be analyzed) and transported directly to the laboratory.

5.4.1 Criteria for Stormwater Discharge Sampling

The regulations require that stormwater discharge at each of the nine outfalls be sampled from three storm events. An allowable storm event defined in 40 CFR §122.21 (g)(7)(ii) must meet the following:

- The storm event must contain greater than 0.1 inches of precipitation.
- Each storm event must be at least 30 days apart from a previously sampled storm.
- Each storm event must be preceded by a period of 72 hours during which no more than 0.1 inch of precipitation has been recorded.
- Where feasible, each storm event must be within 50 percent of the average median rainfall volume and duration for the region.

The National Oceanic and Atmospheric Administration (NOAA) rain gauge located at Reagan National airport is used to track rain conditions for the District and surrounding areas. Monthly summaries for the period from 1981 to 2010 at the National Airport (DCA) data collection station were used to determine the average monthly precipitation. For this data set, the average monthly precipitation in the District was 3.88 inches. To view the complete data set go to: http://www.weather.gov/media/lwx/climate/dcaprecip.pdf.

Table 6 provides information on the amount of precipitation for the Washington DC area from January 2016 to September 2020. In addition to the amount of monthly rainfall per year, Table 6 shows the number of storm events greater than 0.1 inches that occurred within each month. Of these potentially qualifying (sampleable) rainfall events, those occurring at least 72 hours from the end of the previous event with at least 0.1 inches of measured rainfall can be as low as 35 percent of the storms in any given year. The criteria for a sampleable storm event specified by

regulations, compounded by adverse field conditions and/or constraints, may further reduce the number of the actual sampling and analysis for any given year.

Table 6: Precipitation Record for the District of Columbia

Year	Month	Rainfall (in.)	Number of Days in Month with Storm >0.1 inches	Number of Storms Preceded by 72 hrs Dry Weather	Monthly Average Rainfall 2016-2020 (in.)
2016	January	2.68	5	3	2.49
	February	3.79	7	4	3.19
	March	1.16	4	2	2.51
	April	2.05	5	3	3.36
	May	5.65	12	4	5.47
	June	3.68	7	3	3.56
	July	3.13	10	3	7.00
	August	2.79	3	1	4.65
	September	2.50	6	2	3.88
	October	0.90	3	2	3.50
	November	0.76	3	2	3.56
	December	2.61	7	4	3.43
2017	January	2.75	6	2	2.49
	February	0.68	3	2	3.19
	March	3.19	6	4	2.51
	April	2.62	6	1	3.36
	May	5.55	9	4	5.47
	June	1.13	3	1	3.56
	July	9.15	8	4	7.00

	August	4.58	6	3	4.65
	September	1.43	2	1	3.88
	October	2.02	4	4	3.50
	November	2.00	3	2	3.56
	December	0.50	2	2	3.43
2018	January	0.94	5	4	2.49
	February	4.79	7	3	3.19
	March	1.92	4	3	2.51
	April	3.59	5	2	3.36
	May	8.73	10	2	5.47
	June	5.21	8	2	3.56
	July	9.73	6	2	7.00
	August	5.19	9	3	4.65
	September	9.73	13	3	3.88
	October	3.06	4	2	3.50
	November	7.57	9	2	3.56
	December	5.82	9	3	3.43
2019	January	3.30	7	3	2.49
	February	3.52	8	2	3.19
	March	4.09	5	3	2.51
	April	2.24	4	2	3.36
	May	4.97	11	3	5.47
	June	4.27	7	3	3.56
	July	6.49	7	3	7.00

	August	1.99	5	2	4.65
	September	0.25	1	1	3.88
	October	6.66	7	3	3.50
	November	1.37	4	1	3.56
	December	3.28	9	3	3.43
2020	January	2.79	6	4	2.49
	February	3.21	8	2	3.19
	March	2.31	8	3	2.51
	April	6.30	10	3	3.36
	May	2.49	5	1	5.47
	June	3.51	6	3	3.56
	July	6.51	10	5	7.00
	August	6.37	9	2	4.65
	September	5.53	9	3	3.88
	October	4.86	6	3	3.50
	November	6.14	5	2	3.56
	December	4.96	6	3	3.43

Data obtained from Ronald Reagan National Airport; Source: NOAA, National Weather Service and Accuweather.

During months with rainfall and snowfall, a conversion factor (10 in. snow = 1 in. rain) was used to calculate values.

5.4.2 Narrative Descriptions of Storm Events

CFR 40 §122.26(d)(2)(iii)(A)(2) states that "a narrative description shall be provided of the date and duration of the storm event(s) sampled, rainfall estimates of the storm event which generated the sampled discharge and the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event." Measurements describing the peak intensity of the storm, if available, should also be reported (EPA, *Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems, 1992).*

The 1992 guidance reflected the historical rainfall pattern and state of knowledge and methodology of analysis at the time. In recent years, the rainfall pattern (frequency, intensity,

duration, and spatial distribution) has undergone change that is likely to continue. The qualifying wet weather events are getting fewer. As a result, the District has encountered various challenges, including:

- The weather forecasts for the region do not accurately predict upcoming rainfall events;
- The highly variable spatial distribution of rainfall in the region (even within the city boundaries) requires close watch. The gauge at the Reagan National Airport is not always a true indicator. Sampleable storms may not occur at the planned sampling site;
- Storm events occur in the form of short duration thunderstorms that may present a physical hazard to the field crew and/or do not last for the duration of time required for the collection of sufficient volume of flow for sample analysis;
- At some sites, various obstructions, including outfall access difficulties and/or restrictions, have been encountered; and
- A monitoring site cannot be sampled within the same month.

As a result, it has been difficult for the District of Columbia to comply with its MS4 outfall monitoring requirements as prescribed in the District's MS4 NPDES permit.

Table 7 provides a summary of the precipitation accumulation, storm duration, and time from the previous events for the rainfall events sampled from 2018-2020.

Table 7: Storm Event Characteristics

Date Sampled	Precipitation (inches)	Storm Duration (hours)	Time from Previous Measurable Rainfall (approx. hrs)
10-11-18	0.13	2	288
12-28-18	1.02	10	168
1-24-19	1.03	13	96
3-1-19	0.69	31	111
3-21-19	1.96	28	262
7-11-19	0.88	5	75
7-23-19	0.5	5	135
10-16-19	1.40	5	360
12-9-19	0.75	5	200
1-3-20	0.25	5	80
2-25-20	0.23	4	300
3-13-20	0.22	3	219
4-30-20	1.10	10	75
10-29-20	2.26	12	72
11-11-20	2.02	12	216

12-14-20	1.06	5	192
3-18-21	0.37	15	408
3-24-21	1.69	12	120
6-3-21	0.10	5	75
10-29-21	1.15	5	75

Precipitation data was obtained from Ronald Reagan National Airport. Source: www.accuweather.com and www.weather.gov

During months with rainfall and snowfall, a conversion factor (10 in. snow = 1 in. rain) was used to calculate the total precipitation amount.

5.4.3 Analytical Methods Used

Each composite and grab stormwater sample has been analyzed at the laboratory for the parameters defined in the Quality Assurance Project Plan (QAPP). The QAPP contains the list of parameters, the detection limits, and EPA-approved methods utilized for monitoring activities.

DOEE maintains the records of monitoring information including:

- Description of Sampling
  - Location/Collection Time
  - Sampling Collection
  - Field Test
  - Contractor personnel who collected samples
- Storm Event Data
  - Date and duration of the storm events samples
  - Rainfall measurements
  - Duration between storm event sampled and the end of the previous measurable storm event
  - Estimate of the total volume of the discharge sampled
- Sampling Difficulties/Field Notes
- QA/QC Review and Clarification
  - Field Test Results
  - Laboratory Results Tables
  - Atlantic Coast Laboratories Data
  - Lancaster Laboratories Data
  - Triangle Laboratories Data
  - Martel Laboratories Data

The annual monitoring results are reported via NetDMR to EPA.

5.5 Estimation of System Wide Event Mean Concentrations, Annual Pollutant Loads, and Seasonal Loads

System wide EMC and annual pollutant load calculations were conducted following procedures described in EPA's *Guidance Manual for the Preparation of Part 2 of the NPDES Permit Application for Discharges from Municipal Separate Storm Sewer Systems, (EPA, 1992).*

5.5.1 Annual Pollutant Loading Calculation

The Simple Method is widely used to estimate stormwater runoff pollutant loads for urban areas. The Simple Method estimates pollutant loads for chemical constituents as a product of annual runoff volume and pollutant concentrations (Equation 1).

Equation 1 Simple Method

$$L = \sum_{i=1}^{\text{No. of landuse types}} \left(\frac{P}{12} \times CF \times Rv_i \times C_i \times A_i \times 2.72 \right)$$

Where:
L = Pollutant loading (lb./year for chemical constituents, MPN/yr. for bacteria)
P = Average annual rainfall (inches)
CF = Correction factor (0.9) to adjust for storms where no runoff occurs (dimensionless) (EPA 1992)
Rv_i = Runoff coefficient for the land use type (dimensionless)
C_i = Average event mean concentration (EMC) (mg/L for chemical constituents)
A_i = Land use area (acres)
2.72 = Unit conversion factor for chemical constituents in concentration units of mg/L; 12,334,885 for bacteria in units of MPN/100 mL

The geometric mean of the measured event mean concentration (EMCs) were calculated for each monitoring station (Equation 2).

Equation 2 Event Mean Concentration

$$\text{Geomean of EMCs} = \left[\prod_{j=1}^{m} \text{EMC}_j \right]^{\frac{1}{m}}$$

Where:
EMCj = Event Mean Concentration of Storms
M = Number of storms at monitoring location

The total cumulative pollutant load for each of the three watersheds was calculated using the data from each monitoring site in a watershed. This calculation assumes that the two sampling stations are representative of the respective Potomac River, Anacostia River and Rock Creek watersheds. Given this assumption, a simple ratio is used to cover a cumulative load for each watershed (Equation 3).

Equation 3 Cumulative Pollutant Load

$$L_A = \left(\frac{\sum L_i}{\sum A_i} \right) (A_t)$$

L_A = Estimated subwatershed cumulative pollutant load (lb./year)

A_t = Subwatershed total area (acres)

L_i = Pollutant loading for each monitoring site (lb./year)

A_i = Size of each monitoring site (acres)

The EMCs of the pollutants of concern were determined based on analysis of samples collected between 2013 and 2014. The pollutants of concern calculated annual pollutant loading are presented in Attachment 4.

5.5.2 Seasonal Pollutant Loading Calculation

Under normal conditions precipitation in the District is evenly distributed over the year, and there are no significant differences from month to month. In general, seasonal variations in water quality may be isolated by considering warmer months versus colder months. Contributing factors to seasonal variations in water quality include:

- Water quality problems such as depressed dissolved oxygen levels or the presence of nuisance algae blooms are typically greatest during the warmer months.
- The seasonal introduction of specific pollutants to the MS4 including, but not limited to, salts from road maintenance in the winter, herbicides and pesticides from lawn application in the spring and summer, runoff from car washing activities in the summer, and organic materials such as grass and leaves during the summer and fall.
- Greater recreational and irrigation use of water during the warmer months.

The eight-month period between March 1 and October 31 was identified in the 1998 Parts 2 application as a season of interest and is being used for the calculation of seasonal loads.

5.6 Collection of Representative Data for Proposed Monitoring Program

The District's current MS4 permit identifies a set of parameters (including pollutants) for which wet weather monitoring is currently required at outfalls. EPA established this set of parameters as those for which stormwater WLAs exist or that occur in discharges with sufficient concentration and frequency to be considered a pollutant of concern.

This list of parameters was reevaluated during development of the 2015 Revised Monitoring Program. The set of parameters for wet weather monitoring was limited compared to the much

longer list that was analyzed for previous efforts because monitoring for many other pollutants with WLAs (e.g., mercury, PCBs, pesticides) produces a high rate of non-detection and adds little to understanding the effectiveness of the MS4 Program. Five *in-situ* measurements are also being monitored to provide context for the other parameters, Table 8.

Table 8: Monitoring Parameters and Collection Method

Composite Samples	Grab Samples	In-situ measurements
Total suspended solids	*E. coli*	Water Temperature
Total nitrogen		Dissolved Oxygen
Total phosphorus		Conductivity
Copper		pH
Lead		Hardness
Zinc		
Cadmium		

Monitoring frequency for chemical/physical parameters is taken at least three times per year at a minimum. The sampling is conducted in accordance with 40 C.F.R. § 122.21(g)(7). All chemical analyses will be performed in accordance with analytical methods approved under 40 C.F.R. Part 136. The sampling equipment will remain the same as those used for the previous monitoring reported above, with an additional effort being made to capture and characterize flow data during sampling events at these outfalls.

5.6.1 Selection of Representative Sampling Sites

The selection of wet weather monitoring sites is based on several factors including the collection of long-term wet weather data for trend analysis, collection of data from sites that are representative of the District's discharges, and collection of data to support additional needs as identified over the course of the next permit cycle. Site selection resulted in three monitoring sites within each of the District's major watersheds (the Anacostia River, Potomac River, and Rock Creek watersheds). Monitoring required to support additional data needs through "special studies" would potentially add more monitoring sites to the program.

Three monitoring sites were selected to maintain a continuous record with data collected to date and to evaluate the statistical significance of any changes observed in outfall water quality samples over time (including events from previous permit cycles). This group of continuous record monitoring sites includes one site within each of the District's three major watersheds. Sites were selected from the existing pool of sites that have been sampled for past wet weather events. In addition to these continuous record sites, a set of two sites per watershed were then vetted based on site access limitations and safety considerations to ensure they are suitable sampling locations (see Table 9).

Each of the sites will be monitored for three wet weather events per year using the regulatory requirements referenced in SWMP section 5.1. In addition, rain duration and intensity data will be collected for the sampled storm events and will be used with sub-basin areas and pollutant concentrations present to determine system wide event mean pollutant concentrations (EMC) and annual pollutant loads for the District's MS4.

