Annual Report

2022 Nonpoint Source Management Program

District of Columbia Department of Energy and
Environment

Reporting Period:

October 1, 2021 – September 30. 2022

Table of Contents

Figures

Tables

Executive Summary

In accordance with Section 319 of the Federal Clean Water Act, this report documents the activities and accomplishments by the District of Columbia (District) 319 Nonpoint Source (NPS) Management Program during Fiscal Year (FY) 2022, which runs from October 1, 2021, through September 30, 2022. The District Department of Energy and Environment (DOEE) is the lead agency for administering Section 319, including 319(h) funding. DOEE helps to protect and improve District water quality by promoting, funding, and tracking the implementation of best management practices (BMP), stream restoration efforts, education and outreach, and other measures to reduce NPS pollutant loads.

In FY 2022, the District received $1,191,000 through the Environmental Protection Agency (EPA) 319(h) grant and matched it with $794,000 to support the District's NPS pollution reduction efforts. Over the course of FY 2022, some of the District's accomplishments include removing over 165,000 pounds of trash from District waterways, the installation of multiple LID retrofit projects on public and private property, and training over 500 employees on proper pollution prevention strategies. DOEE's NPS management work was still impacted by the COVID-19 pandemic throughout FY 2022, resulting in more virtual events and trainings and limited contact with the public.

Mission and Goals of the District of Columbia's NPS Management Program

The mission of the District's NPS Management Program is to prevent and control NPS pollution in District waterways. Implementing both regulatory and non-regulatory approaches, the NPS Management Program works to safeguard the District's water and soil resources as well as the health and welfare of citizens using those resources.

DOEE's *Nonpoint Source Management Plan for the District of Columbia, 2019* outlines a comprehensive strategy for managing NPS pollution in an urban environment to restore beneficial uses, and sets new goals and objectives, including specific milestones for when the goals and objectives will be achieved. The format and goals in this annual report were organized to reflect the goals outlined in the approved management plan. The plan is aimed at reducing NPS pollution from urban runoff, construction, and hydrologic/habitat modification and includes:

- Supporting activities that reduce pollutant loads from urban runoff, litter prevention, and trash removal;
- Supporting and implementing activities that restore and maintain healthy habitat, species diversity, and water flows to all tributaries to the Anacostia River, Rock Creek, and Potomac River;
- Installing LID practices on public and private properties throughout the District to maximize reduction in stormwater runoff;
- Coordinating NPS Management program efforts with other District, federal, and private sector programs and adjoining jurisdictions;

- Supporting programs that aim to prevent NPS pollution from individual actions by carrying out effective information and education campaigns; and
- Coordinate a pollution prevention program that reduced stormwater pollution from industrial and commercial facilities in the District by providing compliance assistance and encouraging the adoption of practices that will improve water quality in District waterways.

The District's NPS Management Program is administered by DOEE's Watershed Protection Division (WPD), which consists of the Restoration Branch and the Partnering and Environmental Conservation Branch. The mission of WPD is to protect and restore the environmental health of the District's watershed by restoring streams and wetlands, providing incentives to control NPS pollution, and conducting outreach and education. The Restoration Branch manages large-scale LID, stream, and restoration projects, as well as the RiverSmart Homes, RiverSmart Communities, and other incentive programs included in the NPS Management Program that conserve the soil and water resources of the District to protect watersheds from pollution. The Partnering and Environmental Conservation Branch is responsible for RiverSmart Schools, Community Stormwater Solutions, and other initiatives that cultivate partnerships through engagement, education, and financial, technical, and compliance assistance to enforce District laws that achieve clean water goals and support communities.

The District has also created an EPA-approved *Consolidated TMDL Implementation Plan* (2016), which superseded the *Oxon Run WIP* (2010), the *Rock Creek WIP* (2010), and the *Anacostia River WIP* (2011). The plan identified water body impairments, technically appropriate implementation projects, and timelines that guided DOEE in its work. An updated Consolidated TMDL Implementation Plan was finalized in September 2022. When prioritizing water quality improvement efforts, DOEE assesses the health of all significant waterbodies in the District and prioritizes based on data gathered from water quality monitoring. DOEE then characterizes waterbody impairments and threats that are included in the District's Section 305(b) reports as required by the federal Clean Water Act. The reports describe many of the District waterbodies as not supporting their swimmable (primary contact recreation) and fishable (fish consumption) designated uses.

Urban stormwater runoff is a prevalent source of pollutants to District waterbodies. Primary NPS pollutants of concern include nutrients, sediment, toxicants, pathogens, and hydrocarbons. The few waterbodies that partially or fully support a designated use are also threatened by NPS pollutants. Processes to prioritize subwatersheds for NPS implementation in the District can be found in the Consolidated TMDL Implementation Plan referenced above.

This annual report is written in response to *Sections 319 (h)(8) and (11) of the Clean Water Act (33 UC 1329)*, for the purpose of documenting progress made in FY 2022 by the District of Columbia in implementing its *Nonpoint Source Management Plan for the District of Columbia, 2019*.

Goal One: Support Activities that Reduce Pollutant Loads from Urban Runoff, Litter Prevention, and Trash Removal

Inspection and Enforcement

Anacostia Clean Up and Protection Act

The District continues to implement the Anacostia Clean Up and Protection Act of 2009 (Bag Law), which required any business that is selling food or beverages to charge five cents for every disposable bag distributed, with limited exceptions. The Bag Law is working to keep trash out of District waterbodies by incentivizing residents to use reusable bags and reduce consumption of disposable bags. Additionally, funds from the disposable bag fee are funding important projects aimed at reducing NPS pollution, including the maintenance of trash traps, stream restoration, reusable bag distribution, and environmental education.

During FY 2022, DOEE sent emails to 25 grocery and pharmacy chains to remind them of the Bag Law requirements, and over 5,000 postcards to businesses with a food license to remind them to remit the bag fee to the Office of Tax and Revenue. DOEE inspected 460 businesses for Bag Law compliance and found a 68% compliance rate.

Sustainable DC Omnibus Amendment Act

In 2008, the Anacostia Watershed Society (AWS) determined through their monitoring that expanded polystyrene (more commonly referred to as Styrofoam™) was one of the top-four-most common types of trash found in the Anacostia River. As part of the Sustainable DC Omnibus Act of 2014 (Food Service Ware Regulations), the District passed a ban on disposable food service ware made of expanded polystyrene and other products that cannot be recycled or composted. The ban on polystyrene went into effect in January of 2016 while additional compostable/recyclable requirements became effective in January 2017. In October 2018, the list of acceptable recyclable items was updated to ban single-use plastic straws and stirrers. The ban on these products affected all businesses and organizations in the District that serve food. The foam ban was expanded in January 2021 to include the retail sale of foam coolers and shipping materials.

The Zero Waste Omnibus Amendment Act of 2020 limits the distribution of disposable food service ware (such as utensils, condiment packets, and straws) only to customers that request them. This amendment act also created a grant program to support businesses that are transitioning from disposable to reusable food service ware. The disposable utensils requirements are January 2022, and the grant program will be open in the Spring of 2022.

In FY 2022, DOEE completed 256 food service ware inspections and found a compliance rate of 88%. DOEE also completed an outreach campaign to around 5,000 District food-serving entities to inform them of the "Utensils By Request" regulation, which stipulates that business must not include utensils, condiment packages, and other disposable food accessory items in all orders unless they are first requested by the customer.

Comprehensive Stormwater Management Enhancement Amendment Act

The Comprehensive Stormwater Management Enhancement Amendment Act of 2008 (Coal Tar and High-PAH Sealant Ban), effective July 1, 2009, prohibits the sale, use, and permitting of coal tar-based pavement products in the District. The law was amended in March 2019 to expand the list of banned products to include other sealants that do not contain coal tar but contain high amounts of polycyclic aromatic hydrocarbons (PAH). When stormwater washes particles and dust from these sealants, down storm drains, and into local streams and rivers, it threatens aquatic life in the Anacostia River, Potomac River, and the Chesapeake Bay. The Coal Tar and High-PAH Sealant Ban helps to protect human health and the environment by reducing the amount of toxic PAHs in District communities and ecosystems.

In FY 2022, DOEE performed 60 coal tar inspections and found a compliance rate of 100%. DOEE also mailed outreach letters to District contractors and home improvement stores to inform them of the new regulations against high-PAH pavement products. In Q2 of FY 2023, DOEE will begin reviewing the testing protocol from the Chesapeake Bay Program's Goal Implementation Team Toxic Contaminants Workgroup to determine next steps for integrating the protocol into our enforcement strategy.

Trash Removal

In 2010, the District and the State of Maryland established a total maximum daily load (TMDL) for trash for the Anacostia River. These loads were calculated based on stream and shoreline transect sampling performed by AWS through a grant from DOEE. For the District's portion of watershed, an annual load allocation totaling 103,188 pounds of trash was assigned.

