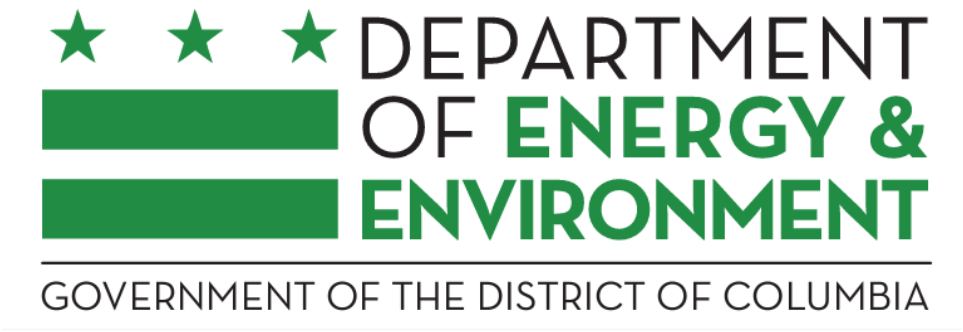
**A: PROGRAM MANAGEMENT AND INFORMATION/DATA QUALITY OBJECTIVES**
**A1: Title Sheet**




**Quality Assurance Project Plan (QAPP):**

# District of Columbia Chesapeake Bay Program Best Management Practices (BMP) Data Management, Reporting, and Verification

Version #7
*Updated for Reporting Year 2024*

Project ID:

Effective Date: December 19, 2024

EPA Document Control
Number (DCN): 220064.2

1200 First Street NE
Washington, DC

## A2: Approval Sheet

**Concurrence**

**Preparer/Author**

| | |
|---|---|
| Name: Alicia Ritzenthaler<br>Title: Environmental Protection Specialist<br>Organization: DOEE Water Quality Division | 1/22/2025 |

**Management/Supervisor**

| | |
|---|---|
| Name: Jonathan Champion<br>Title: Associate Director<br>Organization: DOEE Water Quality Division | Jonathan Champion<br>1/22/2025 |

**Quality Assurance Officer**

| | |
|---|---|
| Name: Richard Jackson<br>Title: Director<br>Organization: DOEE | 1-23-2025 |

**EPA Region 3**

| | |
|---|---|
| Name: Auston Smith<br>Title: EPA Chesapeake Bay QA Officer<br>Organization: EPA | David Auston Smith<br>1/23/25 |
| Name: Emily Heller<br>Title: Environmental Protection Specialist<br>Organization: EPA | Emily Heller<br>1/27/25 |

**Approval**

**EPA Region 3**

| | |
|---|---|
| Name: Durga Ghosh<br>Title: EPA Chesapeake Bay QA Coordinator<br>Organization: CBP / EPA | Durga Ghosh<br>Digitally signed by DURGA GHOSH<br>Date: 2025.02.24 12:34:43 -05'00' |

**Note:** This approval action represents EPA's determination that the document(s) under review comply with applicable requirements of the EPA Region 3 Quality Management Plan [https://www.epa.gov/sites/production/files/2020-06/documents/r3qmp-final-r3-signatures-2020.pdf] and other applicable requirements in EPA quality regulations and policies [https://www.epa.gov/quality]. This approval action does **not** represent EPA's verification of the accuracy or completeness of document(s) under review, and is **not** intended to constitute EPA direction of work by contractors, grantees or subgrantees, or other non-EPA parties.

## A3: Table of Contents, Document Format, and Document Control

### Table of Contents

## Table of Tables/Figures

## Document Format

This Quality Assurance Project Plan (QAPP) was developed in accordance with the U.S. EPA Quality Assurance Project Plan Standard. The order of the elements in this QAPP follows the Standard, as seen in the Table of Contents. The QAPP is also in accordance with the U.S. EPA Region 3 Quality Management Plan, DCN R3QMP001-20200601.

## Document Control

Table A3-1 shows changes to this controlled document over time. The most recent version is presented in the top row of the table. Previous versions of the document are maintained by Quality Manager.

Table A3-1: QAPP Versions

| Document Control Number | History/ Changes | Effective Date |
|---|---|---|
| DCN 220064.2 | • Updated format to align with EPA QAPP guidance.<br>• Updated DOEE organizational structure.<br>• Clarified references to DOEE's stormwater database by replacing with database name (SGS). | Draft |
| Revision 6 | DCN added to title page and EPA Region 3 contacts updated per EPA request. Content related to tree plantings has also updated throughout. | December 2023 |
| Revision 5 | Title Page and Approval Sheet replaced the Final QA Signature Page Template provided by the Chesapeake Bay Program. Contact info updated in Table A8-1. Updates made to content regarding street sweeping (Pgs 7-8, 28, and 33-35). | January 2023 |
| Revision 4 | Updates made to erosion and sediment control (pg 64 and 65) | April 2022 |
| Revision 3 | A6: Project Description<br>• Table A6 (2.1) – Conservation landscaping added<br>• Table A6 (2.2) – Catch basin cleaning added | December 2020 |

| | | |
|---|---|---|
| | • Section 2<br>- Catch Basin Cleaning<br>Definition updated<br>- Conservation Landscaping<br>Definition added<br>• Pg 33- Changed Catch Basin language to update that it is reported to CBP now<br><br>A8: Training<br>• DOEE Data Manager – Update for new Stormwater Database Manager<br><br>A9: Documentation and records<br>• Added Bayscaping inspection forms<br><br>Figure B10.1 Reporting Data Flow<br>• Changed image to reflect data from DC water and new process for Catch Basin, Trees, Street Sweeping going into SWDB<br><br>Table D1(a) – (page 2 of table)<br>• Updates to catch basin cleaning and street sweeping QA information. | |
| Revision 2 | Unknown | Unknown |
| Revision 1 | Unknown | Unknown |

## A4: Project Purpose, Problem Definition, and Background

As a part of its Chesapeake Bay Program (CBP) commitments, the District of Columbia reports its nutrient and sediment load reduction activities and those of federal agencies within its borders to the Environmental Protection Agency, CBPO. The Department of Energy & Environment (DOEE) is the District government agency tasked with collecting this information and verifying that it is correct.

The purpose of this Quality Assurance Project Plan is to document:

- How the District of Columbia collects information on the BMPs installed throughout the city for CBP reporting purposes;
- How the District maintains the database of BMPs installed;
- How the District performs quality assurance/quality control (QA/QC) to identify and replace inaccurate and missing data;
- How the District tracks the maintenance, verification and removal of installed BMPs; and
- How the District reports BMP data to the CBP.

### *BMP Verification Principles*

The CBP partnership defined and adopted five principles to guide partners' efforts as they build on existing local, state and federal practice tracking and reporting systems and make enhancements to their BMP verification programs (Table A4-1).

Table A4-1: Chesapeake Bay BMP Verification Principles

| Principle | Description |
|---|---|
| Practice Reporting | Affirms that verification is required for practices, treatments and technologies reported for nitrogen, phosphorus and/or sediment pollutant load reduction credit through the Bay Program. This principle also outlines general expectations for BMP verification protocols. |
| Scientific Rigor | Asserts that BMP verification should assure effective implementation through scientifically rigorous and defensible, professionally established and accepted sampling, inspection and certification protocols. Recognizes that BMP verification shall allow for varying methods of data collection that balance scientific rigor with cost-effectiveness and the significance of or priority placed upon the practice in achieving pollution reduction. |
| Public Confidence | Calls for BMP verification protocols to incorporate transparency in both the processes of verification and tracking and reporting of the underlying data. Recognizes that levels of transparency will vary depending upon source sector, acknowledging existing legal limitations and the need to respect individual confidentiality to ensure access to non-cost shared practice data. |
| Adaptive Management | Recognizes that advancements in practice reporting and scientific rigor, as described above, are integral to assuring desired long-term outcomes while reducing the uncertainty found in natural systems and human behaviors. Calls for BMP verification protocols to recognize existing funding and allow for reasonable levels of flexibility in the allocation or targeting of funds. |
| Sector Equity | Calls for each jurisdiction's BMP verification program to strive to achieve equity in the measurement of functionality and effectiveness of implemented BMPs among and across the source sectors. |

DOEE has adopted these principles and worked to incorporate them into processes and procedures associated with TMDL reporting. A brief discussion of elements associated with these principles is provided below, with details provided in the appropriate sections of this document:

- Practice Reporting – DOEE has invested significant resources in establishing routine processes, data validations, relationships with staff in federal agencies, and an improved stormwater database (i.e. Surface and Groundwater System (SGS)) enhanced with data elements to support verification.

- Scientific Rigor – DOEE is tracking, inspecting, and reporting individual (verifiable) BMP installations and is committed to performing special studies to verify performance and confirm expert panel assumptions associated with BMP pollution reduction efficiencies. It also provides confidence that reductions can be reliably assigned to the correct sector (MS4, CSS, direct drainage).
- Public Confidence – The majority of DOEE's pollution reduction strategies are implemented through NPDES permits and District stormwater regulations, with program-specific annual reports available to the public.
- Adaptive Management – DOEE's Consolidated TMDL Implementation Plan relies on adaptive management strategies with the goal of meeting TMDL milestones. Examples of anticipated adaptive management strategies are focused implementation efforts in specific watersheds where BMP installation is lagging, continuing improvements in information gathering efforts with federal partners and other District agencies, and pilot studies to confirm assumptions on pollution reductions. Furthermore, DOEE has demonstrated adaptive management in recent years by modifying processes to implement expert panel recommendations, performing pilot studies for emerging BMPs, and improving tracking reporting mechanisms (See Section: *New or Emerging BMP definitions*).
- Sector Equity – DOEE demonstrates sector equity by focusing verification elements on key sectors, point sources, and urban stormwater (including urban tree planting and urban stream restoration). The District has no agricultural sector, no septic sector, and current & past restoration activities, including tree plantings, have been implemented primarily as urban stormwater BMPs.

***Section 1) Historic Reporting Practices***

*Stormwater Sector*

Historically, BMP data had been summarized and reported geographically by HUC 10 and regulated area (whether the practice occurred in the MS4 or CSS). Prior to 2010, the District provided information directly to CBPO. From 2010 through 2012, DOEE utilized contractor support (Tetra Tech, Inc.) to convert implementation data into a National Environmental Information Exchange Network (NEIEN) compatible format. Since 2013, DOEE has internally revised the reporting process and reported individual BMP installation information when available instead of summarized implementation data.

In 2012, DOEE began a thorough review of stormwater BMP records in order to support development of a Consolidated TMDL Implementation Plan and to comply with the CBPO request to submit revised and corrected historic BMP data by June, 2015. This effort culminated with an improved inventory of BMP implementation data throughout the District.

*Wastewater Sector*

Historically, data received from all Point Source facilities, both major and minor, were aggregated into a spreadsheet to calculate loads (both nutrients and sediments) to assess compliance with TMDL wasteload allocations. Wasteload allocations were enforced in each facility (major or minor) depending upon nutrient discharge limits specified in their individual

NPDES permits. Starting with the 2018 progress reporting period, DC Water submits significant facility and cso data directly to the EPA's Chesapeake Bay Office. DC Water also provides flow split data to DOEE who in turn reports it to the Chesapeake Bay Office.

Also starting with the 2018 progress reporting period, DOEE used EPA's new Chesapeake Bay Program Point Source Application (App) to help report flow, nutrient, and sediment data for nonsignificant individually-permitted NPDES facilities. The App pulls discharge monitoring data from EPA's ICIS-NPDES, which is an information management system to track permit compliance and enforcement status of regulated facilities. App users can download facility data, find available discharge monitoring report (DMR) data, submit data via the application, and prepare the submission spreadsheet. The App also enables users to edit facility information, do quality assurance checks, view datasets, and generate reports.

***Section 2) Rationale***

DOEE is using this BMP inventory to support assessments of progress through time toward meeting local TMDLs, as well as the Chesapeake Bay TMDL. The data are reported in standardized formats and codes via NEIEN. The CBPO creates annual progress scenarios using the CBP Partnership's Watershed Model to describe, assess and report the status of the restoration efforts, and anticipated reductions in nitrogen, phosphorus and sediment loadings to Chesapeake Bay and its tidal tributaries. The data is similarly loaded to the District's Implementation Plan Modeling Tool (IPMT) in order to determine progress toward meeting the milestones laid out in the Consolidated TMDL Implementation Plan.

***Section 3) Data Management and Governance***

Stormwater BMP data for the Bay Program are tracked on a continuous basis and reported annually to CBPO for Bay TMDL progress runs. The data are reported and incorporated into the CBP's Watershed Model to estimate progressive nutrient load reductions from implementation of these BMPs over time.

*Historic data inventory*

DOEE has migrated the historic data inventory from earlier tracking systems into the Surface and Groundwater System (formerly the Stormwater Database) and has subsequently undertaken a process to validate the historic data inventory (this validation effort is discussed in A7: *Potential Bias - Historic BMP Record*). The historic data inventory is available to the full set of features and inspection tools (mapping, scanned plans, inspection forms, notices of violation, etc.) and stormwater retention calculation features. The Surface and Groundwater System (SGS) exports NEIEN-compliant XML data, including historic data.

*BMP lifespan tracking & reporting*

In the SGS, each BMP has a unique ID. DOEE's data management governance processes prohibit a unique BMP from being reported more than once. If a record submitted in one year is inspected or maintained in another year, the unique BMP record is updated with the new event status codes, dates, and results. These updates are done in a manner consistent with WTWG recommendations on BMP lifespan reporting and the CBPO NPS-BMP plug-in and Scenario Builder rules that implement BMP lifespans and flag BMPs for specific reporting years. In a

similar fashion, DOEE does not report a unique BMP multiple times simply from having a BMP name change; rather, that unique BMP record is updated and reported.

*Units*

BMPs are reported with associated units of measure (area, length, count, volume, etc.). For historic BMPs, drainage area may be determined using percentages of available land if detailed BMP information has not been validated. In this circumstance DOEE will not report volume.

*Agricultural sources*

The District does not implement BMPs associated with the Agriculture sector, and therefore does not implement federal agricultural cost-share practices, NRCS practices, or have a 1619 data sharing agreement with the U.S. Department of Agriculture.

## A5: Project Task Description

***Section1) Project Description***

On July 19, 2013, DOEE released the 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control (2013 SW Rule), which amended Chapter 5 (Water Quality) of Title 21 (Water and Sanitation) of the District of Columbia Municipal Regulations (DCMR). The new requirements are based upon standards for volume retention, representing a shift of focus from the 1998 regulations, which were more focused on water-quality treatment. Major land-disturbing activities must retain the volume from a 1.2-inch storm event, and major substantial improvement activities must retain the volume from a 0.8-inch storm event. The retention volume can be achieved through a combination of on-site retention and off-site retention. By retaining stormwater, retention practices effectively provide both treatment and additional volume control, significantly improving protection for District waterbodies. This Stormwater Retention Volume (SWRv) can be managed through runoff prevention (e.g., conservation of pervious cover or reforestation), runoff reduction (e.g., infiltration or water reuse), and runoff treatment (e.g., plant/soil filter systems or permeable pavement). The Stormwater Management Guidebook, which provides technical guidance on complying with the Rule on Stormwater Management and Soil Erosion and Sediment Control (2020 SW Rule) was also updated in 2020 accordingly. All BMP design standards, criteria, and definitions are documented in the Guidebook.

DOEE tracks regulated and voluntary BMPs using the Surface and Groundwater System (SGS), (formerly the 'Stormwater Database'). Applicants for DOEE approval of a Stormwater Management Plan (SWMP) enter detailed information about the design of BMP projects. DOEE staff review and approve these BMP designs electronically. The database also streamlines participation in the Stormwater Retention Credit (SRC) and RiverSmart Rewards programs, which incentivize installation of runoff-reducing Green Infrastructure (GI). Applications for these programs can also be completed through the database using information already submitted in a SWMP. The database also provides public access to the SRC registry, which lists SRCs that are currently for sale. Access to the online database and documentation is provided at http://doee.dc.gov/swdb.

***Section 2) BMP Definitions***

Urban stormwater BMP definitions in the District are best defined by the time period associated with stormwater regulations: plans submitted after January 1, 2014 and the legacy (or historic) record. The differences between BMP definitions for the two periods are discussed below.

*2020 SW Rule*

Chapter 3 (pages 31 through 263) of DOEE's Stormwater Management Guidebook (SWMG (see *List of Supporting Documents and Attachments*)) provides extensive information on BMPs, including definitions and performance criteria. BMP performance criteria are based on several critical design factors to ensure effective and long-lived BMPs. For each BMP, the following factors are discussed:

- General Feasibility
- Conveyance
- Pretreatment
- Design and Sizing
- Landscaping
- Construction Sequencing
- Maintenance
- Stormwater Compliance Calculations

These BMPs will be reported to CBPO through NEIEN using the data elements and recommended methods associated with the new urban stormwater protocols for determining pollution reduction.

BMPs discussed in the SWMG are:

***Green Roofs***

Practices that capture and store rainfall in an engineered growing media that is designed to support plant growth. A portion of the captured rainfall evaporates or is taken up by plants, which helps reduce runoff volumes, peak runoff rates, and pollutant loads on development sites. Green roofs typically contain a layered system of roofing, which is designed to support plant growth and retain water for plant uptake while preventing ponding on the roof surface. The roofs are designed so that water drains vertically through the media and then horizontally along a waterproofing layer towards the outlet. Extensive green roofs are designed to have minimal maintenance requirements. Plant species are selected so that the roof does not need supplemental irrigation and requires minimal, infrequent fertilization after vegetation is initially established.

Design variants include extensive and intensive green roofs.

- G-1 Extensive green roofs have a much shallower growing media layer that typically ranges from 3 to 6 inches thick.
- G-2 Intensive green roofs have a growing media layer that ranges from 6 to 48 inches thick.

***Rainwater Harvesting***

Rainwater harvesting systems store rainfall and release it for future use. Rainwater that falls on a rooftop or other impervious surface is collected and conveyed into an above- or below-ground

tank (also referred to as a cistern), where it is stored for non-potable uses. Cisterns can be sized for commercial as well as residential purposes. Residential cisterns are commonly called rain barrels. Non-potable uses of harvested rainwater may include the following:

- Landscape irrigation,
- Exterior washing (e.g., car washes, building facades, sidewalks, street sweepers, and fire trucks),
- Flushing of toilets and urinals,
- Fire suppression (i.e., sprinkler systems),
- Supply for cooling towers, evaporative coolers, fluid coolers, and chillers,
- Supplemental water for closed loop systems and steam boilers,
- Replenishment of water features and water fountains,
- Distribution to a green wall or living wall system,
- Laundry, and
- Delayed discharge to the CSS.

In many instances, rainwater harvesting can be combined with a secondary (down-gradient) stormwater practice to enhance stormwater retention and/or provide treatment of overflow from the rainwater harvesting system. Some candidate secondary practices include the following:

- Disconnection to a pervious area (compacted cover) or conservation area (natural cover) or soil amended filter path (see *Impervious Surface Disconnection*)
- Overflow to bioretention practices (see *Bioretention*)
- Overflow to infiltration practices (see *Infiltration*)
- Overflow to grass channels or dry swales (see *Storage Practices*)

By providing a reliable and renewable source of water to end users, rainwater harvesting systems can also have environmental and economic benefits beyond stormwater management (e.g., increased water conservation, water supply during drought and mandatory municipal water supply restrictions, decreased demand on municipal water supply, decreased water costs for the end user, and potential for increased groundwater recharge).

#### *Impervious Surface Disconnection*

This strategy involves managing runoff close to its source by intercepting, infiltrating, filtering, treating or reusing it as it moves from an impervious surface to the drainage system. Disconnection practices can be used to reduce the volume of runoff that enters the combined or separate sewer systems. Two kinds of disconnection are allowed: (1) simple disconnection, whereby rooftops and/or on-lot residential impervious surfaces are directed to pervious areas (compacted cover) or conservation areas (natural cover) or soil amended filter paths, and (2) disconnection leading to an alternative retention practice(s) adjacent to the roof (see Figure 3.11 in the SWMG). Alternative practices can use less space than simple disconnection and can enhance retention. Applicable practices include:

- D-1 Simple disconnection to pervious areas with the compacted cover designation
- D-2 Simple disconnection to conservation areas with the natural cover designation
- D-3 Simple disconnection to a soil compost amended filter path

- D-4 Infiltration by small infiltration practices (dry wells or French drains) (see *Infiltration*)
- D-5 Filtration by rain gardens or stormwater planters (see *Bioretention*)
- D-6 Storage and reuse with a cistern or other vessel (rainwater harvesting) (see *Rainwater Harvesting*)

Disconnection practices reduce a portion of the Stormwater Retention Volume (SWRv). In order to meet requirements for larger storm events, disconnection practices must be combined with additional practices.

***Permeable Pavement Systems***

This is a paving system that captures and temporarily stores the Stormwater Retention Volume (SWRv) by filtering runoff through voids in an alternative pavement surface into an underlying stone reservoir. Filtered runoff may be collected and returned to the conveyance system, or allowed to partially (or fully) infiltrate into the soil. Design variants include:

- P-1 Porous asphalt (PA)
- P-2 Pervious concrete (PC)
- P-3 Permeable pavers (PP)

Other variations of permeable pavement that are DDOE-approved permeable pavement surface materials, such as synthetic turf systems with reservoir layer, are also encompassed in this section. Permeable pavement systems are not typically designed to provide stormwater detention of larger storms (e.g., 2-year, 15-year), but they may be in some circumstances. Permeable pavement practices shall generally be combined with a separate facility to provide those controls. There are two different types of permeable pavement design configurations:

- Standard Designs. Practices with a standard underdrain design and no infiltration sump or water quality filter (see Figure 3.13 in the SWMG).
- Enhanced Designs. Practices with underdrains that contain a water quality filter layer and an infiltration sump beneath the underdrain sized to drain the design storm in 48 hours (see Figure 3.14) or practices with no underdrains that can infiltrate the design storm volume in 48 hours (see Figure 3.15 in the SWMG).

***Bioretention***

Practices that capture and store stormwater runoff and pass it through a filter bed of engineered soil media composed of sand, soil, and organic matter. Filtered runoff may be collected and returned to the conveyance system, or allowed to infiltrate into the soil. Design variants include:

- B-1 Traditional bioretention
- B-2 Streetscape bioretention
- B-3 Engineered tree pits
- B-4 Stormwater planters
- B-5 Residential rain gardens

Bioretention systems are typically not designed to provide stormwater detention of larger storms (e.g., 2-year, 15-year), but they may be in some circumstances. Bioretention practices shall

generally be combined with a separate facility to provide those controls. There are two different types of bioretention design configurations:

- Standard Designs. Practices with a standard underdrain design and less than 24 inches of filter media depth (see Figure 3.17 in the SWMG). If trees are planted using this design, the filter media depth must be at least 24 inches to support the trees.
- Enhanced Designs. Practices with underdrains that contain at least 24 inches of filter media depth and an infiltration sump/storage layer (see Figure 3.18 in the SWMG) or practices that can infiltrate the design storm volume in 72 hours (see Figure 3.19 in the SWMG).

The particular design configuration to be implemented on a site is typically dependent on specific site conditions and the characteristics of the underlying soils.

#### *Filtering Systems*

Practices that capture and temporarily store the design storm volume and pass it through a filter bed of sand media. Filtered runoff may be collected and returned to the conveyance system or allowed to partially infiltrate into the soil. Design variants include:

- F-1 Non-structural sand filter
- F-2 Surface sand filter
- F-3 Three-chamber underground sand filter
- F-4 Perimeter sand filter

Stormwater filters are a useful practice to treat stormwater runoff from small, highly impervious sites. Stormwater filters capture, temporarily store, and treat stormwater runoff by passing it through an engineered filter media, collecting the filtered water in an underdrain, and then returning it back to the storm drainage system. The filter consists of two chambers: the first is devoted to settling and the second serves as a filter bed consisting of a sand filter media.

Stormwater filters are a versatile option because they consume very little surface land and have few site restrictions. They provide moderate pollutant removal performance at small sites where space is limited. However, filters have no retention capability, so designers should consider using up-gradient retention practices, which have the effect of decreasing the design storm volume and size of the filtering practices. Filtering practices are also suitable to provide special treatment at designated stormwater hotspots. A list of potential stormwater hotspots operations can be found in Appendix P of the SWMG.

Filtering systems are typically not to be designed to provide stormwater detention (Qp2, Qp15), but they may be in some circumstances. Filtering practices are generally combined with separate facilities to provide this type of control. However, the three-chamber underground sand filter can be modified by expanding the first or settling chamber, or adding an extra chamber between the filter chamber and the clear well chamber to handle the detention volume, which is subsequently discharged at a predetermined rate through an orifice and weir combination.

***Infiltration***

Infiltration practices capture and temporarily store the design storm volume before allowing it to infiltrate into the soil over a two day period. Design variants include:

- I-1 Infiltration trench
- I-2 Infiltration basin

Infiltration practices use temporary surface or underground storage to allow incoming stormwater runoff to exfiltrate into underlying soils. Runoff first passes through multiple pretreatment mechanisms to trap sediment and organic matter before it reaches the practice. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants. Infiltration practices are suitable for use in residential and other urban areas where field measured soil infiltration rates are sufficient. To prevent possible groundwater contamination, infiltration must not be utilized at sites designated as stormwater hotspots.

***Open Channel Systems***

Vegetated open channels that are designed to capture and treat or convey the design storm volume (Stormwater Retention Volume (SWRv)). Design variants include:

- O-1 Grass channels
- O-2 Dry swales/bioswales
- O-3 Wet swales

Open channel systems shall not be designed to provide stormwater detention except under extremely unusual conditions. Open channel systems must generally be combined with a separate facility to meet these requirements.

Grass channels (O-1) can provide a modest amount of runoff filtering and volume attenuation within the stormwater conveyance system resulting in the delivery of less runoff and pollutants than a traditional system of curb and gutter, storm drain inlets, and pipes. The performance of grass channels will vary depending on the underlying soil permeability. Grass channels, however, are not capable of providing the same stormwater functions as dry swales as they lack the storage volume associated with the engineered soil media. Their retention performance can be boosted when compost amendments are added to the bottom of the swale (see Appendix K of the SWMG). Grass channels are a preferable alternative to both curb and gutter and storm drains as a stormwater conveyance system, where development density, topography, and soils permit.

Dry swales (O-2), also known as bioswales, are essentially bioretention cells that are shallower, configured as linear channels, and covered with turf or other surface material (other than mulch and ornamental plants). The dry swale is a soil filter system that temporarily stores and then filters the desired design storm volume. Dry swales rely on a premixed soil media filter below the channel that is similar to that used for bioretention. If soils are extremely permeable, runoff infiltrates into underlying soils. In most cases, however, the runoff treated by the soil media flows into an underdrain, which conveys treated runoff back to the conveyance system further downstream. The underdrain system consists of a perforated pipe within a gravel layer on the bottom of the swale, beneath the filter media. Dry swales may appear as simple grass channels

with the same shape and turf cover, while others may have more elaborate landscaping. Swales can be planted with turf grass, tall meadow grasses, decorative herbaceous cover, or trees. Wet swales (O-3) can provide a modest amount of runoff filtering within the conveyance. These linear wetland cells often intercept shallow groundwater to maintain a wetland plant community. The saturated soil and wetland vegetation provide an ideal environment for gravitational settling, biological uptake, and microbial activity. On-line or off-line cells are formed within the channel to create saturated soil or shallow standing water conditions (typically less than 6 inches deep).

#### *Ponds*

Stormwater ponds are stormwater storage practices that consist of a combination of a permanent pool, micropool, or shallow marsh that promote a good environment for gravitational settling, biological uptake and microbial activity. Ponds are widely applicable for most land uses and are best suited for larger drainage areas. Runoff from each new storm enters the pond and partially displaces pool water from previous storms. The pool also acts as a barrier to re-suspension of sediments and other pollutants deposited during prior storms. When sized properly, stormwater ponds have a residence time that ranges from many days to several weeks, which allows numerous pollutant removal mechanisms to operate. Stormwater ponds can also provide storage above the permanent pool to help meet stormwater management requirements for larger storms. Design variants include:

- P-1 Micropool extended detention pond
- P-2 Wet pond
- P-3 Wet extended detention pond

Stormwater ponds should be considered for use after all other upland retention opportunities have been exhausted and there is still a remaining treatment volume or runoff from larger storms (i.e., 2-year, 15-year or flood control events) to manage.

Stormwater ponds do not receive any stormwater retention value and should be considered only for management of larger storm events. Stormwater ponds have both community and environmental concerns that should be considered before choosing stormwater ponds for the appropriate stormwater practice on site.