Table 9: Proposed Monitoring Stations for Storm Event Sampling

Outfall ID	Watershed	Receiving Water	Drainage Area (acres)	Outfall Size
999 - Gallatin	Northwest Branch	Anacostia	727.8	7'x16'
1035 – Kenilworth and Douglas	Nash Run	Anacostia	241	10'x6'
260 – 53rd and Dix Street	Oxon Run	Anacostia		27"
124 – Oxon Run	Oxon Run	Potomac	20	42"
950 – Potomac Trib	Foundry Branch	Potomac	47.1	36"
103 – Oxon Run	Oxon Run	Potomac	9.1	30"
851 – Soapstone Creek	Soapstone Creek	Rock Creek		66"
825 – Tilden and Reno	Nash Run	Rock Creek	97.4	12'x3'
901 – Tributary to Pinehurst Branch	Tributary of Pinehurst Branch	Rock Creek	14.1	30"

Monitoring sites may be subject to change after field verification due to site access or safety concerns

5.6.2 Goals and Objectives of the Monitoring Program

The overall goal of the discharge monitoring program is to provide data and information to allow DOEE to evaluate the effectiveness of its MS4 program and to provide support for any recommended changes. The goals described in the Revised Monitoring Program will be achieved through the following objectives:

- **Make wet weather loading estimates of pollutants from the MS4 to receiving waters.** These loading estimates will be used to support WLA tracking efforts and evaluate progress toward TMDL goals. DOEE needs to ensure these data are statistically significant to support the development of long-term trends.
- **Evaluate the health of receiving waters.** This step will include evaluating the impact of discharges from the MS4 on receiving waters as seen through water quality, biological, and geomorphological indicators. DOEE also needs to ensure these data are statistically significant to support the development of long-term trends.

- **Conduct monitoring, as needed, for source identification purposes.** This step will include identifying and prioritizing sources of urban runoff pollutants to the MS4 through source identification and dry weather screening efforts.

5.6.3 Construction of a Water Quality Database

DOEE's Natural Resources Administration maintains all water quality monitoring data in a centralized database as required by the MS4 permit. The Environmental Quality Information System (EQUIS) database was acquired for this purpose. The EQUIS database will maintain MS4 outfall monitoring, ambient water quality monitoring, fish and habitat surveys, invertebrates, insect, and plankton data. All historic data for the aforementioned datasets have been migrated into EQUIS. Data collection will be automated for field and laboratory samples. DOEE will utilize a field application to upload data directly into Equis, and laboratory data will be uploaded via electronic data deliverables (EDDs). EQUIS has quality control features that ensure data stored is of high quality. The EQUIS desktop application will be used to analyze data, create dashboards, prepare discharge monitoring reports, and estimate pollutant loadings. As MS4 outfall monitoring as well as other monitoring efforts continue, the database will be continuously updated.

A public website will be developed to provide stakeholders access to water quality data collected by DOEE. The database will improve data management and integration of data collected by all of DOEE's Natural Resource Administration monitoring efforts.

5.7 Rapid Stream Assessment Monitoring Program

In 2019, DOEE developed a Rapid Stream Assessment (RSA) Program. The intent of the RSA is to collect information to provide a high-level overview of the entire perennial, safely wadeable stream network within the District. This information can help identify potential issues as well as locations that may warrant follow-up inspections or more in-depth evaluations. The information from the RSA can also serve as a baseline against which to compare information from future assessments.

The RSA has an integrated approach to monitoring and will:

- Develop a complete inventory of the District's streams and the physical characteristics associated with these streams (i.e., water clarity, average depth, substrate type, bacteria presence);
- Develop a baseline from which to compare changes or trends over time; and
- Identify issues that need to be investigated further and addressed (i.e., potential restoration projects, dump sites, illicit connections, severe stream erosion).

The RSA seeks to address several goals and objectives driven by the MS4 permit as well as the draft Integrated Monitoring Strategy including:

- Goals:
    - Provide data and basic information on the health and integrity of the District's waters and related aquatic ecosystems.

    - Accurately characterize the quality of the District's waterbodies and more clearly set expectations for their protection, use, and enjoyment.
- Objectives:
    - Evaluate the health of the receiving waters to include the identification of stressors and their ecological effects.
    - Assess trends to evaluate progress toward meeting water quality standards.
    - Determine status and trends of MS4 impacts in receiving waters through effective monitoring (MS4 permit).
    - Provide adequate quantity and quality of data to assess, analyze, and evaluate status of DC waterbodies.

The RSA includes general stream characterization, habitat evaluation, and evaluation of geomorphological features. In addition, infrastructure along each stream reach (i.e., stormwater outfalls, exposed sewer pipes, illicit discharges) and environmental features (i.e., dump sites, stream buffer deficiencies, potential wetland sites) will be identified and recorded (if not already documented by the District). The RSA includes several types of assessments including:

- Reach assessments
    - Open channel (above-ground) streams
    - Closed channel (underground) streams
    - Outfall reach
- Point assessments

Hand-held, GPS-enabled devices are used during RSA to facilitate rapid and accurate data collection. All data collected as part of this program is housed in a mapping database. The RSA Quality Assurance Project Plan (QAPP) is available in Attachment 5.

5.8 Citizen Science Water Quality Monitoring Program

In 2019, the DOEE awarded a grant to Anacostia Riverkeeper (ARK) to develop and implement the District's volunteer-based program that monitored water quality (*E. coli*, pH, turbidity, and water temprature) at 22 locations in District rivers and tributaries where high recreation activities occurred. Sites are located in the Rock Creek, Potomac River and Anacostia River watersheds. Monitoring takes place weekly from May to September every year. A Recreational Use Survey (RUS) was completed to develop a clearer picture of on-water recreation in District waters.

The purpose of this grant is to increase understanding of water quality in areas where recreational activities take place and to make the bacteria data collected available to the public. Data collected through this grant may be used to assess the effectiveness of capital investments to reduce bacteria loading into select District tributaries, streams, and rivers.

ARK worked with watershed partners that were selected based on their in-depth understanding of their select watersheds and ability to choose pertinent monitoring sites, volunteer management expertise, and shared commitment to clean water in DC. Watershed partners who worked on this project include Alliance for the Chesapeake Bay, Audubon Naturalist Society, Potomac Riverkeeper Network, and Rock Creek Conservancy. To ensure Tier II compliance in the District of Columbia, a QAPP was developed to ensure consistency in sample collection and methodology, lab procedures, and data management. DOEE reviewed and approved this QAPP,

Attachment 5, allowing the data to be certified as Tier II data and to be considered in policy and regulation decisions. The project will contuine to collect water quality data in areas with high recreation activities.

Volunteers engaged from all eight wards in the District were trained in monitoring techniques and requirements,and, together with ARK and its watershed partners, the first three years of the project have been completed.

5.9 In-Stream Trash Monitoring

Trash is currently being monitored as required by the District's MS4 Permit. DOEE contracts the Metropolitan Washington Council of Governments (MWCOG) to conduct in-stream trash monitoring twice per year at 13 stream sites within the Anacostia River, Potomac River, and Rock Creek watersheds. Trash items in the areas of interest are counted, recorded, and categorized, and an aggregate wet weight is determined for each of 26 trash categories. The QAPP for trash monitoring is included in Attachment 5.

6 PROPOSED MANAGEMENT PROGRAMS

The District implements the following management programs for reducing runoff contamination and protecting water quality. The programs are designed to address runoff from the various types of existing land uses in the District. These management programs will continue to be implemented, assessed, evaluated, and upgraded throughout the next MS4 Permit cycle with input from MS4 Technical Workgroup agencies, the federal government, non-profit organizations, educational institutions, and District residents.

The District continues to implement regulations as well as make additions and amendments to its stormwater-related legislation and regulations. Since 2016, there have been updates to the Comprehensive Stormwater Management Enhancement Amendment Act of 2008 (Coal Tar Ban), Anacostia River Clean Up and Protection Act, the Sustainable DC Act of 2012, the 2013 Stormwater Rule (Stormwater Rule), the Green Area Ratio (GAR), the Stormwater Fee Discount Program (RiverSmart Rewards), and the Sustainable DC Omnibus Amendment Act of 2014.

Additionally, several policy and procedural documents have been created to provide performance metrics and guidance on the implementation of District stormwater programs. These include updates to the Stormwater Management Regulations, the Stormwater Management Guidebook, and the Green Area Ratio (GAR) Guidebook.

6.1 Management Plan for Commercial, Residential, Federal Government, and District Government Areas

The management plan for commercial, industrial, residential, federal government, and District government areas includes programs for: source controls and maintenance, maintenance of public streets and roadways; flood management; pollution prevention; control in the application of pesticides and fertilizers; illicit discharge detection and elimination; inspection and enforcement; education and outreach; and field screening and monitoring.

6.1.1 Stormwater Control Measures

The District's current approach to stormwater management in commercial, residential, federal government, and District government areas focuses substantially on the implementation of stormwater runoff-reducing green infrastructure (GI). The District uses a combination of regulations for development and substantial improvement projects, direct public investments, and financial incentives to promote GI. The District also manages stormwater through grey infrastructure inspections and pollution prevention.

6.1.2 Major Structural Controls

Structural controls, also referred to as Best Management Practices (BMPs), are engineered controls built to manage or alter flow, velocity, duration, and water quality of runoff by physical means. These practices can reduce stormwater volume and peak discharge rate, as well as reduce the magnitude of pollutants in the discharge water. A subset of BMPs, known as green infrastructure (GI), DOEE tracks BMPs constructed and installed on private property, on District-owned property, on federally-owned property and in the Public Right-of-Way (PROW)

using the District's Surface and Groundwater System (SGS). The SGS manages the review, approval, and compliance monitoring of projects required to install BMPs and voluntarily implemented BMPs (see Section 6.1.3). These projects include those with land disturbance activities greater than 5,000 square feet. Figure 5 contains a map showing the location of BMPs approved for construction from years 2000 to 2020. Figure 6 contains a map of green roofs installed in the District. These maps are also available to view online.