In FY 2022, DOEE implemented a new grant program focused on providing funding to NGOs to remove trash and invasive species from park space throughout the District. A total of 67,455 lbs of trash was removed through this program from sites in the Potomac, Rock Creek, and Anacostia watersheds in 2022.

In FY 2022, DOEE continued to work with the Alice Ferguson Foundation (AFF) on implementing an education and outreach campaign throughout the District's portion of the Anacostia river watershed to inform residents and visitors of the challenges associated with trash in the city's waterways. DOEE also continued to work with the DC Metropolitan Police Department, the District Department of Public Works, and the National Park Service (Park Service) to implement the DumpBusters program.

In FY 2022, 2,714,073 pounds of trash were removed from District waterways. The breakdown of how much trash was collected through each method can be seen in Figure 1.

Source of Trash Collection	Amount of Trash Removed (lbs.)
Trash Traps	7,785
Organized Shoreline Cleanups	67,455
Environmental Hotspots	3,018
Clean Team Program	1,661,573

Skimmer Boats	974,000
Bag Law	242
Total:	2,714,073

Figure 1 - Breakdown of trash removed from District waterways in FY 2022

Trash Free Shorelines

DOEE started the Trash Free Shorelines program in FY 2021, which aims to capture and remove litter from the shorelines of the Anacostia River and Washington Shipping Channel by piloting and testing new trash reduction technology. The first technology to be piloted through this program will be Seabins™, a new type of trash skimmer that is designed to act as a floating garbage bin that can intercept and collect floating debris, macro and micro plastics, and microfibers that are present in the waterway.

Figure 2 – Installation of a Seabin at Yards Marina

Anacostia Riverkeeper (ARK) was selected as the grantee for this project in June 2021. In FY 2022, 23.152 pounds of trash were collected by the Seabins from installation (first two installed Dec. 2021) through Sept. 30, 2022, including 3,362 pieces. We expect our collection numbers will be higher for FY23 due to some to some post installation adjustments and an addition of regular oversight.

Two of the five Seabins purchased with grant funds were installed at Yards Marina (near Navy Yard in DC) in December 2021. The devices joined two that had been previously installed at the same location by the marina. The remaining three Seabins were installed at James Creek Marina in September-October 2022.

Press coverage of the Trash Free Shorelines grant funded Seabins project: https://dcist.com/story/21/12/15/new-underwater-trash-bins-clean-up-anacostia-river/

Video produced by Anacostia Riverkeeper: https://www.youtube.com/watch?v=NqS9X5y4ia8

Table 1 - Goal One: Support Activities that Reduce Pollutant Loads from Urban Runoff, Litter Prevention, and Trash Removal

Objectives by 2023	Milestone	2019	2020	2021	2022	2023	Total
To complete at least 2,750 inspections of businesses regulated by the Anacostia Clean Up and Protection Act (Bag Law)	550 inspections per year	554 inspections	217 inspections	157 inspections	460 inspections		1,388 inspections
To complete at least 1,500 inspections of entities regulated by the Sustainable DC Omnibus Amendment Act 2014 (Food Service Ware Regulations)	300 inspections per year	319 inspections	154 inspections	254 inspections	256 inspections		983 inspections
To educate 1,000 businesses regulated by the Bag Law and Food Service Ware Regulations and the public about any changes in requirements in an effective and efficient manner	Educate 200 businesses per year	5,000 businesses	17 businesses	7,000 businesses	10,000 businesses		22,017 businesses
To complete at least 300 inspections of regulated properties to ensure compliance with the Comprehensive Stormwater Management Enhancement Amendment Act of 2008 (Coal Tar and High-PAH Sealant Ban)	60 inspections per year	63 inspections	45 inspections	53 inspections	60 inspections		221 inspections
To remove 600,000 pounds of trash through a combination of street, stream, and shoreline clean-up efforts; maintenance of trash traps; skimmer boat operations; street sweeping; and implementation of litter reduction policies	120,000 pounds of trash removed per year	131,000 pounds	534,972 pounds	665,907 pounds	2,714,073 pounds		4,405, 952 pounds

Goal Two: Support and Implement Activities that Restore and Maintain Healthy Habits, Species Diversity, and Water Flows to all Tributaries to the Anacostia River, Rock Creek, and Potomac River

Stream and Wetland Restoration

Stream and wetland restoration is the act of modifying a waterway or marsh to improve its environmental health and habitat.

Due to urbanization, 65% of the District is impervious surface. This causes all District streams to face similar threats from high amounts of impervious surface runoff. Consequently, stormwater flows increase and the geomorphological flow of streams ultimately changes, eroding their banks and beds. Stream restoration attempts to alleviate the stress of the increased stormwater flow by creating a new channel to better manage stormwater runoff.

In FY 2022, DOEE had 4 major stream restoration projects under design: Fort Dupont (18,600ft), Oxon Run (21,000ft), Park Drive (1,300ft), and Stickfoot Branch (950ft). DOEE began preparing solicitation packages for gully restoration work at Linnean Ave. NW, multiple Rock Creek outfalls, Pinehurst Branch stream restoration, and neared completion of the 36th Pl. SE Wetland procurement process.

Alger Park Stream Restoration

The restoration of 1,540 linear feet of stream in Alger Park was completed in FY 2017. The project used regenerative stream restoration techniques and added more than half an acre of wetland to the stream corridor. The project planted over 3,000 wetland plants, 300 shrubs, and 300 trees. DOEE conducted outreach in the watershed related to our RiverSmart Homes program to maximize installation of private home LID practices in the area draining to Alger Park. Prior to restoration, conservative estimates showed that Alger Park had one of the most eroded stream beds in the District, losing more than 100 tons of sediment per year.

DOEE completed 1,541ft of stream restoration in Alger Park and 28 public space LID practices in the drainage area to Alger Park by 2017. In subsequent years, including FY 2022, DOEE has continued post construction quarterly maintenance visits and monitoring of Alger Park and took over control of the LID maintenance as well.

Branch Avenue Park Stream Restoration

Branch Avenue Park is a triangular wooded parcel in the District's southeast quadrant that is bound by major roads on each side. A stream flows through this park, entering from an enclosed storm drain system in the northwest region of the park and leaving through an enclosed storm drain system in the southeast region. The downstream storm drain system discharges into Oxon Run, a tributary to the Potomac River. DOEE completed the Branch Avenue Park Stream Restoration project in early FY21. This project restored 580 feet of perennial stream and 150 feet of an eroded ephemeral gully. DOEE worked on post-construction quarterly maintenance and monitoring in FY 2022.

Congress Heights Stream Restoration

The Congress Heights Recreation Center is located in the Oxon Run watershed and is approximately four acres, one of which is impervious surface. In FY 2018, DOEE began the process of contracting to restore a woodland stormwater gully located on the south side of the Congress heights Recreation Center by implementing a Regenerative Stormwater Conveyance (RSC) channel. The construction for this RSC technique was completed in October 2019 and includes the use of boulder step pools that safely convey storm flows while encouraging stormwater treatment and infiltration in the gully along the existing conveyance channel. In total, 400 linear feet of stream were restored.

Fort Dupont Stream Restoration

The District has commenced a comprehensive project to restore the Fort Dupont watershed with five main components:

Figure 3 – Congress Heights Stream Restoration

- Community outreach and educational activities focused on watershed restoration;
- Upland LID work on private property within the watershed through voluntary implementation efforts;
- Installation of LID on National Park Service or public right of way areas;
- Stream restoration; and
- Wetland restoration

DOEE began efforts to achieve these goals in FY 2017. In FY 2018, DOEE partnered with the National Park Service and the Eastern Federal Lands Division of the Federal Highway Administration to install over 2,500 feet of bioswales along the roadways that transect Fort Dupont. These bioswales catch and filter roadway runoff before it enters the stream network, helping to reduce the velocity and improve the quality of water entering the Fort Dupont stream during a rain event.

In FY 2019, DOEE worked on an Environmental Assessment (EA) identified 10 initial project areas to be included in the Fort Dupont Stream and Wetland Restoration Project. Project areas 1-9 will be stream design projects utilizing Regenerative Stream Design (RSD) as the primary approach to restoration, include approximately 13,000 feet of perennial stream restoration, and be exclusively comprised of stream restoration combined with outfall stabilization. The tenth project area will consist of daylighting 425 feet of piped stream between the nearby bike trail and the Anacostia River, as well as designing the land around it to create a tidal wetland complex behind the seawall (Figure 3). The stream design contract was awarded in FY 2020.

In FY 2022, DOEE advanced stream and wetland restoration designs at Fort Dupont to the 60% phase. DOEE began the pre-NEPA compliance process which is expected to be completed in FY 2023 along with final design plans for 18,600ft of stream restoration. DOEE will have a separate NEPA compliance process for wetland restoration work along the seawall which will combine stream daylighting and fringe wetland creation of at least 5 acres of wetlands.