#### *Constructed Wetlands*

Wetland practices create shallow marsh areas to treat urban stormwater which often incorporate small permanent pools and/or extended detention storage. Stormwater wetlands are explicitly designed to provide stormwater detention for larger storms (2-year, 15-year or flood control events) above the design storm (Stormwater Retention Volume (SWRv)) storage. Design variants include:

- W-1 Shallow wetland
- W-2 Extended detention shallow wetland

Stormwater wetlands, sometimes called constructed wetlands, are shallow depressions that receive stormwater inputs for water quality treatment. Wetlands are typically less than 1 foot deep (although they have greater depths at the forebay and in micropools) and possess variable microtopography to promote dense and diverse wetland cover. Runoff from each new storm

displaces runoff from previous storms, and the long residence time allows multiple pollutant removal processes to operate. The wetland environment provides an ideal environment for gravitational settling, biological uptake, and microbial activity.

Stormwater wetlands should be considered for use after all other upland retention opportunities have been exhausted and there is still a remaining treatment volume or runoff from larger storms (i.e., 2-year, 15-year or flood control events) to manage.

Stormwater wetlands do not receive any stormwater retention value and should be considered only for management of larger storm events. Stormwater wetlands have both community and environmental concerns that should be considered before choosing stormwater ponds for the appropriate stormwater practice on site.

#### *Storage Practices*

Storage practices are explicitly designed to provide stormwater detention (2-year, 15-year, and/or flood control). Design variants include:

- S-1 Underground detention vaults and tanks
- S-2 Dry detention ponds
- S-3 Rooftop storage
- S-4 Stone storage under permeable pavement or other BMPs

Detention vaults are box-shaped underground stormwater storage facilities typically constructed with reinforced concrete. Detention tanks are underground storage facilities typically constructed with large diameter metal or plastic pipe. Both serve as an alternative to surface dry detention for stormwater quantity control, particularly for space-limited areas where there is not adequate land for a dry detention basin or multi-purpose detention area. Prefabricated concrete vaults are available from commercial vendors. In addition, several pipe manufacturers have developed packaged detention systems.

Dry detention ponds are widely applicable for most land uses and are best suited for larger drainage areas an outlet structure restricts stormwater flow so it backs up and is stored within the basin. The temporary ponding reduces the maximum peak discharge to the downstream channel, thereby reducing the effective shear stress on the bed and banks of the receiving stream.

Storage practices do not receive any stormwater retention or treatment volume and should be considered only for management of larger storm events. Storage practices are not considered an acceptable practice to meet the SWRv. Storage practices must be combined with a separate facility to meet these requirements. Upland practices can be used to satisfy some or all of the stormwater retention requirements at many sites, which can help to reduce the footprint and volume of storage practices.

#### *Proprietary Practices*

Proprietary practices are manufactured stormwater treatment practices that utilize settling, filtration, absorptive/adsorptive materials, vortex separation, vegetative components, and/or other appropriate technology to manage the impacts stormwater runoff.

Proprietary practices may be used to achieve treatment compliance, provided they have been approved by the District and meet the performance criteria outlined in this specification. Historically, proprietary practices do not provide retention volume. Proprietary practices will not be valued for retention volume unless the practice can demonstrate the occurrence of retention processes.

***Tree Planting and Preservation***

Existing trees can be preserved or new trees can be planted to reduce stormwater runoff. Tree canopy can intercept a significant amount of rainfall before it becomes runoff, particularly if the tree canopy covers impervious surface, such as in the case of street trees. Through the processes of evapotranspiration and nutrient uptake, trees located on a development site have the capacity to reduce stormwater runoff volumes and improve water quality. Further, through root growth, trees can improve the infiltration capacity of the soils in which they grow.

DOEE recognizes the need to perform regular assessments of tree canopy as suggested in the forestry verification guidance. This assessment will be required to evaluate progress toward meeting the District's Sustainable DC Plan goal of increasing the district's tree canopy to 40% by 2032. As discussed in A7: *Potential Bias*, the District anticipates incorporating DDOT UFD data for tree mortality into NEIEN submissions, with the goal of better representing the net gain in trees.

***Sediment and Erosion Control***

In several decades of implementing the stormwater management and soil erosion and sediment control regulations of the District and undertaking numerous restoration projects, the Department has acquired substantial firsthand knowledge and experience of the damage to District waterbodies from impervious development and inadequately managed stormwater. Stormwater impacts District waterbodies with its powerfully erosive volume and the pollution it contains.

DOEE's Soil Erosion and Sediment Control Manual (2017) (see: *List of Supporting Documents and Attachments*) provides technical guidance on complying with the 2020 Rule on Stormwater Management and Soil Erosion and Sediment Control. This handbook defines the standards and specifications to design, review, approve, install, and maintain erosion and sediment control practices on land undergoing clearing, grading, and development. It also provides information on how to evaluate site-specific conditions, such as soils, drainage, proposed clearing, and grading and should be considered the source for detailed information for erosion and sediment control. This document provides an overview of the BMP with a focus on the verification elements.

DOEE organizes Erosion and Sediment control practices into eleven functional categories:

- Road Stabilization
- Sediment Barriers
- Dikes & Diversions
- Sediment Traps and Basins
- Downdrains and Flumes
- Inlet & Outlet Protection
- Dewatering Strategy
- Waterways and Stream Protection

- Site Preparation
- Vegetative Stabilization
- Other Practices

The control practices described above include both temporary and permanent structural practices. Temporary structural practices are those used for relatively short periods of time (e.g., straw bale dikes, which are effective for three months). These practices should not be used for longer than the periods of time prescribed. Such measures are usually implemented to ensure erosion or sediment control during certain phases of construction.

Permanent structural practices are designed to remain in place and to function, following completion of construction. Such controls include diversions and grassed waterways. Permanent controls require individual designs in order to fit the practice to individual situations. Structural practices are constructed to control the flow of water and possible resultant erosion, or to trap sediment so that off-site sedimentation does not occur. Vegetative practices are concerned with stabilizing the soil surface to prevent erosion. The retention of natural buffer areas along the periphery of the site may assist in ensuring that grading and construction activities will not adversely affect adjacent property or water resources.

All construction projects requiring soil Erosion and Sediment Control (ESC) plans must post a District-approved sign that notifies the public to contact the DOEE in the event of erosion or other pollution from the site. This signage requirement will help to protect the District's natural resources by identifying and correcting sites that are causing erosion and/or discharging sediment to local waterbodies. This is a requirement of the 2020 Rule on Stormwater Management and Soil Erosion and Sediment Control (2020 SW Rule) which calls for the prominent posting of a sign that:

- Is in plain view of and readable by the public at a distance of twelve feet (12 ft);
- Placed at each entrance to the site or as directed by DDOE; and
- Provides contact information identified by the Department, including phone number, e-mail address, and 311 mobile app.

*1998 Storm Water Regulations*

The historic record of legacy BMPs reported to the CBPO for Bay TMDL progress are similar, or in many cases, the same as those in the SWMG, however the electronic record does not contain the detail or granularity (required by the newer urban protocols) that is currently being tracked. The historic record of BMPs underwent a comprehensive one-time validation effort in which an external independent review team visited locations, documented presence/absence, condition, and retention volume if applicable; and verified contributing drainage area. The effort included digitization of historic as-built plans, inspection reports, and digital photos that were added to the SGS. Confirmation of the location of BMP implementation on the ground, and the work flow process described in ***Error! Reference source not found.*** determined which sector ( MS4/CSO/direct drainage) was assigned a pollution reduction. This effort also allowed for the identification and addition of "discovered BMPs." Discovered BMPs were held to the same validation standards as other practices in the legacy system. Their coordinates, installation date,

maintenance records, contributing area, landcover types, and retention volume were entered into the SGS (and automatically assigned a new NEIEN-compliant "unique state identification number." This validation effort targeted the BMPs documented below in Table A5-1.

Table A5-1: Structural BMPs Reported to the Bay Program

| Structure Name | Structure Function | Reporting Units |
|---|---|---|
| Bioretention | Landscape designed such that stormwater runoff collects in shallow depressions before filtering through fabricated planting soil media | Acres treated/volume captured |
| Cisterns/Rain Barrels | Rain barrels and cisterns capture and store stormwater runoff from rooftops and other impervious catchment areas, providing water for non-potable uses such as landscape irrigation. | Acres treated/volume captured |
| Conservation Landscaping | Managed turf that is converted into perennial meadows using species that are native to the Chesapeake Bay region. | Acres treated |
| Detention Structure (Dry Pond) | Designed to store runoff without creating a permanent pool | Acres treated/volume captured |
| Extended Detention Structure (Two types):<br><br>1) Extended Detention Structure, Dry<br><br>2) Extended Detention Structure, Wet | Designed to temporarily detain a portion of runoff for 24 hours after a storm using a fixed orifice to regulate outflow at a specific rate, allowing solids & associated time to settle out<br><br>Designed for the temporary storage of runoff associated with at least a 24 hour 1-year storm without creating a permanent pool of water.<br><br>Designed for the storage of runoff associated with at least a 24 hour 1-year storm. The detained water drains partially & the remaining portion creates a permanent pool. | Acres treated/volume captured |
| Bioswale | Open vegetated channel used to convey runoff and provide treatment by filtering pollutants and sediment. | Acres treated/volume captured |
| Green Roof | Green roofs absorb, store, and later evapotranspire initial precipitation, thereby acting as a stormwater management system and reducing overall peak flow discharge to a storm sewer system. | Acres treated/volume captured |
| Hydrodynamic Structure aka:<br>1) Oil grit separator<br>2) Bay Saver©<br>3) Stormceptor© | An engineered structure used to separate sediments and oils from stormwater runoff using gravitational separation and/or hydraulic flow. | Acres treated/volume captured |
| Infiltration Basin | Designed to allow stormwater to infiltrate into permeable soils. It differs from a retention structure in that it may include a back-up underdrain pipe to ensure eventual removal of standing water. | Acres treated/volume captured |
| Disconnection of Rooftop Runoff | Impervious area reduction | Acres treated/volume captured |

| Structure Name | Structure Function | Reporting Units |
|---|---|---|
| Infiltration Trench (Three types):<br><br>1) Complete Exfiltration<br><br>2) Partial Exfiltration<br><br>3) Water Quality Exfiltration | An excavated trench that has been backfilled with exposed or unexposed stones to form an underground reservoir (Also see Dry Well)<br><br>Runoff can only exit the trench by exfiltrating through the stone reservoir into the underlying infiltration system.<br><br>Runoff exits the trench by exfiltrating a) through the stone reservoir into the underlying soil, and b via a perforated underdrain at the bottom of the trench that diverts runoff to a central outlet<br><br>Storage volume is set to receive only the first ½" of runoff (first flush) from an impervious area of the watershed | Acres treated/volume captured |
| Porous Pavement | A porous asphalt surface designed to have bearing strength similar to conventional asphalt but provides a rapid conduit for runoff to reach a subsurface stone reservoir | Acres treated/volume captured |
| Sand Filter | A bed of sand to which the first flush of runoff is diverted. Water leaving the filter is collected in underground pipes & returned to a waterway. A layer of peat, limestone, and/topsoil may be added to improve removal efficiency | Acres treated/volume captured |
| Stream Restoration | Stream restoration in urban areas is used to restore the urban stream ecosystem by restoring the natural hydrology and landscape of a stream, help improve habitat and water quality conditions in degraded streams. | Linear feet restored/linear feet restored – enhanced treatment |
| Wetlands | A structure with a permanent shallow pool planted with wetland vegetation often designed to provide extended detention | Acres treated |
| Vegetated Buffer | A vegetated protective zone of variable width located along both sides of a waterway | Acres treated |

Table A5-2: Non-Structural BMPs Currently Reported to the Bay Program

| Structure Name | Practice Function | Reporting Units |
|---|---|---|
| Street Sweeping | Street sweeping on a regular basis reduces nitrogen, phosphorus, and sediment whereas less regular street sweeping reduces only sediment. | Acres swept/Curb Miles |
| Tree Planting | Urban tree planting is planting trees on urban pervious areas. | Number of trees |
| Erosion & Sediment Control | Erosion & Sediment control BMPs help prevent destruction of property and natural resources caused by soil erosion, sedimentation and nonagricultural runoff from land-disturbing activities. | Acres treated/percent of projected construction |
| Catch Basin Cleaning | Catch basin cleaning activities help prevent sediment, leaves, and organic materials from entering waterways, therefore reducing nitrogen and phosphorus pollution. | Pounds of sediment and nutrients |

For additional information on BMPs, please see the attachment titled "*NEIEN NPS BMP CBP Data Flow_P6AppendixA 19_1_08212019*.xlsx."

### *New or Emerging BMP definitions*

#### *Catch Basin Cleaning*

In FY 2013 and FY 2014 DOEE partnered with DC Water to improve tracking and reporting of catch basin cleaning efforts.

Starting in 2020, DOEE coordinated with DC Water to obtain the necessary information to report catch basin cleaning. DC Water provides DOEE with a database that describes which catch basins were cleaned, the approximate volume of material removed, and the type (size) of each catch basin. DOEE uses this volumetric data along with bulk density and material composition estimates provided from a local study in Baltimore to convert the volumes into wet masses for sediment and organics. DOEE uses CBP values to convert both wet mass to dry mass. Then DOEE uses CBP provided nutrient enrichment factors to estimate the total load reduction of each nutrient.

#### *Street Sweeping*

DOEE is working with DPW and federal partners to obtain more detailed information and confirmation that regenerative air sweepers (and not mechanical broom) are being consistently used for routes located in the MS4. Beginning in 2019, DOEE began obtaining GPS AVL data points that tracks street sweepers to calculate mileage. Separate calculations are made after data is merged with information regarding the specific sweeper type (regenerative air vs. mechanical broom) to assess the mileage from each sweeper type. A GIS analysis was conducted to determine the frequency of visits to each street segment reported and the mileage of those sections was calculated for reporting.

#### *Wetland Restoration*

As described in Table A6(2.1), wetlands have historically been reported to CBPO as BMPs designed to provide extended detention for stormwater. In the future, DOEE may engage in activities focused primarily on restoring wetlands that provide additional nutrient and sediment reductions. At that time, DOEE will update the QAPP with additional information needed to define the practices and provide confirmation of data review, verification and validation information. DOEE will ensure that reporting processes distinguish between wetlands implemented as stormwater BMPs for regulated activities and efforts undertaken to restore habitat where native wetlands have been lost.

#### *Tree Planting for Urban Stormwater Retention*

As described in Table A5(2.2), tree planting activities by DDOT UFD and a DOEE funded grantee (currently Casey Trees) are conducted to increase canopy cover in the District. The SGS may capture additional details for trees planted as part of a stormwater management plan. These planting records include number of trees planted, and site location,.Details (total contributing area, impervious contributing area, stormwater retention volume) will also be recorded when available and reported using the new urban stormwater BMP protocols.

#### *Urban Nutrient Management*

DOEE has not reported Urban Nutrient Management practices because of a lack of verification that policies have been properly implemented. A more comprehensive discussion on this subject

is provided in the *Potential Bias* section (A7) of this document. DOEE hopes to obtain confirmation of implementation consistent with the CBPO practice definition, and to report this BMP with the appropriate verification elements. At that time, DOEE will update this QAPP to reflect the information available.

#### *Conservation Landscaping*

DOEE has been implementing conservation landscaping practices for many years as a part of the RiverSmart Program. These practices are called BayScaping within the District and are practices that replace grass or impervious surfaces with plants native to the Chesapeake Bay region. Native plants have deeper root systems that absorb more stormwater, reduce erosion, increase infiltration, and are more drought resistant than turf grass or ornamental species. BayScaping also provides beneficial habitat for pollinators like butterflies and bees.

### *Point Source Reductions*

As a part of its CBP commitments, the District of Columbia (DC) reports its nutrient and sediment load reduction activities to the Environmental Protection Agency, CBPO. DOEE is the District government agency tasked with collecting this information and verifying that it is correct.

The wastewater sector is at the core of DOEE strategy to meet DC commitments to reduce nutrients and sediment loadings to the Chesapeake Bay. The facilities covered under this sector are classified as major and minor and are subject to enforceable National Pollutant Discharge Elimination System (NPDES) permit discharge limits on the amount of total nitrogen and total phosphorus. However, to ensure that permit limits are met, it is necessary to verify that the monitoring values reported are both valid and were determined using correct procedures. It is also important to verify on a consistent basis that treatment technologies put in place to make the needed reductions are actually installed and are functioning as required.

DOEE verifies compliance of Best Management Practices (BMP) for wastewater dischargers through existing regulatory tools and functions including permits, inspections and monitoring requirements that ensure accountability, proper design, implementation, operation and maintenance. Compliance verification through existing regulatory programs ensures the upgraded wastewater facilities, CSS/Combined Sewer Overflows (CSOs) or on-site treatment systems are designed, installed and maintained over time in order to meet their assigned load reduction targets.

DC Water operates a wastewater collection system comprising both separate and combined sewers. Approximately two-thirds of the District is served by separate systems, which consist of two independent piping systems: one system for sanitary wastewater (i.e., sewage from homes and businesses) and one system for storm water. The remaining one-third is served by the CSS, which conveys both storm water and sanitary wastewater in one piping system.

#### *Combined Sewer Overflow*

During dry weather, sanitary wastewater collected in the CSS is conveyed to Blue Plains. During periods of heavy rainfall, the capacity of a combined sewer may be exceeded and the excess flow, which is a mixture of storm water and sanitary wastewater, is discharged directly to the Anacostia River, Rock Creek, the Potomac River, or their tributary waters. This excess flow is

called combined sewer overflow (CSO). Release of this excess flow is necessary to prevent flooding in homes, businesses, and streets. DC Water's Long-Term Control Plan (LTCP) is currently being implemented to prevent or mitigate wastewater discharge into the local waterways. The original estimate was for the LTCP to reduce CSOs by 96 percent across the District. General activities outlined in the LTCP include:

- Consolidation or separation of select CSOs
- Implementation of Low Impact Development retrofits
- Rehabilitation of pumping stations
- Construction of storage tunnels
- Improvements to excess flow treatment at Blue Plains

Some of these activities are already underway or have been completed. For example, DC Water put the Anacostia and Blue Plains tunnels into operation in March 2018. During 2018, the tunnel removed about 3 billion gallons of CSO, which equated to a capture rate of about 90%, and the removal of 460 tons of trash, solids, and other debris. 2018 was the wettest year on record in the District. The total annual rainfall was about 66 inches.

In accordance with EPA's CSO Policy, DC Water's NPDES Permit (Part III) requires implementation of EPA's nine minimum controls (NMCs) to keep track of the activities. The NMCs are non-structural and low cost management practices intended to optimize the existing sewer system to reduce CSOs. The NMCs are as follows:

1. Proper operations and maintenance
2. Maximize use of the collection system for storage
3. Review and modify pretreatment requirements
4. Maximize flow to the Publicly Owned Treatment Works (POTW) for treatment
5. Eliminate dry weather overflows
6. Control solids and floatables in CSO
7. Pollution prevention
8. Public notification
9. Monitoring

The permit requires DC Water to submit an annual report on the NMCs by March 31 of each year covering the prior calendar year. In addition, DOEE and the Bay Program also use the following to track and verify the CSO performance at Blue Blains:

- Regular filing of the extent of CSO separation (acres).
- Monitoring of discharge through Outfall 001(a CSO-related bypass). Discharges vary with weather conditions.

It is important to note that CSO contributions to the overall nutrient load are highly dependent on the rainfall patterns from year to year. Additional QAPP details covering CSS/CSO verification and validation are included in the Verification Checklist for the ***Table D1-7:*** Waste Water Sector verification checklist.

***Green Infrastructure CSS controls***

The District and DC Water announced an agreement to modify a 2005 federal consent decree (CD) allowing DC Water to incorporate green infrastructure in its long-term strategy for curtailing CSOs on May 20, 2015. The modification authorizes DC Water to pursue an integrated green/gray infrastructure approach to address water quality issues resulting from CSOs in the Rock Creek and Potomac watersheds. The use of GI in this manner emphasizes EPA's preference for green infrastructure mechanisms over concrete "gray" infrastructure such as stormwater tunnels. The rationale for EPA's preference is based in part on the fact that stormwater stored in tunnels must be treated and discharged, while water stored in green infrastructure will mostly evaporate or be absorbed into soil. The elements of the modification that touch on verification and or validation include:

- Using green infrastructure to retain the first 1.2 inches of rainwater on 365 acres in the Rock Creek area, and 133 acres in the Potomac watershed.
- Potentially eliminating the Rock Creek storage tunnel and significantly decreasing the size of the Potomac tunnel depending upon the success demonstrated by green infrastructure.

In 2011, when DC Water proposed incorporating GI into its overflow control strategies for the Potomac and Rock Creek watersheds, it submitted to EPA an analysis demonstrating that modified CSO controls in the Potomac and green infrastructure in Rock Creek could provide equivalent pollution reductions to those in the original plan and were economically feasible. These submissions should be a good starting point in formulating strategies to verify that equivalent reductions are actually being achieved. Current status summary QAPP for the GI project is provided in the Verification Checklist for the *Table D1-7:* Waste Water Sector verification checklist.

***Verification Priority***

DOEE prioritizes verification of the controls in place at the single, major permitted point source in the District, Blue Plains, the gray and green infrastructure associated CSS, and urban stormwater BMPs required by the local Stormwater Rule (i.e 2013 Stormwater Rule, 2020 Stormwater Rule). DOEE does not further prioritize verification within the suite of urban stormwater BMPs; construction inspections are required on all permitted projects, and key variables required to determine pollution reduction (retention volume, contributing drainage area, and impervious area treated) are tracked.

For purposes discussed in detail in sections A6: Information/Data Quality Objectives and Performance/ Acceptance Criteria and *A12: Documentation and Records*, DOEE also considered the validation of the historic record of BMPs an important priority. DOEE validated a majority of the entire historic record through inspection efforts that prioritized BMPs with the largest contributing drainage areas, since these were assumed to be associated with larger estimated pollution reductions.

***BMP Lifespans***

BMPs reported by DOEE are inspected according to schedules outlined in section D1: Environmental Information Review. If documentation associated with inspection and maintenance is not available for a specific BMP, the records in the CBPO NPSBMP-NEIEN database will lack the reporting information (Event Status Codes for inspection and/or

maintenance, the associated dates, and inspection results) needed to verify continuing function. This will trigger the CBPO partnership's practice lifespan and sunset recommendations and the records (lacking verification) will expire and no longer be credited for pollutant reductions. DOEE anticipates scenarios where BMPs have been installed & reported, then retired for a period of time because of the lack of verification, but then re-activated as of the date when maintenance was performed, verified, and reported. DOEE will report this verification information to CBPO using the Watershed Technical Workgroup's NEIEN reporting recommendations. of this document includes more detailed information on this verification element.

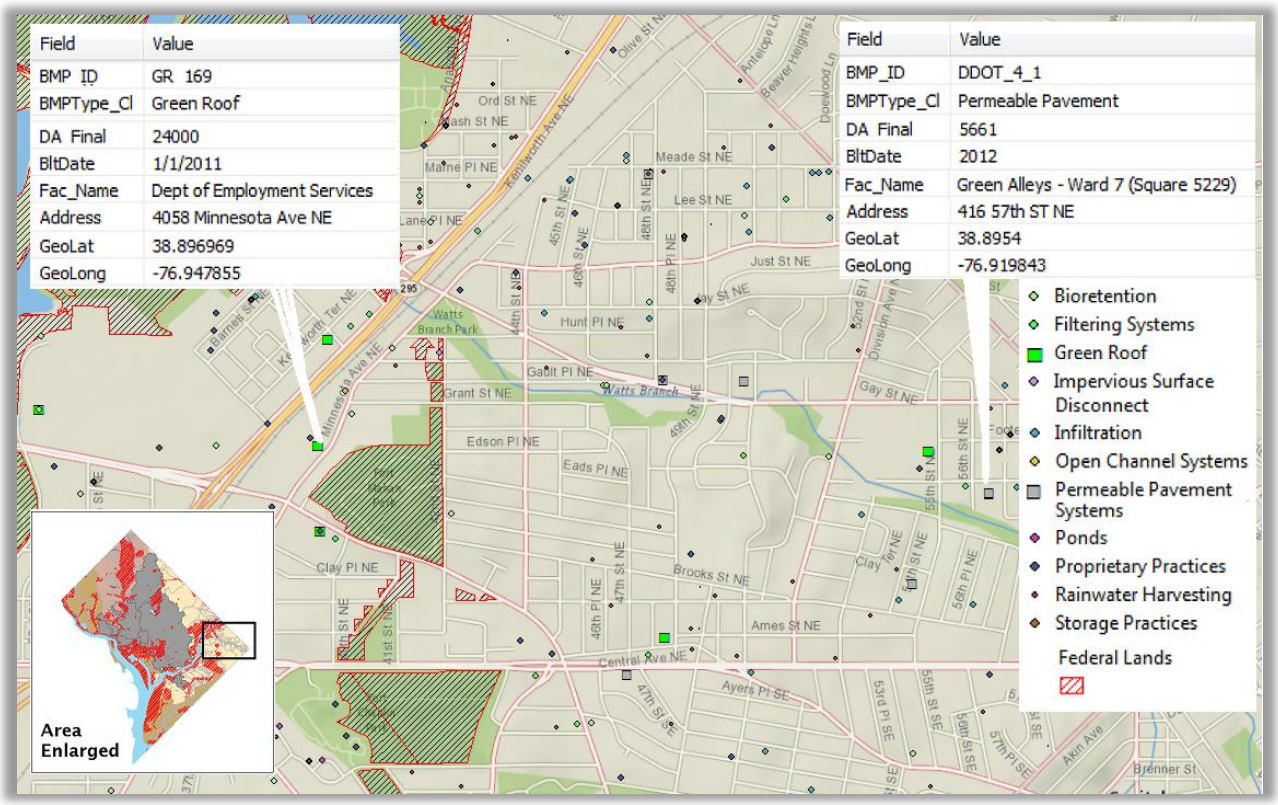
***Procedures used to compile data***

BMP tracking and reporting in the District differ from other jurisdictions in the partnership, primarily because of the smaller geographic scale and smaller number of agencies involved in the process. DOEE tracks and reports unique BMP IDs, most of which are also grouped within a Stormwater Management Plan (SWMP). Historic SWMPs are subject to ongoing data validation.

*Structural Practices in the Historic Record*

As part of the Consolidated TMDL Implementation planning process, DOEE's project team compiled a standardized inventory of the historic BMP record (all BMP types). The methodology and technical approach are documented in *Appendix F - BMPs and BMP Implementation of the TMDL IP Final Comprehensive Baseline Analysis* deliverable of the Implementation Plan. This inventory currently represents the historic record in the District through 2013. DOEE's SGS is used as the source of BMP and verification data from 2013 to the present. As an example of how DOEE's BMPs are tracked and reported to CBPO, see Figure A5-3, a map of structural BMPs in Watts Branch.

Figure A5-3. Example map of structural BMPs in Watts Branch in the Anacostia watershed.




*Street Sweeping*

For legacy reporting, DPW street sweeping has been compiled and reported by 12-digit HUC. DOEE has worked with DPW to improve the tracking and reporting of street sweeping, and now receives detailed GIS data which shows each individual route taken by a sweeper during the year. This route data is combined with sweeper type data (regenerative air vs. mechanical broom) when available and then compiled to determine sweeping frequency for each street segment. Street segment lengths for each reporting criteria are then calculated for submission.

DPW now utilizes a contractor, GeoTab, to provide GIS tracking of vehicles used to conduct sweeping allowing DPW to track the route of each vehicle in an average of approximately 10-second intervals. At the end of the reporting period, Sweeper GPS data is extracted, exported, and sent to DOEE by DPW as an Excel Workbook with each sweeper vehicle as a worksheet. The data goes through QA/QC from DOEE staff and then is used to generate street sweeping values. Attributes of the workbook provided to DOEE include: VIN, AssetName, Lat/Lon, Speed, Timestamp, Session From, and Session To.

- **VIN:** VIN of the vehicle
- **AssetName:** vehicle number (name) used to cross reference to a vehicle spreadsheet containing additional information of each DPW vehicle
- **lat:** lattitude of GPS point (y coordinate)
- **lon:** longitude of GPS point (x coordinate)

- **speedInKmh:** speed of vehicle when GPS point captured
- **timestampUTC:** time stamp of GPS point captured
- **sessionFromUTC:** start time of when sweeper broom is turned on
- **sessionToUTC:** end time of when sweeper broom is turned off

Within each worksheet of the workbook, new fields and formulas were developed in December 2022 and added to allow the creation of groups of points that pertain to each sweeper broom on session. The formulas create Unique IDs generated based on existing attribute data in the worksheet so it would change based on when each session ends and the sweeper type (Regenerative/Mechanical) for each vehicle is also added to the worksheet at this time.