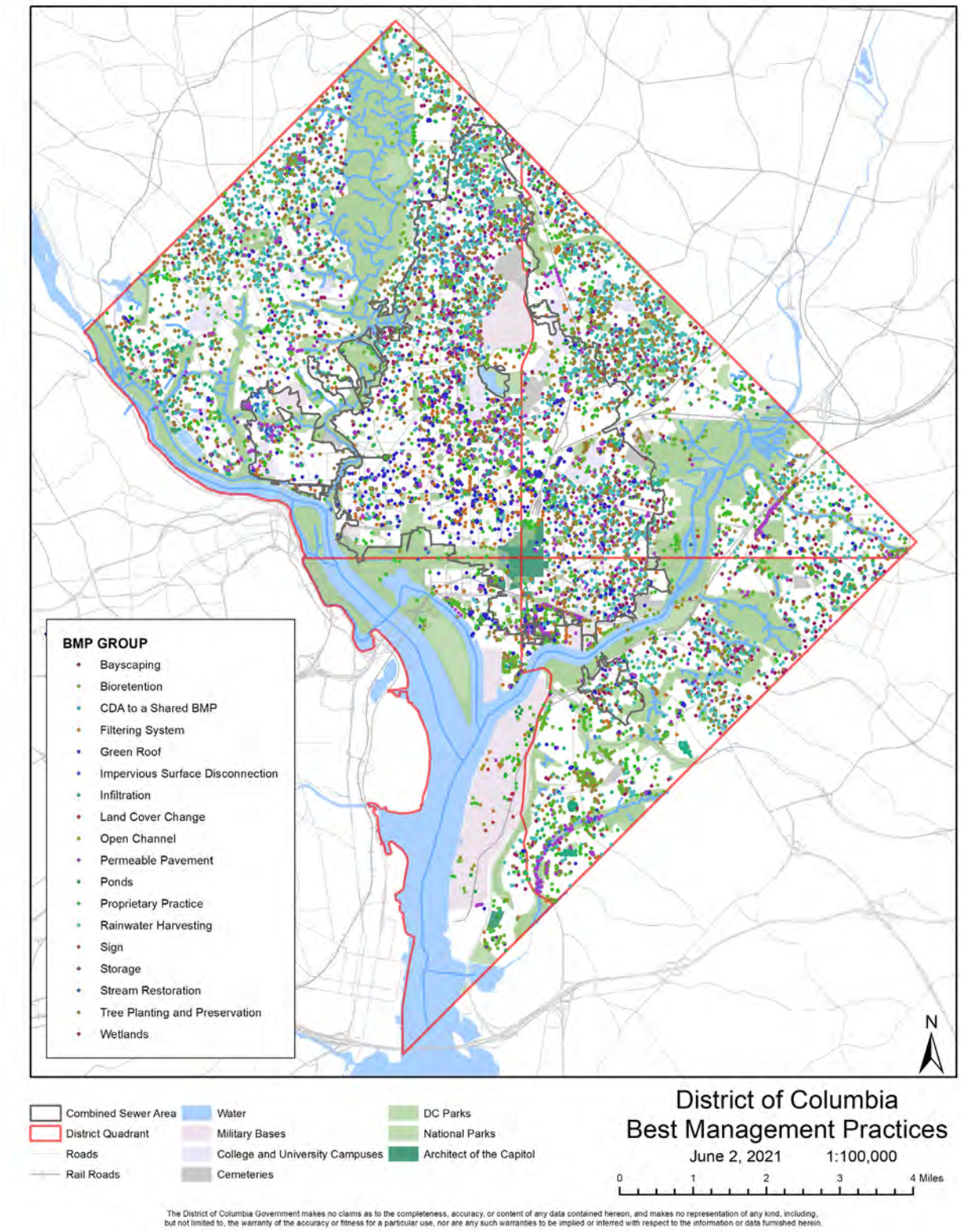

Figure 5: Approved BMPs in the District of Columbia

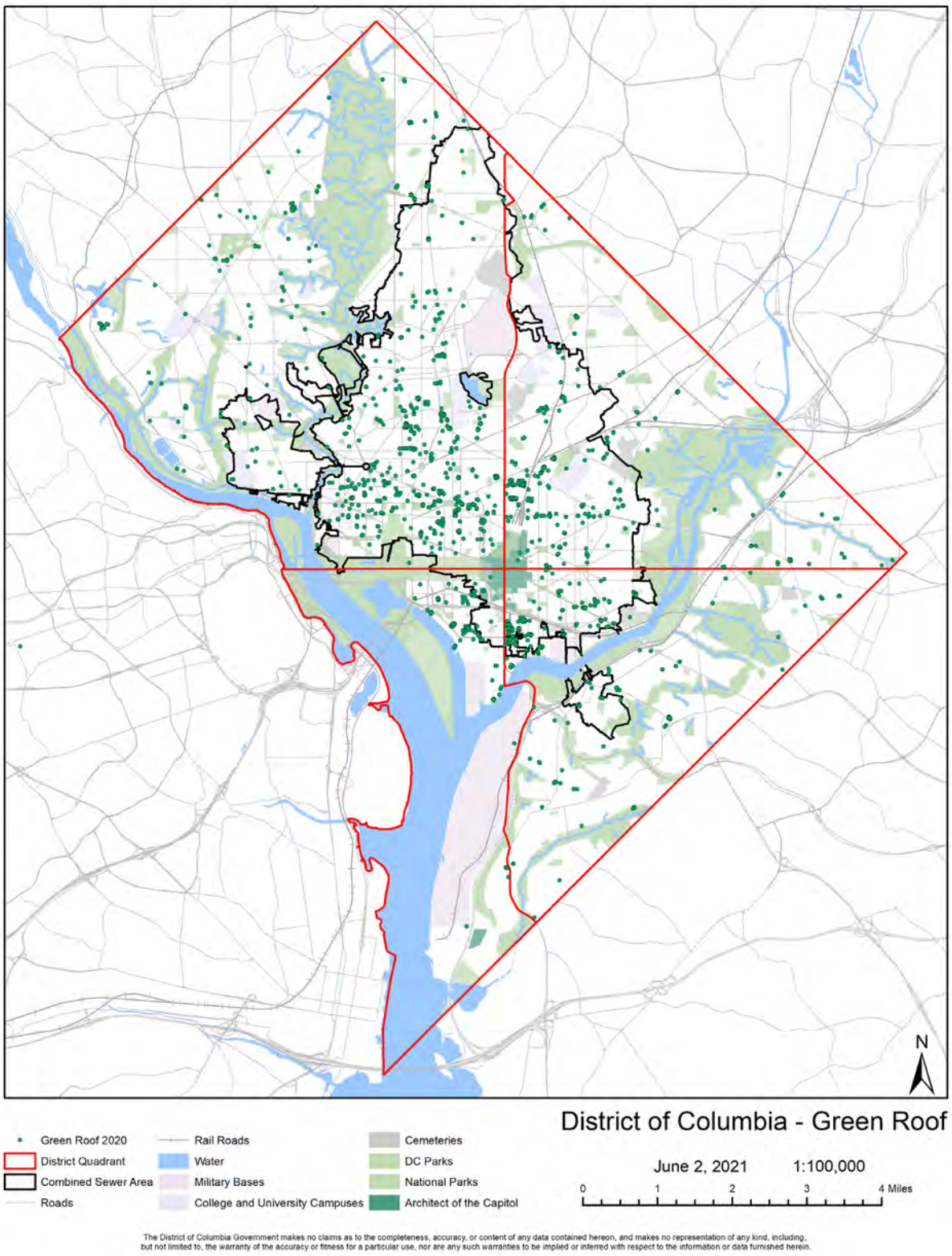

Figure 6: **Green Roofs Installed in the District of Columbia**

6.1.3 Stormwater Management Regulations

In 2020, DOEE finalized an amendment to the District's 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control ("Stormwater Rule"), which amended Chapter 5 (Water Quality and Pollution) of Title 21 (Water and Sanitation) of the District of Columbia Municipal Regulations (DCMR)[3]. Under the District's stormwater management regulations, a Major Land-Disturbing activity must retain the first 1.2" of rainfall on-site or through a combination of on-site and off-site retention[4], and a Major Substantial Improvement activity must retain the first 0.8" of rainfall on-site or through a combination of on-site and off-site retention[5]. Retention is achieved by designing and constructing Green Infrastructure (GI), which are BMPs that mimic natural hydrology through on-site infiltration.

The stormwater management regulations are a critical driver of GI retrofits as the vast majority of development projects in the District involve the redevelopment of existing impervious surfaces that were not treated by effective stormwater management controls. On average, regulated development projects disturb approximately 325 acres of land per year. Further, Major Substantial Improvement projects result in a significant amount of additional stormwater retrofits. As more sites are retrofitted with GI through regulated development, the District will gradually be transformed into a landscape that can absorb water, resulting in healthier streams and rivers.

The regulations are achieving their intended objectives, setting the District on a long-term path to reducing stormwater runoff and associated pollutant loads so District streams and rivers meet water quality standards without inhibiting the development that provides valuable benefits to the District. Approximately 1,275 projects have been successfully designed in compliance with the regulations to include runoff-reducing GI that will capture stormwater from approximately 1,250 acres of the District, while the annual average number of development projects increased by around 20%.

DOEE's primary regulatory focus in developing the Stormwater Rule was on major development projects, particularly relatively large new and renovated buildings and parking lots. For these projects, the cost to design and install GI is minimal relative to the total project costs. While the regulations have achieved DOEE's intent, compliance has had a disproportionate impact on projects with relatively low total project costs, for which the cost to achieve stormwater compliance can be comparatively high. Examples of this type of minor development include small affordable housing projects, the redevelopment of recreation areas, and landscaping maintenance.

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3 To view the guidance documents for the Stormwater Rule go to www.doee.dc.gov/swregs.
4 A major land-disturbing activity is any activity that disturbs over 5,000 square feet or greater of land area.
5 A major substantial improvement activity is a substantial improvement activity and associated land-disturbing activity, including such activities that are part of a common plan of development, for which the combined footprint of improved building and land-disturbing activity is five thousand square feet (5,000ft2) or greater, and the value of the construction activity is greater than 50% of the preconstruction structure value.

To address the disproportionate burden of compliance and provide meaningful compliance flexibility, DOEE finalized amendments to the Stormwater Rule in January 2020. These amendments included definition changes for Major Land-Disturbing and Major Substantial Improvement activities and new exemptions to stormwater performance requirements.

DOEE continues to provide training sessions on the Stormwater Rule. These sessions focus on topics such as general compliance with the regulations, in-depth compliance with specific aspects of the rule (such as the Maximum Extent Practicable (MEP) process for the PROW), design submission requirements and the basics of the Stormwater Retention Credit (SRC) trading program, and the use of the SGS (DOEE's online permitting platform). Training sessions are scheduled throughout the year and are advertised to a DOEE-maintained stakeholder list and on DOEE's website. They are open to the public and other District agencies. DOEE also holds internal training sessions that address any ongoing questions that DOEE staff have about implementing the new regulations.

The federal government is a significant landowner in the District. While it is exempt from many regulations, it must comply with the Stormwater Rule. The District has broadened its' coordination efforts with federal partners such as National Park Service, General Services Administration, National Capital Planning Commission, and officials from Joint Base Anacostia-Bolling.

In June 2013, the District finalized the Green Area Ratio (GAR). The GAR is a zoning regulation that integrates sustainable landscape elements into parcel site design to address these environmental consequences. The GAR sets minimum lot-coverage standards for landscape and site design features to promote greater livability, ecological function, and climate adaptation in the urban environment. The GAR assigns a weighted score to a building based on the types of landscape and site design features that are implemented and the amount of area they cover. The minimum required GAR score needed to reach compliance differs by zoning district. This score is based on an assessment of the square footage of landscape elements that can be incorporated with each type of land use.

With limited exceptions, sites that require a Certificate of Occupancy must submit a GAR plan as part of the building permit application. These sites include new building construction as well as additions and interior renovations for which the cost of work exceeds 100% of the assessed building value. The District developed the GAR Guidebook to provide technical guidelines to aid building permit applicants, Certified Landscape Experts, and property owners in complying with the requirements of the GAR zoning regulation. The GAR Guidebook and forms can be found at http://doee.dc.gov/node/619622 .

6.1.4 District Direct Investment in Retrofits

To support the implementation of the MS4 Permit, the District collects a Stormwater Fee (see Section 2.1.1) from all properties with impervious surfaces. The Stormwater Fee is charged based on the size of a property's impervious surface. The Stormwater Fee provides a dedicated funding source for compliance with the District's MS4 Permit and includes funding to implement stormwater retrofit projects primarily on public property.

Tree Planting

The District adopted a tree canopy of 40 percent canopy coverage by 2032 in an effort to set a clear target for achievement to help improve the air and water quality in DC. DDOT's Urban Forestry Division (UFD) manages the District's street tree planting program and plants over 4,150 trees annually in the MS4 Sewershed. As of 2021, UFD has achieved over 97% stocking levels of existing public right-of-way (PROW) planting locations. Through an MOU between DDOT and DOEE, Tree Fund monies are now funding an additional 3,500 trees planted annually in private and public planting locations across the District. This includes installations as part of DOEE's Riversmart Homes program, tree rebate reimbursements to private landowners, and planting installations in larger parcels including schools, parks, cemeteries, housing complexes, and other public and private lands. Since 2019, trees have been provided to private landowners at no cost. Ongoing outreach and planning efforts are continuing to prioritize new tree planting activity in the MS4 as well as areas of extreme heat exposure and vulnerability. The Urban Forestry Advisory Council convenes key partners and stakeholders quarterly to coordinate ongoing tree planting and management efforts. The results of the 2020 urban tree canopy analysis update are available at:
https://storymaps.arcgis.com/stories/62580ba81fc34563b1bae8e8416ee16d.

Retrofit Projects in the Public Right-of-Way (PROW)

The PROW occupies approximately twenty five percent (25%) of the impervious area of the District of Columbia, which makes it one of the most significant sources of stormwater runoff impacting District water bodies. PROW projects provide many opportunities to incorporate GI to manage stormwater runoff. Given the unique constraints that routinely exist, PROW projects are required to retain stormwater to the MEP. The Stormwater Management Guidebook outlines the process that a PROW project will follow to demonstrate that opportunities to achieve stormwater retention have been utilized to the MEP.

The DDOT Stormwater program continues to increase efforts to retain stormwater runoff from the PROW. DDOT issued Green Infrastructure Standards in April 2014 (DDOT 2014 GI Standards) to use on all public and private projects constructed within the PROW. DDOT transitioned major construction projects to meet the 2013 Stormwater Regulations and 2020 Amendments, and reviews private development projects for retrofit opportunities in the PROW.

The DDOT 2014 GI Standards include standard designs for bioretention, permeable pavement, and tree space designs in the PROW. The illustrated "Greening DC Streets" guide is a non-technical guide to educate residents, leaders, and stakeholders on opportunities and challenges in constructing GI in the District PROW. The standards, guide, and fact sheets on DDOT's projects can be downloaded from www.ddot.dc.gov.

DDOT resolved many challenging design and construction issues by developing the GI standards, but many challenges remain in making GI a standard practice in the streetscape. DDOT continues to establish guidelines and validate or update GI standards and practices based on lessons learned from completed projects. DDOT also seeks to streamline designs by creating standardized designs that build upon the Standard Drawings published in the DDOT 2014 GI Standards. These standardized designs aim to reduce the design time and cost to

implement GI in the PROW. The standardized designs package together DDOT Standard Drawings with design guides such as tables, flow charts, and guidance to simplify technical aspects of designing and implementing GI.

In addition to PROW projects following the MEP standards, DDOT also installs retrofit projects throughout the District. DDOT focuses its efforts to retrofit the PROW within priority watersheds. Several priority watershed projects have been completed and future projects are in planning, design, or construction phases. Retrofit projects are also identified through resident requests, DDOT livability studies, traffic calming or pedestrian improvement requests, and others. Retrofits include green alleys, permeable pavement parking lanes, bioretention, impervious surface removal, and tree plantings.

DDOT's Green Alley Projects are designed to reduce the quantity and improve the quality of stormwater within the PROW. Although alleys constitute a significant portion of impervious surface, most do not have stormwater controls, such as water quality catch basins or grate inlets. To mitigate this, green alleys use sustainable design and GI that reduce the amount of stormwater and pollutants entering the sewer system by increasing water infiltration and treatment on site. DDOT constructs green alleys by removing gravel, concrete, or asphalt surfaces and replacing them with a permeable surface such as pervious concrete, porous asphalt, or permeable pavers in areas where the storm sewer and sanitary sewers are separated. The alleys are identified either through priority watershed studies or by resident requests. The alleys are then evaluated to see if they're eligible for a green alley project and meet the design requirements. If eligible, the alleys are designed and constructed as funding becomes available.

The Riversmart Washington Project

The Riversmart Washington Project was a demonstration project constructed in 2015. Bioretention and permeable pavement were built in the PROW of two neighborhoods in the Rock Creek Watershed. The MacFarland Petworth project in the CSS area is a row home neighborhood with small businesses and a school. The Lafayette Chevy Chase project in the MS4 area contains medium density residential properties. The Riversmart project installed four green alleys, one full width permeable pavement roadway section, 16 permeable paving street parking lanes, 17 bioretentions, and planting trees. Permeable pavement was installed in several street parking lanes and one full section of a local residential roadway to demonstrate the feasibility and durability of permeable pavement use in the road. The Riversmart Washington project treated runoff from over six acres of PROW pavement. In 2019-2020, a renewed effort was undertaken to conduct rehabilitative maintenance to all the installed practices, accompanied with pre- and post-construction monitoring of the two project watersheds and the control watershed, including practice-level monitoring of several bioretention and permeable surface facilities. The monitoring indicated that practices responded positively to maintenance activities with improved infiltration rates and that peak flows were dampened.

The District has learned many lessons through this effort, some of which have already been incorporated into new GI installations and in developing procedures on how existing and future GI is maintained. The District is now developing a unified model under which one agency, DOEE, is charged with the maintenance of the District's BMPs. More information on the Riversmart Washington Project can be found at https://doee.dc.gov/node/1580716.

Low Impact Development Projects

DOEE oversees the design and construction of low impact development (LID) stormwater retrofits at various locations around the District including on federal parkland, on District parkland, and in the public right of way.

These stormwater retrofit projects are funded through the DOEE Stormwater Enterprise Fund and with grant funding that DOEE receives from the Environmental Protection Agency (EPA).