Fort Dupont presently does not meet water quality standards for swimming use, recreation use, aquatic life, and fish consumption. The primary pollutants that are preventing the stream from meeting water quality standards are E. coli and a high amount of total suspended solids (TSS). The stream restoration at Fort Dupont will drastically reduce the TSS runoff loads, which could ensure that the stream meets water quality standards for secondary contact use and aquatic life.

Oxon Run Stream Restoration

The District's upper portion of Oxon Run has natural streambanks that suffer from high rates of erosion due to the flashy nature of the stream during storm events. Severe bank erosion has caused massive tree loss, excessive downstream sedimentation, and the exposure of a large sanitary sewer line in multiple locations. The middle portion of this stream is trapezoidal concrete structure installed in the 1960s to reduce flood risk in the nearby neighborhoods. The concrete channel provides little to no habitat areas for aquatic or terrestrial species and created a barrier for larger fish. Additionally, the lower portion of Oxon Run has naturalized stream banks that are highly unstable.

In FY 2022, DOEE awarded a letter contract to initiate stream monitoring and design work for Oxon Run as well as the development of a Park Master Plan for the surrounding park area. Throughout FY 2022, assessments were performed of the watershed, the stream, macroinvertebrates, fish, and the park area. In FY 2023, DOEE will begin developing preliminary designs and initiate pre-NEPA compliance work.

Park Drive Gully Restoration

The Park Drive Gully Restoration project is in the southeast quadrant of the District and has two different restoration sites: Fort Davis and Texas Avenue. Both sites ultimately drain into the Anacostia River and are in Fort Davis Park (owned by the National Park Service).

In FY 2022, DOEE advanced designs at Park Drive to the 100% design phase for 1,300 feet stream restoration work. DOEE expects construction activities to commence and be completed in FY 2023.

Pinehurst Branch Stream Restoration

Pinehurst Branch originates at the District/Maryland border and flows approximately 1.3 miles east-southeast on National Park Service property to its confluence with Rock Creek. The land use of Pinehurst Branch's 619-acre watershed is approximately 70% residential and commercial development and 30% parkland. Approximately 70% of the watershed lies within the District, with the remaining 30% in Montgomery County, Maryland. The large amount of impervious surfaces in the watershed has caused significant erosion in Pinehurst Branch, resulting in

sediment transport to Rock Creek and exposed sanitary sewer lines throughout the stream. DC Water had abandoned or removed existing sanitary sewer lines in Pinehurst Branch and DOEE will coordinate with them to restore the stream over the next few years.

The Pinehurst Branch stream restoration project will restore approximately 7,900 feet of degraded stream reaches, create conditions suitable for wildlife habitat, and improve the conditions of existing wetlands.

In FY 2017, DOEE began an EA process to explore options on how to implement the restoration to achieve these objectives. A contract for the EA was awarded in FY 2019 with the actual assessment beginning in FY 2020. As archaeological and Environmental Assessment work continued in FY 2021, project partners came to the consensus that more information is needed before the public can be presented with a viable option for restoration. The existing EA contract was abandoned and a new solicitation for data collection, preliminary design, and completion of the EA was developed. In FY 2022 progress continued on the Pinehurst Stream and Wetland Restoration Project, with solicitation development for the completion of the Environmental Assessment, advancement of the Public Involvement Strategy and designs. Solicitation is expected to go to internal review in February 2023 with multiple rounds of negotiations expected with the Office of Contracting and Procurement.

Spring Valley Stream Restoration

The Spring Valley Park stream is a 1,100-foot stream and tributary to the Potomac River. DOEE began collecting pre-restoration monitoring date in FY 2014 with the intent to replace the existing incised stream channel with a stable stream channel. In FY 2017, DOEE awarded a design-build contract for the restoration of the Spring Valley Park stream. DOEE met with community members during the restoration to inform them about this project and encourage them to adopt practices on their properties to reduce stormwater runoff to the stream.

In September 2019, DOEE completed the Spring Valley Stream Restoration. The restored channel was sized to convey increased stormwater flows at a shallower flow depth. This will reduce shear stress on the channel and minimize potential bank erosion in the future. A recreational trail was also installed through the park, creating a loop, allowing residents access to the restored stream. In FY 2022, the stream was assessed for minor repairs and continued to be monitored.

Stickfoot Branch Stream Restoration

In FY 2017, DOEE entered into an agreement with DC Water to restore a headwater tributary of Stickfoot Branch that drains into the Anacostia River. In FY 2019, DOEE issued a contract to execute an EA and develop stream designs for this restoration project. Designs were advanced to the 30% design phase and all NEPA compliance was completed in FY 2020. In FY 2022, DOEE completed designs on 950ft of stream restoration and began the permitting process for the project. Pre-restoration monitoring occurred in FY 2022. Stream restoration work will go out for bids in FY 2023 with completion expected in FY 2024.

This project will involve the restoration of over 950 feet of degraded urban stream and improving the protection of a sanitary sewer line within the restoration area (Figure 4).

Outfall Repair

Branch Avenue Park Outfall Repair

In addition to the stream restoration at Branch Avenue Park, two degraded outfalls were repaired and stabilized in FY 2020. A recreational trail was also installed through the park for residents to have access to the restored stream in FY 2021. Monitoring continued through FY 2022.

Park Drive Outfall Repair

As a part of the Park Drive gully restoration, four outfalls within the project area will be repaired and stabilized. All restoration activities should be completed in FY 2023.

Spring Valley Outfall Repair

Figure 4 - Eroded outfall at Park Drive to be repaired in FY 2023.

As part of the Spring Valley Stream Restoration project, two outfalls within the project area were repaired and construction was completed in September 2019. In FY 2022, the outfalls and stream were assessed for minor repairs and continued to be monitored.

Stickfoot Branch Outfall Repair

In addition to the stream restoration occurring at Stickfoot Branch, DOEE has issued a contract to conduct an EA and develop designs for the repair of four storm sewer outfalls within the restoration area. 100% designs were completed and pre-restoration monitoring occurred in FY 2022. Project work should be completed in FY 2024.

Table 2 - Goal Two: Support and Implement Activities that Restore and Maintain Healthy Habitat, Species Diversity, and Water Flows to all Tributaries to the Anacostia River, Rock Creek, and Potomac River

Objective by 2023	Milestone	2019	2020	2021	2022	2023	Total
To restore 4 miles of stream or 12 percent of the District's total stream/river length	0.8 miles of stream restored per year	.21 miles	.21 miles	0 miles	0 miles		.42 miles
To restore and maintain 10 acres of wetlands	2 acres of wetlands restored and maintained per year	0 acres	0 acres	0 acres	0 acres		0 acres
To repair 50 outfalls, or substitute a portion of outfall repairs with stream restoration with a demonstration that the in-stream water quality benefits of restoration exceed those derived from outfall repairs	Restore 10 outfalls per year (or substituted a portion of outfall repairs with stream restoration work)	2 outfalls	2 outfalls	0 outfalls	2 outfalls		6 outfalls

Goal Three: Install LID Practices on Public and Private Properties Throughout the District to Maximize Reductions in Stormwater Runoff

Public Property LID Installations

Parkland LID Retrofits

DOEE developed a new program to retrofit parkland sites around the District. "Parkland LID Retrofits" aim 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. The partnership between DOEE and DPR continued into FY 2022. Below is a list of completed projects.

- Amidon Park: Subsoiling techniques were applied to approximately 1.2 acres of compacted athletic fields, improving stormwater infiltration.
- Congress Heights Park: Restoration included invasive species removal and the restoration of a 300 foot stream channel.
- Palisades Recreation Center: The installation of a bioretention system was completed in FY 2021 and provides a stormwater retention volume of 1,761 cubic feet.
- Douglass Recreation Center: The installation of a bioretention system was completed in FY 2021January 2021 and provides a stormwater retention volume of 2,031 cubic feet.
- Benning Park/Woody Ward Recreation Center: The conversion of asphalt into a pocket park for community recreational use and the installation of a bioretention system and a water quality swale was completed in FY 2021 and provides a stormwater retention volume of 6,574 cubic feet.
- Fort Greble Park: Two bioretention systems and large parcel tree planting was completed in FY 2021 and provides a stormwater retention volume of 1,797 cubic feet.
- Fort Stevens Recreation Center: Two bioretention systems were installed in FY 2022, as well as erosion control measures on slopes to protect mature tree canopy.

Carter Barron Stormwater Retrofit Project

The Carter Barron Stormwater Retrofit project area is a 30-acre site located in the northwest quadrant of the District. The project area was identified as a priority restoration area by U.S. Fish and Wildlife Service (FWS), National Park Service, and DOEE due to its impact on the existing habitat along Rock Creek. Nestled within Rock Creek Park, the site is home to the Carter Barron Amphitheatre and the Rock Creek Tennis Center and sits at the headwaters of the Blagden Run watershed. The Blagden Run watershed averages 69% impervious cover and the project area includes 11 acres of impervious surface, or approximately 15% of the imperviousness in the whole watershed.