Once all worksheets have been modified, the data is exported into ArcGIS for further GIS processing, calculations, and analysis.

The GPS points are grouped by UniqueID and sweeper lines are created from the GPS points and grouped by UniqueID. Total length swept is summarized from length field from the lines attribute table.

For NEIEN reporting, the DC Street Centerline layer was buffered to 50 ft along its length and subtracted by 60ft buffers around the center of intersections to minimize double counting of crisscrossing sweeping. This is to capture as much of the sweeper lines as they often don't fall within the roadway due to factors that effect GPS signals in a moving vehicle in an urban setting. The lines that fall outside of the buffers along the lengths of roads are pulled back into the buffer areas as much as possible.

Calculations of the lines by sweeper type and running the frequencies of each sweeper (UniqueID) per sections of road, results the counts of sweeper visits by type.

*Surface and Groundwater System (SGS)*

Detailed attributes (including stormwater retention volume) are calculated and tracked for each unique BMP in DOEE's SGS. The database has multiple layers of data entry with roles for owners, installers, plan reviewers, inspectors, and data administrators so that BMP installation can be tracked during the lifecycle of the project (and beyond). The database also supports the attachment of electronic files to a stormwater management plan. Types of files include, but are not limited to, scanned images of as-built plans, DOEE inspection reports, digital photographs, and Notice Of Violation (NOV) forms.

*Tree Planting*

The District currently tracks tree planting in the city from three sources: DDOT - Urban Forestry Division (UFD) tree planting activity, DOEE grant funded tree planting activities, and non-DOEE funded tree planting efforts reported by groups such as the National Park Service (NPS) and Casey Trees.

DDOT-UFD currently tracks individual, verifiable tree plantings using GIS. Previously, UFD provided DOEE the number of trees planted on a quarterly basis however beginning the 2023

reporting year DOEE now exports street tree data from DDOT publicly available system. DOEE reports these trees aggregated by their local TMDL segment.

Casey Trees provides unique tree planting records for DOEE funded projects and, aggregated records of privately funded tree planting in the District by block in order to protect consumer privacy. DOEE asks Casey Trees and other tree planting organizations (e.g NPS) to provide the number and location of non-DOEE funded trees planted on a reporting year (July 1 to June 30) basis. Discrete coordinates are not required for individual tree plantings, site coordinates may be reported instead for large parcel tree plantings.

*Stream Restoration*

The majority of stream restoration work is initiated by WPD's Restoration Branch. Regardless of the originator of stream restoration work, these projects must be reviewed and approved by the Stormwater and Green Area Ratio Branch of RRD. Submitted plans and their treatment areas are entered into a database and are double-checked by the engineer performing the plan review. On an annual basis, the Restoration Branch determines the linear feet of stream restored so that it can be reported to the CBP.

*Catch Basin Inserts*

Catch basins in the District are cleaned by DC Water. To track the project, DC Water developed a catch basin cleaning app. This app tracks the volume of material removed from each catch basin by requiring staff to record the percent full status of the catch basin both before and after cleaning activities. As of 2020, DOEE uses this information 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.

*Development/Redevelopment and all other BMPs*

The second largest proportion of load reduction acreage reported to the Bay Program after point source load reductions comes from the redevelopment of the District in accordance with current regulations for stormwater management. The vast majority of the District was developed before the advent of stormwater BMPs so new development in the District invariably reduces stormwater and pollutant loads to our local waterways.

## A6: Information/Data Quality Objectives and Performance/Acceptance Criteria

***Section 1 & 2) - Accuracy & Completeness Objectives***

DOEE plan reviewers approve calculations and confirm designs and plans are consistent with the stormwater regulations. Inspectors conduct on-site inspections with as-built documents to confirm that implementation reflects the approved plan. The SGS contains validations and governance processes to minimize data entry error. NEIEN administrators review data for consistency and required elements before transmitting data to CBPO.

The stormwater management data collected by RRD, IED, WPD, and WQD from other agencies is provided through inter-agency cooperation, including through the permitting process, as applicable.

DOEE's objectives for reporting to the Bay Program are:

- To receive data on all BMPs listed under NPDES Permits (ongoing)
- To receive data on all BMPs being installed and inspected (ongoing)
- To receive data on all federal BMPs (ongoing)
- To accurately record location data for all BMPs in the database (ongoing)
- To update the database to meet new District stormwater regulations which require a stormwater retention standard (complete)
- To receive data on all BMPs installed on a voluntary basis (non-permitted activities such as tree planting) (ongoing)
- To verify BMPs installed on a voluntary basis (ongoing)
- To provide the BMP data in the format necessary for the CBP Model (ongoing)
- To provide the CBP with stormwater volume capture data (stormwater performance standard information) for each newly installed BMP (ongoing)
- To provide the data through the National Environmental Information Exchange Network (NEIEN) (ongoing)
- To post the majority of BMP data and their associated load reduction estimates on the internet for the public at opendata.dc.gov (ongoing)

*Potential Bias*

DOEE acknowledges and accepts the potential for *low bias* of not capturing BMPs that were installed without stormwater management plans being filed. (e.g. voluntary stormwater retrofits that are not required to submit a stormwater management plan). Additionally, primarily for historic BMP records, DOEE acknowledges and accepts the potential for *low bias* of not capturing the completion of a BMP if DOEE's final inspection date was not recorded.

***Federal Reporting***

DOEE acknowledges and accepts the potential for *low bias* for BMPs implemented on federal lands in the District. Many federal agencies have not historically filed stormwater management plans with DOEE, but have started reporting BMPs to DOEE on an annual basis using the reporting template shared between the District and Maryland. In order to avoid double counting, these BMPs are not included in the CBPO NPSBMP NEIEN reporting work flow until they can be reconciled with BMPs in the SGS. At the end of a reporting cycle, DOEE prepares a summary report of all data received (and also agencies who neglected to submit data) and shares the document with CBPO.

One example of unconfirmed, unreported BMP implementation is the National Park Service and Urban Nutrient Management. Section 4.8.2.4 (Soil Resource Management) of the National Park Service Management Policies (See: *List of Supporting Documents and Attachments*) states:

"When use of a soil fertilizer or other soil amendment is an unavoidable part of restoring a natural landscape or maintaining an altered plant community, the use will be guided by a written prescription. The prescription will be designed to ensure that such use of soil fertilizer or soil

amendment does not unacceptably alter the physical, chemical, or biological characteristics of the soil, biological community, or surface or groundwaters."

Because of the lack information and confirmation that these policies have been implemented, the District has never reported Urban Nutrient Management as a BMP on NPS properties to CBPO for Bay TMDL pollution reductions. DOEE hopes to obtain confirmation of implementation consistent with the CBPO practice definition, and to report this BMP with the appropriate verification elements. At that time, DOEE will update this QAPP to reflect the information available.

#### *Historic BMP Record*

DOEE acknowledges and accepts the potential for *low bias* in the historic data. In some cases, the exact date of BMP installation was not recorded in the database, nor was the exact design details of each BMP. In these cases, BMPs that have been built may not be reported, and BMPs that are reported may have missing attributes. DOEE anticipates that ongoing validation of historic records will reduce this low bias.

#### *Tree Planting*

In future reporting cycles, DOEE intends to take advantage of the recently enhanced NEIEN capacity to report multiple BMP event status code dates, and will report dates (where available), for planting, condition inspection, *and mortality*. This verification reporting will provide additional confidence to CBPO that tree coverage in the District is not overestimated by the failure to account for tree mortality.

### *Double Counting (Prevention)*

#### *Tree Planting*

Special considerations are taken with urban tree planting to avoid double counting. For trees planted by the DDOT UFD and the D OEE Tree Canopy Grantee (currently Casey Trees), tree planting mortality (death) results in trees that are *replaced*, in accordance with program warranty. These trees are not included in counts of trees planted. For street trees, tree condition, species, DBH (diameter at breast height), and mortality (date) is captured in the UFD's GIS layer. In 2014, DOEE phased in the reporting, through NEIEN, of the tree species information and DBH measurement (along with coordinates (latitude and longitude) which have been reported since 2012) for verification purposes.

Tree planting through the RiverSmart Homes program is administered by DOEE WPD through a Tree Grant that is currently awarded to Casey Trees. Planting data is tracked and organized by program/funding source and location which ensures that a tree planted by a grantee is not double-counted.

### *Completeness*

For some historic BMPs, the exact implementation date may not be known. Because NEIEN requires implementation date in the format YYYY-MM-DD, the DOEE SGS applies assumed implementation dates based on other known information (permit approval date, most recent inspection date, etc.) in order to successfully validate and submit progress submissions.

For cases in the legacy stormwater database when site locations did not report valid addresses, BMP locations were geo-referenced manually using project descriptions (intersections of cross streets, or lengths of roads between bounding streets), in order to obtain the most accurate location information as possible for the practice.

## A7: Distribution List

Table A7-1: Customers and Stakeholders

| Name | Organization |
|---|---|
| Auston Smith | EPA Region 3 |
| Durga Ghosh | EPA Region 3 |
| Ruth Cassilly | EPA Region 3 |
| Richard Jackson | DOEE - Director |
| Jonathan Champion | DOEE – Water Quality Division |
| Alicia Ritzenthaler | DOEE – Water Quality Division |
| Matt Gallagher | DOEE – Water Quality Division |
| Meredith Upchurch | DOEE – Regulatory Review Division |
| Matt Johnson | DOEE – Regulatory Review Division |

## A8: Project Organization

Best management practices (BMP) data provided to the Chesapeake Bay Program Office (CBPO) by DOEE consists of point source reductions from DC Water, urban BMPs that treat stormwater from new development or redevelopment, retrofits of existing areas, and non-structural BMPs such as street sweeping, urban stream restoration work, and tree planting. The District's primary reductions come from upgrades to the Blue Plains Advanced Wastewater Treatment Plant (Blue Plains), the Long Term Control Plan to reduce combined sewer overflows, and from permitted stormwater treatment facilities installed as a part of new development or redevelopment of areas larger than 5,000 square feet.

*Program and/or Project Organization and Responsibilities*

***DOEE***

The Watershed Protection Division (WPD) Restoration Branch, Regulatory Review Division (RRD), Inspection and Enforcement Division (IED), and the Water Quality Division (WQD) are charged with compiling, geo-coding, and processing the stormwater BMPs installed and non-structural stormwater BMP activities. DOEE WPD, RRD, IED, and WQD collect stormwater BMP data from sources described below, verify implementation location through geo-coding, and organize this information and report it to the CBP. DOEE has multiple roles and responsibilities for assuring QA/QC of data reported to CBP. The overarching oversight for QA/QC within DOEE is the responsibility of the DOEE Quality Management Officer (QMO), currently Richard Jackson. These roles are broken out by DOEE branches below. Key individuals at DOEE are listed in Table A8-1.

*DOEE Water Quality Division (WQD) Planning and Reporting Branch* – Collects the street sweeping data from the Department of Public Works (DPW), performs QA/QC, GIS analysis, and reports to the Bay Program. They also coordinate the collection of data on BMPs installed on federal lands, performs QA/QC, and ensures it does not duplicate records of BMPs in the DOEE SSGS.

*DOEE Regulatory Review Division (RRD)* – Tracks, reviews, and records all plans for new development or redevelopment in the District. The Stormwater and Green Area Ratio Branch ensures that all permitted construction over 50 square feet has a plan to have appropriate erosion and sediment control devices in place and that all permitted construction over 5,000 square feet has plans to install stormwater suitable BMPs. The Stormwater and Green Area Ratio Branch records all submitted construction plans in DOEE's SGS which they manage and performs QA/QCs on.

*DOEE Inspection and Enforcement Division*– Inspects sites under construction to make sure that they are in compliance with erosion and sediment control regulations, performs inspections during the installation of BMPs, the final inspection on constructed BMPs, and maintenance inspections of installed BMPs. This Division aims to inspect all installed BMPs every five years to ensure that they are in good working order. A process for owner-conducted Self-Inspections/ Self-Reporting (SISR) of stormwater BMPs was developed to increase stormwater management compliance amongst the regulated community. If the BMPs require maintenance, landowners are required to perform the required maintenance to bring it into compliance. The Inspection and Enforcement Division maintains records of inspections in DOEE's SGS database and QA/QCs recorded data.

*DOEE Watershed Protection Division*– Compiles, geo-codes, QA/QCs the information on stormwater BMPs installed and non-structural stormwater BMP activities from the various reporting agencies, divisions and branches. DOEE WPD then works with WQD to report the voluntary BMP data to the CBP including the location of the BMP, the type of BMP installed, the volume capture of the BMP, and the number of acres treated by the BMP. DOEE WPD and WQD also QA/QC and report the inspection, maintenance and/or removal of any previously installed and reported BMP.

***DC Water***

DC Water is tasked with overseeing and implementing upgrades to Blue Plains and to the Combined Sewer System (CSS). These upgrades are closely tracked by DC Water and are regulated by the EPA as a part of its discharge permit and its Long Term Control Plan. DC Water also monitors discharges from the CSS and Blue Plains, QA/QC's these point source loads, and submits load data to the Metropolitan Washington Council of Governments (MWCOG) for reporting to the CBP. This information is obtained by DOEE through the new Point Source App which retrieves information from the ICIS-NPDES database. DC Water is also responsible for installation of grey and green infrastructure as determined by the Long Term Control Plan. The permitting of green infrastructure for stormwater treatment under the Long Term Control Plan is regulated and permitted by DOEE RRD Building Permit Plan Review Branch and their installation and maintenance is overseen by DOEE IED. DOEE RRD keeps a

database of all permitted stormwater BMPs and of all inspection and enforcement efforts. Key individuals at DC Water are listed in Table A8-1.

***District Department of Transportation (DDOT) Urban Forestry Division (UFD)***

DDOT Urban Forestry Division (UFD) is responsible for tracking the number and location of trees planted in the public right of way. UFD performs QA/QC on this data and then provides it to DOEE Restoration Branch, who reviews, standardizes, and incorporates the information into the tracking & reporting database. UFD will be expanding their tree management (including planting) to DC owned parklands and DCPS public school lands. Key individuals at DDOT are listed in Table A8-1.

***District Department of Public Works (DPW)***

DPW is responsible for tracking the lane miles swept, how often they are swept, the type of sweeper used, and the location of street sweeping activities as a part of the District's street sweeping efforts.

DPW works with GeoTab to track and obtain Automated Vehicle Location (AVL) on it's sweepers and vehicles. This allows the location and activities to be tracked. GPS data along with relevant activity and sweeper status is recorded when vehicles are operating. At the end of the reporting period, Sweeper GPS data is extracted, exported, and sent to DOEE as an Excel Workbook with each sweeper vehicle as a worksheet.

Key individuals at DPW are listed in Table A8-1.

***Federal Agencies***

Federal agencies are responsible for installing BMPs on federal lands, which make up almost a third of land area in the District. Federal agencies are required to submit stormwater management plans to DOEE for stormwater plan review and approval, as all other projects are required to do in the District. If federal agencies fail to follow stormwater regulations, the federal agencies can report their activities directly to WQD; however projects not properly permitted and inspected may not be accepted by DOEE nor reported to the Bay Program. Key individuals at federal agencies (including DOD, AOC, USACE, GSA, USDA, and NPS) are listed in Table A4(1).

Table A8-1: Reporting Agencies, Contact Person, BMP Types, and data management system.

| Type | Agency/ Organization | Type of BMP | Contact Person | Database |
|---|---|---|---|---|
| Local | DDOT UFD | Urban Tree Planting | earl.eutsler@dc.gov | ArGIS Layer |
| Local | Casey Trees | Urban Tree Planting | mhansen@caseytrees.org | ArGIS Layer |
| Local | DOEE WPD | Urban Tree Planting | erica.carlsson@dc.gov | Custom Excel Report |
| Local | DPW | Street Sweeping | david.koehler@dc.gov | GeoTab |
| Local | DOEE RRD | New Development & Redevelopment | matt.johnson2@dc.gov | Quick Base/SGS |
| Local | DOEE WPD | Stream Restoration | josh.burch@dc.gov | Custom Excel Report |

| Type | Agency/ Organization | Type of BMP | Contact Person | Database |
|---|---|---|---|---|
| Federal | EPA CBPO | Wastewater-Point Source App | thynge.megan@epa.gov | Online platform tool |
| Local | DC Water | Wastewater-significant | diran.adalian@dcwater.com | Discharge Monitoring Reports |
| Local | DC Water | Wastewater/CSS | John.Cassidy@dcwater.com | Clean Rivers Project |
| Local | DOEE WQD | Wastewater-non significant | alicia.ritzenthaler@dc.gov | Custom Excel Report |
| Local | DOEE | Overarching QA/QC | richard.jackson@dc.gov | QA/QC |
| Federal | AOC | New Development & Redevelopment | dhelmann@aoc.gov | NEIEN Excel Template |
| Federal | AOC | New Development & Redevelopment | jherr@aoc.gov | NEIEN Excel Template |
| Federal | USACE | New Development & Redevelopment | amy.m.guise@usace.army.mil | NEIEN Excel Template |
| Federal | DOD | New Development & Redevelopment | ashley.l.kelly10.civ@us.navy.mil | NEIEN Excel Template |
| Federal | DOD | New Development & Redevelopment | Pearl.Ashitey@jacobs.com | NEIEN Excel Template |
| Federal | DOD | New Development & Redevelopment | evan.m.miles2.civ@us.navy.mil | NEIEN Excel Template |
| Federal | DOD | New Development & Redevelopment | kevin.dubois@navy.mil | NEIEN Excel Template |
| Federal | DOD | New Development & Redevelopment | jennifer.mcdonnell@navy.mil | NEIEN Excel Template |
| Federal | FRA (Fed Railroad Admin) | New Development & Redevelopment | Sydney.schnier@dot.gov | NEIEN Excel Template |
| Federal | FRA (Fed Railroad Admin) | New Development & Redevelopment | David.Valenstein@dot.gov | NEIEN Excel Template |
| Federal | GSA | New Development & Redevelopment | Russell.Clark@gsa.gov | NEIEN Excel Template |
| Federal | GSA | New Development & Redevelopment | Andrew.oetman@gsa.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | lara_hannon@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | Leslie_Frattaroli@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | Nick_Bartolomeo@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | maureen_joseph@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | andrew_landsman@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | rene_senos@nps.gov | NEIEN Excel Template |

| Type | Agency/ Organization | Type of BMP | Contact Person | Database |
|---|---|---|---|---|
| Federal | NPS | New Development & Redevelopment | J_Patrick_Campbell@nps.gov | NEIEN Excel Template |
| Federal | Smithsonian | New Development & Redevelopment | SpoffordM@si.edu | NEIEN Excel Template |
| Federal | Smithsonian | New Development & Redevelopment | trowbridgea@si.edu | NEIEN Excel Template |
| Federal | USDA | New Development & Redevelopment | john.houston@ usda.gov | NEIEN Excel Template |
| Federal | USDA | New Development & Redevelopment | daniel.jewett@ usda.gov | NEIEN Excel Template |

*List of Supporting Documents and Attachments*

1. NEIEN Appendix A (Attached)
2. DOEE Stormwater Management Guidebook (http://doee.dc.gov/node/610622)
3. DOEE Soil Erosion and Sediment Control Handbook (http://doee.dc.gov/node/65302)
4. DOEE Surface and Groundwater System User Manual (http://doee.dc.gov/swdb)
5. Consolidated TMDL Implementation Plan (https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/FINAL%202022%20Consolidated%20TMDL%20Implementation%20Plan%20091320222_0.pdf)
6. DC Water Clean Rivers Project Construction Management Plan (Attached)
7. DC Water CSS Long Term Control Plan – Final Report (https://www.dcwater.com/sites/default/files/Complete%20Long-term%20Control%20Plan.pdf)
8. DC WASA First Amendment to Consent Decree (http://www2.epa.gov/sites/production/files/2015-05/documents/firstamendment-dcwasa-cd.pdf)
9. Permit No. DC0021199 (DC WASA Blue Plains facility) (https://www.epa.gov/npdes-permits/district-columbia-npdes-permits )
10. DC Water Proposal modifying Clean Rivers Project for Green Infrastructure (https://www.dcwater.com/sites/default/files/green-infrastructure-ltcp-modificaitons.pdf )
11. DC Water LTCP Modification for Green Infrastructure Briefing Slides (Attached)
12. District of Columbia NPDES Compliance Monitoring Strategy 2015 (http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/DC%20FY15%20Proposed%20Compliance%20Monitoring%20Strategy%20Report.pdf )
13. DC Water Combined Sewer System Annual and Quarterly Reports (Nine Minimum Controls) (https://dcwater.com/publications?field_document_type_tid=47&field_document_sub_type_tid=50 )
14. US EPA NPDES Compliance Inspection Manual

(http://www2.epa.gov/sites/production/files/2013-09/documents/npdesinspect_0.pdf)

15. DDOT Green Infrastructure Standards Maintenance Schedules (http://ddot.dc.gov/GreenInfrastructure)
16. CBPO Partnership Verification Framework (http://www.chesapeakebay.net/documents/Complete%20CBP%20BMP%20Verification%20Framwork%20with%20appendices.pdf)
17. Stream Restoration Functional Lift Documentation (http://www.chesapeakebay.net/channel_files/18279/stream_health__and_the_functional_lift_pyramid.pdf)
18. Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects (http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2013/10/stream-restoration-short-version.pdf)
19. Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed (https://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2019/07/Approved-Verification-Memo-061819.pdf
20. Casey Trees Survivability Report (2014) (Attached)
21. NPDES Compliance Inspector Training Laboratory Analyses Manual. (1990. EPA)
22. Water Compliance Inspection Report (Example: NPDES DC0000248) (http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/Kennedy%20Center%20Compliance%20Inspection%20Report%20FY14.pdf)
23. RiverSmart Washington Project Factsheet (https://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/RiverSmart%20Washington%20Fact%20sheet%20031114.pdf )
24. National Park Service Management Policies (2006) (www.nps.gov/policy/mp2006.pdf)

*Federal Grants Associated with the Program*

a. EPA Section 319(h) Grant
b. EPA Chesapeake Bay Program Implementation Grant
c. EPA Chesapeake Bay Program Regulatory Assistance Program Grant

## A9: Project QAM Independence

DOEE's Planning and Reporting Branch Chief (currently Matthew Gallagher) is DOEE's designated Project Quality Assurance Manager (QAM) for the Chesapeake Bay Program Best Management Practice (BMP) Management, Reporting and Verification Project described in this QAPP. The QAM has oversight authority and responsibilities for planning, documenting, coordinating, and assessing effectiveness of the QAPP as well as authority to access and discuss quality-related issues with DOEE's Quality Management Officer (QMO). The QAM maintain independence by not having direct involvement in the environmental information operations described in this QAPP.

## A10: Project Organization Chart and Communications

Figure A10-1: Project organization chart for BMP reporting

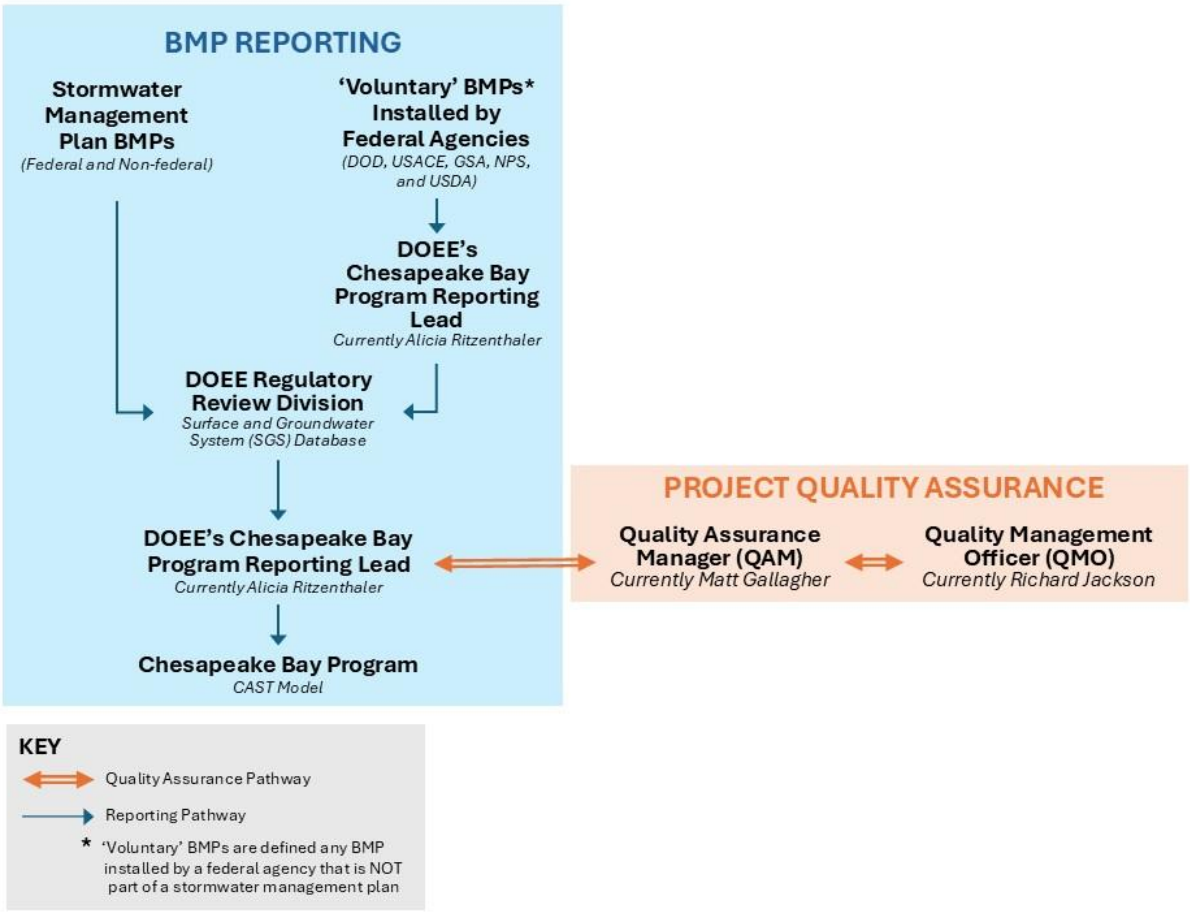
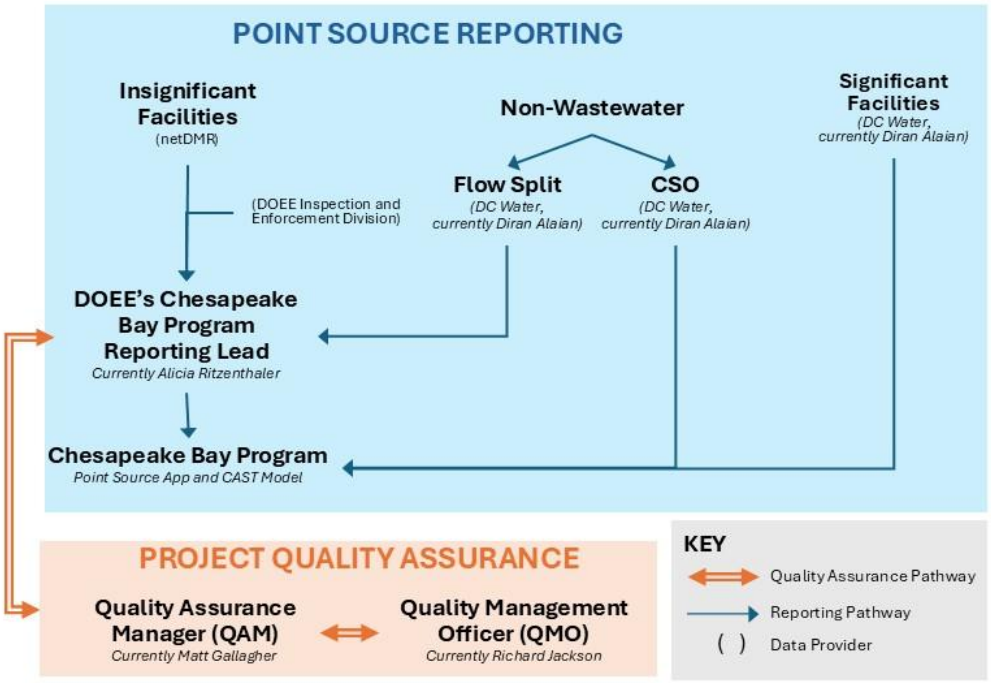


Figure A10-2: Project organization chart for point source reporting




## A11: Personnel Training/Certification

***DOEE Inspection and Enforcement Division***

Technical staff positions titles within IED and RRD include both *Environmental Engineer* and *Environmental Protection Specialist*, though duties performed for these two titles are sometimes the same. IED Inspectors must have a degree in engineering, chemistry, biology or environmental science.