The goal of these projects is to improve water quality in the Anacostia and Potomac Rivers for the benefit of District residents, visitors, wildlife, and the environment while providing high quality outdoor recreational space and facilities for children and adults to learn, play, and connect with nature. A further goal of these projects is to reduce the stormwater pollutants that enter the local waters (i.e., rivers, streams, estuaries) of the District as required under the current MS4 NPDES permit.

There have been 11 projects installed to date:

- Amidon Park Stormwater Retrofit Project
- Carter Barron Stormwater Retrofit Project
- Congress Heights Recreation Center Stormwater Retrofit Project
- Douglass Community Center Stormwater Retrofit Project
- Fort Greble Recreation Center Stormwater Retrofit Project
- Fort Stevens Recreation Center Stormwater Retrofit Project
- Hamlin Street Stormwater Retrofit Project
- Hickey Lane Stormwater Retrofit Project
- Palisades Community Center Stormwater Retrofit Project
- RiverSmart Washington Stormwater Retrofit Project
- Woody Ward Recreation Center Stormwater Retrofit Project

Stream and Outfall Restoration Projects

DOEE's Watershed Protection Division's Restoration Branch plans, funds, and oversees stream restoration projects that improve water quality in the District's waterways and improve the ecological diversity found within the District's borders.

Stream restoration work focuses on repairing sewer lines and outfalls, stabilizing stream banks, improving water quality, and enhancing habitat conditions in streams across the District. Due to the urbanized nature of the District, streams throughout the District deal with large amounts of stormwater at both high volume and high velocity during storm events, causing high rates of bank erosion which degrades habitat and water quality conditions. Stream restoration work aims to stabilize and enhance stream conditions based on the current urbanized conditions in the District.

Over the last decade, the District has restored over 4.35 miles (23,000 ft) of stream in the District. DOEE continues to restore streams across the District as opportunities and funding allows.

DOEE is taking Acres Managed credits for stream restoration projects. Stream restoration work is also counted toward pollutant load reduction calculations. DOEE will pursue a stream restoration equivalency to account for a portion of outfall restoration requirements.

Green Bank

In July 2018, the District established the Green Finance Authority Establishment Act, officially making the District the second city in the country to establish a Green Bank. DC Green Bank is an innovative policy tool that will use public purpose funding to attract private investment. The DC Green Bank will expand renewable energy, lower energy costs, reduce greenhouse gas emissions, create green jobs, and enhance resilience. The goal of the green bank is to accelerate energy efficiency improvements and the deployment of clean energy technology by leveraging private investment, removing upfront costs, and increasing the efficiency of public dollars. Specifically, the DC Green Bank aims to:

- Attract private capital at a ratio of at least 5 private dollars to every 1 dollar of public investment;
- Use bonding authority to increase capacity, accelerate lending, and recapitalize funds;
- Become a go-to resource for District residents, small business owners, building owners and operators, and commercial developers interested in energy efficiency improvements, clean energy installations, transportation electrification, and construction of green infrastructure; and,
- Be a breakeven entity, where the revenues earned from financing activity covers its operating costs.

6.1.5 Retrofit Incentive Programs

The District also leverages its stormwater fund by establishing incentive programs to help residents, non-profits organizations, and commercial properties implement stormwater projects that typically include retrofits to impervious surfaces. District stormwater incentive programs include the RiverSmart programs and Stormwater Retention Credit Trading Program (SRC). These programs provide layered incentives to encourage community members to voluntarily retrofit additional impervious surfaces.

RiverSmart Homes, launched in 2008, offers financial and technical assistance to encourage homeowners to adopt stormwater management practices that will reduce non-point source pollution from their properties.

The voluntary program provides assistance to install rain barrels, rain gardens, BayScaping (conservation landscaping), shade trees, and permeable pavers. The RiverSmart Homes program promotes partnerships among residents, businesses, non-profits, and government to successfully reduce stormwater runoff, improve local water quality, increase awareness about stormwater challenges, and encourage community participation in improving the environment.

Since 2015, the RiverSmart Homes team has completed over 3,000 stormwater audits on private residential properties in the MS4. Those audits resulted in more than 7,000 shade trees planted, 400 rain gardens installed, 800 BayScapes created, 300 pervious paver projects completed, and 2,000 rain barrels installed. RiverSmart will implement green infrastructure

practices to capture, retain, or reuse stormwater from at least 10% of the District's land area under the District's Sustainable DC 2.0 Plan.

RiverSmart Schools is a program that works with schools within the District to install LID practices to reduce runoff and nonpoint source pollution while providing stormwater-related educational resources. It offers District schools technical support, professional development, field trips, community planting events, and assistance with installing GI practices. These practices are specially designed to be functional as well as educational to fit with the school environment. Additionally, schools that take part in the RiverSmart Schools program receive training on how to use the sites to teach to curriculum standards and how to properly maintain the sites.

Between 2015 and 2020, the RiverSmart Schools Program accomplished the following:

- Provided over 150 teachers with a 20-days workshop on RiverSmart schools site usage and programming.
- Conducted 150 classroom visits and provided 100 boat trips to support integration of watershed lessons for the RiverSmart Schools project at each participating school.
- Engaged students, teachers, and volunteers in Community Work Days to construct and maintain Schoolyard Conservation Sites. Approximately 400 kids from twenty (20) schools participated in 80 Community Work Days.
- Completed the construction of twenty-five (25) RiverSmart Schools projects.

RiverSmart Communities is a program aimed at installing LID retrofits on nonprofit and religious institutional properties. The program provides full funding for design and construction costs to participants on the condition that the nonprofit or religious institution partner will maintain the retrofits as well as perform outreach and education on watershed protection and relevant DOEE programs. Participants install LID practices such as rain gardens, BayScapes, permeable pavement, shade trees, and rain cisterns to control stormwater pollution.

Since 2011, RiverSmart Communities has supported the installation of 48 projects, which cover a total of 153,000 square feet of treatment area averaging 4,000 square feet per project. The average funding provided per project is $54,000. In FY22, DOEE is on track to complete 8 new projects.

RiverSmart Rooftops, also known as the Green Roof Rebate Program, offers rebates for properties that install green roofs. Only properties within the MS4 area are eligible to participate. Properties of all sizes, including residential, commercial, and institutional, are encouraged to apply. For buildings with a footprint of 2,500 square feet or less, funds are also available to defray the cost of a structural assessment. Participating property owners receive up to $15 per vegetated square foot. A current inventory of green roofs in the District can be found at http://doee.dc.gov/publication/inventory-green-roofs.

Since 2006, the RiverSmart Rooftops rebate program has supported the installation of 104 projects. This amounts to a total of 544,000 square feet of vegetation installed averaging 6,000 square feet per individual project.

RiverSmart Rebates offers a series of rebates for tree plantings, rain barrels, rain gardens, and impervious surface removal. Any D.C. property owner residing in a building with four units or less is eligible to apply for the rebates, and homeowners that have already participated in the RiverSmart Homes program can also take advantage of the rebates.

RiverSmart Rewards offers a discount of up to 55% off the DOEE Stormwater Fee charged on a property's water and sewer utility bill. To be eligible for a discount, a property must install and maintain GI to retain stormwater runoff. Eligible GI practices include bioretention, rainwater harvesting, permeable pavement systems, green roofs, and newly planted or preserved trees. All stormwater management practices assigned a retention value in DOEE's Stormwater Management Guidebook (SWGB) qualify for a discount. Discounts are available for three-year periods and are renewable.

DOEE calculates discounts based on the volume of stormwater retained by eligible GI. The maximum discount of 55% is provided when a property manages the 1.2" storm event, and the discount is scaled back proportionately for properties that manage less stormwater. DOEE uses the SGS to track discount applications, approvals, and expirations.

DOEE also coordinates administration of RiverSmart Rewards with DC Water, which established its own discount program for its Clean Rivers Impervious Area Charge (CRIAC). When a property is approved for a RiverSmart Rewards discount, it is also automatically eligible for DC Water's CRIAC Incentive Program.

Currently, through the RiverSmart Rewards program, DOEE provides stormwater fee discounts to over 1,400 properties, incentivizing the continued maintenance of voluntary GI practices.

Stormwater Retention Credit Trading Program provides an incentive for voluntary GI that reduces stormwater runoff. Property owners can generate and sell SRCs to earn revenue for projects that reduce harmful stormwater runoff by GI or by removing impervious surfaces. Installing new, voluntary GI in the MS4 will generate High-Impact SRCs which provide the greatest water quality benefits to the District's waterbodies.

SRC generators trade their SRCs on an open market to developers who use them to meet regulatory requirements for retaining stormwater through off-site retention. This revenue stream creates incentives to install GI that protects rivers and streams and provides other co-benefits.

Through DOEE's SRC Price Lock Program, eligible SRC generators have the option to sell SRCs to DOEE at a fixed price if they are unable to sell to a buyer on the open market. The option to sell to DOEE offers certainty about the revenue from an SRC-generating project and helps to secure financing options for new, private GI projects. Only projects generating High-Impact SRCs from new, voluntary GI in the MS4, are eligible for the SRC Price Lock Program.

Up through 2021, SRC Price Lock Program projects have retrofitted nearly 30 acres of the District's MS4 area with High-Impact SRC-generating GI. More information on the District's SRC program can be found at https://doee.dc.gov/src.

6.1.6 Performance Metrics for Retrofits

The draft Consolidated TMDL Implementation Plan includes a long-term, performance-based strategic plan for addressing TMDL Waste Load Allocations (WLAs) assigned to the District's MS4. A major component of this plan is a schedule for WLA attainment, including interim milestones and numeric benchmarks detailing incremental progress toward ultimate WLA attainment. The interim milestones developed for the draft Consolidated TMDL IP represent the acreage of the District that must be retrofitted to manage the 1.2" volume of stormwater runoff in order to achieve the TMDL WLAs by the dates designated in the Implementation Plan. The projections that informed the development of these milestones account for and integrate projected implementation from the programs discussed above. Interim milestones are developed at the major river basin scale, i.e. for the Potomac River, Anacostia River, and Rock Creek. Table 10 shows the interim milestones. The District is on target to meet the five year milestones. The District will continue to use these five-year milestones for the upcoming permit period.

As these interim milestones integrate the impact of the overwhelming majority of the District's implementation efforts to address and manage stormwater runoff, these should represent the primary numeric performance metric for the District's next permit term.

Table 10: Interim Milestones for Acres Managed by Watershed

Numeric Limits in Acres Managed for this Permit Term Major Basin	5-Year Limits (Acres Managed)
Anacostia River	307
Potomac River	116
Rock Creek	96
Anywhere in the MS4 Permit Area	519
Total	1,038

6.2 Maintenance Activities for Pollution Source Controls

DOEE requires and monitors the regular maintenance of regulated stormwater control measures and best management practices to ensure these facilities operate as designed to infiltrate, filter, and/or detain stormwater and stormwater pollutants. DOEE conducts compliance monitoring inspections of District, federal, and privately owned stormwater control measures and BMPs to ensure they are maintained according to the approved stormwater management plan.

DOEE's SWMG, which was updated to include the 2020 regulation updates, provides technical guidance on complying with the Stormwater Rule. The District included operational and maintenance requirements for retention practices and non-retention BMPs in the SWMG, which can be found at http://doee.dc.gov/swguidebook.

The DDOT 2014 GI Standards contain operation and maintenance schedules for projects in the PROW. The DDOT Green Infrastructure Standards can be found at http://ddot.dc.gov/.

DOEE is in the process of establishing a new Maintenance and Pollution Prevention Branch. Part of the duties for the new Branch will include programs to ensure the maintenance of all District-owned green infrastructure (GI) practices. Through a combination of grants and contracts, the Branch will ensure these GI practices receive required maintenance as outlined by the District's 2020 SWMG for functionality and to meet regulatory requirements. The program will utilize the required maintenance to support the training of District-residents, including young people and returning citizens, to gain knowledge on how to maintain green infrastructure in preparation for future employment opportunities.

6.3 Management Plan for Streets and Roadways

6.3.1 Street Sweeping Activities

Residential and arterial street sweeping are the District Department of Public Works' (DPW's) primary means of improving stormwater quality. Street sweeping activities include the use of mechanical sweepers to clean streets and paved alleys, manual street cleaning crews, and mechanized vacuum carts. Debris collected from the street sweeping program is handled as standard municipal solid waste and the debris is deposited at the municipal waste transfer station located at 4900 Bates Road, NE.

During spring, summer, and fall seasons, DPW conducts scheduled mechanical street sweeping in densely populated residential neighborhoods with high-volume pedestrian traffic. Mechanical street sweeping is suspended during the winter months for public safety concerns. Sweepers emit a fine spray of water to keep dust down as they sweep; when the temperature is at freezing or below, sweeping is discontinued to prevent freezing and pedestrian or vehicles accidents. Among the greatest impediments to street sweeping are illegally parked vehicles during scheduled sweeping hours, which are established by street signs. DPW has recently implemented Sweepercam, a program designed to improve compliance with weekly parking restrictions for scheduled street sweeping. When a vehicle blocks a sweeper from reaching the curb lane, three spaces are missed as the sweeper must go around the illegally parked vehicle. The Sweepercam program uses license plate recognition technology to enable sweeper operators to photograph vehicles illegally parked in the curb lane of residential and commercial streets during sweeping hours. The camera, which is installed onto the sweeper, photographs the illegally parked vehicle, its license tag, and its position on the street. The registered owner may then receive a ticket in the mail. The Sweepercam program is intended to increase awareness among District residents to comply with street sweeping schedules. It is expected that this program will allow for more effective sweeping operations.

Streetsweepers are outfitted with tracking mechanisms that provide mileage data. DPW sends the data to DOEE to allow DOEE to calculate miles of lanes swept in the District.

6.3.1.1 Snow and Ice Removal

DPW is the lead agency to clear snow and ice from District roadways and bridges. DPW/DDOT clears and makes safe approximately 2,295 lane miles, bridges, overpasses and ramps. DPW works closely with the Mayor and other District agencies when deciding to declare and enforce snow emergencies. If a snow emergency is declared, residents must immediately relocate any vehicles parked on snow emergency routes.