Before LID installation, the targeted 11-acre impervious area had no stormwater controls because it was developed prior to the promulgation of the District's stormwater regulations. During rain events, stormwater swiftly left the project area from drainage outfalls, concentrating

flows into erodible gullies, lowering localized infiltration and the groundwater table, and therefore impacting and reducing native habitat along Rock Creek. Stormwater also left the project area through overland flow and a storm sewer that drains directly to Blagden Run.

The goal of the Carter Barron Stormwater Retrofit project was to fully retrofit the targeted 11-acre impervious area with green stormwater infrastructure (GSI) to restore natural hydrology, prevent erosion, reduce stormwater pollution, and protect and restore existing natural habitat for federally listed endangered species and other species. The project was completed in August 2019 and subsequently won the 2019 Best Retrofit in the Chesapeake Bay award. Retrofitting this 11-acre impervious area will capture more than 5,000,000 gallons of stormwater runoff annually.

In FY 2022, DOEE supported the completion of two maintenance visits to the Carter Barron LID projects.

Hamlin Street Stormwater Retrofit Project

The Hamlin Street LID Stormwater Retrofit project is located within the District's Hickey Run watershed at the southeastern side of the 2000 block of Hamlin Street NE (Figure 5). This project site was receives drainage from approximately 3.1 acres of land, with approximately 1.3 acres of it from impervious cover, and has a high potential for treating stormwater

Figure 5– Hamlin Street Bioretention

management practices installed through DOEE's RiverSmart Homes program. However, the street itself has no stormwater controls because it was developed prior to the promulgation of the District's stormwater regulations.

DOEE issued a contract for the design of an LID stormwater retrofit at the Hamlin Street project site in FY 2020. In FY 2021, designs for the project were completed and all permits were approved. Construction began on the project in September 2021.

Construction of the Hamlin Street, NE, Stormwater Retrofit Project began in May 2022 and proceeded uninterrupted through the end of the fiscal year. The two bioretention systems installed utilized innovative design approaches to increase stormwater capture. Both systems have storm chambers installed underneath the bioretention filter media in a green-grey hybrid

approach. It is estimated that when completed, these two systems will manage stormwater from up to 2.75 acres of urban land, approximately ~50% of which is impervious cover, providing retention of ~2,400 cubic feet of stormwater in every storm event.

Hickey Lane Stormwater Retrofit Project

The Hickey Lane LID Stormwater Retrofit project is located within the U.S. National Arboretum (USNA) at the intersection of R Street NE and Hickey Lane NE. The project site was identified as a priority LID retrofit area by USNA because it has a contributing drainage area of approximately 8.1 acres of land, with approximately 2.2 acres of it from impervious cover. The purpose of this project is to reduce stormwater runoff and pollution, prevent erosion, restore natural hydrology, and increase natural habitat in the Hickey Run watershed.

DOEE issued a contract for the design of an LID stormwater retrofit at the Hickey Lane project site in FY 2020. In FY 2021, designs for the project were completed and the permitting process began. Permitting for the project was approved in early FY 2022.

Construction on the Hickey Lane, NE Stormwater Retrofit Project started in July 2021 and the project was substantially complete by February 2022. The first of its kind in the District, a submerged gravel wetland was designed and installed along Hickey Lane, NE within the US National Arboretum's property. The BMP has a large contributing drainage area, managing stormwater runoff from land within the Arboretum as well as from the public right of way. Due to a high-water table in this location (likely an old, buried tributary to Hickey Run) the BMP necessitated an internal water storage layer which ultimately acts to detain stormwater and as a result provides enhanced Nitrogen removal. Plantings for the BMP were provided by the USNA and completed by Friends of the Arboretum (FONA) volunteers.

Tenleytown Mainstreet Stormwater Retrofit Project

In 2018, DOEE awarded a grant to the Center for Watershed Protection to install a LID stormwater retrofit in the District's Tenleytown neighborhood on the corner of Wisconsin Avenue NW, 42nd Street NW, and Emery Place NW. This is a voluntary stormwater management project with the goal of adding green infrastructure to the city and collaborating with the DC Business Improvement Districts and Main Streets. Upon completion this project will provide 670 cubic feet of stormwater retention through a curb extension bioretention and permeable paver patio.

In FY 2021, a traffic control study for this busy corner was completed and confirmed that an extended bioretention cell would not disrupt traffic patterns. Designs for the project were completed and fully permitted.

In FY 2022, this project began construction and we anticipate its completion in FY 2023.

RiverSmart Schools

RiverSmart Schools is a program that works with schools within the District to install LID practices to reduce runoff and NPS pollution while providing stormwater-related educational resources.

In FY 2022, RiverSmart Schools selected five (5) schools through an application process for schoolyard retrofits with stormwater green infrastructure and landscaping practices that maximize stormwater capture and infiltration. The awarded schools were Anacostia High School, Two Rivers Young Public Charter School, Lee East End Public Charter School, Friendship Collegiate Public Charter School, and Mundo Verde Calle Ocho.

The program trained 35 school staff virtually and in-person on how to use the sites as outdoor classrooms for their students. These lessons have reinforced concepts being taught in the classroom, including District Public School science and environmental educational standards. Due to delays in the contracting process, the project implementation started in early FY 2022 and will be completed in Q2 of FY 2023.

Private Property LID Installations
RiverSmart Communities

RiverSmart Communities is a program aimed solely at installing LID retrofits on non-profit and religious institutional properties. The program provides full funding for design and construction costs to participants on the condition that the non-profit partner will perform outreach and education on watershed protection and relevant DOEE programs. In FY 2022, RiverSmart Communities had a total of seven project areas:

Figure 6 – Bioretention completed at First Baptist Church

- Project Area 1: Mt. Airy Baptist Church
- Project Area 2: Stoddard Baptist Nursing Home
- Project Area 3: Zion Baptist Church
- Project Area 4: First Baptist Church
- Project Area 5: Guildfield Baptist Church
- Project Area 6: Georgetown Lutheran Church
- Project Area 7: Jones Memorial Methodist Church

Project areas 1-4 applied for the RiverSmart Communities program and were selected in FY 2021 (Figure 6). The designs and implementation of these projects were completed in FY 2022 and had a combined stormwater treatment area of 22,504 square feet. Project areas 5-7 applied for the RiverSmart Communities program and were selected in FY 2022. During this reporting period, the site selection, design charettes, and specific BMP selections for these project areas were completed. The plan review process has begun, and the completion of these project areas is anticipated for Spring 2023.

RiverSmart Homes

Because residential property is among the largest single land uses in the city and because the relatively small lot sized make it the least likely to be regulatorily required to install stormwater management practices, the District has recognized the importance of targeting and engaging homeowners for pollution reduction measures. In 2008, DOEE developed RiverSmart Homes, a LID retrofit program aimed at single-family homes. The program started with eight demonstration sites, on in each of the District's wards. It then expanded to a pilot program in the Pope Branch watershed and has been open to all District residents since 2009.

Through RiverSmart Homes, DOEE audits residential properties and provides feedback to the homeowners on what LID technologies can be safely installed to help manage stormwater.

DOEE also offers homeowners subsidized installations of any LID practices recommended by the audit, which can include rain barrels, shade trees, rain gardens, native landscaping to replace grass or invasive species (BayScaping), and permeable pavement.

Accomplishments for the RiverSmart Homes program during FY 2022 include the following:
- 1,079 property audits;
- 422 rain barrel installations;
- 84 rain garden installations;
- 383 BayScape garden installations; and
- 49 Impervious surface removal projects, totaling 26,852 square feet.

DOEE piloted a RiverSmart Homes Ambassadors program in FY 2022 with the goal of increasing program participation through enhanced outreach and engagement in historically underserved and overburdened communities. In FY 2022, program registrations increased about 25% in Wards 7 and 8, which are historically disadvantaged environmental justice communities. The program will continue to build on this early success and increase watershed protection stewardship throughout the Anacostia and Oxon Run watersheds.

Rain Barrel Installation and Rebate Program

The Rain Barrel Installation and Rebate Program is a component of RiverSmart Homes that allows District residents to have up to two rain barrels installed on their property for a small copayment, with DOEE subsidizing the rest of the cost. Alternatively, homeowners can purchase and install their own rain barrel and receive a rebate of $2 for every gallon of capacity in the rain barrel or cistern. This rebate program has a maximum of $1,000 in rebates per property.

In FY 2022, RiverSmart Homes installed 422 rain barrels on residential properties throughout the District and issued $8,855.18 in rebates to District residents. These rain barrels will capture approximately 22,230 gallons of water for every 1.25 inch rainstorm/annually.