The following trainings and certifications are required for DOEE inspectors:

- Basic Inspector training
- OSHA Confined Space
- Personal protection training
- Construction Site Entry
- Vehicle Accident Reporting
- Inspector Ethics
- Erosion and Sediment Control training
- Stormwater BMP installation and maintenance training.

Staff members inspect construction sites for compliance with District regulations for erosion and sediment control, stormwater management, and complaints related to these subjects for

construction sites and land disturbance activities where a building permit is required as described by the District Code of Municipal Regulations.

Staff training described in performance plans are required to be completed with satisfactory ratings, including training for all types BMPs, including gray or conventional stormwater infrastructure, and green infrastructure practices; such as green roofs, bio-retention, harvest reuse in order to support the performance of competent inspections for construction, and operation and maintenance of these Erosion and Sediment Control and other stormwater BMPs.

Staff members are also required to have expertise in using digital cameras, smartphones, desktop computers, field laptop computers, Google Earth, working knowledge of GIS, database software, and experience completing reports and recording of inspections and enforcement actions. Inspectors are required to maintain accurate records and site files with information related to onsite inspection and enforcement for the land disturbing activity and construction and maintenance of all BMPs approved as required by the administrative procedures for the Building Permit and as described by Standard Operating Procedures for the Branch.

Inspectors are also provided with training in the areas of environmental regulatory enforcement compliance, including:

- Writing investigative reports
- Issuing warnings or tickets (corrective Actions, Directives, Notice of Violations, Notice of Infractions and Stop Work Orders)
- Testifying in court
- Supplemental USEPA approved Inspector training
- DOEE Office of Enforcement training to support effective inspections for enforcement

DOEE has also recently instituted a cross-training program for all staff with site review and inspection responsibilities. This program is envisioned to facilitate communication and information sharing that will alert stormwater inspectors when staff members from other branches discover potential problems while performing their assigned duties, with the ultimate goal of increasing compliance with district regulations.

#### *Erosion & Sediment Control Outreach*

DOEE IED provides educational materials to assist the construction industry and governmental construction management agencies with the implementation and maintenance of erosion and sediment controls on developing sites. The materials are designed to enhance the technical capability of supervisors in charge of implementing and maintaining erosion and sediment control measures, and to assist inspectors responsible for erosion and sediment control plan compliance monitoring. These materials are available to any group or person seeking a better understanding of sediment pollution and control.

#### ***DC Water Clean Rivers Construction Managers***

It is the responsibility of Consultant Construction Managers (CCM) to coordinate the provision of manufacturer or vendor-provided training as provided for in the construction contract documents and in accordance with DETS SOP 5480. The CCM shall review all training

submittals, conduct training coordination, and arrange for the delivery of the training required under the construction contract.

- Review and approve all lesson plans specified in the construction contracts, ensure that lesson plans are consistent with the operations and maintenance manuals.
- Coordinate training classes including the scheduling of classrooms and arrangement of support equipment and material.
- Monitor and evaluate quality of classroom training to ensure material is covered adequately.
- Review and approve videos prepared by the construction contractors.

The identification of individuals to receive training will remain the responsibility of DC Water. The CCM will be required to coordinate the time(s) for training with DC Water to ensure the maximum availability of maintenance and operations personnel.

***Wastewater Sector***

DOEE now uses the EPA's Chesapeake Bay Program Point Source Application (App) to report flow, nutrient, and sediment data for nonsignificant individually-permitted NPDES facilities. The App pulls discharge monitoring data from EPA's ICIS-NPDES, which is a national information management system to track permit compliance and enforcement status of regulated facilities. App users can download facility data, find available discharge monitoring report (DMR) data, submit data via the application, and prepare the submission spreadsheet. The App also enables users to edit facility information, do quality assurance checks, view datasets, and generate reports. DOEE staff members tasked with using the Point Source App have received training directly from EPA personnel to properly retrieve data and generate reports.

***DOEE Data Managers***

The DOEE SGS manager has has extensive experience using the Quick Base database which is the foundation of the SGS. Additional DOEE staff members have multiple years of experience developing databases for environmental programs using Quick Base as well. Contractor support staff (Karder Corporation) for the SGS have over three decades of database experience and are an Intuit-approved Quick Base Solutions Provider. DOEE's NEIEN data manager has been working with the EPA Exchange Network for various data submissions since 2022 and is a member of the CBPO Watershed Technical Workgroup.

***Contractor Support***

DOEE, with the assistance of CBPO funding to support verification principles, engaged contractor support to perform a one-time inspection and validation effort. Legacy BMP implementation (historic record) was compiled so that an external independent review team could visit locations, document presence/absence, condition, verify contributing drainage area, and retention volume if applicable. A description of the qualifications of the assembled project team is provided below.

- Experience:
    - extensive watershed-scale stormwater management planning experience,

  - local knowledge of the District's land use, stormwater system, permit-related issues, and monitoring requirements
  - local and national TMDL expertise
- Certifications, Degrees, and Technical Expertise:
  - Professional Engineers
  - Bachelor's degrees in Civil and Environmental Engineering,
  - Bachelor's degree in Environmental Studies
  - Bachelor's and Master's degrees in geography with emphasis on hydrology & water resources

## A12: Documentation and Records

***Section 1) Data Providers***

DOEE receives BMP information from data providers (including federal partners) in electronic format, usually by email, in an excel template format. Data received by email is archived within 5 weeks of transmission and stored on a hard drive. Emails and attached files are also saved on hard drives in folders specific for progress year and data provider. At the end of a progress submittal, DOEE compiles and reports information on data received, processed, and reported.

***Section 2) Electronic Records Retention and Back up Procedures***

Data from DOEE's legacy stormwater management database has been archived and migrated into the Surface and Groundwater System (SGS). DOEE's SGS is a Quick Base application that is backed up daily. The encrypted backup files are stored within Quick Base-owned data centers. Intuit does not use a third party to maintain backup files. Local backup for applications is done as a snapshot every 24 hours, and the most recent 14 daily snapshots are kept. In addition to the daily snapshots, Quick Base keeps the most recent six months' worth of weekly snapshots past the 14 days' worth of daily snapshots.

***Section 3) Inspection Forms***

*DOEE Regulated Stormwater Retrofit*

Inspections before, during, and after construction are required to ensure that stormwater BMPs are built in accordance with the approved plan specifications. Inspectors use detailed inspection checklists that require sign-offs by qualified individuals at critical stages of construction to ensure the contractor's interpretation of the plan is consistent with the designer's intent.

DOEE construction inspection forms are documented in Appendix L (pages L1-L20) of the Stormwater Management Guidebook:

- Green Roof Construction Inspection
- Rainwater Harvesting Construction Inspection
- Impervious Surface Disconnection Construction Inspection
- Permeable Pavement Construction Inspection
- Bioretention Construction Inspection
- Filtering System Construction Inspection
- Infiltration Practice Construction Inspection

- Open Channel System Construction Inspection
- Ponds, Wetland, and Storage Practice Construction Inspection
- Generic Structural BMP Construction Inspection
- Tree planting and Preservation Construction Inspection
- Stormwater Facility Leak Test

DOEE recommends that an annual maintenance inspection and cleanup be conducted at each BMP site, particularly at large-scale applications. Maintenance inspection forms are documented in Appendix M (pages M1-M23) of the Stormwater Management Guidebook:

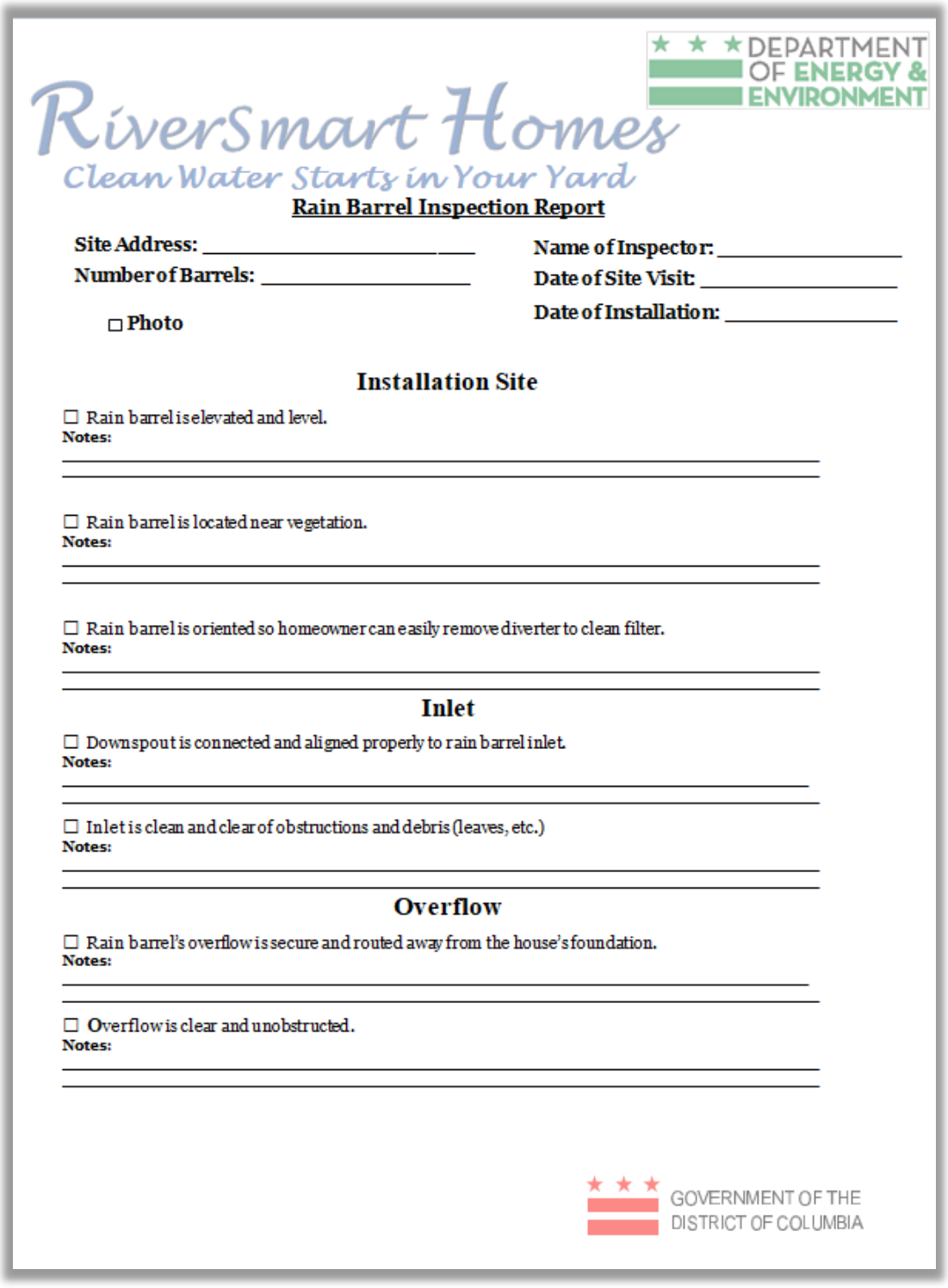
- Green Roof Maintenance Inspection
- Rainwater Harvesting Maintenance Inspection
- Impervious Surface Disconnection Maintenance Inspection
- Permeable Pavement System Maintenance Inspection
- Bioretention Maintenance Inspection
- Filtering System Maintenance Inspection
- Infiltration Practice Maintenance Inspection
- Open Channel System Maintenance Inspection
- Wet Ponds and Wetlands Maintenance Inspection
- Storage and Underground Detention Practices Maintenance Inspection
- Generic Structural BMP Maintenance Inspection
- Tree Planting and Preservation Maintenance Inspection
- Maintenance Service Completion Inspection

Property owners/managers can access inspection forms specific to their approved stormwater management plan by utilizing the Self-Inspection Self-Reporting portal located in the DOEE SGS.

*Riversmart Homes*

DOEE Riversmart homes provides incentives to homeowners to implement BMPs voluntarily on private property. An initial inspection is required for all Riversmart BMPs by DOEE auditors in order to receive incentives. Site drawings are created and saved in an ArcPad database and PDF reports are generated and provided to homeowners. Follow-up audits are performed on approximately 10% of installations by DOEE auditors or non-profit partners. Examples of Riversmart Homes inspection forms are provided below:

***Rain Barrels***



DEPARTMENT OF ENERGY & ENVIRONMENT

RiverSmart Homes

Clean Water Starts in Your Yard

**Rain Barrel Inspection Report**

**Site Address:** _____ **Name of Inspector:** _____

**Number of Barrels:** _____ **Date of Site Visit:** _____

**Date of Installation:** _____

☐ **Photo**

## Installation Site

☐ Rain barrel is elevated and level.
**Notes:**
_____
_____

☐ Rain barrel is located near vegetation.
**Notes:**
_____
_____

☐ Rain barrel is oriented so homeowner can easily remove diverter to clean filter.
**Notes:**
_____
_____

## Inlet

☐ Downspout is connected and aligned properly to rain barrel inlet.
**Notes:**
_____
_____

☐ Inlet is clean and clear of obstructions and debris (leaves, etc.)
**Notes:**
_____
_____

## Overflow

☐ Rain barrel's overflow is secure and routed away from the house's foundation.
**Notes:**
_____
_____

☐ Overflow is clear and unobstructed.
**Notes:**
_____
_____

GOVERNMENT OF THE DISTRICT OF COLUMBIA

DEPARTMENT OF ENERGY & ENVIRONMENT

RiverSmart Homes

Clean Water Starts in Your Yard

## Filter

☐ Filter is present on the inlet.
**Notes:**

☐ Filter is clean and clear of debris (leaves, etc.)
**Notes:**

### General Comments/Notes for Follow-Up with Homeowner:

| Circle the appropriate ranking below | |
|---|---|
| 0 | This task has not been completed, or rain barrel has been removed or disconnected from downspout |
| 1 | Barrel is present and connected to downspout, filter and inlet are obstructed by debris, soaker hose is not present, and overflow is not directed away from structure or functioning. |
| 2 | Barrel is connected to downspout, there is a large amount of debris in inlet or filter (>3/4 cup), no soaker hose attached to barrel, overflow is not directed away from structure or functioning. |
| 3 | Barrel is connected to downspout, there is moderate accumulation of debris in inlet or filter, soaker hose is attached or nearby barrel. |
| 4 | Barrel is connected to downspout, there is very little debris in inlet or filter, soaker hose is attached or nearby barrel, overflow is directed away from structure. |
| 5 | Barrel is connected to downspout, soaker hose is attached to barrel, filter and inlets are clear of debris, overflow is directed away from structure. |

GOVERNMENT OF THE DISTRICT OF COLUMBIA

***Rain Gardens***

DEPARTMENT OF ENERGY & ENVIRONMENT

# RiverSmart Homes

## Clean Water Starts in Your Yard

**Rain Garden Inspection Report**

**Site Address:**

_____

☐ **Site Visit Photo**

**Name of Inspector:** _____

**Date of Site Visit:** _____

**Date of Installation:** _____

**Check if completed:**

☐ Rain garden measures at least 50 square feet.
Notes:
_____
_____

☐ Rain garden is a minimum of 10 feet away from any existing foundation or retaining wall.
Notes:
_____
_____

☐ Downspout from the house's roof is extended into rain garden.
Notes:
_____
_____

☐ Downspout inlet is protected (i.e. with river rock) to disperse water, but is not blocked by other debris.
Notes:
_____
_____

☐ Rain garden has a 2-3" hardwood mulch layer.
Notes:
_____
_____

☐ Garden at time of site visit is consistent with initial design sketch.
Notes:
_____
_____

GOVERNMENT OF THE DISTRICT OF COLUMBIA

DEPARTMENT OF ENERGY & ENVIRONMENT

# RiverSmart Homes

## Clean Water Starts in Your Yard

☐ A berm is present on the downslope side of the garden (berm should be level with the upslope side of the garden).
Notes:_____
_____

☐ Garden has at least 6" of ponding depth.
Notes:
_____
_____

☐ Garden is clear of weeds and there is no other encroaching vegetation (turf, English Ivy, etc.);
Notes:
_____
_____

☐ Plants are alive and thriving.
Notes:
_____
_____

| Circle the appropriate ranking below | |
|---|---|
| 0 | This task has not been completed, plant material has died or feature has been removed. Weeds have taken over garden. |
| 1 | 0-25% or less of the plant material is alive. Garden is badly in need of water, weeding, and/or mulching. |
| 2 | 26-50% of plant material looks alive. Garden is in need of water, weeding, and/or mulching. |
| 3 | 51-75% of plant material or tree appears alive. Garden could use moderate mulching or weeding. |
| 4 | More than 75% of plant material is alive, but could use some light mulching or weeding. |

GOVERNMENT OF THE DISTRICT OF COLUMBIA

***Tree Planting***

DEPARTMENT OF ENERGY & ENVIRONMENT

RiverSmart Homes

Clean Water Starts in Your Yard

**Tree Inspection Report**

**Site Address:** _____

**Date of Planting:** _____

**Name of Inspector:** _____

**Date of Site Visit:** _____

**Date of Installation:** _____

☐ **Photo**

Check if completed:

☐ Tree is alive and thriving, appears free of disease.

**Notes:**

_____

_____

☐ Area around tree is mulched and weeded. Mulch should not be piled up around the trunk of the tree.

**Notes:**

_____

_____

☐ A water bag is present around the base of the tree.

**Notes:**

_____

_____

**Comments and Follow-Up with Homeowner:** _____

_____

_____

_____

_____

GOVERNMENT OF THE DISTRICT OF COLUMBIA

| Circle the appropriate ranking below | |
|---|---|
| 0 | This task has not been completed, plant material has died or tree has been removed. |
| 1 | 0-25% or less of the plant material is alive. Tree is badly in need of water, weeding, and/or mulching. |
| 2 | 26- 50% of plant material looks alive. Tree is in need of water, weeding, and/or mulching. |
| 3 | 51-75% of plant material appears alive. Tree is not in need of water, but may require weeding and/or mulching. |
| 4 | More than 75% of plant material is alive, but could use some light mulching or weeding. |
| 5 | Tree is thriving. Area around tree is mulched and is free of weeds or other debris. Water bag is present. |

***Permeable Pavement***

DEPARTMENT OF ENERGY & ENVIRONMENT

RiverSmart Homes

Clean Water Starts in Your Yard

**Impervious Surface Removal & Replacement Project Inspection Report**

**Site Address:** _____

**Contractor:** _____

**Name of Inspector:** _____

**Date of Site Visit:** _____

**Date of Installation:** _____

☐ **Site Visit Photo**
Check if completed:

☐ Final installation is permeable (either pervious pavers or planting beds/grass).
Notes:
_____
_____

☐ Is downspout routed into the permeable paver system? If so, is a filter installed on that downspout.
Notes:
_____
_____

☐ Downspout filter is clean and clear of debris
Notes:
_____
_____

☐ Paver system is clear of sediment/debris and there is no evidence of clogging (pooled water).
Notes:
_____
_____

☐ Paver system is clear of weeds, grass, or other growth.
Notes:
_____
_____

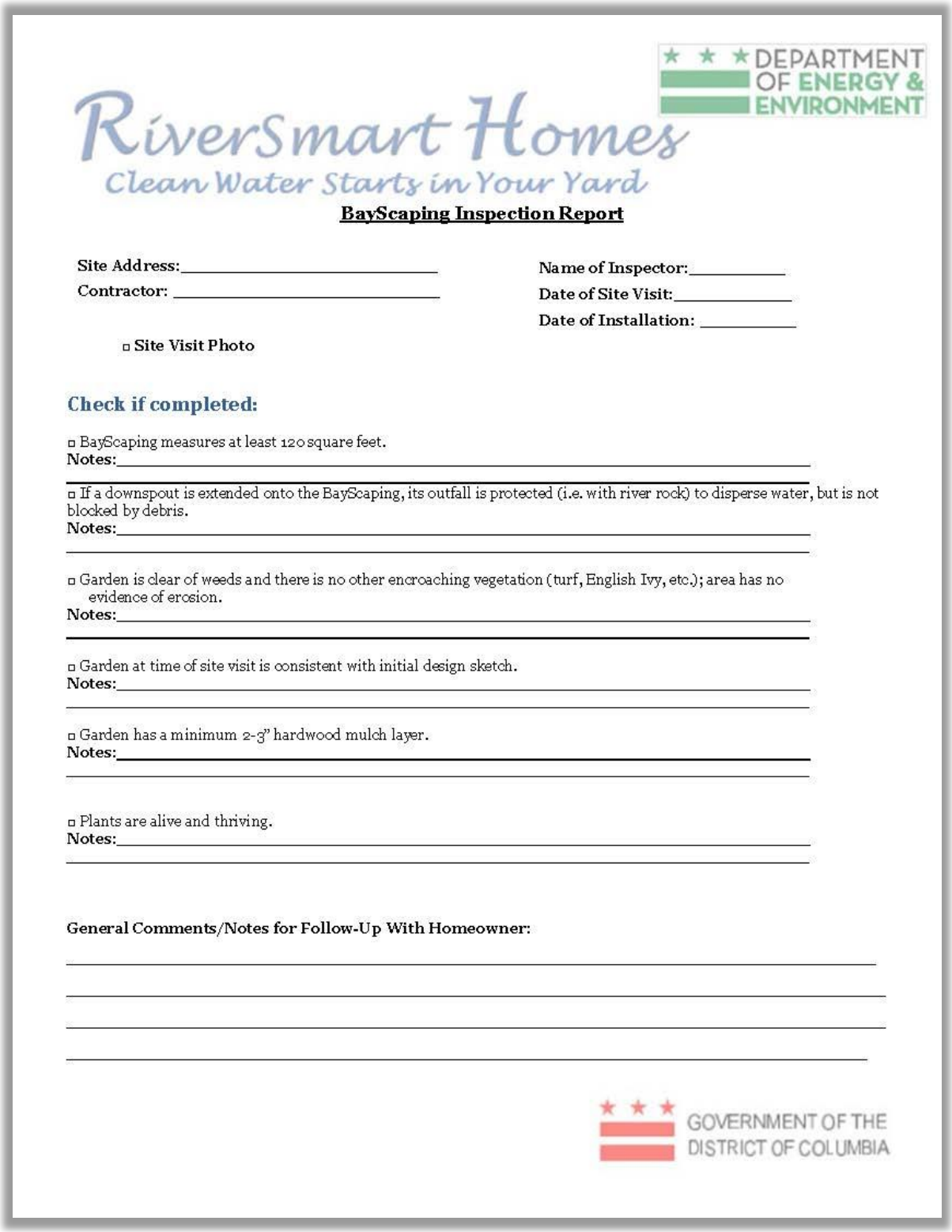
**General Comments/Follow-up with Homeowner:**

_____

_____

GOVERNMENT OF THE DISTRICT OF COLUMBIA

***Conservation Landscaping (BayScaping)***



DEPARTMENT OF ENERGY & ENVIRONMENT

RiverSmart Homes

Clean Water Starts in Your Yard

**BayScaping Inspection Report**

**Site Address:**_____ **Name of Inspector:**_____

**Contractor:** _____ **Date of Site Visit:**_____

**Date of Installation:** _____

▫ **Site Visit Photo**

**Check if completed:**

▫ BayScaping measures at least 120 square feet.
**Notes:**_____

▫ If a downspout is extended onto the BayScaping, its outfall is protected (i.e. with river rock) to disperse water, but is not blocked by debris.
**Notes:**_____

▫ Garden is clear of weeds and there is no other encroaching vegetation (turf, English Ivy, etc.); area has no evidence of erosion.
**Notes:**_____

▫ Garden at time of site visit is consistent with initial design sketch.
**Notes:**_____

▫ Garden has a minimum 2-3" hardwood mulch layer.
**Notes:**_____

▫ Plants are alive and thriving.
**Notes:**_____

**General Comments/Notes for Follow-Up With Homeowner:**

_____

_____

_____

_____

GOVERNMENT OF THE DISTRICT OF COLUMBIA

DEPARTMENT OF ENERGY & ENVIRONMENT

RiverSmart Homes

Clean Water Starts in Your Yard

| Circle the appropriate ranking below | |
|---|---|
| 0 | This task has not been completed, plant material has died or feature has been removed. Signs of significant erosion. Weeds have taken over garden. |
| 1 | 0-25% or less of the plant material is alive. Garden or tree is badly in need of water, weeding, and/or mulching. |
| 2 | 26- 50% of plant material looks alive. Garden is in need of water, weeding, and/or mulching. |
| 3 | 51-75% of plant material or tree appears alive. Garden could use moderate mulching or weeding. |
| 4 | More than 75% of plant material is alive, but could use some light mulching or weeding. |
| 5 | Garden is thriving. Feature looks healthy and alive, mulch is at least 3" deep. Few or no weeds present. |

GOVERNMENT OF THE DISTRICT OF COLUMBIA

*NPDES Compliance Inspection forms.*

For both major and minor facilities, DMR self-monitoring submissions are reviewed. The reported values are checked against laboratory reports/log books maintained onsite; hard copies of which are submitted to DOEE and EPA. For major facilities, the verifications and field inspections are performed annually. For minor facilities, inspection frequency varies.

The forms are documented in APPENDIX J - FORM 3560-3 of the NPDES Compliance Inspection Manual (*List of Supporting Documents and Attachments*).

*DC Water Construction Management*

DC Water has processes in place to assure that the construction work is performed and completed in accordance with the contract documents. Projects are staffed with various discipline inspectors as needed for the specific work activities. These disciplines include civil, tunnel and shaft, grouting, piping, welding, mechanical, electrical, instrumentation, structural and in-factory inspections, and environmental compliance.

On Design-Build contracts, the CCM Inspector(s) assume the duties of an IVA Inspector and will coordinate with the PCO for Independent Verification Inspection, Sampling and Testing as required.

Duties may include:

- Monitor contractor's quality process, and coordinate field sampling and testing.
- Prepare daily inspection reports and other quality records as needed.
- Observe and document the safety performance of the contractor.
- Assist Field and Office Engineers in the verification of schedule performance and quantity.

The following inspection forms are documented in Appendix 4 of DC Water's Construction Management Plan:

- QA Audit/Inspection Forms
- Material Supplier Audit (MSA) Precast Segment Plant
- Material Supplier Audit (MSA) Ready Mix Concrete
- Quality Surveillance Report (QSR)
- Field Activity Audit (FAA)
- Field Document Audit (FDA)
- Monthly Record Document Audit (MDA)
- Quality Observation Report (QOR)

*DDOT -UFD*

UFD Inspection forms track the following data elements, which are reported to DOEE electronically:

Table A12-1: UFD inspection form fields

| Field Name | Field Description |
|---|---|
| FACILITYID | Unique ID for tree |
| VICINITY | Nearby Street Address |
| WARD | District of Columbia Ward |
| TBOX_L | Length of tree box |
| TBOX_W | Width of tree box |
| WIRES | High voltage, low voltage, or both types of wires nearby |
| CURB | Temporary, permanent, or no curb nearby |
| SIDEWALK | Temporary, permanent, or no sidewalk nearby |
| TBOX_STAT | Tree box status (planted, open, proposed, retired) |
| RETIREDDT | Date tree retired (removed) |
| SCI_NM | Scientific Name |
| CMMN_NM | Common Name |
| DATE_PLANT | Date tree planted |
| DBH | Diameter Breast Height |
| DISEASE | Type, if present |
| PESTS | Type, if present |
| CONDITION | Tree condition (excellent, good, fair, poor) |
| CONDITIODT | Date of condition determination |
| OWNERSHIP | UFA, NPS, Private, other |
| TREE_NOTES | Text comment field for forester notes on non-standard items |
| WARRANTY | Warranty period for tree planting |
| FAM_NAME | Taxonomic Family Name |
| CREATED_US | Name of arborist creating a new record (planting) |
| CREATED_DA | Date of creation for new record (planting) |
| EDITEDBY | Name of arborist updating information for a record (tree planting) |
| LAST_EDI_1 | Date updates made for a tree planting record |

*DOEE Tree Canopy Grant*

***Tree Rebate Program***

DOEE administers a Tree Canopy Grant with funding provided by DDOT from DC tree funds. Additionally, DOEE may provide funding through other grants. The grantee (currently Casey Trees) performs inspection audits of approximately 10% of plantings associated with their tree rebate program. An email is sent out to 20% of the program participants – who then respond with a photo of their tree. If a single parcel has submitted 10 rebates or more, a staff member will verify the number of trees planted in person. Spreadsheet logs are maintained that confirm presence/absence by street address.