DPW applies brine solution and salt, and conducts plowing, based upon the amount and type of precipitation expected. Brine solution for snow operations is used to pre-treat the roadway pavement before a typical snowstorm. The use of a brine solution will reduce by up to 30% the use of traditional rock salt on pavements during snow events, which will significantly minimize pollution of stormwater runoff. If a storm event misses or changes direction after pretreatment of roadway surfaces, the water in the brine solution will evaporate and the salt residue will eventually wash off.

Brine is made at DDOT's Farragut Street Salt Dome Facility at 401 Farragut Street NE, and there are holding tanks at the other salt dome facilities. To deploy the brine solution, DPW purchased one new liquid spray tank. Table 11 shows the location of the salt dome facilities located in the District, indicating the capacity of each facility and location by sewershed. The salt storage facilities include berms to control water runoff from salt storage and loading areas.

Table 11: Salt Storage Facilities

Salt Domes	Area	Capacity
Brentwood Road and W Street, NE	CSS	13,000 tons
113 Potomac Avenue, SW	MS4	5,000 tons
3890 Fort Drive, NW	MS4	4,500 tons
401 Farragut Street, NE	MS4	18,000 tons
3400 Water Street, NW (under Key Bridge)	MS4	100 tons

The snow removal program includes the following requirements aimed at minimizing stormwater pollution:

- Snow is not dumped directly into waterways during or in advance of snow emergency, unless directed by Federal Authorities.
- Dumping of snow in areas adjacent to water bodies is avoided except as necessitated by extreme emergencies.
- Winter storm plans are evaluated and updated as necessary to provide optimum ice and snow control while minimizing pollutant discharge.

One of the MS4 permit requirements (2.6) was to develop a program for testing alternatives for ice and snow management. During the 2019 and 2020 reporting years, DOEE designed a pilot test in collaboration with DPW to compare the effectiveness of Calcium Magnesium Acetate (CMA) and a pre-wetting technology to wet road salt applied using the existing practice of road salt application. To best target the effectiveness of each deicing treatment, the project has only been deployed during events when plowing is not needed. Unfortunately, the pilot has only been implemented for one snow event due to a lack of qualifying weather events as of the time of this report's preparation. Preliminary evidence from that single event showed comparable effectiveness across all three treatments, but DOEE and DPW will need to implement the pilot in

additional weather events before any conclusions can be drawn. More information about the pilot project in general can be found in the most recent 2021 MS4 annual report attachments here.

Measurable Outputs:

- Continue to sweep streets and roadways to reduce stormwater pollution.
- Continue to minimize the amount of salt used on roadways.
- Continue to manage the snow removal plan to protect waterways.

6.4 Management Plan for the Solids and Floatables Reduction Program

Solid and floatable materials include sediment, debris, trash, and other suspended solids. They come mainly from street litter that ends up in the District's catch basins and sewers. Solids and floatables can be discharged into surrounding waters during rain events. The proposed solids and floatables control program focuses on using preventive measures to help reduce the amounts of solids and floatable materials that may enter the MS4. These preventive measures include, but are not limited to, the use of skimmer boats, catch basin cleaning, street sweeping, in-stream trash traps, volunteer trash cleanups, and leaf collection.

6.4.1 The Sustainable DC Omnibus Act of 2014

Title IV, Subtitle A of the Sustainable DC Omnibus Act of 2014, D.C. Law 20-142 (effective Dec. 17, 2014) Polystyrene Food Service and Loose Fill Packaging Prohibition Amendment Act of 2019, D.C. Law 23-76 (effective Apr. 16, 2020) (D.C. Official Code § 8-1531 *et seq.*) bans food-serving entities from using expanded polystyrene, commonly known as Styrofoam™, food and beverage service containers to serve consumers, which became effective in January 2016. The ban was expanded in 2020 by the Polystyrene Food Service and Loose Fill Packaging Prohibition Amendment Act of 2019, D.C. Law 23-76 (effective Apr. 16, 2020) to include the retail sale of foam food service ware, containers, or packing materials. A 2008 study conducted on the Anacostia River revealed expanded polystyrene to be one of the most common types of trash found.

In addition, the Act requires food-serving entities to only use materials considered recyclable or compostable to serve consumers. The food service ware material requirements banned multi-material products like paper bags with a plastic window as well as single-use plastic straws and stirrers.

Table 12: Inspections for Foam Ban, Recyclable/Compostable Requirements

	Inspections*	Notices of Violation	Notices of Infraction
FY16	200	40	5
FY17	309	29	8
FY18	302	18	14
FY19	318	83	10
FY20	154	12	5
Totals	**1,283**	**182**	**42**

*Inspections are for all prohibited products, including the foam ban, non-recyclable/compostable products including single-use plastic straw ban, and retail foam ban

DOEE inspects at least 300 food-serving and retail entities for compliance with the District's Foam Ban and food service ware material requirements every year. Routine inspections were suspended in FY20 due to COVID-19 safety restrictions but resumed in FY21.

6.4.2 Anacostia River Clean Up and Protection Act of 2009

The Anacostia River Clean Up and Protection Act of 2009, D.C. Law 18-55 (effective Sept. 23, 2009) (D.C. Official Code § 8-102.01 *et. seq*.), commonly referred to as the District's Bag Law, requires businesses that sell food or alcohol to charge five cents for each disposable paper or plastic bag distributed with any purchase. The law took effect January 1, 2010 and was the first of its kind in the United States. The law was passed after a trash study found that plastic bags were one the largest sources of litter in the Anacostia River. The law's ultimate goal is to change consumer behavior by reducing the amount of disposable bags that people use in order to reduce the volume of trash in the District's waterways.

Regulated businesses retain one cent of the five-cent fee (or two cents if they offer a rebate to customers who bring their own bag), and the remaining three or four cents goes to the Anacostia River Clean Up and Protection Fund, a special-purpose fund managed by DOEE. The money deposited into the fund is used to implement watershed education programs, stream restoration projects, and trash collection projects and to purchase and distribute reusable bags. As of September 2020, the Bag Law has raised over $22 million in bag fees.

Below are just a few types of projects that the Bag Law has funded:

- **Trash Capture:** Bag Fund revenues supported the installation and ongoing maintenance of nine trash traps, which have collectively removed more than 80,000 pounds of trash and debris from the District's water. In FY20, these trash traps captured over 8,500 pounds of litter. Each trap is monitored, with data reported on the amount (weight and volume) and type of trash collected and removed. This data informs DOEE's litter reduction measures.
- **Outreach and Reusable Bag Distribution:** DOEE purchases and distributes tens of thousands of reusable bags every year to District nonprofits, sister agencies, and partners, with a special focus on low-income and senior populations. In FY20, groups that received reusable bag donations include DC Office on Aging, Bread for the City, DC Food Project, and Emory Beacon of Light Food Pantry. This effort aids residents in changing their behavior from using disposable bags to using reusable bags.
- **Watershed Education:** The Overnight Meaningful Watershed Education Experience (MWEE) is a three-day, two-night field experience designed for District fifth-graders to learn about their local watersheds while immersed in a non-urban environment.
- **Freshwater Mussel Restoration:** As of FY20, DOEE and its grantee, Anacostia Watershed Society (AWS), deployed at least 27,894 mussels, with 11,473 of those being released into the Anacostia River directly. Four different unionid mussel species were propagated: Alewife floater (Utterbackiana implicata), Eastern pondmussel (Ligumia nasuta), Eastern floater (Pyganodon cataracta) and Eastern lampmussel (Lampsilis radiata). AWS implemented the Mussel Power

program at six schools in the District and is working with the Aquatic Resources Education Center to develop a mussel display for educational purposes.

- **Green Infrastructure:** RiverSmart Homes offers financial and technical assistance for single-family residential properties to install one or more green infrastructure practices, depending on which are best for their property and lifestyle. In FY20, RiverSmart Homes conducted over 900 audits, installed 417 rain barrels and 88 rain gardens, and planted 704 shade trees.

DOEE began active enforcement of the law in December 2010, after conducting almost a full year of extensive compliance assistance and educational outreach about the law's requirements. Table 12 provides an overview of enforcement statistics by fiscal year.

Table 13: Bag Law Enforcement Statistics

Fiscal Year	Inspections	Notices of Violation	Notices of Infraction
FY11	336	188	13
FY12	466	217	29
FY13	587	226	34
FY14	564	165	49
FY15	553	146	40
FY16	573	130	43
FY17	551	83	51
FY18	554	88	61
FY19	554	78	49
FY20	217	33	19
Totals	**1,953**	**796**	**125**

DOEE inspectors check businesses for compliance with the Bag Law primarily through "secret shopping," in which inspectors do not identify themselves as such. DOEE has determined this to be an efficient and accurate way to ascertain whether a business is in compliance. Items purchased during inspections are paid for with fees collected through the Anacostia River Clean Up and Protection Fund. In FY20, the Bag Fee enforcement program was temporarily suspended due to the Mayor's Stay-at-Home orders.

Measurable Outputs:

- Conduct inspections of regulated businesses.
- Continue to conduct targeted outreach with businesses, residents and visitors to the District.
- Continue to remove trash and debris from the Anacostia River.

6.4.3 Volunteer Clean-Up Activities

The District sponsors several clean-up events on an annual basis. Examples include the Alice Ferguson Foundation's Potomac Trash clean-up, the Anacostia Watershed Society annual Anacostia River Earth Day clean-up, and Rock Creek Conservancy's Extreme Cleanup.

The Adopt Your District programs include Adopt-A-Stream, Adopt-A-Block, and Adopt-a-Park programs. The Adopt-A-Stream program is managed by the Alice Ferguson Foundation and funded through DOEE's Trash Free Communities grant. Volunteers participating in the program adopt a segment of a District stream, collect data on types of trash found in the area, and organize cleanups to help protect the stream and beautify the area.

The Adopt-A-Block program allows residents to host at least four cleanup events and clean adopted streets and alleys. Residents have adopted and cleaned over 1,200 blocks in the District.

6.4.4 Trash Free Shorelines

Through the Trash Free Shorelines program, Anacostia Riverkeeper (ARK) will install, maintain, and monitor a minimum of five new, innovative litter devices designed to capture and remove litter from the Anacostia River and Washington Ship Channel. ARK will partner with marinas to determine best locations to install the devices; how devices will be accessed to install, monitor and maintain; and develop a maintenance plan. ARK will collect data on the amounts and types of litter captured by the devices and will incorporate educational opportunities on the impact of litter in our local waterways for local communities within the selected project area. The project outcomes will be:

- Understanding new practices that can reduce litter in local waterways.
- Noticeable reduction in the presence of litter in targeted areas.
- Increased, more comprehensive understanding of the common types of litter in local water ways.
- Increased District resident knowledge of the watershed, the harms posed by litter, and ways to mitigate them.

6.4.5 Skimmer Boats

DC Water implements a floatable reduction program by utilizing skimmer and support boats on the Potomac and Anacostia Rivers to remove floatable debris and trash from the rivers. The boat docking area and roll-off containers are located on the west bank of the Anacostia River in the vicinity of M and 14th Streets, SE. Since 2003, the skimmer boats have removed a total of 13,873 tons of debris from District water bodies. The average annual removal from 2003-2021 is 462 tons.

6.4.6 Leaf and Tree Collection

DPW collects leaves from residential neighborhoods each autumn to prevent clogging of catch basins that could result in localized street flooding during heavy rain events. Seasonal leaf collection also reduces the potential for accidents and injuries resulting from slippage on wet leaves. DPW collects 6,000 - 8,000 tons of leaves between November and January each year. Most of the leaves are collected by vacuum trailers and are composted. Residents can call 311, the Mayor's Citywide Call Center, between March and October to request compost. Compost also can be obtained between March and October at the Fort Totten Trash Transfer Station (4900 Bates Road, NE, weekdays from 10 am to 2 pm and Saturdays from 7 am to 2 pm).

DPW mails a Leaf Collection Brochure that contains the annual leaf collection schedule to residents who receive trash and recycling services from the District. DPW's Leaf Collection

Brochure provides updated information about the collection cycles per ward. DPW also has developed a web-based GIS tool that allows District residents to obtain the leaf collection status of their neighborhood by address. This tool can be accessed at the www.dc.dpw.gov website. DPW will continue with the collection of leaves and public education throughout the life of the revised Permit.

6.4.7 Preventive Maintenance of the MS4 Conveyance

DC Water is responsible for the operation and maintenance of the sewer network infrastructure while DDOT is responsible for maintenance of the road systems. Storm drain maintenance activities include responding to reports of blockages or defects, catch basin cleaning and maintenance, and ensuring that the outlet structures of the MS4 remain clear. These inspections are conducted on a daily, weekly or monthly basis according to an inspection schedule. The Department of Maintenance Services within DC Water performs corrective maintenance on pumping stations in response to work order requests from the operational staff. The activity conducted by DC Water to maintain the MS4 conveyance is now stored in their new mobile Catch Basin Cleaning Application.

To achieve the stormwater outfall repair requirements set forth in the current District of Columbia MS4 Permit, DOEE has focused on making repairs to outfalls where stream restoration projects are being implemented.

6.4.8 Catch Basin Cleaning Activities

DC Water is responsible for cleaning and maintenance of catch basins located in the MS4 and combined sewer system (CSS) areas of the District, and DOEE organizes storm drain labeling. There are approximately 17,073 catch basins throughout the District, and in FY21 DC Water performed 11,859 individual catch basin clean-outs. In the MS4 portion of the District, typical catch basins are replaced with water quality or environmental catch basins when the streets undergo total reconstruction, which remove more pollutants than conventional catch basins. The District's catch basins are cleaned on a once-a-year scheduled basis, but additional cleaning is done in response to customer requests. Repair tasks vary from resetting the tops of the catch basins to redesigning the catch basin to avoid damage.

To view information about DC Water's catch basin map and cleaning activities: https://www.dcwater.com/catch-basin-map.

In collaboration with DC Water, DOEE has established Standard Operating Procedures for estimating pollutant reductions attributable to catch basin cleaning in fulfillment of permit section 2.5.1. DOEE uses this information from a catch basin cleaning app along with catch basin type (single, double, etc.) and standard construction dimensions for each catch basin type to estimate the volume of material removed. DOEE uses the calculated volume and a bulk density value derived from a local study of catch basin cleaning to then calculate a weight. DOEE then uses the expert panel guidance on nutrient concentration and wet-to-dry mass conversion to determine load reductions (see attachment 6).