Due to residual effects of the COVID-19 pandemic, the Rain Barrel Installation and Rebate Program had difficulty with supply chain issues when trying to source rain barrels. Due to low inventory and the inability to access barrels, a lower number of rain barrels were installed than expected.

Figure 7 – Permeable Paver Rebate Program Installation

Landscaping Installation and Rebate Program

The Landscaping Installation and Rebate Program is a component of RiverSmart Homes that allows District residents to have up to two conservation landscaping projects (e.g., rain gardens and BayScapes) installed on their property for a small copayment, with DOEE subsidizing the rest of the cost. Rain gardens are areas landscaped with native plants that are connected to a downspout in order to collect and absorb stormwater from a rooftop. BayScaping is native plant gardening with the goal of replacing slopes areas (or areas causing high stormwater runoff) with plants native to the Chesapeake Bay. Alternatively, homeowners are welcome to install their own rain gardens and apply for a rebate of $3 for every square foot of treatment area, with a maximum rebate of $2,200 per property.

In FY 2022, RiverSmart Homes installed 84 rain gardens and 383 BayScape gardens, resulting in over 50,160 square feet of native plant landscapes. This amount to 56,740 gallons retained per rain event.

Permeable Surface Rebate Program
The RiverSmart Permeable Surface Rebate Program is a component of RiverSmart Homes that allows District residents to receive a rebate to replace impervious surfaces with vegetation or permeable pavers.

In FY 2020, the program modified its eligibility area to the Municipal Separate Storm Sewer System (MS4) service area. This eligibility modification brought the rebate program in line with

Figure 2 - Permeable Paver Rebate Program installation in NE, Washington, DC   the eligibility area of RiverSmart Rooftop

rebates. Additionally, the program instituted a maximum, one-time rebate of $4,000 per property.

Properties within the service areas are eligible for rebate of $5 for every square foot of existing impervious surface that is converted into vegetation or for rebates of $10 for every square foot of existing impervious surface that is converted into permeable pavers.

In FY2022, the Permeable Surface Rebate Program rebated 49 projects totaling 26,852 square feet of permeable area and issued $168,820.00 to District residents. This amount to 13,285 gallons of stormwater retained per rain event.

RiverSmart Rooftops

The RiverSmart Rooftops green roof rebate program has been in effect since FY 2012. In the fall of 2020, the program changed its eligibility criteria to only include properties located within the MS4. This programmatic change was implemented with the goal to focus on installing projects where stormwater has a high impact on our streams. Currently, the program offers $15 rebate for every square foot of green roof that is voluntarily installed within the MS4.

In FY 2022, DOEE had 45 customers complete applications for a green roof rebate. Of the initial 45 applications, six projects were fully installed. 5,019 square feet of green roofs were installed through the RiverSmart Rooftops program. This amounts to 2,010 gallons of stormwater retention per rain event. Now that the vast majority of green roof installations in the District are to comply with regulatory requirements, there is diminished need for incentives. DOEE plans to sunset this program in FY 2023. As a result of this we will likely not meet our management program green roof goals via our voluntary program. However, we will likely exceed our installation goals via our regulatory installations. For example, we installed 360,000 square feet of regulated green roofing in FY 2022.

Tree Planting

The District has been called "The City of Trees," in recognition of its significant tree canopy in a dense urban environment. The tree canopy in the District is currently at 38 percent. While this is considered high tree coverage for an urban area, it is lower than the District's canopy cover has been in the past, even at times of higher population density. To improve air and water quality, reduce the urban heat island effect, and offset greenhouse gas emissions, the District adopted a 40 percent tree canopy goal. Mayor Bowser adopted a Sustainability Plan that calls for achieving the tree canopy goal by 2032. To achieve that goal, the District will need to plant an average of 10,800 trees annually.

In FY 2022, 9,433 trees were planted across the District by multiple stakeholders. DDOT's Urban Forestry Division planted 2,801 trees. DOEE funded the planting of 4,117 trees on private, federal, and other District lands, including the following:

- 1,693 trees on private property through the RiverSmart Homes, Communities and Schools programs;
- 346 trees on private property through the RiverSmart Homes rebate program; and
- 2,108 trees across District, federal, and private lands by the Large Parcel Tree Planting Program.

Each tree planted is estimated to harvest an average of 56 gallons of water per 1.25-inch rainstorm.

District-wide BMP Opportunity Assessment

In FY 2022, DOEE worked with the Center for Watershed Protection, Inc. (CWP) to conduct field work to assess the feasibility of potential stormwater BMP opportunities in the District.

The goal of this project was to develop a list of potential stormwater management opportunities that can be implemented by the District Department of Energy & Environment (DOEE) and partners over the next several years for the purposes of meeting water quality goals and federal permit requirements. This project identified a total of 364 potential stormwater BMP opportunities throughout the District. Definitions of different stormwater management techniques can be found in the 2020 Stormwater Guidebook.

Additional details can be found in this StoryMap: https://arcg.is/0yT51b

Table 3 - Goal Three: Install LID Practices on Public and Private Properties Throughout the District to Maximize Reductions in Stormwater Runoff

Objective by 2023	Milestone	2019	2020	2021	2022	2023	Total
To retrofit 30 District facilities with LID projects	Install 6 LID retrofit projects on District facilities per year	8 projects	5 projects	9 projects	5 projects		27 projects
To retrofit 15 facilities with LID projects through our RiverSmart Communities Program	Install 3 LID retrofit projects on private facilities per year	5 projects	4 projects	4 projects	4 projects		17 projects
To install 1,250,000 square feet or green roof	Install 250,000 square feet of green roof per year	675,809 square feet	909 square feet	8,415 square feet	5,019 square feet		690,152 square feet
To audit 5,000 residential homes through the RiverSmart Homes program	Audit 1,000 residential homes per year	1,226 audits	891 audits	1,413 audits	1079 audits		4,609 audits
To plant 50,000 trees	Plant 10,000 trees in the District per year	15,692 trees	12,974 trees	13,470 trees	9,433 trees		51,569 trees
To install 3,000 rain barrels	Install 600 rain barrels per year	226 rain barrels	447 rain barrels	308 rain barrels	383 rain barrels		1364 rain barrels
To install 500 rain gardens	Install 100 rain gardens per year	82 rain gardens	85 rain gardens	96 rain gardens	84 rain gardens		347 rain gardens

Goal Four: Coordinate NPS Management Program Efforts with Other District, Federal, and Private Sector Programs and Adjoining Jurisdictions

Partnerships and Coordination

The District comprises only a small portion of the watersheds that it resides in 17 percent of the Anacostia River watershed, 0.5 percent of the Potomac River watershed, and 0.1 percent of the Chesapeake Bay watershed. Furthermore, DOEE is not a landowning or landholding agency.

Because of this, strategic regional partnerships and collaboration with both governmental and private entities have become vital to the successful implementation of the agency's watershed protection and restoration work.

Local and Regional Partners

Almost 30 percent of the District is federal land, so coordinating with federal agencies is a critical component of efforts to reduce urban runoff. Starting in FY 2018, DOEE began convening with major federal landholding agencies within the District to develop nitrogen and phosphorus reduction strategies as part of the process for developing the District's Phase III WIP for the Chesapeake Bay. These federal agencies are:

- United States Department of Agriculture
- United States Department of Defense (USDOD)
- General Services Administration
- National Park Service
- Smithsonian Institute

Additionally, DOEE continued coordination with local and regional partners throughout FY 2022 by participating in:

- 24 meetings with Park Service to discuss stream restoration efforts;
- 2 meetings with Park Service and USDOD to discuss annual BMP submissions;
- 9 meetings with DC Water to coordinate restoration efforts;
- Three Urban Forestry Advisory Committee meetings;
- Three Natural Resource Damage Assessment meetings;
- 14 Kingman Island and Kingman Lake Coordination meetings;
- One Watershed Partners Meeting;
- Four Anacostia Watershed Steering Committee meetings;
- Four Quarterly Environmental Stakeholder meetings;
- 24 Green Infrastructure Maintenance Coordination meetings; and
- 8 Anacostia Waterfront Working Group meetings.

Chesapeake Bay Program

The Chesapeake Bay Program (CBP) is a unique regional partnership that has led and directed the restoration of the Chesapeake Bay. The District has been a partner in this program since its inception in 1983. By working with other legislative bodies and participating advisory groups, the partners have committed to work together through a series of Chesapeake Agreements. The 2014 Chesapeake Watershed

Figure 8 – Community Stormwater Solutions Mural Project at Minnesota Ave NE

Agreement includes 10 goals to advance a vision of clean water, abundant life, conserved lands, public access to water, a vibrant cultural heritage, and a diversity of engaged citizens and stakeholders. DOEE is the agency responsible for carrying out the District's program activities related to the Chesapeake Bay.

In FY 2022, DOEE participated in:

- one executive council meeting;
- 12 CBP management board meetings; and
- 43 meetings on over 15 Region 3 CBP implementation teams, working groups, advisory committees or similar.