*Riversmart Homes*

Tree planting through the RiverSmart Homes program is administered by DOEE WPD through a Tree Grant that is currently awarded to Casey Trees. The grantee is responsible for planting trees associated with the RiverSmart Homes program. These plantings are automatically included in

Casey Trees' tree survival study, which surveys a 51% sample of plantings after their establishment period, typically the second year after the planting date. The survival study is a long-term longitudinal cohort study that tracks trees until they die.

Electronic forms are used on devices in the field. These forms track the following fields:

Table A12-2: Casey Trees' inspection form fields

| Field Name | Field Description |
|---|---|
| Date_Ptd | Date Planted |
| Date_Ins | Date Inspected |
| SciName | Scientific name |
| Lat | Latitude |
| Long | Longitude |
| Cond | Tree condition |

## B: IMPLEMENTING ENVIRONMENTAL INFORMATION OPERATIONS

### B1: Identification of Project Environmental Information Operations

N/A

### B2: Methods for Environmental Information Acquisition

DOEE has consistently reported direct numeric assessments of implementation for progress reporting. All jurisdictions were requested to clean-up of the CBPO historic BMP implementation record for model calibration. Furthermore, jurisdictions were requested to fill annual gaps in the historic record. Previously, DOEE used a CBPO-recommended technical approach to fill gaps in the record from between 1986-1992 and 1993–1997. DOEE assumed implementation occurred at a fixed rate and interpolated between known data points to fill the two gaps. Data from the one-time historic validation conducted by DOEE and contractors has now added additional detail for these time periods.

### B3: Integrity of Environmental Information

N/A

### B4: Quality Control

N/A

### B5: Instruments/Equipment Calibration, Testing, Inspection, and Maintenance

N/A

### B6: Inspection/Acceptance of Supplies and Services

N/A

### B7: Environmental Information Management

DOEE contacts federal agencies, along with other partners (Casey Trees, DPW, DC Water) in mid-July with a request to provide BMP implementation data by early October. DOEE receives BMP information from data providers in electronic format, usually by email, in an excel template

format that is also used by the state of Maryland. Data received by email is archived within 5 weeks of transmission and stored on a hard drive. DOEE also processes stormwater management plan data in the Surface and Groundwater System (SGS) and notifies federal partners of any BMP records (in the current progress year) implemented on federal lands. This is done to avoid double counting and to confirm implementation with the appropriate agencies.

*Procedures for Emergency Situations*

Data is backed up weekly by Quick Base. DOEE IT staff can obtain a backup of database from Quick Base as necessary. The District government has contingency plans in case of an information technology disaster. DOEE IT Branch maintains this plan.

***Section 1) Work Flow***

Urban stormwater BMP data is entered directly into the SGS by applicants for DOEE's programs or by DOEE staff who have reviewed the data.

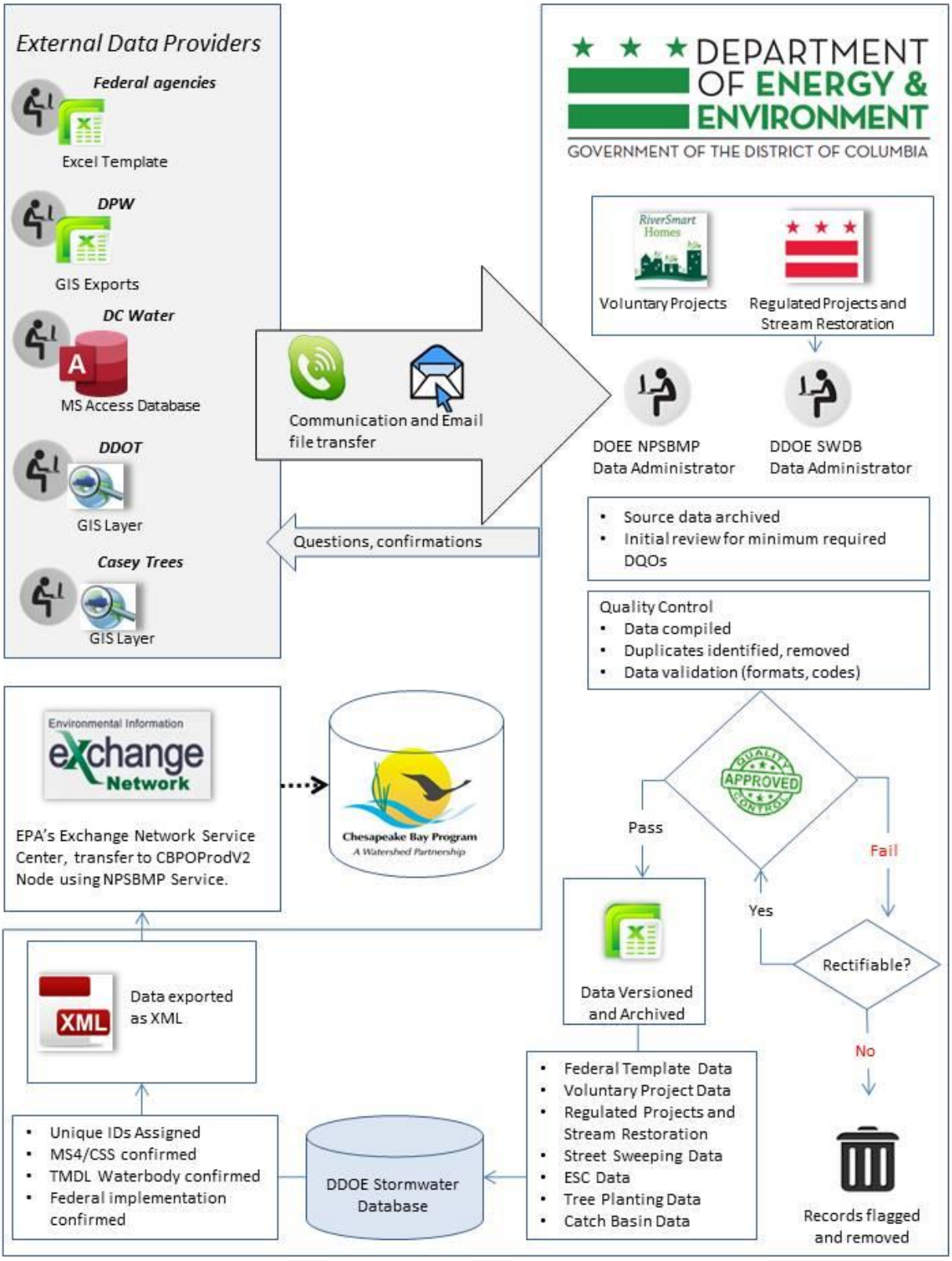
- Each BMP is georeferenced using site descriptions and address information from stormwater management plans, if applicable, along with unique coordinates for each BMP. Addresses are standardized and geo-coded with the Office of the Chief Technology Officer (OCTO) Matching Address Repository (MAR) tool. This facilitates sorting and helps in the recognition of replicates (preventing double counting). The SGS allows for geolocation of each BMP with a map/pin integration.
    - The address-based geo-referencing also automatically identifies sewershed and coordinates. DOEE imports data to ArcGIS to further identify TMDL waterbody. delineations and federal ownership.
- The compiled data are verified to include geospatial information, BMP type, stormwater volume captured (if applicable) and area draining to by each BMP.
- The data is converted to a NEIEN-NPSBMP compliant XML file, and submitted to the CBP.
- Range checks are performed to ensure that implementation numbers are within expected and reasonable (previously encountered) levels. If detected, outliers are reviewed and corrected or confirmed (as appropriate).
- DOEE works with CBPO staff to review any processing errors to resolve issues. This can be accomplished by contacting the data source and reconciling issues in the source data and simultaneously updating XML documents.

Additional details in workflow procedures are provided in the following sections of this document:

- A5 (*Procedures used to compile data*)
- A6 *Section 1 & 2) - Accuracy & Completeness Objectives)*

The workflow diagram below depicts the lifecycle of implementation from internal and external data providers to DOEE, additional processing performed, and the final reporting to the CBP through NEIEN.

Figure B7-1: Reporting Data Flow



***Section 2) NEIEN Reporting***

DOEE has prepared an attachment titled "*NEIEN NPS BMP CBP Data Flow_P6AppendixA 19_1_08212019*.xlsx" that identifies the exact BMP codes reported to the NPSBMP database through NEIEN. The appendix lists the matching Scenario Builder BMP, BMP unit codes, any conversion rules applies, along with reference to the stored procedures used by the NPSBMP plug-in to process the data.

DOEE is committed to using valid codes for all NEIEN data elements published in the *NEIEN Chesapeake Node Codes List*. XML reporting of BMP implementation data for progress determination (or model recalibration) will not be submitted without validated codes.

***Section 3) BMP Lifespan tracking***

As described in other sections of this document, DOEE tracks several dates associated with BMPs, including the stormwater management plan approval date, final construction inspection date, maintenance inspection dates, and maintenance dates. DOEE is currently maintaining the SGS, which has been designed to track elements associated with critical urban stormwater BMPs, geographic references, and data elements to support verification principles.

The District aims to ensure that all BMPs are inspected within a 5-year period. DOEE has migrated the historic record, with its limited set of data elements, into the SGS, and assembled a team of inspectors to visit and inspect the legacy BMPs to document their condition. Going forward, DOEE expects all BMPs to be inspected and maintained on a regular basis. Any records that have not been inspected or maintained within the CBPO-approved BMP lifespan recommendations should be considered non-functional for progress determination until required verification components are obtained.

## C: ASSESSMENT, RESPONSE ACTIONS, AND OVERSIGHT

## C1: Assessment and Response Action

***Section 1) Data Suitability***

A variety of assessments are performed on BMPs implemented in the District of Columbia. DOEE inspectors are responsible for inspecting BMPs associated with urban stormwater retrofits.

Any BMPs reported by federal partners that are new (no instance in DOEE's Stormwater Database) are added into Surface and Groundwater System and flagged for DOEE inspectors for maintenance inspections.

DOEE WPD staff are also responsible for follow-up site visits and assessments for BMPs implemented through the RiverSmart Homes program (homeowner BMPs) and stream restoration projects. DDOT's Urban Forestry Division is responsible for inspecting and maintaining street trees and tree planted in DC owned public natural areas and schools. DOEE's Tree Canopy Grantee (currently Casey Trees) also performs assessments of privately funded tree plantings. Verification and validation details are supplied for project-specific BMPs in sections D1.

***Section 2) Sector Prioritization***

The verification of stormwater retrofits implemented to meet stormwater regulations have been prioritized by DOEE, as they are expected to drive pollution reductions associated with stormwater in the District. Section 3) Data Management and GovernanceThe District's Surface and Groundwater System serves as the consolidated BMP inventory, with access to the full suite of inspection tools (mapping, scanned plans, inspection forms, notices of violation, etc.), stormwater retention calculation features, and reporting (NEIEN and Implementation Plan Modeling Tool for local TMDLs).

## C2: Oversight and Reports to Management

25. BMPs which are part of a stormwater management plan are reviewed and QAQCd by DOEE RRD staff throughout the permitting process. Following implementation, DOEE's Self-inspection, Self-Reporting (SISR) program lead is responsible QAQC of maintenance and inspection records received for stormwater management plan BMPs. BMPs not implemented as part of a stormwater management plan are subject to the QA policies and procedures of the implementing federal agency however DOEE routinely meets with federal agencies to ensure uniform record keeping between federal records and DOEE SGS records. Any QA concerns are raised to the appropriate supervisors and DOEE QA Manager(s) for corrective action as applicable. DOEE also works closely with CBPO NPS data managers to review BMP implementation and address any issues or outliers that are identified during the progress reporting process.

## D: DATA VALIDATION AND USABILITY

## D1: Environmental Information Review

## Data Review, Verification, and Validation

Verification is normally conducted to ensure that monitoring data or BMP performance information (including their maintenance) meets agreed standards. Verification provides the opportunity to test data quality, consistency, and specifications, including traceability. Validation, on the other hand, is done to see if the data sets used in measuring compliance are acceptable (have integrity, e.g., files/databases are properly maintained; no anomalies and no chain of custody issues) and provide the correct information (correct unit of a measure, etc.). While verification and/or validations are done periodically, compliance checks can be done at any time and as many times as required. For the CBPO, verified and validated data and/or information are acquired and used not only for compliance assessments (including as model input data), but also to encourage the jurisdictions to comply with their commitments to reduce nutrients and sediment loadings into the Chesapeake Bay. How the District of Columbia specifically verifies and validates its monitoring data or BMP performance information within its wastewater sector for purposes of Bay TMDL compliance is summarized in Section Verification and Validation Methods -Wastewater Sector.

For the purposes of reporting BMP data, the CBP partners have agreed upon the following definitions for data review, verification, and validation:

> **Data Review** – Data reviews should be independent, meaning that they are carried out by someone within the same organization having technical expertise in the subject matter to

a degree at least equivalent to that needed for the original work, but who was not involved as a participant, supervisor, technical reviewer, or advisor in the development or operations of the program/practice under review. An external independent review is done by someone from an outside organization with technical expertise in the subject matter to a degree at least equivalent to that needed for the original work. (CBP 2014)

**Verification** – BMP verification is: "the process through which agency partners ensure practices, treatments, and technologies resulting in reductions of nitrogen, phosphorus, and/or sediment pollutant loads are implemented and operating correctly." (CBP 2014).

**Data Validation** – BMP data validation is defined as a QA/QC check of a data record. The CBP's preferred validation method is a visual field check of an adequate statistical sample. It is expected that all BMPs, both internal and external, have at least a basic database or paper check of an adequate statistical sample.

This document has organized discussion of these three aspects by sector, program, or implementing agency immediately below table D1-1

Table D1-1: Data Review, Verification, and Validation

| A. WIP Priority | B. Data Grouping | C. BMP Type | D. Initial Inspection | | | | E. Follow-up Check | | | F. Lifespan/Sunset | G. Data QA, Recording and Reporting |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Method | Frequency | Who Inspects | Documentation | Follow-up Inspection | Statistical Subsample | Response if Problem | | |
| High | Urban Stormwater - Regulatory Enforcement Inspection | DOEE Regulated Urban Stormwater Retrofit | Final Construction Inspection required to obtain occupancy permit | One time | DOEE Inspector | Historic: Hardcopies Current: PDF attachements in Stormwater Database | Maintenance Inspection within 5 years of Final Construction inspection | N/A | Inspector notifies property owner of deficiency and re-inspects when issue addressed. | Follow-up inspection within 5 years of previous successful inspection. | Stormwater Database Inspection Module |
| High | Point Source - Regulatory Enforcement Inspection | WWTP Controls | DOEE and EPA NPDES Compliance Inspection | One time | DOEE and EPA Inspector | Online Compliance Inspection Form Results | EPA and DOEE Inspections verify self-reporting | N/A | Data correction | NA | CBPO Point Source Application |
| Medium | Urban Stormwater - Voluntary BMPs | Residential Stormwater Retrofit | Stormwater Site Audit required to receive incentive | One time | DOEE RiverSmart Homes Auditor | Site drawing in ArcPad database. Word/PDF reports emailed to homeowners | Inspected by DOEE Auditors. Non-profit partners also conduct independent inspections | 10% | N/A | BMP specific | Inspection Reports |
| Medium | Urban Stormwater - Restoration | DOEE Stream Restoration | Visual Inspection for health and establishment; as-built plans | Two photo surveys annually for the first five years; annual benthic survey; geomorphic survey years 1,3,and 5 | DOEE for photo monitoring 3rd party for geomorphic/benthic | Photo survey report; geomorphic report with graph; benthic report | Yearly | NA | Plan for corrective action | 5 years to comply with 404 permit | Monitoring Reports |

| A. WIP Priority | B. Data Grouping | C. BMP Type | D. Initial Inspection | | | | E. Follow-up Check | | | F. Lifespan/Sunset | G. Data QA, Recording and Reporting |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Method | Frequency | Who Inspects | Documentation | Follow-up Inspection | Statistical Subsample | Response if Problem | | |
| Medium | Urban Tree Planting - DDOT UFA | Urban Tree Planting | Visual Inspection for health and establishment | Three times during establishment | DDOT Urban Forester | Electronic - data table associated with GIS layer | Every 5 years after establishment | N/A | Replacement, pruning, mulching, weeding, watering | Reinspection every 5 years, mortality tracking and reporting | GIS data layer maintained |
| Medium | DC Water | Catch Basin Cleaning | Visual inspection by cleaning crew | One time | DC Water Staff | DC Water Catch Basin Cleaning App | N/A | N/A | N/A | Annual practice | DC Water Catch Basin Cleaning App Database |
| Low | Urban Tree Planting - Casey Trees | Tree Planting (Other Funding Sources) | Arborist site visit | 3rd year after planting | Casey Trees | iPad electronic reports | Annual | 10% for Rebate Program, 51% for annual survivability | Re-planting | Tree inspection and mortality tracking | Annual Casey Trees Survivability Report |
| Low | Urban Stormwater - DPW | Street Sweeping | None | None | None | GIS tracking of street sweeper location and sweeper status | None | None | None | Occurs annually March through October | DPW maintains Trackster database of route miles swept each day. Detailed GIS data for each vehicle stored in Fleet Center |
| Low | Stormwater Management (Historic) | DOEE Wetland Restoration | Final Construction Inspection | One time | DOEE Inspector | Hardcopies of Stormwater Management Plans | Special project to inspect BMPs in historic record | N/A | BMP may become obsoleted if problems not addressed | CBPO lifespan applied | Stormwater Database Inspection Module |
| Low | Land Management | Urban Nutrient Management | Plan Implementation Verification Required. | Future BMP Reporting. To be determined | Land Manager, 3rd party verification. | TBD | TBD | TBD | TBD | Annual practice | Nutrient Management Tracking Module required |

***Point Source Sector***

*Verification*

The cornerstone of the District's compliance verification is the self-monitoring requirements included in the NPDES permits issued to all permitted facilities. For all major and minor facilities, DMR self-monitoring submissions are reviewed. The reported values are checked against laboratory reports/log books maintained onsite; hard copies of which are submitted to DOEE and EPA for further evaluation. For major facilities, the verifications and field inspections are performed annually. For minor facilities, inspection frequency varies.

Both the federal and DOEE staff conducting regular inspections on permitted facilities are well trained on the required processes and procedures - and follow these required processes and procedures at all times, including QA/QC plans. Each permitted facility has dedicated on-site operational manuals. For example, Blue Plains utilizes a SCADA system for data capture, and operational manuals are maintained on-site. Additional information can also be found in the NPDES Compliance Inspection Manual (*List of Supporting Documents and Attachments*). The specific processes that DOEE follows, including forms that are used to conduct inspections and document observations in the wastewater sectors, are provided in the appropriate sections and tables of this document. DOEE also uses random inspections and enforcement actions when and where necessary to compel compliance. DMR data is submitted through an online form and maintained in a database. Table D1(b) lists both major and minor wastewater treatment facilities in DC with a NPDES permit.

Effluent limitations, self-monitoring, and reporting are performed according to NPDES permit requirements. As part of prior preparation, generally a week before the appointed inspection day, inspection staff members normally review DMRs to identify problem potential unit processes to target for spot checks. Otherwise, the target and how to target, is randomly selected based on what is revealed when inspectors are onsite.

Table D1-2: Current NPDES permits issued for the District of Columbia by EPA Region 3

| Facility or Permit Name | Permit Number | Permit Type | Permit Status | Issuance Date | Effective Date | Expiration Date |
|---|---|---|---|---|---|---|
| D.C. Municipal Separate Storm Sewer System (MS4) | DC0000221 | Stormwater | Final | 5/23/2018 | 6/22/2018 | 6/21/2023 |
| D.C. Water and Sewer Authority Wastewater Treatment Plant at Blue Plains | DC0021199 | Publicly Owned Treatment Works | Final | 7/26/2018 | 8/26/2018 | 8/25/2023 |
| General Services Administration (GSA) West Heating Plant | DC0000035 | Industrial | Final | 9/11/2018 | 9/11/2018 | 9/10/2023 |
| JFK Center for the Performing Arts | DC0000248 | Industrial | Final | 6/6/2013 | 6/6/2013 | 6/5/2018* |
| Lincoln Memorial Reflecting Pool | DC0000370 | Industrial | Final | 7/3/2018 | 7/3/2018 | 7/2/2023 |
| National World War II Memorial | DC0000345 | Industrial | Final | 7/3/2018 | 7/3/2018 | 7/2/2023 |
| Potomac Electric Power Company (PEPCO) Benning Generating Station | DC0000094 | Industrial | Final | 6/19/2009* | 7/19/2009 | 6/18/2014* |
| Super Concrete Ready-Mix Corp. (Aggregate Industries) | DC0000175 | Industrial | Final | 1/6/2014 | 1/6/2014 | 1/5/2019* |
| Washington Aqueduct Water Treatment Plant | DC0000019 | Industrial | Final | 11/20/2009 | 11/20/2008 | 11/19/2013* |
| Washington Metropolitan Area Transit Authority (WMATA) Mississippi Avenue Pumping Station | DC0000337 | Industrial | Final | 12/11/2018 | 12/11/2018 | 12/10/2023 |

*EPA has administratively extended the permit per 40 CFR §122.6(a)(1).

***Photographic Record***

EPA and DOEE inspectors often include photographs taken during the inspection in the inspection report to support their observations. Guidance on the usage of digital photography and recommended procedures listed in NPDES Compliance Inspection Manuals are followed. Examples of usage of photographic record are provided in two example inspection reports provided in A4: Section 1 (*List of Supporting Documents and Attachments*).

#### *Allocation of PS loads to Jurisdictions*

Blue Plains treats wastewater from the District, Maryland, and Virginia. For the 2018 reporting period, DC Water submitted progress data allocated to the different jurisdictions directly to the EPA CBPO via spreadsheet format. In addition, the Point Source App is able to pull DC Water's DMRs directly from EPA's ICIS-NPDES, which is a national information management system to track permit compliance and enforcement status of regulated facilities.

#### *Use of Statistical Approaches*

DOEE handles a large amount of datasets/records pertaining to its wastewater sector. To be able to verify the accuracy of these datasets, it would be more efficient to take samples out of the entire record, including its various layers/strata/BMPs, etc., and review those against allowable source documentation to ensure compliance with DOEE and/or federally agreed upon standards. However, DOEE has not built this capability in-house yet. Because of this, DOEE stands ready to collaborate with EPA and be part of the EPA Funding Available to Support Verification through statistical approaches.

#### *Historic Record*

EPA is the permitting authority for the facilities listed in Table D1(b) in the District of Columbia and is responsible for data storage, review, correction, and verification of the historic record for these point sources.

### *Validation*

DOEE staff performs regular assessments of DMRs and other pieces of information submitted by permitted facilities. Because EPA is the permitting authority for federal NPDES in the District of Columbia, it receives the original data, which are then available to DOEE on EPA's ICIS-NPDES database.

DOEE uses the EPA's CPBO Point Source App for data validation. Users can download facility information, flow, water quality concentrations for a range of parameters that include nutrients and sediments. Nutrient and sediment loads are calculated for each facility.

## *Urban Stormwater Sector*

### *Regulated Development - DOEE*

New development and redevelopment projects in the District, including projects occurring on federal lands, must apply for permits through the District Department of of Buildings (DOB). Construction projects that disturb 50 square feet are automatically directed to DOEE Stormwater and Green Area Ratio Branch for erosion and sediment control plan review. Likewise, construction that disturbs or substantially improves at least 5,000 square feet must meet District stormwater regulations and their plans are sent to the Stormwater and Green Area Ratio Branch for stormwater plan review.

Urban stormwater BMPs and associated data are reviewed, verified and validated multiple times from the time they are reported to DOEE to the time they are reported to the Bay Program. The following verification and validation protocols for stormwater BMPs and stream restoration are as currently in place:

1) Plans are submitted to DOEE that include the following information for each BMP associated with the plan:

    a. Pre- and post-project land cover in the BMP's contributing drainage area
    b. System-generated calculations of retention volume achieved
    c. Additional treatment volume (if applicable)
    d. BMP treatment train information (if applicable)
    e. Location information

2) RRD Plan reviewers check the information provided and, if needed request revisions. Once the plan is accepted as final the project is permitted for installation. Construction begins after a pre-construction meeting with IED.

3) IED inspectors oversee the construction of the BMP, perform a data review and verify (on the ground) that it has been done according to plan. If substantial changes have been made, inspectors direct design engineers to submit the plan changes to RRD for review. The as-built plans are submitted that include corrected volume capture and area treated information. (Copies of inspection forms are described in this document and provided in appendixes of the SMG).

4) Once the BMP is installed to the satisfaction of the inspector, final inspection is performed and a final approval is issued.

5) During annual progress assessment, DOEE RRD and WQD staff members perform another layer of review and validation (outlier checks, confirmation of initial determination of the regulated area) of the record to ensure it is accurate, is not duplicative of other agency reporting, and the data is properly formatted for the CBPO NEIEN reporting.

6) Once a final approval is issued a countdown begins for the installed practice. Inspectors aim to perform BMP inspections on all permitted District BMPs within five years of their final construction inspection date to ensure that they continue to be in place and maintained per their design. If they are found to not meet their design or be in need of maintenance the inspectors require that this work is performed to their satisfaction. Once the BMP is found to be in good working order the clock begins for the next inspection date.

    As a result of increased development in the District, DOEE is piloting a stormwater BMP Self-Inspection Self-Reporting (SISR) program. This program aims to increase stormwater management plan owner compliance with DCMR and increase DOEE conducted inspections of stormwater BMPs in the MS4. Stormwater management plan owners with a history of compliance are encouraged to submit pre- and post-maintenance inspection reports through DOEE's Surface and Groundwater System (SGS). Each plan owner has the ability to submit pre- and post-maintenance inspection reports for stormwater management plans they own or are responsible for maintaining. Once the owner/person responsible for maintenance submits their inspection report with at least two time and date stamped photos for each BMP type, the DOEE SISR program coordinator will review each submission. Submissions contain clear before and after photos, complete inspection checklists, and supplemental information.

A similar review process has been in place prior to the 2013 stormwater rule. DOEE also conducted a one-time validation effort of the historic practices (in 2016) to increase confidence that practices were installed properly on the ground.

Additional details on DOEE's Inspection Requirements are documented in Section 5.3 – Inspection Requirements of the Stormwater Management Guidebook (SWMG - in *List of Supporting Documents and Attachments*). The guidebook outlines requirements for:

- Inspection schedules and reports
- Inspection requirements before and during construction
- Inspection requirements by BMP type
- Final construction inspection reports
- Inspection for preventive maintenance
- Maintenance, maintenance responsibility, and maintenance agreements.

Additionally, Chapter 3 of the SWMG contains detailed descriptions of BMPs. For each BMP, a sub-section specific to maintenance schedules and criteria is provided.

#### *Other Verification Opportunities*

A mapping component of the SGS provides DOEE inspectors in the field with location information for nearby BMPs that facilitates opportunistic inspections. Also, District residents, visitors, and property owners can request inspections out-of-cycle through DOEE's 311 mobile app.

Additional data reviews associated with DOEE regulated development are discussed in detail in Section ***Error! Reference source not found.*** of this document.

### *Erosion and Sediment Control*

Inspection of all projects constructed in the District of Columbia, including federal agencies is the responsibility of DOEE. The erosion and sediment control inspector ensures that implementation of the approved erosion and sediment control plan is carried out in an effective manner. In addition to this primary function, the inspector must constantly evaluate the adequacy of the plan for preventing sediment pollution. If the inspection reveals that the erosion and sediment control plan has not been implemented or maintained, then appropriate enforcement actions are initiated to correct deficiencies.

#### *Implementation Estimate Validation*

In 2019, in consultation with EPA, DOEE revised the approach for submitting erosion and sediment control credit from direct acres controlled to percent implementation of active construction acres. In this revised approach, DOEE staff reviewed 5 years of construction area and erosion and sediment control inspection data to determine an estimate for active construction area, and a representative implementation rate for erosion and sediment control measures. The active construction area is estimated as the 5-year average and was determined to be 250 acres. The implementation rate is estimated by reviewing the compliance rate of erosion and sediment control inspections. In 2019, a 90% implementation rate was selected because the compliance rate from inspection data supported a higher percentage, but 90% leaves room to account for

temporarily failures of control measures that may not be reflected in inspections. DOEE staff will conduct a periodic review of updated construction area and inspection data to adjust these estimates according to updated data.