6.4.8.1 Storm Drain Marking Program

DOEE implements a storm drain marking program during the summer and spring months. Storm drain markers are placed on storm drains to educate people that whatever enters the storm drains may discharge into District creeks and rivers. DOEE has committed to installing 400 storm drain markers annually.

6.4.9 Trash TMDL Revisions and Updates

In August 2010, the District, in partnership with Montgomery County, Prince George's County, the Maryland Department of Environment, and EPA Region III, established a total maximum daily load (TMDL) for trash for the Anacostia River. This was the first inter-jurisdictional TMDL for trash developed for a water body in the United States. The TMDL includes waste load allocations (WLAs) for both the District's combined sewer system (CSS) and MS4. The official TMDL document notes that the WLA for the CSS will be addressed by the long-term control plan (LTCP) currently being implemented by DC Water, whereas DOEE is responsible for compliance with the MS4 WLA. The Anacostia River Trash TMDL can be viewed at http://doee.dc.gov/publication/trash-tmdl-anacostia-final. On January 22, 2013, DOEE submitted the Draft Anacostia River Watershed Trash TMDL Implementation Strategy, via the 2012 MS4 Annual Report, to EPA Region III. The Anacostia Trash TMDL Implementation Strategy can be viewed at http://doee.dc.gov/Draft%20Anacostia%20River%20Watershed%20Trash%20TMDL%20Implementation%20Strategy.

A lawsuit filed in 2016 challenged the Anacostia Trash TMDL on the basis that the load was not expressed as the maximum load allowed in the waterbody. The court agreed and vacated the 2010 TMDL, although the vacatur was stayed until a replacement TMDL is approved by EPA. DOEE has been working with Maryland Department of Environment, EPA, and Morgan State University to develop a public survey for determining an appropriate maximum load that will allow the Anacostia River and its tributaries to meet water quality criteria. Until the new TMDL is in place, the District will continue to implement and track trash reduction strategies as required by the 2010 TMDL.

The District has committed to taking a multi-pronged approach to reducing trash loads from entering the Anacostia River by 108,347 pounds per year, which is the WLA assigned to the District's MS4 under the Anacostia River Trash TMDL. The following is a current list of structural and non-structural controls the District will continue to utilize throughout the District under the next permit cycle to meet its MS4 permit requirements:

- In-stream and end-of-pipe best management practices (e.g., trash traps).
- Skimmer boat activities.
- Stream and river cleanup activities.
- Roadway and block cleanup activities.
- Street sweeping of environmental hotspots.
- Education and outreach.
- Regulatory approaches (e.g., Bag Law and Styrofoam ban).

The District plans to continue to implement and maintain existing practices, as well as look for new opportunities to implement new and innovative trash reduction practices to reduce trash loads to the Anacostia River by 108,347 pounds per year. The District will track and report implementation annually, and DOEE will report on new practices along with their respective load reduction calculation methodologies as they are implemented.

DOEE has been an active participant in the Anacostia Trash Reduction Workgroup (MS4 permit section 4.5.2.1) to align metrics for tracking and reporting on trash reduction and removal. In particular, the District now uses several of the collaboratively developed trash reduction metrics for annual reporting, specifically volunteer clean-ups and trash traps.

Measurable Outputs:

- Continue to monitor for trash.
- Implement trash reducing BMPs.
- Track and report trash loads.
- Continued participation in Anacostia Trash Reduction Workgroup.
- Continued participation in development of the new trash TMDL.

6.5 Flood Control Projects

The District of Columbia has enacted and implemented floodplain regulations required for participation in the National Flood Insurance Program (NFIP), 20 DCMR Chapter 31, which allows the District to access FEMA grant funds, disaster relief funds, and federally backed flood insurance. DOEE, as the District's Floodplain Administrator, coordinates the District's participation in the NFIP, and works with FEMA and District agencies on implementation. In addition to its role in administering the NFIP, DOEE provides technical assistance to District property owners and other interested parties on issues such as floodplain management, flood insurance, floodplain development requirements, floodplain mapping, and flood mitigation. More information can be found at https://doee.dc.gov/service/flooding.

DOEE is actively pursuing several flood control projects throughout the District. Current focus areas include Buzzard Point, Watts Branch, and Southwest DC. In the next few years, DOEE is engaging on an effort to identify areas that are vulnerable to stormwater flooding through the Integrated Flood Model Project. Once these areas have been identified, DOEE will propose, design, and build infrastructure, including blue-green and gray infrastructure, in places to reduce flood risk in neighborhoods that need it the most.

6.6 Pollution Prevention

The District has taken significant steps to enhance its pollution prevention program during the current Permit term. Since May 2013, the District has focused its efforts on staff training and awareness of pollution prevention requirements and has continued to improve interagency coordination.

DOEE provides trainings for District agencies on how to better manage their facilities to reduce and mitigate pollutants in stormwater runoff. Basic pollution prevention training is provided

through an online training module, which consists of a 25-minute video followed by a 10-question quiz with one bonus question. The module is designed to satisfy the annual training requirements of the MS4 permit and trainees must score an 80% or better to demonstrate their understanding of core principles around pollution prevention to pass the training. DOEE conducts educational site walkthroughs and mock inspections of District facilities that are Critical Sources of stormwater pollution to provide one-on-one training to facility staff on how to conduct self-inspections, identify issues, take corrective action, and to teach staff what to expect from regulatory inspections. Site-specific and topic-specific trainings are also provided to District agencies upon request, and include tailored presentations, hands-on learning opportunities, and training on additional skills through which stormwater pollution issues are successfully identified, fixed, and reported. Every year DOEE coordinates with DPW to provide a short module on pollution prevention as part of their required Snow Plow Drivers training course.

DOEE coordinates with District agencies to schedule these trainings for their personnel. All personnel who are responsible for the design, installation, maintenance, and repair of controls, storage, and handling of materials exposed to stormwater, and who are responsible for monitoring, inspections, and documenting corrective actions, are required to be trained at least once a year.

Personnel are trained in the following areas:

- Stormwater pollution overview
    - Impacts of stormwater pollution
    - Regulation of stormwater:
        - Requirements of Municipal Separate Stormwater Sewer System (MS4) permit
        - Requirements of Multi-Sector General Permit (MSGP)
- Stormwater Pollution Prevention Plans (SWPPP)
    - Overview, including identification of pollutants of concern
    - Structural BMPs
    - Preventative Maintenance
    - Good Housekeeping including material management practices
    - Spill prevention and response procedures
    - Industry specific requirements, if applicable
- Location and maintenance of on-site controls.
- Tracking and Reporting:
    - Inspection schedule and procedures
    - Record keeping requirements, including for illicit discharges
    - Annual reporting requirements
    - Guidelines for taking corrective actions, updating SWPPPs, and submitting reports and notices under the MSGP

DDOE has also worked with sister agencies to develop, implement and update SWPPPs for appropriate facilities. In FY21, DOEE developed a template SWPPP that complies with the 2021 MSGP and can be used by all District Critical Source facilities (industrial or not). Thirty-five SWPPPs were created or revised for District facilities, including for DPW, DDOT, DGS, OSSE, FEMS, MPD, UDC and DCHA. The template SWPPP can be

automatically generated using information that has been entered into the Pollution Prevention (P2) Database.

The P2 Database is an online data management application developed by DOEE in collaboration with DGS to help District Critical Source facilities implement SWPPPs, and manage housekeeping and self-inspections. DOEE works with DGS to ensure staff at these facilities have access to the database. DOEE also provided computer tablets so that facilities could access the database in the field to complete self-inspections online. The database allows District agencies to better track self-inspections, corrective actions, monitoring data, BMP maintenance, training, and other elements of their SWPPP. Inspection forms and corrective action reports can be completed and signed online in compliance with the MSGP and District MS4 Permit requirements. Agencies can use the P2 Database to automatically generate an updated SWPPP using the information they enter and keep up to date in the database, send it for signature, and keep a SWPPP modification log. Corrective action forms in the database allow facilities to track stormwater issues, submit work order requests to DGS, and track how long it has been since the issue was identified. SWPPP team leads receive automatic emails with reporting and recordkeeping reminders from the P2 Database if a corrective action ages 14 calendar days and 45 calendar days. The P2 Database also allows DOEE and District facilities to manage SWPPP implementation across facilities through agency-specific dashboards that provide reports on BMP maintenance, self-inspections, analytical monitoring, quarterly visual stormwater analysis, corrective action forms, training, and other efforts by District Critical Source facilities. DOEE provides regular training on how to utilize the P2 Database and is developing an online training module and user guide to help staff become proficient at using it.

District Critical Source facilities are asked to conduct an annual review of their SWPPP to ensure it continues to accurately reflect efforts to prevent stormwater pollution and to record their efforts to do so. DOEE developed an Annual SWPPP Review Checklist, which District Critical Source facilities submit to DOEE for review. The five-page checklist walks staff through an annual SWPPP review by having them check to see if their SWPPP includes all elements required by the District MS4 Permit and 2021 MSGP, that they are keeping the appropriate records with their SWPPP and are taking action to address ongoing compliance issues.

DOEE also conducts regulatory inspections of facilities to ensure they comply with NPDES Permitting requirements and local stormwater regulations that manage BMP maintenance. Sites typically are inspected at least once every permit term, see section 6.7.

Guidance on good housekeeping practices and SWPPPs can be found in Appendix Q of the 2013 SWMG at http://doee.dc.gov/node/620102.

Measurable Outputs:

- SWPPPs will be reviewed annually and kept up to date.
- DOEE will continue to conduct regular stormwater inspections at District facilities to ascertain whether they are in compliance with Federal and District regulations.
- DOEE will provide on-going training sessions and an online training module to Agency staff.

- DOEE will continue to provide site visits at various facilities to provide guidance in SWPPP development and implementation.
- The P2 Database will continue to be utilized by District Agencies to track SWPPP implementation and recordkeeping.

6.7 Compliance Monitoring of Critical Sources of Potential Stormwater Pollution

DOEE conducts various monitoring programs to assure compliance with District and federal laws and regulations for the reduction and elimination of stormwater pollutants, including the MS4 Facilities compliance monitoring program, the NPDES compliance monitoring program, and the hazardous waste monitoring program.

6.7.1 MS4 Compliance Monitoring Program

DOEE conducts compliance monitoring inspections of all critical sources of stormwater pollution, including industrial, commercial, institutional, municipal, and federal facilities within the MS4 area. DOEE inspects stormwater pollution prevention and control measures at each facility, including good housekeeping practices, best management practices, retention structures, treatment devices, sediment and erosion control measures, and spill response, containment, and countermeasures. DOEE evaluates the effectiveness of facility control measures, documents deficiencies and/or violations, and determines the appropriate enforcement tool for compelling correction and/or compliance. Additionally, the MS4 Compliance Monitoring Program deploys varying techniques, methods, and procedures to ensure and maintain compliance. These include, but are not limited to the following:

- Maintain a current and accurate database of critical source facilities,
- Conduct a minimum of two compliance monitoring inspection within each MS4 permit term of critical source facilities,
- Compel compliance with District and federal laws and regulations, using all available enforcement tools, as provided in Section 3.2.7, and
- Document and manage accurate and complete compliance monitoring inspections, re-inspections, and enforcement actions

6.7.2 NPDES Compliance Monitoring Program

The facilities situated within the District and covered by a NPDES individual and general permits are inspected as part of DOEE's NPDES compliance monitoring program. The database includes 53 facilities covered by the 2021 NPDES Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity, 5 Major Individual NPDES Permitted facilities, and 6 Minor Individual NPDES Permitted facilities.

As part of the compliance monitoring program, DOEE conducts Compliance Evaluation Inspections (CEI) of all NPDES permitted facilities within the District according to the EPA's Compliance Inspection Manual for National Pollutant Discharge Elimination System.[6] DOEE

6 https://www.epa.gov/compliance/compliance-inspection-manual-national-pollutant-discharge-elimination-system

also conducts a CEI of at a minimum of 10% of the NPDES MSGP facilities. DOEE conducts the CEI to verify permittee compliance with regulations, permit conditions, applicable permit self-monitoring requirements, effluent limits, compliance schedules, and the current SWPPP. Additionally, DOEE reviews facility DMR's for compliance with established effluent limits and the District Water Quality Standards.

6.7.3 Hazardous Waste Compliance Monitoring Program

The hazardous waste compliance monitoring program regulates industrial, commercial, businesses, federal, and District government facilities that generate, transport, treat, store, or dispose of hazardous waste. Each of these entities is regulated to ensure proper management of hazardous waste from the moment it is generated until its ultimate disposal or destruction.

6.8 Illicit Discharge Detection and Elimination Program (IDDE)

DOEE implements a comprehensive and robust IDDE program designed to detect and eliminate illicit discharges to District waters. DOEE, with support from other District agencies and partners, including but not limited to DC Water and DPW, tracks, documents, and investigates reports and/or complaints of spills, releases, illegal dumping, sewer overflows, and/or other sources of potential illicit discharges. The IDDE program also deploys policies and procedures to prevent illicit discharges to District waters. These include but are not limited to the following:

- Conduct dry weather outfall inspections,
- Promote the proper handling and disposal of household hazardous waste,
- Enforce compliance of solid waste, hazardous material, and hazardous waste laws and regulations through the MS4 Facilities Compliance Monitoring Program,
- Coordinate with DC Water's Sewer Services to ensure the sanitary and combined sewer wastewater systems are properly maintained, repaired, and/or replaced to avoid the infiltration, discharge, or overflow of sanitary wastewater to the MS4 and/or District Waters.