Partnership and Planning Meetings

In June 2006, the Metropolitan Washington Council of Governments (MWCOG) adopted a resolution that established the Anacostia Watershed Restoration Partnership (AWRP). The AWRP is comprised of a steering committee, management committee, and the citizen's advisory committee that provide a cooperative framework to support the restoration of the Anacostia River and its tributaries. In FY 2022, DOEE participated in:

- Four management committee meetings;
- Three steering committee meetings; and
- Six Chesapeake Bay and Water Resources Policy Committee meetings.

Community Stormwater Solutions Grants

DOEE's Community Stormwater Solutions Grant Program provides start-up funding for community-oriented projects that raise awareness about urban watershed issues, particularly those associated with stormwater runoff. To qualify for the Community Stormwater Solutions Grant Program funding, projects must contain one or more of the following criteria:

- Installation of GSI;
- Maintenance of existing GSI;
- Provide pathways to green jobs that are focused on stormwater solutions;
- Restore natural habitat;
- Clean up areas affected by high volumes of litter and address littering sources;
- Reduce sources of pollution to District waterbodies;
- Engage communities, raise awareness, and bring about behavioral changes on issues impacting water quality;
- Support the existing DOEE restoration and engagement efforts at Kingman and Heritage Islands; and
- Supports the education priorities at Anacostia High School.

In FY 2022, DOEE awarded 12 Community Stormwater Solutions grants totaling $342,339. Environmental Justice and arts, culture, placemaking, and creativity were cross-cutting project areas in FY 2022.

Table 4 - Goal Four: Coordinate NPS Management Program Efforts with Other District, Federal, and Private Sector Programs and Adjoining Jurisdictions

Objective by 2023	Milestone	2019	2020	2021	2022	2023	Total
To meet with DC Water, Park Service, or other local and regional partners at least 30 times on NPS management issues	At least 6 coordination meetings on NPS management issues per year	6 meetings	6 meetings	98 meetings	24 meetings		134 meetings
To participate in 5 CBP Executive Council meetings	Participate in 1 CBP Executive Council meeting per year	1 meeting	1 meeting	0 meetings	1 meeting		3 meetings
To participate in 60 CBP Management Board meetings	Participate in 12 CBP Management Board meetings per year	11 meetings	12 meetings	12 meetings	14 meetings		49 meetings
To participate in at least 40 Region 3 and CBP Goal Implementation Team, Working Group, and Advisory Committee or similar meetings	Participate in at least 8 region 3 CBP Goal Implementation Team, Working Group, and Advisory Committee or similar meetings per year	8 meetings	28 meetings	43 meetings	44 meetings		123 meetings
To participate in at least 30 MWCOG meetings (including Anacostia Watershed Restoration Partnership, Chesapeake Bay Policy Committee, and Water Resources Technical Committee meetings)	Participate in at least 6 MWCOG meetings per year	13 meetings	11 meetings	13 meetings	12 meetings		49 meetings
To issue 50 grants to entities to further NPS work in the District	Issue at least 10 grants per year to entities to further NPS work in the District	11 grants	16 grants	16 grants	16 grants		59 grants

Goal Five: Support Programs that Aim to Prevent NPS Pollution from Individual Actions by Carrying Out Effective Information and Education Campaigns

Education and Outreach

The District has a population of over 650,000 people, as well as millions of visitors each year. Without properly educated and engaged residents and visitors, the District would not be able to achieve its pollution reduction goals. Effective education and engagement on NPS issues within the District is important to modify public behavior, encourage the adoption of environmentally sensitive practices, advocate for stronger laws and regulations that help reduce NPS pollution, and more. Because education plays such a critical role in the District's efforts to reduce NPS pollution issues, DOEE sponsors and conducts environmental education and outreach activities that are targeted at teachers, environmental educators, and students throughout the District.

RiverSmart Schools

In addition to schoolyard LID projects, RiverSmart Schools provides training workshops in environmental education to teachers and informal educators with environmental curricula that support the District's teaching and learning standards, as well as training teachers on how to properly maintain LID sites. In FY 2022, RiverSmart Schools provided 15 teachers with training workshops on RiverSmart School site usage and programming. These trainings were conducted virtually due to the ongoing COVID-19 pandemic.

Meaningful Watershed Educational Experiences
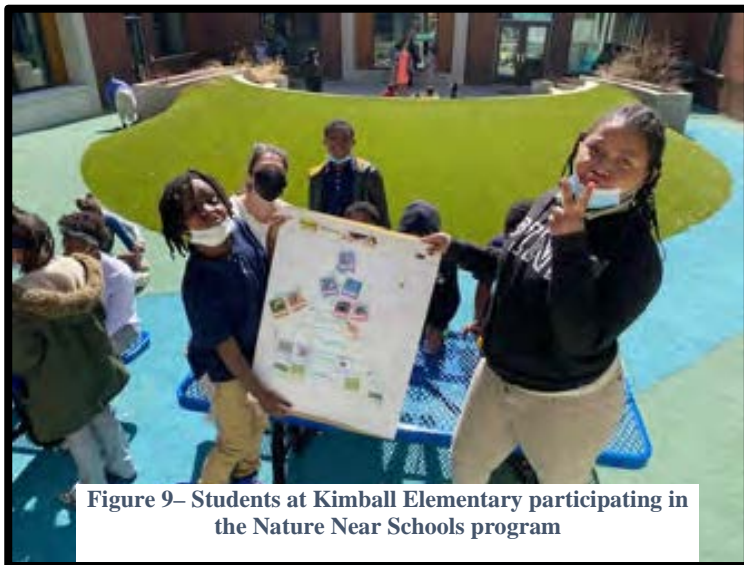
Figure 9– Students at Kimball Elementary participating in the Nature Near Schools program

Historically, DOEE has worked with nonprofit partners to create meaningful watershed educational experiences (MWEEs) for District students and youth. These experiences are usually multiday programs that teach students about their local watershed and the Chesapeake Bay through classroom lessons, field experiences, action projects, and reflection activities.

Nature Near Schools program was piloted in October 2021. This MWEE style programming reached 17 schools in the District and 1,000 students. Students were able to have in-person, outdoor programming at or near their school grounds. The program is now in its second year where the goals are to reach 31 schools and 1,600 students.

Anacostia River Explorers

Anacostia River Explorers are boat tours that educate the public about the Anacostia River through 1- and 2-hour motorized boat and canoe tours. Participants learn about the Anacostia River's human and natural history, the threats it faces, and what solutions are being undertaken to help the river realize its full potential as an invaluable asset for the District and its residents (Figure 8).

The two grantees undertaking this work for the District in FY 2022 held 196 in-person boat tours on the Anacostia River and engaged a total of 3,005 residents.

Adopt-Your-District

Adopt-Your-District is a program implemented in FY 2018 that allows volunteers to adopt parks, blocks, or segments of streams throughout the District. This program is a collaboration effort between DOEE, DPR, Park Service, and the Office of the Clean City. Specifically, DOEE oversees the Adopt-A-Stream portion of the program. In FY 2022, DOEE assisted in identifying parks of interest and establishing correct government contacts for 23 District residents and organizations that were interested in adopting a park through the Adopt-A-Park program.

Under the Trash Free Communities grant, DOEE extends funds to AFF to run the Adopt-A-Stream program. Through Adopt-A-Stream, volunteers collect data on the types of trash present at their adopted stream bank and then organize and complete clean-up events at least twice per year. In FY 2022, 32 volunteers participated in two Adopt-A-Stream trainings.

Storm Drain Marking Program

In FY 2022, DOEE installed a total of 260 storm drain markers throughout the District. DOEE has maintained its geolocated database of marked storm drains. Installations took place across 11 marking events via 8 groups. Since the majority of storm drain markers are installed through community events or organized in-person efforts, the COVID-19 pandemic has significantly impacted DOEE's ability to install storm drain markers the last few years.

Figure 10 - Storm drain markers installed during an outreach activity

Watershed Stewards Academy

The Watershed Stewards Academy (WSA) is an eight-week course taught by DOEE and AWS staff for District residents who want to address pollution problems in their local watersheds. The program is funded by a DOEE grant to AWS and is part of the National Capital Region Watershed Stewards Academy, which is a coalition of watershed protection groups in the Potomac, Rock Creek, Anacostia, and East Patuxent watersheds. Once they have completed the course, these residents are considered Master Watershed Stewards. These

alumni then serve as resource people and community leaders in the effort to clean up local waterways and coordinate efforts to infiltrate and reduce stormwater runoff. In FY 2022, WSA trained 44 District residents to become Master Watershed Stewards. Classes continue to use a hybrid class model by having a portion of the training online and a portion of the training in-person.