*RiverSmart Programs*

DOEE also oversees several incentive programs aimed at encouraging stormwater retrofits. These programs include RiverSmart Homes, RiverSmart Communities, RiverSmart Rooftops, and RiverSmart Rewards. The BMPs installed through these programs often do not meet the size threshold to require stormwater review so they are not captured in the plan review module of the SGS. Instead DOEE developed a separate, program specific database to track these installs. With each of these programs DOEE staff:

1. Visit the property to verify that the installs did indeed take place (*verification*);
2. Perform follow up visits on a subset (10%) of the installations on an annual basis to ensure that BMPs are still present and are being properly maintained (*validation*).
3. RiverSmart staff members submit data to the SGS managers, who then review the data before uploading it to the SGS (*data review*).

*Casey Trees*

Tree plantings done by Casey Trees are automatically included in their long-term tree survival study, which inspects approximately 51% of trees planted after their establishment period, typically the second year after the planting date. Electronic devices are used in the field to document condition of plantings.

***Additional Data Validation***

Tree reconciliation is an ongoing process that involves multiple independent reviews using a customer relationship management (CRM) system, field reports, tree planting site maps, a GIS system and QuickBooks. This process has weekly, monthly and season-end check-points. Data points are created for each tree prior to its arrival in DC and are relocated to the planting site after the trees have been placed in their designated planting spot. GIS is reconciled monthly against QuickBooks to ensure that trees are accounted for and planted to programmatic specific accounts. This is a monthly and quarterly task aligned with accounting and grant reporting, as well as a season-end process.

*DDOT Retrofits*

In 2014, DDOT published Green Infrastructure Standards, which includes maintenance schedules for BMPs implemented and maintained by DDOT. Descriptions of maintenance and verification processes are described below for permeable pavement practices and bioretention cells below. A further level of data review and validation occurs if the BMPs triggered stormwater regulations and when BMPs are reported to DOEE for annual progress reporting.

Table D1-3: Permeable Pavement Practices

| Maintenance Tasks | Frequency | Time of Year / Timing |
|---|---|---|
| In the first year following construction, inspect the practice and contributing drainage area twice , within 24 hours after storm events that exceed 1/2 inch of rainfall. Conduct any needed repairs or stabilization. | Twice after installation | Within 24 hours after storm events that exceed 1/2 inch of rainfall |
| Conduct a maintenance inspection | Annually | |
| Mechanically sweep pavement with a regenerative street sweeper, or a vacuum sweeper to remove sediment | 4 times per year in potential high sediment load areas<br>2 times per year otherwise | During Spring clean-up following final snow storm;<br>During Fall clean-up following leaf fall |
| Remove any accumulated sediment in pretreatment cells and inflow points | Once a year | |
| • Stabilize contributing drainage area within public land to prevent siltation of practice<br>• Remove any soil or sediment deposited on pavement.<br>• Replace or repair any pavement surfaces that are degenerating or spalling<br>• Blow-out cleanouts using compressed air, high pressure water hose, or drain snake in practices that show evidence of clogged underdrain | As needed following Annual Inspection | |
| • Conduct maintenance using a regenerative street sweeper, a vacuum sweeper, or power washing (< 500 psi, at an angle 30 degrees or less).<br>• Replace any necessary joint material | If clogged | |
| • Mow grass in grid paver applications<br>• Spot weed for grass applications | Once every 6 weeks during the growing season<br>Annually | April through October |

Table D1-4: Bioretention Practices

| | Maintenance Tasks | Frequency | Time of Year / Timing |
|---|---|---|---|
| Initial Tasks during Establishment (first three years) | Within 6 months following construction, the practice and drainage area should be inspected after storm events that exceed 1/2 inch of rainfall. | Twice after installation | Following storm events that exceed 1/2 inch of rainfall |
| | Remove stakes, wires, and tags | One time | 6 months after planting |
| | Water plants – initial three years | Weekly during first 2-3 months after installation, and when rainfall is less than 1 inch per week | April-October |
| | Spot fertilization | One time as needed in First-second year of installation | Early spring |
| Routine Inspection | • Conduct a maintenance inspection<br>• Check curb cuts and inlets for accumulated grit, leaves, and debris that may block inflow<br>• Identify maintenance tasks needed<br>• Look for erosion, bare areas, and where mulch needs to be applied | Quarterly | |
| Routine Maintenance | • Spot weed<br>• Adjust mulch as needed to ensure full cover<br>• Remove trash and animal waste<br>• Remove any dead or diseased plants<br>• Remove sediment in pretreatment cells and inflow points<br>• Mow grass filter strips and bioretention with turf cover | Quarterly | March - November |
| | Mulch with 3 inches shredded hardwood mulch | Annually | February - April |
| As-Needed Maintenance | Prune trees and shrubs | As-needed | Feb-April and Sept-Nov as appropriate |
| | Water plants – after three years | Weekly during droughts (more than 2 weeks of no rain) | April-October |
| | • Remove invasive plants using recommended control methods.<br>• Add planting to maintain desired vegetation density.<br>• Replace stone at curb cuts, inflow, weirs, & check dams<br>• Blow-off cleanouts using compressed air, high pressure water hose, or drain snake in practices that show evidence of clogged underdrain<br>• Stabilize the surrounding drainage area to prevent erosion | As needed following Inspection | At appropriate time for disease or pest treatment.<br>October-April per DDOT Std Specs<br>November-March<br>As-needed<br>As-needed |
| | Remove and replace the mulch layer | Once every 3 years | Feb-April |

***Urban Tree Planting***

The DDOT Urban Forestry Division maintains a GIS database for all street trees detailing the last inspection date, inspector, tree species, tree condition, notes, and the data enterer. The table below documents the following verification and follow-up validation procedures.

Table D1-5: Urban Tree Planting

| Maintenance Tasks | Frequency | Time of Year / Timing |
|---|---|---|
| Inspect tree for health and establishment and report any changes to UFA via 311 or 311.dc.gov. | Three times during establishment;<br>Every five years for life of tree | Spring 1st season<br>Fall 1st season<br>Fall 2nd season |
| Remove stakes and wires. | One time | One year after planting |
| Water tree – first year | 25 gallons Weekly via slow release device | April-October |
| Water tree – second & third year | 25 gallons Bi-Monthly via slow release device | April-October |
| Remove weeds and trash | Quarterly | March-November |
| Mulch with 3 inches double ground shredded hardwood mulch. Place much in a ring to capture rain water. Mulch shall not be mounded around tree. | Annually or as needed. | Feb-April |
| If tree pruning is needed, call 311 or 311.dc.gov to request an inspection by UFA. | As-needed | |
| Remove sediment and trash from any inlets and slot drains | Annually | |

*Stream Restoration*

Verification, Validation, and Data Review are discussed below in context of the specific areas highlighted as critical by the stream restoration verification expert panel.

***Professional Design Requirements & Key Functional Features***

Stream restoration projects in the District are now using the Functional Uplift Pyramid (see List of Supporting Documents and Attachments) recommended by the USFWS to assess stream function pre-restoration and to predict where the stream should be post-restoration. All projects in the District will also have a Bank Assessment for Non-point Source Consequences of Sediment (BANCS) analysis (or similar method) performed before and after restoration to assess the project's stability. Stream restoration projects in the District also require stormwater management plans, with as-built plans to be submitted within 30 days of project completion. A DOEE inspector will send the project implementer a notice of approval after inspecting and verifying construction was consistent with the as-built designs. At this time, this approval notice for stream restoration does not provide certification or confirmation of functional uplift. If a project fails a post-construction inspection, the DOEE inspector will assess the problem, determine the root cause, and then give the project owner a specified period of time to address the issue and update as-built plans to reflect the final implementation.

DOEE Restoration Branch ensures that methods and documentation used are consistent with the CBPO Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects (2014). For Bay TMDL progress reporting, DOEE reports the linear feet of

these projects through NEIEN. DOEE will follow verification protocols for stream restoration in accordance with CBPO updates.

***Post-Construction Assessments***

DOEE and its contractors will use the Functional Pyramid and the BANCS analysis methods to measure post-construction performance. Where applicable, DOEE will also perform pre- and post-restoration monitoring for macroinvertebrates and fish using MBSS protocols. DOEE also preforms photo monitoring both before and after restoration at regimented locations that helps document both vegetative growth and project stability. Photo monitoring takes place twice per year for the first five years post-restoration. DOEE also performs geomorphic monitoring by annually taking both cross-sectional surveys and longitudinal surveys to confirm and compare the stability of the restored channel.

***Frequency of Field Verification***

DOEE mirrors its field verification with conditions laid out in 404 permits when applicable. When projects do not require a 404 permit, photographic documentation and standard monitoring protocols take place as follows:

- Photo monitoring: Twice per year through year 5
- Geomorphic Survey: Years 1, 3, and 5
- BANCs: Years 1 and 5 (or as CBPO recommendations warrant)
- MBSS: Annually

***Nutrient Trading and Progress Reporting Standards***

The District does not participate in nutrient trading and complies with Bay reporting standards. Analyses are performed and documentation provided to ensure that project removal rates are applied properly.

## Verification and Validation Methods

***Section 1) Verification Checklists***

Table D1-6: Stormwater Sector verification checklist

| **Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting** | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| **1** | **BMPs Collected** | |
| | Type (structural, management, | Section A5:<br>• *Section 2) BMP Definitions*<br>• *Procedures used to compile data* |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | annual, etc.) | |
| | BMP Funding/Cost shared (federal, state, NGO, non-cost shared) | **Error! Reference source not found.**<br>• *Federal Grants Associated with the Program* |
| | Distinct state standards/ specifications | *List of Supporting Documents and Attachments*<br>• 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control<br>• DDOT Green Infrastructure Design Standards<br>• Green Area Ratio Final Rulemaking<br>• NEIEN Appendix<br>A4: - *Section 1) Historic Reporting Practices* |
| | Matching CBP BMP definition/ efficiencies | *List of Supporting Documents and Attachments*<br>• NEIEN Appendix |
| **2** | **Method/System of Verification/Assessment** | |
| | Description of methods/systems to be used | A5: - *Verification Priority*<br>A6: - *Section 1 & 2*) - Accuracy & Completeness Objectives<br>***Error! Reference source not found.***<br>*D: DATA* VALIDATION AND USABILITY<br>**D1: Environmental Information Review**<br>Data Review, Verification, and Validation *Information Review*<br>• |

<table>
<tr><td colspan="3">Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting</td></tr>
<tr><td colspan="3">QAPP Title: District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification.</td></tr>
<tr><td></td><td>BMP Verification Component</td><td>QAPP Section</td></tr>
<tr><td></td><td>Documentation of procedures used to verify BMPs</td><td>A4: - <u>Section 1) Historic Reporting Practices</u><br>A12: Documentation and Records<br>• <u>Section 3) Inspection Forms</u></td></tr>
<tr><td></td><td>Instruction manual for system users</td><td><u>List of Supporting Documents and Attachments</u><br>• Stormwater Management Guidebook<br>• Surface and Groundwater System User Manual</td></tr>
<tr><td>3</td><td>Who will Complete the Verification</td><td></td></tr>
<tr><td></td><td>Qualification requirements</td><td rowspan="3">A7: Distribution List<br><br>Table A7-1: Customers and Stakeholders<br><table><tr><th>Name</th><th>Organization</th></tr><tr><td>Auston Smith</td><td>EPA Region 3</td></tr><tr><td>Durga Ghosh</td><td>EPA Region 3</td></tr><tr><td>Ruth Cassilly</td><td>EPA Region 3</td></tr><tr><td>Richard Jackson</td><td>DOEE - Director</td></tr><tr><td>Jonathan Champion</td><td>DOEE – Water Quality Division</td></tr><tr><td>Alicia Ritzenthaler</td><td>DOEE – Water Quality Division</td></tr><tr><td>Matt Gallagher</td><td>DOEE – Water Quality Division</td></tr><tr><td>Meredith Upchurch</td><td>DOEE – Regulatory Review Division</td></tr><tr><td>Matt Johnson</td><td>DOEE – Regulatory Review Division</td></tr></table><br>A8: Project Organization<br><br>Best management practices (BMP) data provided to the Chesapeake Bay Program Office (CBPO) by DOEE consists of point source reductions from DC Water, urban BMPs that treat stormwater from new development or redevelopment, retrofits of existing areas, and non-structural BMPs such as</td></tr>
<tr><td></td><td>Training requirements</td></tr>
<tr><td></td><td>Certification requirements</td></tr>
</table>

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | street sweeping, urban stream restoration work, and tree planting. The District's primary reductions come from upgrades to the Blue Plains Advanced Wastewater Treatment Plant (Blue Plains), the Long Term Control Plan to reduce combined sewer overflows, and from permitted stormwater treatment facilities installed as a part of new development or redevelopment of areas larger than 5,000 square feet.<br><br>*Program and/or Project Organization and Responsibilities*<br><br>***DOEE***<br>The Watershed Protection Division (WPD) Restoration Branch, Regulatory Review Division (RRD), Inspection and Enforcement Division (IED), and the Water Quality Division (WQD) are charged with compiling, geo-coding, and processing the stormwater BMPs installed and non-structural stormwater BMP activities. DOEE WPD, RRD, IED, and WQD collect stormwater BMP data from sources described below, verify implementation location through geo-coding, and organize this information and report it to the CBP. DOEE has multiple roles and responsibilities for assuring QA/QC of data reported to CBP. The overarching oversight for QA/QC within DOEE is the responsibility of the DOEE Quality Management Officer (QMO), currently Richard Jackson. These roles are broken out by DOEE branches below. Key individuals at DOEE are listed in Table A8-1.<br><br>*DOEE Water Quality Division (WQD) Planning and Reporting Branch* – Collects the street sweeping data from the Department of Public Works (DPW), performs QA/QC, GIS analysis, and reports to the Bay Program. They also coordinate the collection of data on BMPs installed on federal lands, performs QA/QC, and ensures it does not duplicate records of BMPs in the DOEE SSGS.<br><br>*DOEE Regulatory Review Division (RRD)* – Tracks, reviews, and records all plans for new development or redevelopment in the District. The Stormwater and Green Area Ratio Branch ensures that all permitted construction over 50 square feet has a plan to have appropriate erosion and sediment control devices in place and that all permitted construction over 5,000 square feet has plans to install stormwater suitable BMPs. The Stormwater and Green Area Ratio |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | Branch records all submitted construction plans in DOEE's SGS which they manage and performs QA/QCs on.<br><br>*DOEE Inspection and Enforcement Division*– Inspects sites under construction to make sure that they are in compliance with erosion and sediment control regulations, performs inspections during the installation of BMPs, the final inspection on constructed BMPs, and maintenance inspections of installed BMPs. This Division aims to inspect all installed BMPs every five years to ensure that they are in good working order. A process for owner-conducted Self-Inspections/ Self-Reporting (SISR) of stormwater BMPs was developed to increase stormwater management compliance amongst the regulated community. If the BMPs require maintenance, landowners are required to perform the required maintenance to bring it into compliance. The Inspection and Enforcement Division maintains records of inspections in DOEE's SGS database and QA/QCs recorded data.<br><br>*DOEE Watershed Protection Division*– Compiles, geo-codes, QA/QCs the information on stormwater BMPs installed and non-structural stormwater BMP activities from the various reporting agencies, divisions and branches. DOEE WPD then works with WQD to report the voluntary BMP data to the CBP including the location of the BMP, the type of BMP installed, the volume capture of the BMP, and the number of acres treated by the BMP. DOEE WPD and WQD also QA/QC and report the inspection, maintenance and/or removal of any previously installed and reported BMP.<br><br>***DC Water***<br>DC Water is tasked with overseeing and implementing upgrades to Blue Plains and to the Combined Sewer System (CSS). These upgrades are closely tracked by DC Water and are regulated by the EPA as a part of its discharge permit and its Long Term Control Plan. DC Water also monitors discharges from the CSS and Blue Plains, QA/QC's these point source loads, and submits load data to the Metropolitan Washington Council of Governments (MWCOG) for reporting to the CBP. This information is obtained by DOEE through the new Point Source App which retrieves information from the ICIS-NPDES database. DC Water is also responsible for installation of grey and green infrastructure as determined by the Long Term Control Plan. The |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | permitting of green infrastructure for stormwater treatment under the Long Term Control Plan is regulated and permitted by DOEE RRD Building Permit Plan Review Branch and their installation and maintenance is overseen by DOEE IED. DOEE RRD keeps a database of all permitted stormwater BMPs and of all inspection and enforcement efforts. Key individuals at DC Water are listed in Table A8-1.<br><br>***District Department of Transportation (DDOT) Urban Forestry Division (UFD)***<br>DDOT Urban Forestry Division (UFD) is responsible for tracking the number and location of trees planted in the public right of way. UFD performs QA/QC on this data and then provides it to DOEE Restoration Branch, who reviews, standardizes, and incorporates the information into the tracking & reporting database. UFD will be expanding their tree management (including planting) to DC owned parklands and DCPS public school lands. Key individuals at DDOT are listed in Table A8-1.<br><br>***District Department of Public Works (DPW)***<br>DPW is responsible for tracking the lane miles swept, how often they are swept, the type of sweeper used, and the location of street sweeping activities as a part of the District's street sweeping efforts.<br><br>DPW works with GeoTab to track and obtain Automated Vehicle Location (AVL) on it's sweepers and vehicles. This allows the location and activities to be tracked. GPS data along with relevant activity and sweeper status is recorded when vehicles are operating. At the end of the reporting period, Sweeper GPS data is extracted, exported, and sent to DOEE as an Excel Workbook with each sweeper vehicle as a worksheet.<br><br>Key individuals at DPW are listed in Table A8-1.<br><br>***Federal Agencies***<br>Federal agencies are responsible for installing BMPs on federal lands, which make up almost a third of land area in the District. Federal agencies are required to submit stormwater management plans to DOEE for stormwater plan review and approval, as all other projects are required to do in the District. If federal agencies fail to follow stormwater regulations, the federal agencies can report their activities directly to WQD; however projects not properly permitted and inspected may not be accepted by DOEE nor reported |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | to the Bay Program. Key individuals at federal agencies (including DOD, AOC, USACE, GSA, USDA, and NPS) are listed in Table A4(1). |

Table A8-1: Reporting Agencies, Contact Person, BMP Types, and data management system.

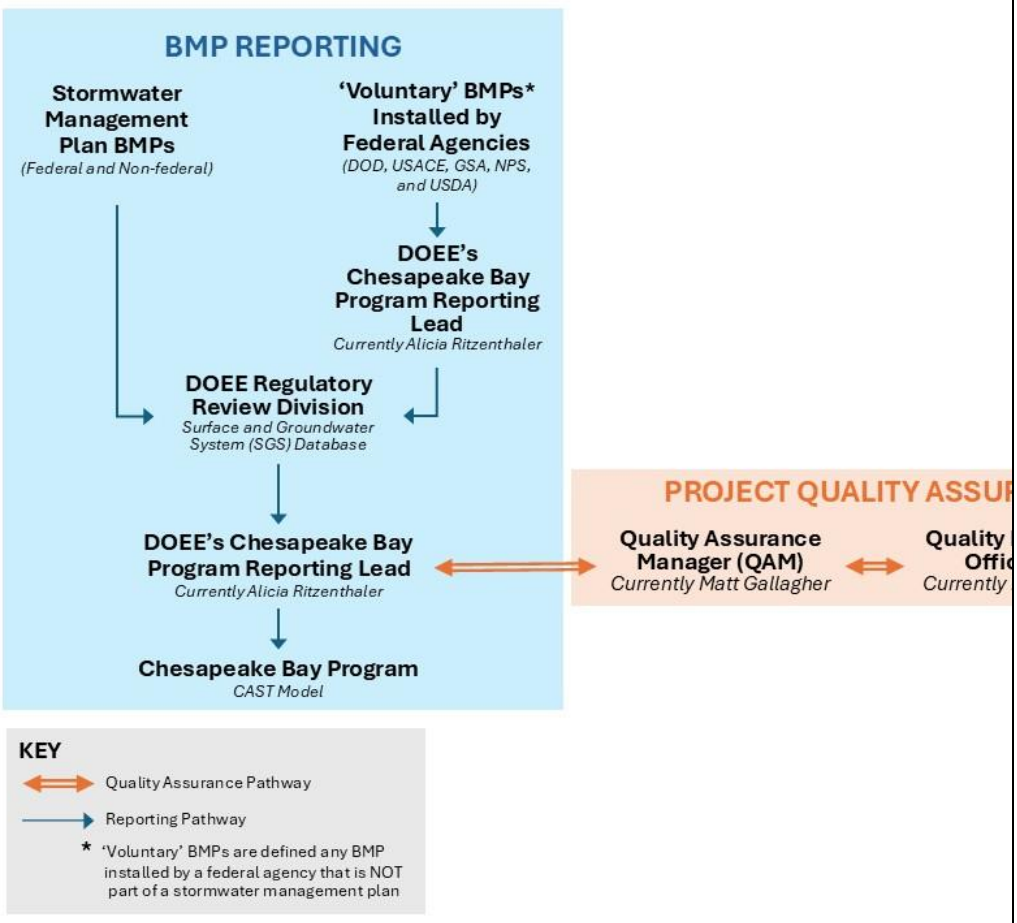
| Type | Agency/ Organization | Type of BMP | Contact Person |
|---|---|---|---|
| Local | DDOT UFD | Urban Tree Planting | earl.eutsler@dc.gov |
| Local | Casey Trees | Urban Tree Planting | mhansen@caseytrees.org |
| Local | DOEE WPD | Urban Tree Planting | erica.carlsson@dc.gov |
| Local | DPW | Street Sweeping | david.koehler@dc.gov |
| Local | DOEE RRD | New Development & Redevelopment | matt.johnson2@dc.gov |
| Local | DOEE WPD | Stream Restoration | josh.burch@dc.gov |
| Federal | EPA CBPO | Wastewater-Point Source App | thynge.megan@epa.gov |
| Local | DC Water | Wastewater-significant | diran.adalian@dcwater.com |
| Local | DC Water | Wastewater/CSS | John.Cassidy@dcwater.com |
| Local | DOEE WQD | Wastewater-non significant | alicia.ritzenthaler@dc.gov |
| Local | DOEE | Overarching QA/QC | richard.jackson@dc.gov |
| Federal | AOC | New Development & Redevelopment | dhelmann@aoc.gov |
| Federal | AOC | New Development & Redevelopment | jherr@aoc.gov |
| Federal | USACE | New Development & Redevelopment | amy.m.guise@usace.army.r |
| Federal | DOD | New Development & Redevelopment | ashley.l.kelly10.civ@us.navy |
| Federal | DOD | New Development & Redevelopment | Pearl.Ashitey@jacobs.com |
| Federal | DOD | New Development & Redevelopment | evan.m.miles2.civ@us.navy.n |

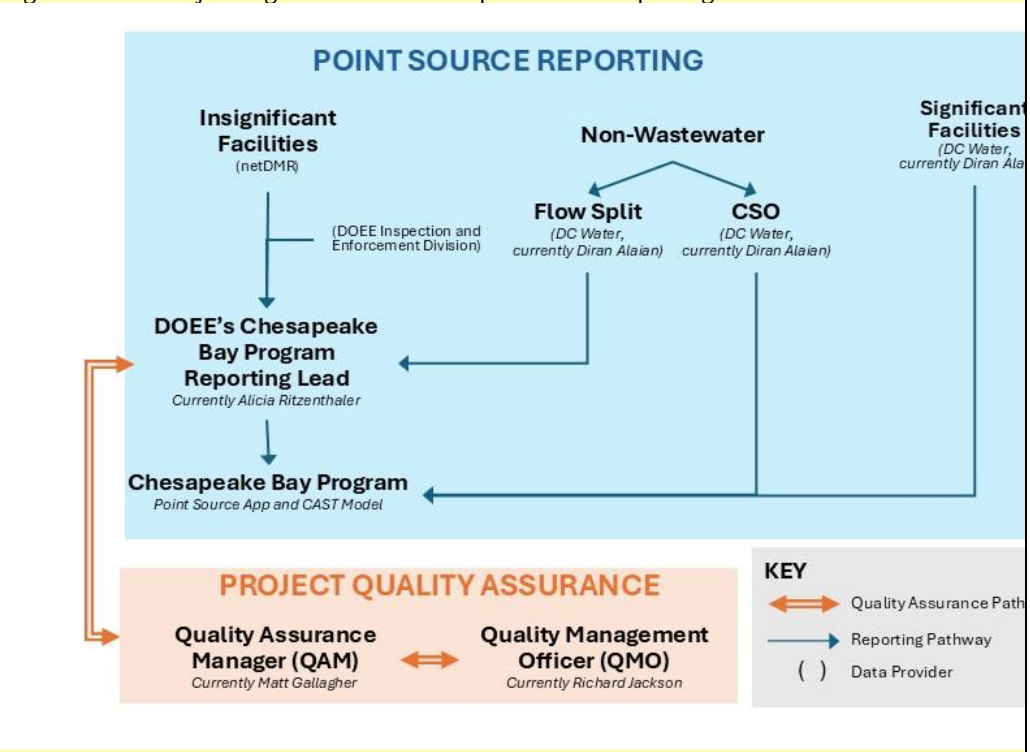
| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | | | | | | |
|---|---|---|---|---|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | | | | | | |
| | **BMP Verification Component** | **QAPP Section** | | | | | |
| | | Federal | DOD | New Development & Redevelopment | kevin.dubois@navy.mil | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | jennifer.mcdonnell@navy.mil | | NEIEN Exce Template |
| | | Federal | FRA (Fed Railroad Admin) | New Development & Redevelopment | Sydney.schnier@dot.gov | | NEIEN Exce Template |
| | | Federal | FRA (Fed Railroad Admin) | New Development & Redevelopment | David.Valenstein@dot.gov | | NEIEN Exce Template |
| | | Federal | GSA | New Development & Redevelopment | Russell.Clark@gsa.gov | | NEIEN Exce Template |
| | | Federal | GSA | New Development & Redevelopment | Andrew.oetman@gsa.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | lara_hannon@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | Leslie_Frattaroli@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | Nick_Bartolomeo@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | maureen_joseph@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | andrew_landsman@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | rene_senos@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | J_Patrick_Campbell@nps.gov | | NEIEN Exce Template |
| | | Federal | Smithsonian | New Development & Redevelopment | SpoffordM@si.edu | | NEIEN Exce Template |
| | | Federal | Smithsonian | New Development & Redevelopment | trowbridgea@si.edu | | NEIEN Exce Template |
| | | Federal | USDA | New Development & Redevelopment | john.houston@ usda.gov | | NEIEN Exce Template |
| | | Federal | USDA | New Development & Redevelopment | daniel.jewett@ usda.gov | | NEIEN Exce Template |
| | | *List of Supporting Documents and Attachments*<br>26. NEIEN Appendix A (Attached) | | | | | |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | 27. DOEE Stormwater Management Guidebook (http://doee.dc.gov/node/610622)<br>28. DOEE Soil Erosion and Sediment Control Handbook (http://doee.dc.gov/node/65302)<br>29. DOEE Surface and Groundwater System User Manual (http://doee.dc.gov/swdb)<br>30. Consolidated TMDL Implementation Plan (https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/FINAL%202022%20Consolidated%20TMDL%20Implementation%20Plan%20091320222_0.pdf)<br>31. DC Water Clean Rivers Project Construction Management Plan (Attached)<br>32. DC Water CSS Long Term Control Plan – Final Report (https://www.dcwater.com/sites/default/files/Complete%20Long-term%20Control%20Plan.pdf)<br>33. DC WASA First Amendment to Consent Decree (http://www2.epa.gov/sites/production/files/2015-05/documents/firstamendment-dcwasa-cd.pdf)<br>34. Permit No. DC0021199 (DC WASA Blue Plains facility) (https://www.epa.gov/npdes-permits/district-columbia-npdes-permits )<br>35. DC Water Proposal modifying Clean Rivers Project for Green Infrastructure (https://www.dcwater.com/sites/default/files/green-infrastructure-ltcp-modificaitons.pdf )<br>36. DC Water LTCP Modification for Green Infrastructure Briefing Slides (Attached)<br>37. District of Columbia NPDES Compliance Monitoring Strategy 2015 (http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/DC%20FY15%20Proposed%20Compliance%20Monitoring%20Strategy%20Report.pdf )<br>38. DC Water Combined Sewer System Annual and Quarterly Reports (Nine Minimum Controls) (https://dcwater.com/publications?field_document_type_tid=47&field_document_sub_type_tid=50 ) |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | 39. US EPA NPDES Compliance Inspection Manual (http://www2.epa.gov/sites/production/files/2013-09/documents/npdesinspect_0.pdf)<br>40. DDOT Green Infrastructure Standards Maintenance Schedules (http://ddot.dc.gov/GreenInfrastructure)<br>41. CBPO Partnership Verification Framework (http://www.chesapeakebay.net/documents/Complete%20CBP%20BMP%20Verification%20Framwork%20with%20appendices.pdf)<br>42. Stream Restoration Functional Lift Documentation (http://www.chesapeakebay.net/channel_files/18279/stream_health__and_the_functional_lift_pyramid.pdf)<br>43. Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects (http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2013/10/stream-restoration-short-version.pdf)<br>44. Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed (https://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2019/07/Approved-Verification-Memo-061819.pdf<br>45. Casey Trees Survivability Report (2014) (Attached)<br>46. NPDES Compliance Inspector Training Laboratory Analyses Manual. (1990. EPA)<br>47. Water Compliance Inspection Report (Example: NPDES DC0000248) (http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/Kennedy%20Center%20Compliance%20Inspection%20Report%20FY14.pdf)<br>48. RiverSmart Washington Project Factsheet (https://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/RiverSmart%20Washington%20Fact%20sheet%20031114.pdf )<br>49. National Park Service Management Policies (2006) (www.nps.gov/policy/mp2006.pdf) |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | *Federal Grants Associated with the Program*<br>d. EPA Section 319(h) Grant<br>e. EPA Chesapeake Bay Program Implementation Grant<br>f. EPA Chesapeake Bay Program Regulatory Assistance Program Grant<br><br>**A9: Project QAM Independence**<br>DOEE's Planning and Reporting Branch Chief (currently Matthew Gallagher) is DOEE's designated Project Quality Assurance Manager (QAM) for the Chesapeake Bay Program Best Management Practice (BMP) Management, Reporting and Verification Project described in this QAPP. The QAM has oversight authority and responsibilities for planning, documenting, coordinating, and assessing effectiveness of the QAPP as well as authority to access and discuss quality-related issues with DOEE's Quality Management Officer (QMO). The QAM maintain independence by not having direct involvement in the environmental information operations described in this QAPP.<br><br>**A10: Project Organization Chart and Communications**<br><br>Figure A10-1: Project organization chart for BMP reporting |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | |  |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | Figure A10-2: Project organization chart for point source reporting<br>  <br><br>A11: Personnel Training/Certification<br>• *DOEE Inspection and Enforcement*<br>• *DC Water Clean Rivers Construction Managers*<br>• *DOEE Data Managers* |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | CEU follow-up training requirements in the future | Must recertify in Confined Space before it expires. Encouraged to attend trainings to further understanding of stormwater management. One training per year fully funded for all inspectors. |
| **4** | **Documentation of Verification Finding** | |
| | Date of installation | A4: - *Section 3) Data Management and Governance*<br>A5: - *Procedures used to compile data* |
| | Location (lat/long if applicable) | |
| | Level of reporting (watershed, HUC, county, site specific, etc.) | |
| | Units (number, acres, length, etc.) needed for NEIEN | A4: - *Section 3) Data Management and Governance*<br>B7: - *Section 2) NEIEN Reporting* |
| | Ownership (public, private) | A4: - *Section 3) Data Management and Governance*<br>A5: - *Procedures used to compile data* |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | Documentation: | D1: - *Regulated Development - DOEE* |
| | Pictures | A5: - *Surface and Groundwater System*<br>• Digital Photos |
| | Worksheets | D1: Environmental Information Review<br>• *Regulated Development - DOEE*<br>• *Stream Restoration* |
| | Electronic Tool | A5: - *Surface and Groundwater System*<br>A6: - *Section 1 & 2) - Accuracy & Completeness Objectives* |
| | Aerial Photos | No |
| | Maps | A4: - *Section 3) Data Management and Governance*<br>A5: - *Surface and Groundwater System*<br>A5: - *Procedures used to compile data*<br>B7: - *Section 1) Work Flow* |
| | Other | A5: - *Surface and Groundwater System*<br>• Plan Drawings<br>• As-built Drawings<br>• Notice of Violation documents |
| | Report Generator | A5: - *Surface and Groundwater System*<br>• Inspection Reports<br>• SRC Reports<br>• NEIEN XML Report |
| **5** | **How Often Reviewed (Cycle of review)** | |
| | 1-2 years | See |
| | 5 years | |