6.8.1 Dry Weather Outfall Monitoring

DOEE deploys various strategies for identifying and monitoring dry and wet weather flows from MS4 outfalls. Based on available data, including sewer/watershed land use and previous inspections, DOEE prioritizes sewer/watersheds and their outfalls for monitoring. DOEE uses various techniques and methods during outfall inspections to monitor for the presence and occurrence of dry weather or non-stormwater flows. Visual and odor observations, such as color, clarity, the presence of sheen, sweet, sour, hydrocarbon, and/or sewage odors are standard characteristics documented during outfall inspections. Outfall inspections may also include the use of field or in-situ water quality test kits. These field test kits help identify the presence of non-stormwater flows and illicit discharges by measuring parameters such as, pH, residual chlorine, detergents, phenols, and ammonia.

6.8.2 Enforcement Plan

DOEE implements an aggressive enforcement plan for compelling compliance and holding responsible parties accountable for illicit discharges, illegal disposal, spills, and releases. DOEE possesses various enforcement tools as outlined in Section 3.2.7 above. Based on varying factors, including severity and impact of the violation, culpability of the responsible party, response and

mitigation efforts, and compliance and violation history, DOEE determines the appropriate path for enforcement.

DOEE issues and adjudicates enforcement actions according to the agency enforcement guidelines and standard operating procedures. The enforcement guidelines and procedures detail the process for compiling and issuing civil administrative enforcement actions. DOEE may also pursue judicial enforcement actions. These cases are internally handled by DOEE's Office of the General Counsel or referred to the District's Attorney General's Office. DOEE routinely reviews and updates agency enforcement guidelines and SOPs.

6.8.3 Emergency and Spill Response Program

The District's emergency response and incident management is led by the District of Columbia Homeland Security and Emergency Management Agency (HSEMA). HSEMA leads the planning and coordination of homeland security and emergency management efforts to ensure the District is prepared to respond to and mitigate all threats and hazards; this includes responding to hazardous substances, hazardous waste, oil, and/or sewage spills that threaten the MS4, District Waters, and/or natural resources within the boundaries of the District of Columbia.

The District plans, prepares, and exercises incident response plans that detail response procedures, policies, and responsibilities. Although HSEMA oversees the planning and response efforts, specific agencies are designated as first responders to specific incidents or hazardous. For example, DC Water is designated as the first responder to reports of sanitary sewage overflows (SSOs) and HSEMA's Fire and EMS HAZMAT is designated as the first responder to hazardous materials incidents or hazards. Accordingly, these agencies execute their own response and incident management plans.

DOEE's primary role in emergency response and incident management of threats and impacts to District Waters is supporting first responders with preliminary impact and hazard assessments; advising on containment, countermeasures, cleanup, and mitigation actions; and documentation of response costs and seeking cost recovery. DOEE's Emergency Response Team (ERT) receives notification or a report of an incident from several potential sources, including the National Response Center. DOEE ERT evaluates the incident's potential threat or impact, and deploys resources as appropriate or refers the incident to other DOEE Divisions in non-emergency response cases. In cases of sewer system overflows (SSOs), DC Water is generally equipped to handle the response and incident management. DC Water is required to notify DOEE of the SSO events within 24-hours. Depending on the threat to District waters, DOEE may respond to support incident management. Regardless of threat, DOEE investigates and documents all SSOs reported by DC Water.

6.8.4 Illegal Dumping and Disposal

DOEE, DPW, and the District's Office of Unified Communications (OUC) work together on programs to report and facilitate responses to illegal dumping. The District's Department of Public Works implements the solid waste education and enforcement program (SWEEP) to prevent and enforce illegal dumping. SWEEP inspectors respond to complaints and reports of illegal dumping. Residents who observe litter or evidence of illegal dumping may contact OUC's 311 Call Center Operation via the following:

- Call 311
- Text "NEW" or "MENU" 32311 (DC311)
- Tweet the Office of Unified Communications at @311DCGov
- Visit the Online Portal at 311.dc.gov
- Download the DC 311 Mobile App
- Live Chat with a 311 Customer Service Representative via the 311 Online Portal

Dump Busters

DOEE works with the District's Metropolitan Police Department (MPD) Environmental Crimes Unit and the Department of Public Works (DPW) Solid Waste Education & Enforcement Program on the DumpBusters Illegal Dumping Enforcement Program. Anyone is encouraged to call 911 if they see illegal dumping occurring and to call 311 to report dumping that has already occurred.

6.8.5 Public Education for Proper Disposal of Household Hazardous Waste

6.8.5.1 Hazardous and Electronic Waste (e-waste) Collection

Through the District's website and periodic mailings, District residents are made aware of the negative environmental consequences of throwing household hazardous waste (HHW) into the trash, pouring it down the drain, or disposing of it in other improper ways. DPW classifies HHW as any leftover household product that can burn or cause a fire; eat away materials; destroy living tissue on contact; cause an explosion or release poisonous fumes when exposed to air, water or other chemicals; or damage or destroy cells and chromosomal material. DPW also promotes proper e-cycling of unwanted computers, televisions, VCRs, stereos, copiers and fax machines to prevent the release of dangerous substances, such as lead and mercury into the environment.

In April 2014, DPW expanded the opportunity for residents to properly dispose of HHW and e-cyling by increasing the frequency of its collection events from monthly to weekly and the first Thursday before the first Saturday of the month. DPW continues to provide personal document shredding on the first Saturday of the month. All HHW, e-cycling, and shredding activity takes place at the Benning Road Transfer Station (3200 Benning Road, NE). By providing these services, DPW increases the awareness of the importance of proper disposal of HHW and promotes control of the disposal of toxic substances.

All HHW is taken to a US EPA-approved facility for processing, recycling or disposal. E-waste is broken down into its component parts; precious/toxic metals are extracted, and then the various materials are recycled or disposed of safely.

DPW accepts the following hazardous waste and e-cycling items:

- Aerosols
- Antifreeze
- Asbestos tile (non-friable)
- Batteries
- Brake fluid
- CDs and DVDs
- Mercury Thermometers
- Moth balls
- Motor and boat oil (used)
- Paint (oil-based)
- Pesticides
- Petroleum products

- Cell phones
- Compressed Fluorescent Lamps
- Cleansers
- Computers and components
- Drain openers
- Fluorescent light bulbs
- Gasoline in small amounts
- Polishers
- Propane tanks
- Solvents
- Thinners
- Videotapes
- Wood preservatives

DPW has distributed a multilingual (English, Spanish, Vietnamese, Chinese, Korean and Amharic) Reference Guide that includes the information detailed above about the importance of hazardous waste and e-cycling, acceptable waste and what citizens can do to help.

The District has enacted and implemented several product stewardship laws that put the onus on manufacturers of products that pose environmental hazards to collect and recycle, or properly dispose of, these products.

The Paint Stewardship Act of 2014, D.C. Law 20-205 (effective March 11, 2015) (D.C. Official Code § 8-233) requires paint manufacturers to collect and reuse, recycle, or safely dispose of leftover paint. Manufacturers, or representative organizations of manufacturers, are required to register with DOEE, pay a registration fee, submit a paint recycling and management plan, and annually report on collection and recycling activities. All paint retailers are required to add a paint stewardship assessment to the price of paint to cover the cost of recycling and responsible disposal of discarded paint.

Subtitle B of The Sustainable Solid Waste Management Amendment Act of 2014, D.C. Law 20-154 (effective Feb. 26, 2015) (D.C. Official Code § 8-1041) requires manufacturers of certain electronics that are sold in the District to provide opportunities for people in the District to recycle electronic waste generated in the city. Manufacturers must register with DOEE and are required to provide reports on the units of covered electronic equipment sold in the District, with collection requirements based on the number of units sold.

Subtitle D of the Zero Waste Omnibus Amendment Act of 2020, D.C. Law 23-211 (effective March 16, 2021) (D.C. Official Code § 8-771) requires all producers of covered batteries and covered battery-containing products sold or offered for sale in the District, including retail, wholesale, business-to-business, and online sales to be a member of a battery stewardship organization and as part of a battery stewardship organization, to implement a battery collection program that provides for collection of all batteries on a free, regular, convenient, and accessible basis.

6.8.5.2 Pet Waste

In partnership with DOEE and the District's animal control contractor, Humane Rescue Alliance (HRA), the Mayor's Office of the Clean City (MOCC) developed a pet waste education and behavior change campaign entitled "Pride Is Picking Up." In collaboration with HRA's Pet Pantry program, local pet service businesses, and Department of Parks and Recreation (DPR) and DC Health events, MOCC distributes informational postcards and individual bag dispensers

to dog owners. MOCC has also installed 18 community bag dispensers across all eight wards of the District, maintained by HRA volunteers. Community partners have installed an additional 9 community dispensers in their areas of concern. Expansion of the network of community boxes is determined through data collected by the Pet Waste Complaint service request in the District's 311 system. Finally, campaign signage is posted at all DPR dog parks and graphics are regularly shared on social media.

6.9 Ban on Coal Tar Pavement Products

Effective July 1, 2009, the Comprehensive Stormwater Management Enhancement Amendment Act of 2008, D.C. Law 17-371 (D.C. Official Code § 8-153.01) makes it illegal to sell, use, or permit the use of coal tar pavement products in the District. Coal tar pavement products contain high concentrations of polycyclic aromatic hydrocarbons (PAHs), suspected carcinogens and highly toxic chemicals with known harmful impacts on humans and animals. Coal tar is usually found in sealants applied to parking lots and driveways. Asphalt-based sealants, an alternative to coal tar-based sealants, are readily available for comparable prices and contain significantly lower concentrations of PAHs. Once sealant has been applied to a paved surface, PAHs enter the environment through volatilization into the air, leaching into stormwater, and the erosion of dust that is carried by air and water.

In response to new high-PAH sealant products entering the market, the District passed the Limitations on Products Containing Polycyclic Aromatic Hydrocarbons Amendment Act of 2018, D.C. Law 22-278 (effective Mar. 29, 2019)**,** which amended the Comprehensive Stormwater Management Enhancement Amendment Act to ban sealant products with PAH concentrations above 0.1% by weight from being used or sold in the District. In order to effectively implement the new rules, DOEE received funding from the Chesapeake Bay Program's GIT Toxic Contaminants Work Group to develop a standardized testing protocol for determining PAH concentrations in pavement sealants. The protocol, once approved, will be used to create a list of compliant low-PAH sealant products. The Low-PAH List, expected to be made public by the end of 2022 will be used to educate the regulated community on the new requirements and assist DOEE with enforcement. The protocol and Low-PAH List will be made publicly available for regulators across the country to use for similar regulations.

DOEE oversees the inspection and enforcement of the coal tar and high-PAH pavement product ban. Inspectors conduct regular inspections of sealed parking lots and driveways throughout the District to determine whether or not the sites' sealant contains coal tar or other products high in PAHs. Inspectors also prioritize inspections based on tips received from an online public tip line. Once a site has been identified as sealed, inspectors collect a small sample of the sealant for a solvent screening test, which provides an initial indication of whether or not the sealant contains coal tar. If the solvent screening test indicates that the sealant contains high concentrations of PAHs, the inspector will request documents related to the most recent sealant application from the site's property owner. The inspector will also arrange a time with the property owner to return to the site to collect a larger sample for laboratory analysis to measure the total concentration of PAHs. This laboratory analysis is a reliable indicator of whether or not the site was sealed with a high-PAH sealant product. If the laboratory analysis indicates that the sample contains PAH concentrations above 0.1% by weight, DOEE will issue an enforcement action and require that the site be remediated.

When the District determines that a high-PAH pavement product has been used on a site, the District issues a Notice of Violation (NOV) to all parties involved in applying the sealant. This often includes property owners, contractors, subcontractors, and property managers. The NOV stipulates that in order to avoid the full civil penalties of the law, those parties must remediate the site via shot blasting or encapsulation. Shot blasting removes the sealant by projecting small balls of abrasive metal at the surface. After passing over a given surface, the metal balls are collected with a magnet and the sealant residue is captured by a vacuum outfitted with a HEPA filter. All collected debris must be disposed of at a Subtitle D landfill facility. Encapsulation applies two additional layers of asphalt-based sealant on top of the existing layer of coal tar-based sealant. This ensures that the coal tar-based sealant does not continue to erode or otherwise export PAHs into the environment. The first encapsulation layer must be brightly colored to indicate when the second additional layer has worn away. Respondents that opt to encapsulate must enter into a binding mitigation plan in which they agree to monitor the encapsulated sealant and reseal any areas in which the indicator layer is visible. The property owner is also responsible for recording the mitigation plan with the District of Columbia Recorder of Deeds as a covenant on the property's deed.

If any respondent fails to meet the terms of the NOV, the District seeks civil penalties by issuing a Notice of Infraction (NOI). Pursuant to the relevant statute, respondents found in violation of the ban on high-PAH pavement products are liable for civil penalties up to $2,500 for each day of the violation. Notices of Infraction are enforceable in the District's Office of Administrative Hearings, an administrative court.

Since 2010, the District has issued 12 NOVs and one NOI for violations of the ban on coal tar pavement products, Table 13. No enforcement actions have been issued for violations of the High-PAH Sealant ban, as implementation is still underway. The District has also entered into one settle agreement with a property owner in lieu of issuing an NOV or NOI. Remediated through shot blasting took place at 10 sites. In one case, a site was remediated through an alternate remediation method proposed by the property owner.

Table 14: Coal Tar Enforcement Statistics

Fiscal Year	Inspections	Positive CT Field Tests	Overall Compliance (%)
FY11	36	13	66.7
FY12	79	2	96.21
FY13	163	6	97.6
FY14	190	9	99.48
FY15	83	1	100
FY16	60	0	100
FY17	64	4*	100
FY18	60	6*	100
FY19	63	1	100

Fiscal Year	Inspections	Positive CT Field Tests	Overall Compliance (%)
FY20	63	0	100
FY21	**45**	**0**	**100**
TOTALS:	737	32	

DOEE will complete a targeted outreach campaign to homeowners, sealant applicators, hardware stores, and other members of the regulated community to raise awareness about the expansion of the ban to include high-PAH sealant products. The timing of the campaign is dependent on the completion of the Low-PAH Product list. DOEE anticipates completing outreach in the fall of 2021, to begin enforcement of the new requirements at the beginning of the next sealant season in spring of 2022.