Job Training Programs

Green Zone Environmental Program (GZEP)

Every summer, Green Zone Environmental Program (GZEP) partners with the Marion Barry Summer Youth Employment Program provide youth and young adults, ages 14-24, with an opportunity to learn about energy and environmental issues, complete community-based environmental projects, and prepare for careers.

In the summer of 2022, DOEE administered GZEP virtually for the third time due to the COVID-19 pandemic. WPD led three virtual training sessions that taught 75 youth and young adults how to identify tree species, how DOEE conducts inspection and enforcement, about community watershed mapping, and environmental careers in the district.

Figure 11 – RiverCorps performing stream monitoring in Oxon Run

River Corps

River Corps is a 5-month long green infrastructure and job training program that DOEE initiated in 2017 and is administered by the Latin American Youth Center. In this program, young people learn how to maintain LID sites, inspect RiverSmart Homes installations, perform trash cleanups, remove invasive plant species, and photo monitor upcoming existing stream restoration projects.

RiverCorps was again held at full capacity in FY 2022, providing 22 youth with hands-on job training. During the reporting period, 11 youth completed the training in Quarter 1 of FY22 and an additional 11 participants started or completed the program from Quarters 2 to 4. During this period, RiverCorps supported the removal of over 7 acres of invasive plant species and over 500 pounds of trash from District parklands and restoration sites. Trainees also inspected and provided quarterly maintenance of 76 green stormwater infrastructure best management practices.

Table 5 - Goal Five: Support Programs that Aim to Prevent NPS Pollution from Individual Actions by Carrying Out Effective Information and Education Campaigns

Objective by 2023	Milestone	2019	2020	2021	2022	2023	Total
To provide 12,500 school students with an overnight MWEE	Provide 2,500 schools students with an overnight MWEE per year	2,520 students	925 students	1,393 students	1,000 students		5,838 students
To train 100 teacher through training that integrates hands-on watershed education system-wide standards of learning	Train 20 teachers per year	17 teachers	32 teachers	40 teachers	15 teachers		104 teachers
To implement the Anacostia River Explorers program to provide free boat tours to at least 5,000 residents on the importance of restoring the Anacostia River	Provide free boat tours on the importance of restoring the Anacostia River to at least 1,000 District residents per year	4,873 residents	1,399 residents	3,803 residents	3,005 residents		13,080 residents
To engage and train at least 75 volunteers in the Adopt-A-Stream Program	Engage and train at least 15 volunteers per year in the Adopt-A-Stream Program	17 volunteers	45 volunteers	26 volunteers	15 volunteers		103 volunteers
To install 2,000 storm drain markers in the District	Install 400 storm drain markers in the District per year	135 markers	101 markers	286 markers	260 markers		782 markers
To train a minimum of 75 District residents on issues addressing watershed restoration and water quality through the Watershed Stewards Academy	Train 15 District residents per year in issues addressing watershed restoration and water quality	31 residents	78 residents	56 residents	44 residents		209 residents
To educate 750 youth enrolled in job training programs on the importance of watershed protection	Educate 150 youth per year	270 youth	64 youth	96 youth	84 youth		514 youth

Goal Six: Pollution Prevention: Coordinate a Pollution Prevention Program that Reduces Stormwater Pollution from Industrial and Commercial Facilities in the District by Providing Compliance Assistance and Encouraging the Adoption of Practices that will Improve Water Quality in District Waterways

Pollution Prevention Team

DOEE developed a Pollution Prevention (P2) program to work with sister agencies to ensure that municipal facilities that have become critical sources of pollution are in compliance with federal and local stormwater regulations. In 2018, the program expanded from one to three personnel to be able to include other pollution prevention initiatives throughout the District. Today, the P2 program provides compliance assistance and education for entities and activities that pose the National Pollutant Discharge Elimination System critical source list, snow and ice removal, and common household activities that affect NPS pollution.

Stormwater Pollution Prevention Plans

To make all of the District government compliant with reducing NPS, DOEE's stormwater P2 team helps other District agencies in developing and implementing Stormwater Pollution Prevention Plans (SWPPPs). SWPPPs are facility-specific plans that aim to reduce or eliminate the creation of pollutants or wastes at the source through aggressive and practical pollution prevention methods. These SWPPPs are meant to address three primary objectives:

- Assure facility compliance with the District's MS4 permit;
- Identify potential sources of pollution associated with the activities at a facility that may affect the quality of stormwater discharges; and
- Provide detailed commitments for daily practices and good housekeeping at each facility to ensure that pollution prevention goals are reached.

In FY 2022, the P2 team reviewed and provided feedback on 34 SWPPPs for varying District facilities.

Snow and Ice Removal

DOEE works with the District snow team to address vehicle washing, snow disposal operations, and salt storage throughout the city. These efforts include developing the Districts first snow plan in FY 2017, which included site maps for proper snow disposal sites throughout the city and salt dome and vehicle wash facility walkthroughs.

DOEE plays a role in snow and ice removal operations and emergency response management during winter weather events by developing and leading snow trainings for District employees, contractors, and downtown Business Improvement Districts. These presentations teach District light- and heavy-plow operators and manual street and bridge teams about stormwater permitting, how to minimize stormwater pollution from snow and ice removal operations, good housekeeping practices, and how to respond to spills, leaks, and drips.

In FY 2022, the P2 team held 13 trainings on proper snow and ice removal techniques. This resulted in 331 employees being proficient on good housekeeping, spill response, and techniques to reduce salt use.

Pollution Prevention Workshops

DOEE's P2 team also targets the automotive repair industry and commercial buildings by conducting workshops throughout the year to educate business owners and provide compliance assistance and stormwater pollution prevention strategies.

In FY 2022, DOEE trained a total of 119 employees on proper pollution prevention strategies by conducting the following workshops:

- 5 Compliance with Stormwater Regulations workshops;
- 1 Multi Sector General Permit for Industrial Stormwater Runoff workshops; and
- 26 Site Walkthrough and Mock Inspection workshops.

Table 6 - Goal Six: Pollution Prevention: Coordinate a Pollution Prevention Program that Reduces Stormwater Pollution from Industrial and Commercial Facilities in the District by Providing Compliance Assistance and Encouraging the Adoption of Practices that will Improve Water Quality in District Waterways

Objective by 2023	Milestone	2019	2020	2021	2022	2023	Total
To provide feedback on 100 SWPPPs for District facilities to ensure they are accurate and complete	Provide feedback on 20 SWPPPs for District facilities per year	28 SWPPPs	17 SWPPPs	29 SWPPPs	34 SWPPPs		108 SWPPPs
To provide trainings for 1,000 municipal snow and ice removal staff on good housekeeping, spill response, and techniques that reduce salt use	Provide annual trainings to 200 municipal snow and ice removal staff per year	860 staff	11 staff	381 staff	331 staff		1,583 staff
To conduct 10 workshops for the automotive repair industry and commercial buildings, to provide compliance assistance and stormwater pollution prevention strategies	Conduct 2 workshops per year; 1 for the automotive repair industry and 1 for commercial buildings, to provide compliance assistance and stormwater pollution prevention strategies	3 workshops	2 workshops	60 workshops	32 workshops		65 workshops

Each calculation represents the annual total for that category. All measurements of pollutants are in pounds (lbs) per year unless otherwise noted.

Table 7 - Annual Runoff Volume and Load Reduction for the FY 2022 BMP Inventory for the District of Columbia

Watershed	Area Treated (acres)	Number of Practices	TN (LBS/YR)	TP (LBS/YR)	TSS (LBS/YR)	Fecal Cloriform (billion MPN)	BOD (LBS/YR)	Oil and Grease (LBS/YR)	Arsenic (LBS/YR)	Copper (LBS/YR)	Lead (LBS/YR)	Mercury (LBS/YR)	Zinc (LBS/YR)	Chlordane (LBS/YR)	DDD (LBS/YR)	DDE (LBS/YR)	DDT (LBS/YR)	Dieldrin (LBS/YR)	Heptachlor (LBS/YR)	PAH1 (LBS/YR)	PAH2 (LBS/YR)	PAH3 (LBS/YR)	TPCB (LBS/YR)	E.coli (billion MPN)
Anacostia	58.9	1297	467.833	56.536	11618.090	9286.082	4992.736	539.313	2.19E-01	7.70E+00	2.45E+00	2.70E-02	1.81E+01	1.24E-03	4.38E-04	2.01E-03	5.09E-03	3.40E-05	1.12E-04	7.79E-01	5.50E-01	4.20E-01	1.15E-02	3.73E+03
Broad Branch	0.25	96	6.597	0.708	98.410	101.875	38.088	6.678	2.52E-03	8.66E-02	2.63E-02	3.10E-04	1.67E-01	1.59E-05	4.92E-06	2.19E-05	5.61E-05	4.67E-07	1.54E-06	1.06E-03	6.75E-03	4.43E-03	1.32E-04	4.09E+01
Dumbarton Oaks	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fenwick Branch	0.05	22	19.778	0.081	8.109	8.454	3.226	0.566	2.10E-04	7.21E-03	2.17E-03	2.59E-05	1.39E-02	1.34E-06	4.09E-07	1.81E-06	4.66E-06	3.95E-08	1.30E-07	8.97E-05	5.67E-04	3.66E-04	1.10E-05	3.39E+00
Fort Chaplin	0.03	10	0.856	0.036	2.896	2.450	1.419	0.144	6.08E-05	2.09E-03	6.30E-04	7.50E-06	4.78E-03	3.88E-07	1.18E-07	5.25E-07	1.35E-06	1.15E-08	3.78E-08	2.60E-05	1.64E-04	1.06E-04	3.18E-06	9.83E-01
Fort Davis	0.03	10	0.421	0.063	9.698	8.203	4.752	0.483	2.04E-04	6.99E-03	2.11E-03	2.51E-05	1.60E-02	1.30E-06	3.97E-07	1.76E-06	4.52E-06	3.84E-08	1.27E-07	8.71E-05	5.50E-04	3.55E-04	1.07E-05	3.29E+00
Fort Dupont	0.01	3	0.615	0.005	0.955	0.808	0.468	0.048	2.01E-05	6.89E-04	2.08E-04	2.47E-06	1.57E-03	1.28E-07	3.91E-08	1.73E-07	4.45E-07	3.78E-09	1.25E-08	8.58E-06	5.42E-05	3.49E-05	1.05E-06	3.24E-01
Fort Stanton	0	0	0.043	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickey Run	29.33	83	126.382	17.256	3572.277	2795.640	1638.586	198.287	6.45E-02	2.29E+00	7.46E-01	7.96E-03	5.45E+00	3.47E-04	1.31E-04	6.05E-04	1.53E-03	9.17E-06	3.03E-05	2.10E-02	1.57E-01	1.29E-01	3.39E-03	1.12E+03
Klingle Valley	0	4	0.176	0.020	3.151	3.284	1.253	0.220	8.15E-05	2.80E-03	8.44E-04	1.01E-05	5.39E-03	5.21E-07	1.59E-07	7.04E-07	1.81E-06	1.54E-08	5.07E-08	3.49E-05	2.20E-04	1.42E-04	4.27E-06	1.32E+00
Luzon Branch	7.63	262	96.146	11.062	1735.951	1795.760	671.259	126.481	4.43E-02	1.53E+00	4.63E-01	5.47E-03	2.95E+00	2.80E-04	8.67E-05	3.86E-04	9.90E-04	8.22E-06	2.71E-05	1.87E-02	1.19E-01	7.81E-02	2.32E-03	7.21E+02
Melvin Hazen	2.07	107	21.421	2.457	389.729	401.590	148.075	25.962	9.88E-03	3.41E-01	1.04E-01	1.22E-03	6.59E-01	6.20E-05	1.93E-05	8.63E-05	2.21E-04	1.81E-06	5.99E-06	4.12E-03	2.64E-02	1.75E-02	5.18E-04	1.61E+02
Nash Run	0.56	24	5.884	0.661	123.075	104.105	60.304	6.126	2.58E-03	8.87E-02	2.68E-02	3.19E-04	2.03E-01	1.65E-05	5.04E-06	2.23E-05	5.74E-05	4.87E-07	1.61E-06	1.11E-03	6.98E-03	4.50E-03	1.35E-04	4.18E+01
Normanstone	0.01	5	0.190	0.022	3.409	3.554	1.356	0.238	8.82E-05	3.03E-03	9.13E-04	1.09E-05	5.83E-03	5.63E-07	1.72E-07	7.62E-07	1.96E-06	1.66E-08	5.48E-08	3.77E-05	2.38E-04	1.54E-04	4.62E-06	1.43E+00
Oxon Run	1.08	85	14.134	1.568	163.585	241.244	109.212	13.029	5.99E-03	2.06E-01	6.20E-02	7.39E-04	3.92E-01	3.82E-05	1.17E-05	5.17E-05	1.33E-04	1.13E-06	3.72E-06	2.56E-03	1.62E-02	1.04E-02	3.13E-04	9.68E+01
Pinehurst	0.04	34	1.508	0.154	18.891	19.693	7.515	1.318	4.89E-04	1.68E-02	5.06E-03	6.03E-05	3.23E-02	3.12E-06	9.52E-07	4.22E-06	1.09E-05	9.21E-08	3.04E-07	2.09E-04	1.32E-03	8.52E-04	2.56E-05	7.90E+00
Piney Branch	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pope Branch	0.05	10	0.435	0.052	12.002	8.851	2.363	0.240	1.92E-04	7.03E-03	2.43E-03	2.37E-05	1.73E-02	8.53E-07	4.03E-07	1.95E-06	4.78E-06	1.91E-08	6.29E-08	4.51E-05	4.19E-04	4.28E-04	1.03E-05	3.55E+00
Portal Branch	0	4	0.176	0.020	3.151	3.284	1.253	0.220	8.1545E-05	0.002800	0.00084	1.00608E-05	0.005386739	5.20512E-07	1.58854E-07	7.04E-07	1.81094E-06	1.54E-08	5.07E-08	3.49E-05	0.00022	0.000142	4.27E-06	1.31816011
Rock Creek	12.7	829	170.205	19.454	3023.833	3126.861	1167.188	217.615	7.72E-02	2.66E+00	8.07E-01	9.52E-03	5.13E+00	4.87E-04	1.51E-04	6.72E-04	1.72E-03	1.43E-05	4.72E-05	3.25E-02	2.07E-01	1.36E-01	4.05E-03	1.25E+03
Soapstone	0.23	169	10.478	1.181	181.985	186.691	67.908	11.906	4.58E-03	1.58E-01	4.83E-02	5.65E-04	3.06E-01	2.85E-05	8.98E-06	4.01E-05	1.03E-04	8.32E-07	2.75E-06	1.89E-03	1.22E-02	8.17E-03	2.40E-04	7.49E+01
Texas Avenue Tributary	0.03	13	0.810	0.084	13.011	11.006	6.375	0.648	2.73E-04	9.38E-03	2.83E-03	3.37E-05	2.15E-02	1.74E-06	5.32E-07	2.36E-06	6.07E-06	5.15E-08	1.70E-07	1.17E-04	7.38E-04	4.76E-04	1.43E-05	4.42E+00
Watts Branch	4.28	123	46.504	5.360	1113.053	910.451	524.341	48.492	2.20E-02	7.66E-01	2.38E-01	2.72E-03	1.77E+00	1.32E-04	4.35E-05	1.97E-04	5.02E-04	3.76E-06	1.24E-05	8.59E-03	5.71E-02	4.04E-02	1.16E-03	3.65E+02

Summary

The District's NPS Management Program meets the challenges of the highly urbanized setting within the District by seeking and employing innovative solutions for reducing NPS pollution. With the help of creative partnerships and new technologies, the District will continue to make significant progress towards achieving its goals.

The District also uses its NPS Management Program to further EPA and District government diversity, equity, inclusion, and justice goals through conservation activities that support environmental justice. The District will continue to increase implementation of coordinated outreach and engagement strategies to serve historically underserved and overburdened communities—many of which are in the District's most impacted watersheds. Furthermore, the District will continue to implement our NPS Management Program in coordination with partners to advance EPA and District government climate change adaptation and mitigation goals. This includes but is not limited to NPS and conservation strategies that address rising temperatures, urban heat island, flooding, sea level rise, and storm surge. Looking ahead, just about every goal in the District's next NPS Management Plan will incorporate environmental justice and climate change goals, strategies, and considerations.

In FY22, the District received supplement funding from US EPA to implement two projects: 1) Anacostia Green Boats, and 2) Promoting Justice, Equity, Diversity, and Inclusion (JEDI) in Watershed Restoration Efforts. The supplemental funding will support the implementation of the Anacostia Green Boat program for two years (FY23 and FY24). A primary goal of this program is to engage District residents (particularly from historically underserved and overburdened communities), including those whose first language is not English, in watershed education by getting them out on the Anacostia River via educational paddling tours. The FY23 boating season will start in early summer 2023. For the second supplemental project, DOEE solicited proposals from qualified vendors to provide JEDI training to DOEE Natural Resources Administration staff who work on nonpoint source management issues, in addition to analysis and recommendations for DOEE to improve grant making and recruitment processes. We anticipate selecting a qualified vendor in FY23. Progress and detailed results from both efforts will be reported out on in the FY23 annual report.

In FY 2023, the District will work to strengthen its existing programs for regulation and enforcement, stream and wetland restoration, education and outreach, and pollution prevention. As we wrap up our 5th year within this management plan we will look forward to completing our target goals. We will also be looking forward to developing our new five-year management at the end of FY 2023. The NPS Management program will continue to provide technical assistance and resources that will improve the quality of the District's waterways.