Measurable Outputs:

- Draft regulations for the ban on coal tar and high-PAH pavement products.
- Conduct outreach to more targeted constituencies
- Conduct targeted inspections

6.10 Compliance Monitoring of Construction Stormwater and Land-Disturbance Activities

DOEE implements a comprehensive construction stormwater compliance monitoring program for all major and minor land-disturbing activities. The compliance monitoring program includes inspections of these regulated activities to assure they comply with District stormwater regulations (Section 6.1.3) and their approved stormwater management plans (SWMP) and erosion and sediment control plans (ESCP).

6.10.1 SWMP and ESCP Review and Approval Process

DOEE conducts the review and approval of SWMPs and ESCPs for compliance with District stormwater regulations. DOEE uses the SGS to manage plan review and approval and as a communication portal for receiving plans, supporting documents, providing comments, and issuing approval notices. The SGS is also used for assigning and scheduling inspections, tracking review and approval times. DOEE closely coordinates with DCRA to aid customers and ensure permit applications, plans, environmental forms and other supporting documents meet regulatory requirements.

6.10.2 Inspection and Enforcement Procedures

DOEE monitors compliance with regulated SWMPs and ESCPs using various programs and strategies. These include but are not limited to, physical inspections of active land-disturbance activities, physical inspections of SWMP construction, physical inspections of active SWMP maintenance, and SWMP maintenance self-inspection self-reporting program. DOEE also

responds to reports and complaints of erosion and sediment runoff and other construction stormwater related complaints.

As part of compliance monitoring inspections DOEE evaluates the effectiveness of installed erosion and sediment control measures, compliance with the approved ESCPs, stormwater pollution prevention plans (SWPPPs), effectiveness of BMPs and/or compliance with the approved SWMPs. Inspectors document deficiencies and/or violations and determines the appropriate enforcement tool for compelling correction and/or compliance. Additionally, the Construction Compliance Monitoring Program deploys varying techniques, methods, and procedures to ensure and maintain compliance. These include, but are not limited to the following:

- Maintain a current and accurate database of ESCPs and SWMPs,
- Conduct a routine inspection of land-disturbance activities according to SOPs[7],
- Respond to all complaints and reports in a timely manner according to SOPs,
- Compel compliance with approved plans and District and federal laws and regulations, using all available enforcement tools, as provided in Section 3.2.7, and
- Document and manage accurate and complete compliance monitoring inspections, re-inspections, and enforcement actions.

6.11 Management Plan for Pesticide and Herbicide Application

Regulations for the application of pesticides and herbicides in the District are at 20 DCMR Chapter 22. The District plans to reduce the amount of pesticides and herbicide application through implementation of public education activities and the pesticide certification/licensing program. The outfall monitoring program described in Section 5 above will offer insight into the success of these programs by providing pollutant concentrations of pesticides and fertilizers entering surface waters in the District.

6.11.1 Pesticides and Fertilizer Education Program

DOEE has an Integrated Pest Management (IPM) strategy to better inform the public about the proper use and disposal of pesticides, and safer alternatives to pesticides. These programs encourage IPM at all project sites. The program provides citizen education and outreach to help residents adopt environmentally sound practices for pesticides use in yards and gardens, including the use of “good” garden pests.

The strategy educates District residents as to the proper application of pesticides and provides guidance on how to choose an appropriate pesticide, how to choose a pest control company, and what regulatory requirements exist regarding commercial application of pesticides.

The Pesticide Program within DOEE regulates the use, sale and distribution of pesticides in the District, as outlined in the 20 DCMR Chapters 22-25. DOEE’s Pesticide Program oversees pesticide registration, certification and testing of commercial and public pesticide applicators to assure the competency, and compliance monitoring, inspections and investigations of pesticide

7 Inspection and Enforcement, Construction and Maintenance Branch SOPs; Responding to a Complaint, Construction Site Inspection

misuse. DOEE's promulgated list of reduced-risk pesticides or classes of pesticides is intended as a living list.

The District provides incentives and education to curb the use of turf-grass fertilizer. The Anacostia River Clean Up and Protection Fertilizer Amendment Act of 2012 (D.C. Official Code § 8-104.01 *et seq.*), established buffer zones around streams and rivers, as well as other limiting factors regarding where and when turf grass fertilizer can be applied. The legislation also requires retail establishments that sell fertilizer for turf to prominently display educational information. Additionally, the legislation requires the development of a public education program that shall include the dissemination of information regarding nutrient pollution, soil testing, proper interpretation of fertilizer label instructions, and the proper use and calibration of fertilizer application equipment, best management practices for fertilizer use in the urban landscape, the requirements of the legislation, and the effects of fertilizers on the Chesapeake Bay and its tributaries.

6.11.2 Source Characterization Screening

DOEE performs outfall monitoring as part of its overall monitoring program. Samples collected are analyzed for suspended pollutants, including pesticides. If pesticides are found in monitoring samples, the Illicit Discharge Detection and Elimination (IDDE) Program is notified and an inspection is conducted. Details of sample set activities are included in Section 5 above.

6.12 Education and Outreach

The District continues to implement targeted education and outreach programs that work to reduce or eliminate behaviors which cause adverse stormwater impacts.

The District provides educational training and materials for construction site operators and District soil and erosion inspectors. The objective of the education efforts is to decrease sources of storm water pollutants and improve storm water quality. Current training is conducted during the site inspection process and includes distribution of the District's Storm Water Management Guidebook and addresses particular needs and questions of the operators. The District will continue to use standardized reports as part of the inspection process to provide accurate record keeping of inspections of construction sites. District inspectors continue to receive training on the updated SOPs, Stormwater Rule, GAR, and professional certifications.

The District provides training to municipal facility staff through the Pollution Prevention program, see section 6.6 above.

DOEE's Regulatory Review Division offers a variety of free trainings for District staff and the public on Stormwater Retention Credit program, the SGS, general compliance with Stormwater Regulations, and Best Plan submission practices.

DOEE continues to provide environmental education for students and teachers:

- Anacostia Environmental Youth Summit
- Anacostia River Explorers Program
- Aquatic Resources Education Center (AREC)

- AREC Educator Workshops
- AREC Family Programs
- Overnight Meaningful Watershed Education Experience
- Middle School Watershed Education
- Trash Free Schools
- DC Environmental Literacy Plan
- District of Columbia Environmental Education Consortium
- Electric Vehicle Grand Prix

The Green Zone Environmental Program offers workforce development for District residents:

- River Corps
- Green Zone Environmental Program

DOEE runs several community involvement programs:

- Community Stormwater Solutions Grants
- Watershed Stewards Academy
- GreenWrench Program
- Citizen Science Programs
- Adopt Your District
- Pet Waste
- Household Hazardous Waste Program
- Storm Drain Marking
- Get RiverSmart

Measurable Output:

- DOEE will continue to review and approve projects throughout the life of the MS4 Permit.
- The District will continue implementing inspection and enforcement procedures as currently managed.

6.13 Mapping and Computer Modeling of Stormwater Impacts

6.13.1 Mapping of the MS4 Infrastructure

Several GIS layers have been developed to support the inspection, management and planning efforts for the District's MS4 infrastructure. A geodatabase containing outfalls, gravity lines, junctions, catch basins and other components of the conveyance system was initially developed by DC Water. DOEE continues to update and refine the geodatabase based on field verification and QA/QC procedures and has used the information to develop a layer outlining the catchment area for each MS4 outfall. All MS4 outfalls and their corresponding catchments have been associated with the TMDL waterbodies in which they occur.

6.13.2 Modeling of Stormwater Impacts

The District of Columbia developed a model, known as the Consolidated TMDL Implementation Plan Modeling Tool (IPMT), to support pollutant load estimation and pollutant reduction, and to track progress in achieving WLAs. The IPMT calculates runoff volumes and pollutant loads using the simple method (see Section 5.5 above) and uses the SGS's current BMP inventory and BMP efficiencies in order to calculate the runoff volume and pollutant load removed. The Consolidated TMDL Implementation Modeling Tool was designed in order to accomplish the following tasks:

- Estimate baseline and current pollutant loads;
- Tabulate loads on an annual basis;
- Estimate pollutant load reductions achievable via various BMP implementation scenarios; and
- Represent the daily expression of the TMDL.

Updates to the IMPT will be included in the draft updated Consolidated TMDL Implementation Plan in March 2022.

6.14 Signatory and Certification requirements

In accordance with section 6.11 of the current MS4 Permit, the Mayor delegated signatory authority for any documents required to be submitted to EPA to the Director of DOEE or his designee. A copy of the letter sent by the District's City Administrator to the EPA regarding the delegation of authority was included in the 2009 SWMP.

7 ASSESSMENT OF CONTROLS

This section provides a strategy to assess the effectiveness of the District's SWMP. As discussed in Section 1.1, the District is updating the Consolidated TMDL Implementation Plan. This IP sets a schedule for attainment of MS4 WLAs, and also includes a framework for tracking progress and adaptive management. The assessment will use pollutant load reductions achieved by BMP implementation, as estimated by the Consolidated TMDL Implementation Plan Modeling Tool. Demonstration of progress will be accomplished by comparing the area managed by BMPs and associated load reductions with the interim milestones and numeric benchmarks specified in the updated Consolidated TMDL IP.

7.1 Assessment of the Stormwater Management Program

The District's SWMP will be evaluated through direct and indirect measurements, in accordance with the guidance in EPA's "Guidance, Manual for the Preparation for Part 2 of the NPDES Permit Applications from Municipal Separate Storm Sewer Systems." As indicated in the EPA manual, direct measurement "includes the number of BMPs installed, removal efficiencies, stormwater volume reduction, event mean concentration reduction, and pollutant loading reduction." For some of the components of the District's SWMP, such as implementation of structural controls (e.g., bioretention cells, sand filters), the effect on pollution from stormwater runoff is observable and pollutant removal efficiencies can be modeled and estimated directly.

For other components, such as outreach programs for industrial facilities, new regulatory initiatives and the installation of storm drain stencils, pollutant reductions are hard to quantify and incorporate into benchmarks. For these harder to quantify activities, EPA encourages applicants to identify some indirect measurement that can be used to evaluate their success. As stated in EPA's manual, indirect measurement "includes but is not limited to, the amount of household hazardous waste collected, number of public hearings and attendance at these hearings, number of spill cleanups, number of sewer inlet stencils, number of educational brochures distributed, and number of erosion and sediment control permits issued."

7.1.1 Direct Measurement of Program Effectiveness

The District will submit estimates of expected pollutant load reductions from the Consolidated TMDL IP Modeling Tool. This modeling tool incorporates modules focused on calculating stormwater runoff (based on the Simple Method), calculating pollutant loads (based on EMCs derived from the District's wet weather monitoring program or from the original TMDL studies), and for calculating pollutant load reductions (based on implementation of BMPs and removal efficiencies for BMPs from EPA's Chesapeake Bay Program and other reputable sources).

7.1.2 Indirect Measurement of Program Effectiveness

Progress of stormwater management activities under the District's SWMP can also be assessed indirectly using statistics on stormwater management activities implemented and reported by District agencies. While these measures are qualitative and not quantitative, the level of effort, equipment and personnel dedicated to each stormwater management activity help assess pollution reduction resulting from improvements to the SWMP. It is important to note that the unit of measurement (tons, units, pounds, etc.) for each indirectly measured activity may vary

each year, as certain activities are subject to development trends, weather, increased education and changes in consumer habits. For example, the number of annual plan reviews conducted per year is subject to economic development trends in the District, and the amount of hazardous waste collected may decrease as citizens learn to reduce the production of household hazardous waste by switching their purchasing habits to less toxic products. Therefore, these indirect measurements must be assessed in the context of the District's overall stormwater management program. Indirect measurement statistics may include, but are not limited to the following:

- Number of catch basins cleaned;
- Number of miles swept;
- Tons of leaves collected each year;
- Number of construction plans reviewed;
- Number of outfall inspections performed per year;
- Tons of household hazardous waste collected;
- Number of education materials distributed; and
- Number of boat trips.

7.1.3 Impacts of Stormwater Controls on Groundwater

The promotion and implementation of green infrastructure includes the promotion and implementation of infiltration BMPs, such as infiltration trenches and basins. However, infiltration BMPs have the potential to contaminate groundwater if they are constructed on previously contaminated land or on land that has the potential to receive pollutants from proposed development. To address the potential of groundwater contamination via seepage, the revised stormwater management and erosion and sediment control regulations prohibit the use of any infiltration practice on previously contaminated land (remediation has not occurred) and on land that will be developed for an industry or business that has the potential to pollute stormwater runoff. In previously contaminated land, projects are permitted to remediate to acceptable screening levels determined by end use by the EPA. In these cases, the Regulatory Review Division coordinates internally at DOEE with the Toxic Substances Division to ensure that all remediation requirements have been met. In addition to the revisions in the stormwater regulations, DOEE is also in the process of proposing additional regulations for discharging groundwater into the MS4. Between the new regulations and the existing stormwater regulations, DOEE will ensure that any groundwater or stormwater that contains pollutants exceeding surface water quality standards will be treated prior to discharge or being containerized.

8 ANNUAL REPORTS ON THE EFFECTIVENESS OF THE STORM WATER MANAGEMENT PROGRAM

The District will continue to submit an Annual Report to EPA throughout the Permit term. The Annual Report will consolidate the Annual Report, Implementation Plan, and Discharge Monitoring Report into one MS4 Program Annual Report. The Annual Report will include, among other things:

1. The status of implementing the components of the SWMP;
2. Proposed changes or revisions to the SWMP;
3. Summary of stormwater management activities;
4. TMDL WLAs and TMDL implementation activities;
5. Summary of water quality monitoring data;
6. Results of water quality modeling; and
7. Event Mean Concentration and annual pollutant loadings for wet and dry weather events for pollutants of concern.

The Annual Report data will be evaluated in preparing SWMPs for any future permits. Annual Reports will also be used in identifying any required modifications of the current MS4 Permit for the remainder of its term.

8.1 Notifications to Historic Preservation

The current MS4 Permit requires any projects required by the permit will have no adverse effect on historic properties. All projects will be subjected to review by the DC State Historic Preservation Officer (SHPO), DOEE will coordinate and consult early with the DC SHPO and EPA and DOEE will consult with DC SHOP if requested by DC SHPO. DOEE will revise those projects as necessary to avoid adverse effects on historic properties.