| | | |
|---|---|---|
| **Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting** | | |
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | 10 years | *Table* D1-1: Data Review, Verification, and Validation and program-specific discussions of inspection and review cycles. |
| | Other | |
| **6** | **Independent Verification of Finding** | |
| | Is this a requirement? | No. |
| | Internal Independent | Yes. D1: *Urban Stormwater Sector* |
| | External Independent | A6: *Section 1 & 2) - Accuracy & Completeness Objectives* (One-time inspection & verification project). |

| | | |
|---|---|---|
| **Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting** | | |
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | **BMP Data Validation** | |
| **7** | **Quality Assurance/Spot Checking** | |
| | Who-qualifications/ training/certification | D1: *Urban Stormwater Sector*<br>• Plan Reviewers / Inspectors<br>• SGS manager<br>• NEIEN data manager |
| | Method to select BMP for follow-up check | A5: *Verification Priority*<br>A6: *Section 1 & 2) - Accuracy & Completeness Objectives)*<br>B7: *Section 1) Work Flow* |
| | Method to select the number of BMPs to review | DOEE does not currently employ a method that requires a minimum number of data reviews. |
| | Other | NA |
| **8** | **Data Entry of BMP Implementation** | |
| | What is the system? | A5: *SGS*<br>A6: *Section 1 & 2) - Accuracy & Completeness Objectives*<br>D1: *Regulated Development - DOEE*<br>A12: *Section 1) Data Providers* |

| | | |
|---|---|---|
| **Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting** | | |
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | Who enters data (training/certification)? | • Riversmart Homes (electronic devices)<br>• Federal Submission (NEIEN template)<br>• DDOT UFA (electronic devices)<br>• DOEE Tree Canopy Grantee (electronic devices) |
| | Does the system connect to NEIEN? | A6: *SGS*<br>• NPS-BMP XML exports |
| | System in place prevent double counting | B7: *Section 1) Work Flow* |
| **9** | **External Provided Data Validation Meeting CBP Partnership Guidance** | |
| | Method to validate data | B7: *Section 1) Work Flow* |
| | Who will validate data (training/certification)? | **A7: Distribution List**<br>Table A7-1: Customers and Stakeholders<br>**Name** / **Organization**<br>Auston Smith — EPA Region 3<br>Durga Ghosh — EPA Region 3<br>Ruth Cassilly — EPA Region 3<br>Richard Jackson — DOEE - Director |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |

| | |
|---|---|
| Jonathan Champion | DOEE – Water Quality Division |
| Alicia Ritzenthaler | DOEE – Water Quality Division |
| Matt Gallagher | DOEE – Water Quality Division |
| Meredith Upchurch | DOEE – Regulatory Review Division |
| Matt Johnson | DOEE – Regulatory Review Division |

## A8: Project Organization

Best management practices (BMP) data provided to the Chesapeake Bay Program Office (CBPO) by DOEE consists of point source reductions from DC Water, urban BMPs that treat stormwater from new development or redevelopment, retrofits of existing areas, and non-structural BMPs such as street sweeping, urban stream restoration work, and tree planting. The District's primary reductions come from upgrades to the Blue Plains Advanced Wastewater Treatment Plant (Blue Plains), the Long Term Control Plan to reduce combined sewer overflows, and from permitted stormwater treatment facilities installed as a part of new development or redevelopment of areas larger than 5,000 square feet.

*Program and/or Project Organization and Responsibilities*

***DOEE***

The Watershed Protection Division (WPD) Restoration Branch, Regulatory Review Division (RRD), Inspection and Enforcement Division (IED), and the Water Quality Division (WQD) are charged with compiling, geo-coding, and processing the stormwater BMPs installed and non-structural stormwater BMP activities. DOEE WPD, RRD, IED, and WQD collect stormwater BMP data from sources described below, verify implementation location through geo-coding, and organize this information and report it to the CBP. DOEE has multiple roles and responsibilities for assuring QA/QC of data reported to CBP. The overarching oversight for QA/QC within DOEE is the responsibility of the DOEE Quality Management Officer (QMO), currently Richard Jackson. These roles are broken out by DOEE branches below. Key individuals at DOEE are listed in Table A8-1.

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | *DOEE Water Quality Division (WQD) Planning and Reporting Branch* – Collects the street sweeping data from the Department of Public Works (DPW), performs QA/QC, GIS analysis, and reports to the Bay Program. They also coordinate the collection of data on BMPs installed on federal lands, performs QA/QC, and ensures it does not duplicate records of BMPs in the DOEE SSGS.<br><br>*DOEE Regulatory Review Division (RRD)* – Tracks, reviews, and records all plans for new development or redevelopment in the District. The Stormwater and Green Area Ratio Branch ensures that all permitted construction over 50 square feet has a plan to have appropriate erosion and sediment control devices in place and that all permitted construction over 5,000 square feet has plans to install stormwater suitable BMPs. The Stormwater and Green Area Ratio Branch records all submitted construction plans in DOEE's SGS which they manage and performs QA/QCs on.<br><br>*DOEE Inspection and Enforcement Division*– Inspects sites under construction to make sure that they are in compliance with erosion and sediment control regulations, performs inspections during the installation of BMPs, the final inspection on constructed BMPs, and maintenance inspections of installed BMPs. This Division aims to inspect all installed BMPs every five years to ensure that they are in good working order. A process for owner-conducted Self-Inspections/ Self-Reporting (SISR) of stormwater BMPs was developed to increase stormwater management compliance amongst the regulated community. If the BMPs require maintenance, landowners are required to perform the required maintenance to bring it into compliance. The Inspection and Enforcement Division maintains records of inspections in DOEE's SGS database and QA/QCs recorded data.<br><br>*DOEE Watershed Protection Division*– Compiles, geo-codes, QA/QCs the information on stormwater BMPs installed and non-structural stormwater BMP activities from the various reporting agencies, divisions and branches. DOEE WPD then works with WQD to report the voluntary BMP data to the CBP including the location of the BMP, the type of BMP installed, the volume capture of the BMP, and the |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | number of acres treated by the BMP. DOEE WPD and WQD also QA/QC and report the inspection, maintenance and/or removal of any previously installed and reported BMP.<br><br>***DC Water***<br>DC Water is tasked with overseeing and implementing upgrades to Blue Plains and to the Combined Sewer System (CSS). These upgrades are closely tracked by DC Water and are regulated by the EPA as a part of its discharge permit and its Long Term Control Plan. DC Water also monitors discharges from the CSS and Blue Plains, QA/QC's these point source loads, and submits load data to the Metropolitan Washington Council of Governments (MWCOG) for reporting to the CBP. This information is obtained by DOEE through the new Point Source App which retrieves information from the ICIS-NPDES database. DC Water is also responsible for installation of grey and green infrastructure as determined by the Long Term Control Plan. The permitting of green infrastructure for stormwater treatment under the Long Term Control Plan is regulated and permitted by DOEE RRD Building Permit Plan Review Branch and their installation and maintenance is overseen by DOEE IED. DOEE RRD keeps a database of all permitted stormwater BMPs and of all inspection and enforcement efforts. Key individuals at DC Water are listed in Table A8-1.<br><br>***District Department of Transportation (DDOT) Urban Forestry Division (UFD)***<br>DDOT Urban Forestry Division (UFD) is responsible for tracking the number and location of trees planted in the public right of way. UFD performs QA/QC on this data and then provides it to DOEE Restoration Branch, who reviews, standardizes, and incorporates the information into the tracking & reporting database. UFD will be expanding their tree management (including planting) to DC owned parklands and DCPS public school lands. Key individuals at DDOT are listed in Table A8-1.<br><br>***District Department of Public Works (DPW)***<br>DPW is responsible for tracking the lane miles swept, how often they are swept, the type of sweeper used, and the location of street sweeping activities as a part of the District's street sweeping efforts.<br><br>DPW works with GeoTab to track and obtain Automated Vehicle Location (AVL) on it's sweepers and vehicles. This allows the location and activities to |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | be tracked. GPS data along with relevant activity and sweeper status is recorded when vehicles are operating. At the end of the reporting period, Sweeper GPS data is extracted, exported, and sent to DOEE as an Excel Workbook with each sweeper vehicle as a worksheet.<br><br>Key individuals at DPW are listed in Table A8-1.<br><br>***Federal Agencies***<br>Federal agencies are responsible for installing BMPs on federal lands, which make up almost a third of land area in the District. Federal agencies are required to submit stormwater management plans to DOEE for stormwater plan review and approval, as all other projects are required to do in the District. If federal agencies fail to follow stormwater regulations, the federal agencies can report their activities directly to WQD; however projects not properly permitted and inspected may not be accepted by DOEE nor reported to the Bay Program. Key individuals at federal agencies (including DOD, AOC, USACE, GSA, USDA, and NPS) are listed in Table A4(1). |

Table A8-1: Reporting Agencies, Contact Person, BMP Types, and data management system.

| Type | Agency/ Organization | Type of BMP | Contact Person |
|---|---|---|---|
| Local | DDOT UFD | Urban Tree Planting | earl.eutsler@dc.gov |
| Local | Casey Trees | Urban Tree Planting | mhansen@caseytrees.org |
| Local | DOEE WPD | Urban Tree Planting | erica.carlsson@dc.gov |
| Local | DPW | Street Sweeping | david.koehler@dc.gov |
| Local | DOEE RRD | New Development & Redevelopment | matt.johnson2@dc.gov |
| Local | DOEE WPD | Stream Restoration | josh.burch@dc.gov |
| Federal | EPA CBPO | Wastewater-Point Source App | thynge.megan@epa.gov |
| Local | DC Water | Wastewater-significant | diran.adalian@dcwater.com |
| Local | DC Water | Wastewater/CSS | John.Cassidy@dcwater.com |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | | | | | | |
|---|---|---|---|---|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | | | | | | |
| | **BMP Verification Component** | **QAPP Section** | | | | | |
| | | Local | DOEE WQD | Wastewater-non significant | alicia.ritzenthaler@dc.gov | | Custom Exc Report |
| | | Local | DOEE | Overarching QA/QC | richard.jackson@dc.gov | | QA/QC |
| | | Federal | AOC | New Development & Redevelopment | dhelmann@aoc.gov | | NEIEN Exce Template |
| | | Federal | AOC | New Development & Redevelopment | jherr@aoc.gov | | NEIEN Exce Template |
| | | Federal | USACE | New Development & Redevelopment | amy.m.guise@usace.army.mil | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | ashley.l.kelly10.civ@us.navy.mil | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | Pearl.Ashitey@jacobs.com | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | evan.m.miles2.civ@us.navy.mil | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | kevin.dubois@navy.mil | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | jennifer.mcdonnell@navy.mil | | NEIEN Exce Template |
| | | Federal | FRA (Fed Railroad Admin) | New Development & Redevelopment | Sydney.schnier@dot.gov | | NEIEN Exce Template |
| | | Federal | FRA (Fed Railroad Admin) | New Development & Redevelopment | David.Valenstein@dot.gov | | NEIEN Exce Template |
| | | Federal | GSA | New Development & Redevelopment | Russell.Clark@gsa.gov | | NEIEN Exce Template |
| | | Federal | GSA | New Development & Redevelopment | Andrew.oetman@gsa.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | lara_hannon@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | Leslie_Frattaroli@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | Nick_Bartolomeo@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | maureen_joseph@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | andrew_landsman@nps.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | rene_senos@nps.gov | | NEIEN Exce Template |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |

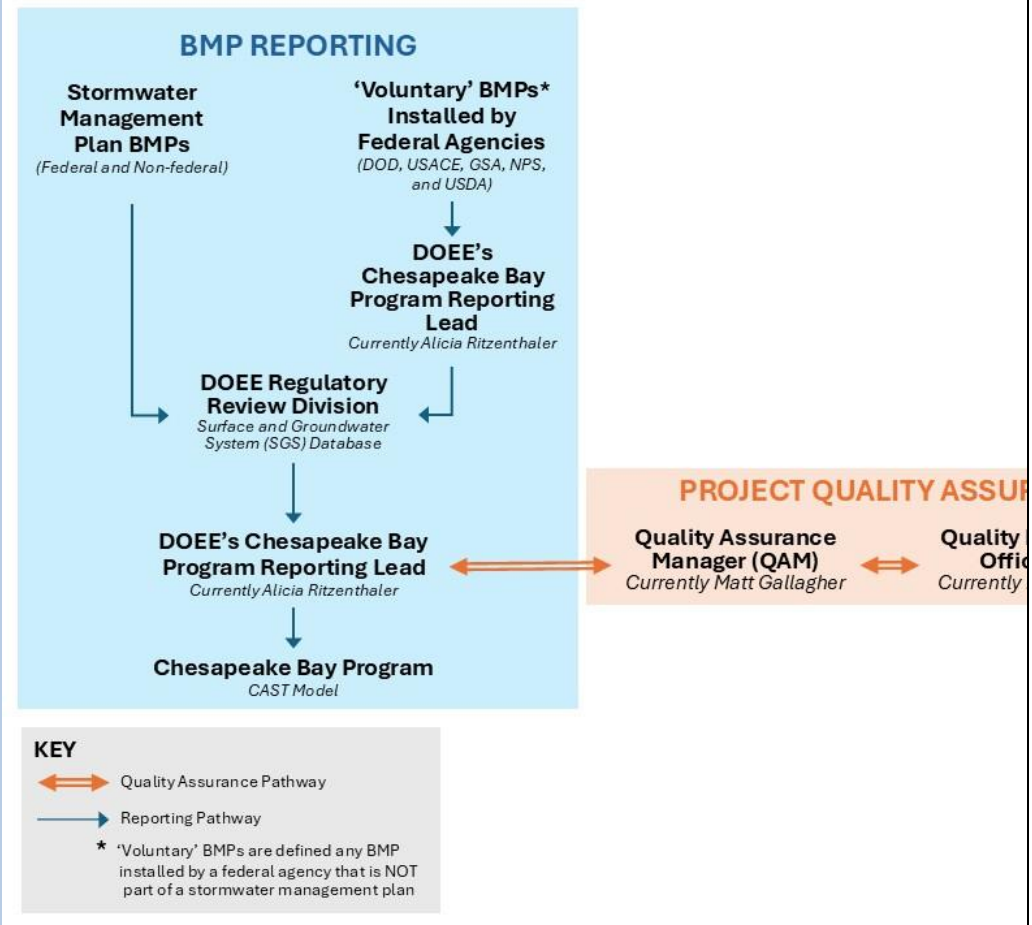
| | | | | | |
|---|---|---|---|---|---|
| Federal | NPS | New Development & Redevelopment | J_Patrick_Campbell@nps.gov | | NEIEN Exce Template |
| Federal | Smithsonian | New Development & Redevelopment | SpoffordM@si.edu | | NEIEN Exce Template |
| Federal | Smithsonian | New Development & Redevelopment | trowbridgea@si.edu | | NEIEN Exce Template |
| Federal | USDA | New Development & Redevelopment | john.houston@ usda.gov | | NEIEN Exce Template |
| Federal | USDA | New Development & Redevelopment | daniel.jewett@ usda.gov | | NEIEN Exce Template |

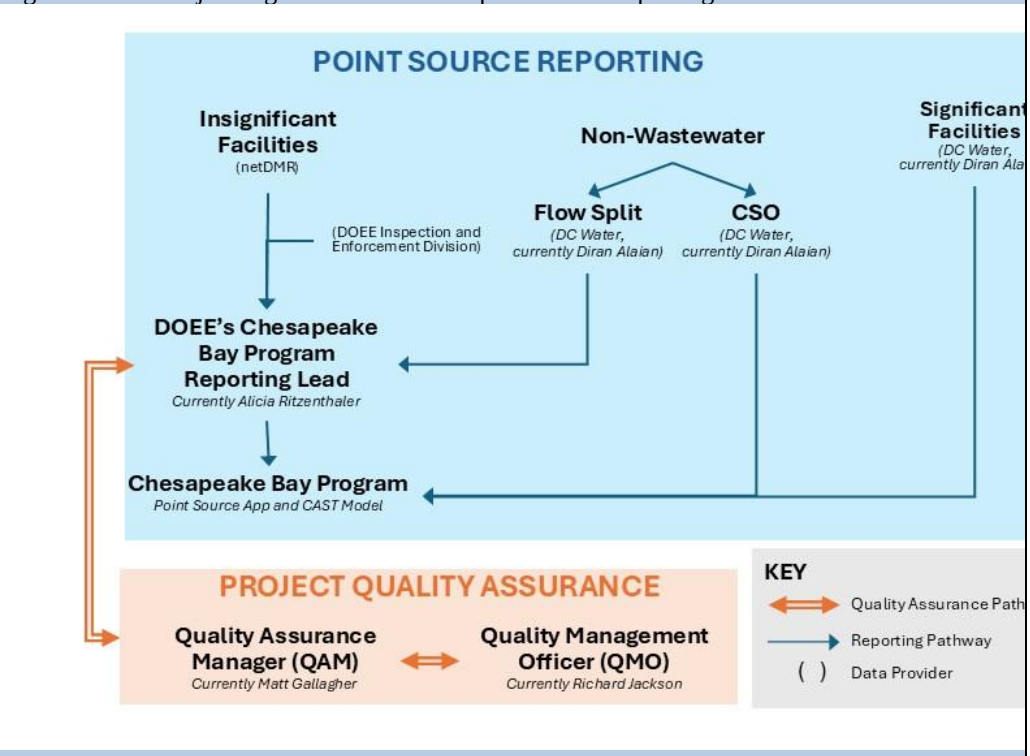
*List of Supporting Documents and Attachments*

50. NEIEN Appendix A (Attached)
51. DOEE Stormwater Management Guidebook (http://doee.dc.gov/node/610622)
52. DOEE Soil Erosion and Sediment Control Handbook (http://doee.dc.gov/node/65302)
53. DOEE Surface and Groundwater System User Manual (http://doee.dc.gov/swdb)
54. Consolidated TMDL Implementation Plan (https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/FINAL%202022%20Consolidated%20TMDL%20Implementation%20Plan%20091320222_0.pdf)
55. DC Water Clean Rivers Project Construction Management Plan (Attached)
56. DC Water CSS Long Term Control Plan – Final Report (https://www.dcwater.com/sites/default/files/Complete%20Long-term%20Control%20Plan.pdf)
57. DC WASA First Amendment to Consent Decree (http://www2.epa.gov/sites/production/files/2015-05/documents/firstamendment-dcwasa-cd.pdf)
58. Permit No. DC0021199 (DC WASA Blue Plains facility) (https://www.epa.gov/npdes-permits/district-columbia-npdes-permits )
59. DC Water Proposal modifying Clean Rivers Project for Green Infrastructure

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | (https://www.dcwater.com/sites/default/files/green-infrastructure-ltcp-modificaitons.pdf )<br>60. DC Water LTCP Modification for Green Infrastructure Briefing Slides (Attached)<br>61. District of Columbia NPDES Compliance Monitoring Strategy 2015 (http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/DC%20FY15%20Proposed%20Compliance%20Monitoring%20Strategy%20Report.pdf )<br>62. DC Water Combined Sewer System Annual and Quarterly Reports (Nine Minimum Controls) (https://dcwater.com/publications?field_document_type_tid=47&field_document_sub_type_tid=50 )<br>63. US EPA NPDES Compliance Inspection Manual (http://www2.epa.gov/sites/production/files/2013-09/documents/npdesinspect_0.pdf)<br>64. DDOT Green Infrastructure Standards Maintenance Schedules (http://ddot.dc.gov/GreenInfrastructure)<br>65. CBPO Partnership Verification Framework (http://www.chesapeakebay.net/documents/Complete%20CBP%20BMP%20Verification%20Framwork%20with%20appendices.pdf)<br>66. Stream Restoration Functional Lift Documentation (http://www.chesapeakebay.net/channel_files/18279/stream_health__and_the_functional_lift_pyramid.pdf)<br>67. Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects (http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2013/10/stream-restoration-short-version.pdf)<br>68. Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed (https://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2019/07/Approved-Verification-Memo-061819.pdf<br>69. Casey Trees Survivability Report (2014) (Attached) |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | 70. NPDES Compliance Inspector Training Laboratory Analyses Manual. (1990. EPA)<br>71. Water Compliance Inspection Report (Example: NPDES DC0000248) (http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/Kennedy%20Center%20Compliance%20Inspection%20Report%20FY14.pdf)<br>72. RiverSmart Washington Project Factsheet (https://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/RiverSmart%20Washington%20Fact%20sheet%20031114.pdf )<br>73. National Park Service Management Policies (2006) (www.nps.gov/policy/mp2006.pdf)<br><br>*Federal Grants Associated with the Program*<br>g. EPA Section 319(h) Grant<br>h. EPA Chesapeake Bay Program Implementation Grant<br>i. EPA Chesapeake Bay Program Regulatory Assistance Program Grant<br><br>**A9: Project QAM Independence**<br>DOEE's Planning and Reporting Branch Chief (currently Matthew Gallagher) is DOEE's designated Project Quality Assurance Manager (QAM) for the Chesapeake Bay Program Best Management Practice (BMP) Management, Reporting and Verification Project described in this QAPP. The QAM has oversight authority and responsibilities for planning, documenting, coordinating, and assessing effectiveness of the QAPP as well as authority to access and discuss quality-related issues with DOEE's Quality Management Officer (QMO). The QAM maintain independence by not having direct involvement in the environmental information operations described in this QAPP.<br><br>**A10: Project Organization Chart and Communications**<br><br>Figure A10-1: Project organization chart for BMP reporting |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | |  |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | Figure A10-2: Project organization chart for point source reporting<br>  <br><br>A11: Personnel Training/Certification: *DOEE Data Managers* |
| **10** | **Historic Data Verification** | A4: *Section 1) Historic Reporting Practices*<br>A6: *Section 1 & 2) - Accuracy & Completeness Objectives* (one-time verification effort). |

**Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting**

**QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification.

| | **BMP Verification Component** | **QAPP Section** |
|---|---|---|
| | System to re-certify or remove | A5: *Surface and Groundwater System (SGS)* (governance process) |
| | Who will verify historic data training/certification)? | **A7: Distribution List**<br><br>Table A7-1: Customers and Stakeholders<br>**Name** / **Organization**<br>Auston Smith — EPA Region 3<br>Durga Ghosh — EPA Region 3<br>Ruth Cassilly — EPA Region 3<br>Richard Jackson — DOEE - Director<br>Jonathan Champion — DOEE – Water Quality Division<br>Alicia Ritzenthaler — DOEE – Water Quality Division<br>Matt Gallagher — DOEE – Water Quality Division<br>Meredith Upchurch — DOEE – Regulatory Review Division<br>Matt Johnson — DOEE – Regulatory Review Division<br><br>**A8: Project Organization**<br><br>Best management practices (BMP) data provided to the Chesapeake Bay Program Office (CBPO) by DOEE consists of point source reductions from DC Water, urban BMPs that treat stormwater from new development or redevelopment, retrofits of existing areas, and non-structural BMPs such as street sweeping, urban stream restoration work, and tree planting. The District's primary reductions come from upgrades to the Blue Plains Advanced Wastewater Treatment Plant (Blue Plains), the Long Term Control Plan to reduce combined sewer overflows, and from permitted stormwater treatment facilities installed as a part of new development or redevelopment of areas larger than 5,000 square feet.<br><br>*Program and/or Project Organization and Responsibilities*<br><br>***DOEE***<br>The Watershed Protection Division (WPD) Restoration Branch, Regulatory Review Division (RRD), Inspection and Enforcement Division (IED), and the Water Quality Division (WQD) are charged with compiling, geo-coding, and |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | processing the stormwater BMPs installed and non-structural stormwater BMP activities. DOEE WPD, RRD, IED, and WQD collect stormwater BMP data from sources described below, verify implementation location through geo-coding, and organize this information and report it to the CBP. DOEE has multiple roles and responsibilities for assuring QA/QC of data reported to CBP. The overarching oversight for QA/QC within DOEE is the responsibility of the DOEE Quality Management Officer (QMO), currently Richard Jackson. These roles are broken out by DOEE branches below. Key individuals at DOEE are listed in Table A8-1.<br><br>*DOEE Water Quality Division (WQD) Planning and Reporting Branch* – Collects the street sweeping data from the Department of Public Works (DPW), performs QA/QC, GIS analysis, and reports to the Bay Program. They also coordinate the collection of data on BMPs installed on federal lands, performs QA/QC, and ensures it does not duplicate records of BMPs in the DOEE SSGS.<br><br>*DOEE Regulatory Review Division (RRD)* – Tracks, reviews, and records all plans for new development or redevelopment in the District. The Stormwater and Green Area Ratio Branch ensures that all permitted construction over 50 square feet has a plan to have appropriate erosion and sediment control devices in place and that all permitted construction over 5,000 square feet has plans to install stormwater suitable BMPs. The Stormwater and Green Area Ratio Branch records all submitted construction plans in DOEE's SGS which they manage and performs QA/QCs on.<br><br>*DOEE Inspection and Enforcement Division*– Inspects sites under construction to make sure that they are in compliance with erosion and sediment control regulations, performs inspections during the installation of BMPs, the final inspection on constructed BMPs, and maintenance inspections of installed BMPs. This Division aims to inspect all installed BMPs every five years to ensure that they are in good working order. A process for owner-conducted Self-Inspections/ Self-Reporting (SISR) of stormwater BMPs was developed to increase stormwater management compliance amongst the regulated community. If the BMPs require maintenance, landowners are required |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | to perform the required maintenance to bring it into compliance. The Inspection and Enforcement Division maintains records of inspections in DOEE's SGS database and QA/QCs recorded data.<br><br>*DOEE Watershed Protection Division*– Compiles, geo-codes, QA/QCs the information on stormwater BMPs installed and non-structural stormwater BMP activities from the various reporting agencies, divisions and branches. DOEE WPD then works with WQD to report the voluntary BMP data to the CBP including the location of the BMP, the type of BMP installed, the volume capture of the BMP, and the number of acres treated by the BMP. DOEE WPD and WQD also QA/QC and report the inspection, maintenance and/or removal of any previously installed and reported BMP.<br><br>***DC Water***<br>DC Water is tasked with overseeing and implementing upgrades to Blue Plains and to the Combined Sewer System (CSS). These upgrades are closely tracked by DC Water and are regulated by the EPA as a part of its discharge permit and its Long Term Control Plan. DC Water also monitors discharges from the CSS and Blue Plains, QA/QC's these point source loads, and submits load data to the Metropolitan Washington Council of Governments (MWCOG) for reporting to the CBP. This information is obtained by DOEE through the new Point Source App which retrieves information from the ICIS-NPDES database. DC Water is also responsible for installation of grey and green infrastructure as determined by the Long Term Control Plan. The permitting of green infrastructure for stormwater treatment under the Long Term Control Plan is regulated and permitted by DOEE RRD Building Permit Plan Review Branch and their installation and maintenance is overseen by DOEE IED. DOEE RRD keeps a database of all permitted stormwater BMPs and of all inspection and enforcement efforts. Key individuals at DC Water are listed in Table A8-1.<br><br>***District Department of Transportation (DDOT) Urban Forestry Division (UFD)***<br>DDOT Urban Forestry Division (UFD) is responsible for tracking the number and location of trees planted in the public right of way. UFD performs QA/QC on this data and then provides it to DOEE Restoration Branch, who reviews, standardizes, and incorporates the information into the tracking & reporting database. UFD will be expanding their tree management (including planting) |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | to DC owned parklands and DCPS public school lands. Key individuals at DDOT are listed in Table A8-1.<br><br>***District Department of Public Works (DPW)***<br>DPW is responsible for tracking the lane miles swept, how often they are swept, the type of sweeper used, and the location of street sweeping activities as a part of the District's street sweeping efforts.<br><br>DPW works with GeoTab to track and obtain Automated Vehicle Location (AVL) on it's sweepers and vehicles. This allows the location and activities to be tracked. GPS data along with relevant activity and sweeper status is recorded when vehicles are operating. At the end of the reporting period, Sweeper GPS data is extracted, exported, and sent to DOEE as an Excel Workbook with each sweeper vehicle as a worksheet.<br><br>Key individuals at DPW are listed in Table A8-1.<br><br>***Federal Agencies***<br>Federal agencies are responsible for installing BMPs on federal lands, which make up almost a third of land area in the District. Federal agencies are required to submit stormwater management plans to DOEE for stormwater plan review and approval, as all other projects are required to do in the District. If federal agencies fail to follow stormwater regulations, the federal agencies can report their activities directly to WQD; however projects not properly permitted and inspected may not be accepted by DOEE nor reported to the Bay Program. Key individuals at federal agencies (including DOD, AOC, USACE, GSA, USDA, and NPS) are listed in Table A4(1).<br><br>Table A8-1: Reporting Agencies, Contact Person, BMP Types, and data management system. |

| Type | Agency/ Organization | Type of BMP | Contact Person |
|---|---|---|---|
| Local | DDOT UFD | Urban Tree Planting | earl.eutsler@dc.gov |
| Local | Casey Trees | Urban Tree Planting | mhansen@caseytrees.org |
| Local | DOEE WPD | Urban Tree Planting | erica.carlsson@dc.gov |
| Local | DPW | Street Sweeping | david.koehler@dc.gov |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | | | | | | |
|---|---|---|---|---|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | | | | | | |
| | **BMP Verification Component** | **QAPP Section** | | | | | |
| | | Local | DOEE RRD | New Development & Redevelopment | matt.johnson2@dc.gov | | Quick Base |
| | | Local | DOEE WPD | Stream Restoration | josh.burch@dc.gov | | Custom Exc Report |
| | | Federal | EPA CBPO | Wastewater-Point Source App | thynge.megan@epa.gov | | Online plat tool |
| | | Local | DC Water | Wastewater-significant | diran.adalian@dcwater.com | | Discharge Monitoring Reports |
| | | Local | DC Water | Wastewater/CSS | John.Cassidy@dcwater.com | | Clean River Project |
| | | Local | DOEE WQD | Wastewater-non significant | alicia.ritzenthaler@dc.gov | | Custom Exc Report |
| | | Local | DOEE | Overarching QA/QC | richard.jackson@dc.gov | | QA/QC |
| | | Federal | AOC | New Development & Redevelopment | dhelmann@aoc.gov | | NEIEN Exce Template |
| | | Federal | AOC | New Development & Redevelopment | jherr@aoc.gov | | NEIEN Exce Template |
| | | Federal | USACE | New Development & Redevelopment | amy.m.guise@usace.army.mil | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | ashley.l.kelly10.civ@us.navy.mil | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | Pearl.Ashitey@jacobs.com | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | evan.m.miles2.civ@us.navy.mil | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | kevin.dubois@navy.mil | | NEIEN Exce Template |
| | | Federal | DOD | New Development & Redevelopment | jennifer.mcdonnell@navy.mil | | NEIEN Exce Template |
| | | Federal | FRA (Fed Railroad Admin) | New Development & Redevelopment | Sydney.schnier@dot.gov | | NEIEN Exce Template |
| | | Federal | FRA (Fed Railroad Admin) | New Development & Redevelopment | David.Valenstein@dot.gov | | NEIEN Exce Template |
| | | Federal | GSA | New Development & Redevelopment | Russell.Clark@gsa.gov | | NEIEN Exce Template |
| | | Federal | GSA | New Development & Redevelopment | Andrew.oetman@gsa.gov | | NEIEN Exce Template |
| | | Federal | NPS | New Development & Redevelopment | lara_hannon@nps.gov | | NEIEN Exce Template |

**Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting**

**QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification.

| | **BMP Verification Component** | **QAPP Section** |
|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| Federal | NPS | New Development & Redevelopment | Leslie_Frattaroli@nps.gov | | NEIEN Exce Template |
| Federal | NPS | New Development & Redevelopment | Nick_Bartolomeo@nps.gov | | NEIEN Exce Template |
| Federal | NPS | New Development & Redevelopment | maureen_joseph@nps.gov | | NEIEN Exce Template |
| Federal | NPS | New Development & Redevelopment | andrew_landsman@nps.gov | | NEIEN Exce Template |
| Federal | NPS | New Development & Redevelopment | rene_senos@nps.gov | | NEIEN Exce Template |
| Federal | NPS | New Development & Redevelopment | J_Patrick_Campbell@nps.gov | | NEIEN Exce Template |
| Federal | Smithsonian | New Development & Redevelopment | SpoffordM@si.edu | | NEIEN Exce Template |
| Federal | Smithsonian | New Development & Redevelopment | trowbridgea@si.edu | | NEIEN Exce Template |
| Federal | USDA | New Development & Redevelopment | john.houston@ usda.gov | | NEIEN Exce Template |
| Federal | USDA | New Development & Redevelopment | daniel.jewett@ usda.gov | | NEIEN Exce Template |

*List of Supporting Documents and Attachments*

74. NEIEN Appendix A (Attached)
75. DOEE Stormwater Management Guidebook (http://doee.dc.gov/node/610622)
76. DOEE Soil Erosion and Sediment Control Handbook (http://doee.dc.gov/node/65302)
77. DOEE Surface and Groundwater System User Manual (http://doee.dc.gov/swdb)
78. Consolidated TMDL Implementation Plan (https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/FINAL%202022%20Consolidated%20TMDL%20Implementation%20Plan%20091320222_0.pdf)
79. DC Water Clean Rivers Project Construction Management Plan (Attached)
80. DC Water CSS Long Term Control Plan – Final Report

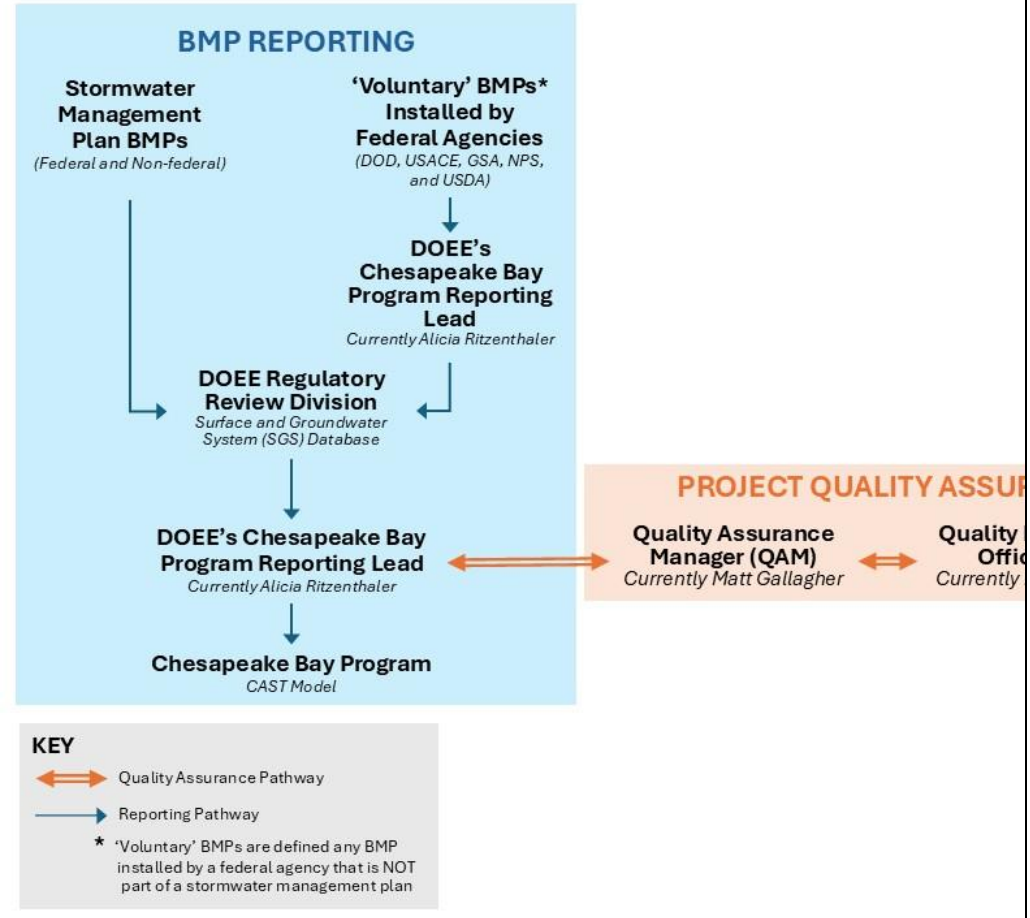
| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | (https://www.dcwater.com/sites/default/files/Complete%20Long-term%20Control%20Plan.pdf)<br>81. DC WASA First Amendment to Consent Decree (http://www2.epa.gov/sites/production/files/2015-05/documents/firstamendment-dcwasa-cd.pdf)<br>82. Permit No. DC0021199 (DC WASA Blue Plains facility) (https://www.epa.gov/npdes-permits/district-columbia-npdes-permits )<br>83. DC Water Proposal modifying Clean Rivers Project for Green Infrastructure (https://www.dcwater.com/sites/default/files/green-infrastructure-ltcp-modificaitons.pdf )<br>84. DC Water LTCP Modification for Green Infrastructure Briefing Slides (Attached)<br>85. District of Columbia NPDES Compliance Monitoring Strategy 2015 (http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/DC%20FY15%20Proposed%20Compliance%20Monitoring%20Strategy%20Report.pdf )<br>86. DC Water Combined Sewer System Annual and Quarterly Reports (Nine Minimum Controls) (https://dcwater.com/publications?field_document_type_tid=47&field_document_sub_type_tid=50 )<br>87. US EPA NPDES Compliance Inspection Manual (http://www2.epa.gov/sites/production/files/2013-09/documents/npdesinspect_0.pdf)<br>88. DDOT Green Infrastructure Standards Maintenance Schedules (http://ddot.dc.gov/GreenInfrastructure)<br>89. CBPO Partnership Verification Framework (http://www.chesapeakebay.net/documents/Complete%20CBP%20BMP%20Verification%20Framwork%20with%20appendices.pdf)<br>90. Stream Restoration Functional Lift Documentation (http://www.chesapeakebay.net/channel_files/18279/stream_health__and_the_functional_lift_pyramid.pdf)<br>91. Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects |

| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | (http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2013/10/stream-restoration-short-version.pdf)<br>92. Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed (https://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2019/07/Approved-Verification-Memo-061819.pdf<br>93. Casey Trees Survivability Report (2014) (Attached)<br>94. NPDES Compliance Inspector Training Laboratory Analyses Manual. (1990. EPA)<br>95. Water Compliance Inspection Report (Example: NPDES DC0000248) (http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/Kennedy%20Center%20Compliance%20Inspection%20Report%20FY14.pdf)<br>96. RiverSmart Washington Project Factsheet (https://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/RiverSmart%20Washington%20Fact%20sheet%20031114.pdf )<br>97. National Park Service Management Policies (2006) (www.nps.gov/policy/mp2006.pdf)<br><br>*Federal Grants Associated with the Program*<br>j. EPA Section 319(h) Grant<br>k. EPA Chesapeake Bay Program Implementation Grant<br>l. EPA Chesapeake Bay Program Regulatory Assistance Program Grant<br><br>**A9: Project QAM Independence**<br>DOEE's Planning and Reporting Branch Chief (currently Matthew Gallagher) is DOEE's designated Project Quality Assurance Manager (QAM) for the Chesapeake Bay Program Best Management Practice (BMP) Management, Reporting and Verification Project described in this QAPP. The QAM has oversight authority and responsibilities for planning, documenting, coordinating, and assessing effectiveness of the QAPP as well as authority to access and discuss quality-related issues with DOEE's Quality Management Officer (QMO). The QAM maintain independence by not having direct |

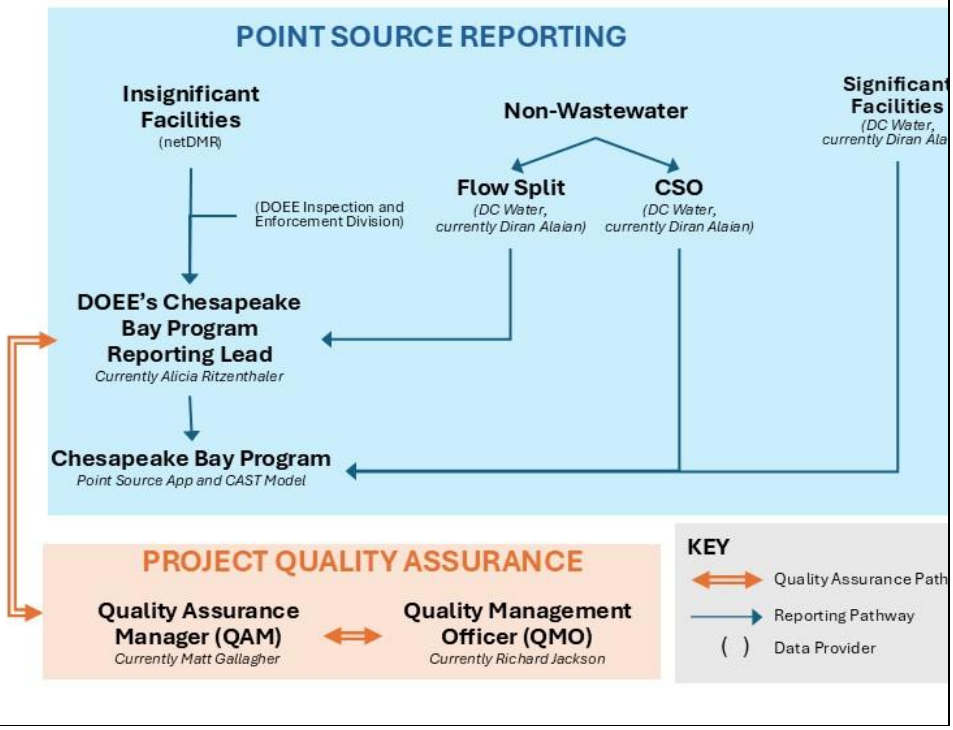
| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | involvement in the environmental information operations described in this QAPP. |

## A10: Project Organization Chart and Communications

Figure A10-1: Project organization chart for BMP reporting



| Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting | | |
|---|---|---|
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | Figure A10-2: Project organization chart for point source reporting |



| | | |
|---|---|---|
| **Sector(s): Urban Stormwater, Stream Restoration and Urban Tree Planting** | | |
| **QAPP Title:** District of Columbia QAPP for Chesapeake Bay Program BMP data management, reporting, and verification. | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | A11: Personnel Training/Certification:<br>• *DOEE Inspection and Enforcement*<br>• *Contractor Support* |
| | Documentation of action | A4: *Section 3) Data Management and Governance*<br>A5: *Verification Priority* |
| | **BMP Performance** | |
| **11** | Does state collect data to assess BMP Performance? | Yes |
| | Systems used to collect BMP performance data? | Special studies will assess performance and Quality Assurance.<br>• A4: *List of Supporting Documents and Attachments*: The RiverSmart Washington project will include pre- and post-implementation monitoring of stormwater flow after LID installations.<br>• A5: New or Emerging BMP definitions - *Catch Basin Cleaning*<br>• D1: Stream Restoration - *Post-Construction Assessments*<br>• A4: *List of Supporting Documents and Attachments*: Consolidated TMDL Implementation Plan |
| | Who collects BMP performance data? | |
| | Who analyses collected data and report to CBP? | DOEE will share analyses with CBPO when available. |

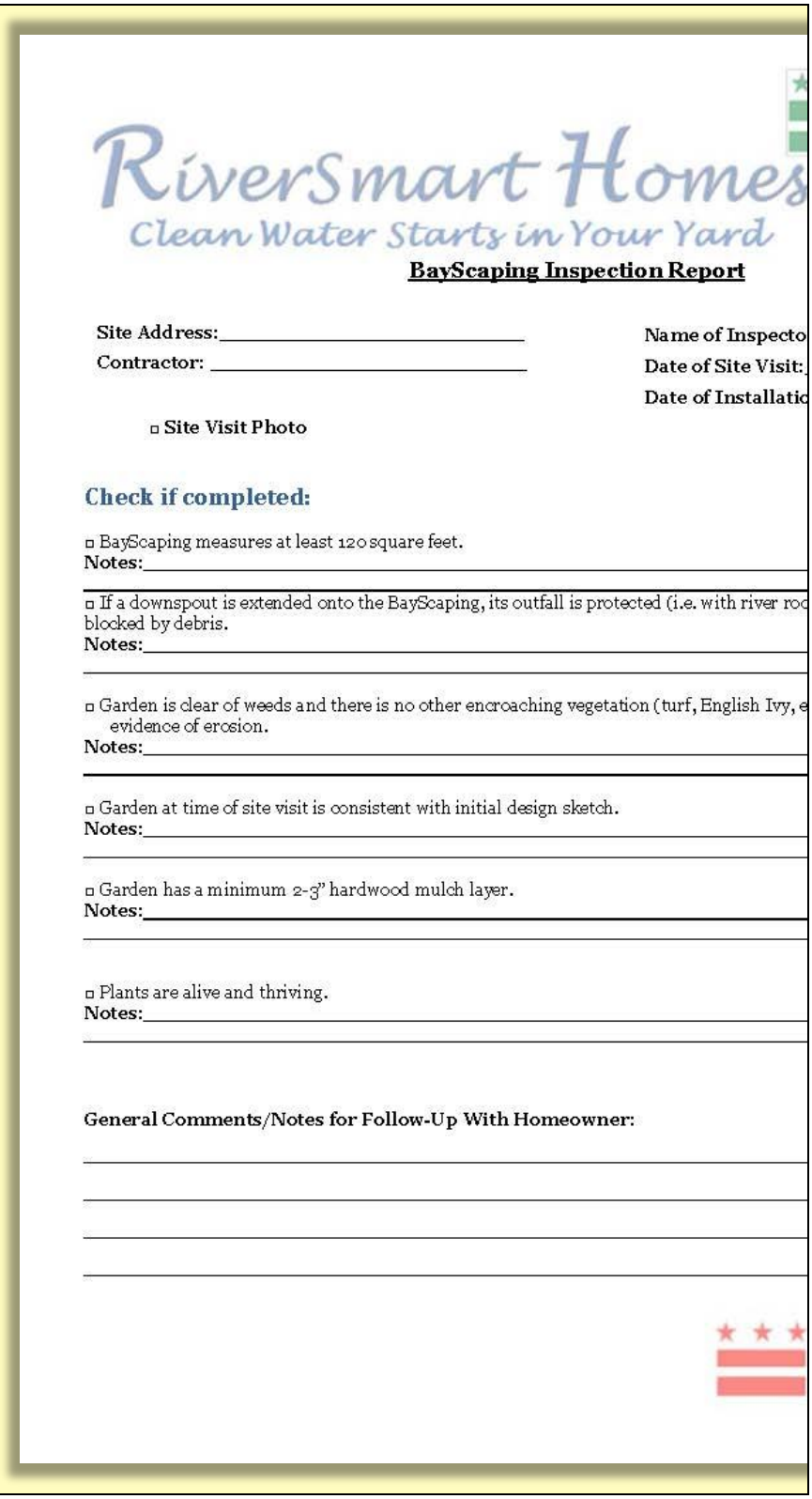
Table D1-7: Waste Water Sector verification checklist

| | | |
|---|---|---|
| **Sector(s): WasteWater Treatment** | | |
| **QAPP Title: Waste Water Treatment Section (**Applicable to facilities named in Table D1(b) and CSS/CSO**)** | | |
| | **BMP Verification Component** | **QAPP Section** |
| **1** | **BMP's Collected** | |
| | Type (structural, management, annual, etc.) | (Structural and Management)<br>Section 2) BMP Definitions<br>• *Point Source Reductions*<br>• *Combined Sewer Overflow* |
| | BMP Funding/Cost shared (federal, state, NGO, non-cost shared) | Non-cost shared |
| | Distinct state standards/specifications | District's and Federal standards;<br>List of Supporting Documents and Attachments<br>• Construction Design Standards QAPP |
| | Matching CBP BMP definition/efficiencies | Not Applicable |
| **2** | **Method/System of Verification/Assessment** | |
| | Description of methods/systems to be used | D: DATA VALIDATION AND USABILITY<br>**D1: Environmental Information Review**<br>Data Review, Verification, and Validation Information Review - *Point Source Sector* |
| | Documentation of procedures used to verify BMPs | *List of Supporting Documents and Attachments*<br>• Permit DC0021199 (Blue Plains Facility)<br>• Water Compliance Inspection Report (3560-3).<br>• Annual 2013 Inspection Report (NPDES Permit #DC0021199).<br>• USEPA's Compliance Monitoring Strategy (CMS).<br>• DC Water Clean Rivers Project Construction Management Plan<br>• DC Water Nine Minimum Controls Annual Report For Combined Sewer System (example)<br>D: DATA VALIDATION AND USABILITY<br>**D1: Environmental Information Review**<br>Data Review, Verification, and Validation Information Review<br>• *Point Source Sector* |

| | | |
|---|---|---|
| **Sector(s): WasteWater Treatment** | | |
| **QAPP Title: Waste Water Treatment Section (**Applicable to facilities named in Table D1(b) and CSS/CSO**)** | | |
| | **BMP Verification Component** | **QAPP Section** |
| | Instruction manual for system users | D: DATA VALIDATION AND USABILITY<br>**D1: Environmental Information Review**<br>Data Review, Verification, and Validation Information Review<br>• *Verification*<br>*List of Supporting Documents and Attachments*<br>• NPDES Compliance Inspection Manual.<br>• DC Water Clean Rivers Project Construction Management Plan<br>• |
| **3** | **Who will Complete the Verification** | |
| | Qualification requirements | *List of Supporting Documents and Attachments*<br>• NPDES Compliance Inspection Manual<br>• NPDES Compliance Inspector Training Laboratory Analyses Manual<br>• DC Water Clean Rivers Project Construction Management Plan (Sec 3.10.8 - DCRA Special Inspections Program) |
| | Training requirements | (EPA approved inspector training courses)<br>*List of Supporting Documents and Attachments*<br>• NPDES Compliance Inspection Manual<br>• NPDES Compliance Inspector Training Laboratory Analyses Manual<br>• DC Water Clean Rivers Project Construction Management Plan (Sec 3.3.5 - Training) |
| | Certification requirements | (EPA courses / associated certification programs)<br>List of Supporting Documents and Attachments<br>• NPDES Compliance Inspection Manual<br>• NPDES Compliance Inspector Training Laboratory Analyses Manual<br>• DC Water Clean Rivers Project Construction Management Plan (Sections 3.3.5 – Training & 3.14.3 Vendor/Contractor Supplied Training)<br>• Industry specific operator training and certifications, including CEU's. |
| | CEU follow-up training requirements in the future | EPA and DOEE staff attend regular annual training courses |
| **4** | **Documentation of Verification Finding** | |
| | Date of installation | NPDES Permit specification |
| | Location (lat./long if applicable) | **WWTP:** |

| Sector(s): WasteWater Treatment | | |
|---|---|---|
| **QAPP Title: Waste Water Treatment Section (**Applicable to facilities named in Table D1(b) and CSS/CSO**)** | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | NPDES Permit specification<br><br>**CSS Green Infrastructure:**<br>Green Infrastructure installed by DC Water will be included in DOEEs A5: ***Error! Reference source not found.*** *and Groundwater System (SGS)*<br>BMP information collected and stored within both GIS and Maximo (asset management system). See also:<br>*List of Supporting Documents and Attachments*<br>• DC WASA LTCP First Amendment<br>• DC Water Proposal modifying Clean Rivers Project for Green Infrastructure (and briefing slides). |
| | Level of reporting (watershed, HUC, county, site specific, etc.) | District-wide with watershed-specific unique requirements<br>*List of Supporting Documents and Attachments*<br>• DC WASA Long Term Control Plan (LTCP).<br>• DC Water Proposal modifying Clean Rivers Project for Green Infrastructure (and briefing slides). |
| | Units (number, acres, length, etc.) needed for NEIEN | D: DATA VALIDATION AND USABILITY<br>D1: Environmental Information Review<br>Data Review, Verification, and Validation<br>• *Verification* (Point Source Application) |
| | Ownership (public, private) | *List of Supporting Documents and Attachments*<br>• Water Compliance Inspection Reports |
| | Documentation: | Standardized EPA reporting forms and narrative reports. Refer to:<br>*List of Supporting Documents and Attachments*<br>• DC WASA Long Term Control Plan (LTCP).<br>• DC Water Quarterly and Annual CSS reports (on the nine minimum controls). |
| | Pictures | Section D1) Verification-<br>*Photographic Record*<br>*List of Supporting Documents and Attachments*<br>• Water Compliance Inspection Report (Example: NPDES DC0021199) |

| Sector(s): WasteWater Treatment | | |
|---|---|---|
| **QAPP Title: Waste Water Treatment Section (**Applicable to facilities named in Table D1(b) and CSS/CSO**)** | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | • Nine Minimum Controls Annual Report for CSS (Example: Section 3) |
| | Worksheets | *List of Supporting Documents and Attachments*<br>• Water Compliance Inspection Reports<br>Section D1) Verification-<br>• *Point Source Application* |
| | Electronic Tool | **D: DATA VALIDATION AND USABILITY**<br>**D1: Environmental Information Review**<br>Data Review, Verification, and Validationl Information Review<br>• *Verification (Point Source Application)*<br>• |
| | Aerial Photos | *List of Supporting Documents and Attachments*<br>• Water Compliance Inspection Reports (Example: NPDES DC0021199 |
| | Maps | *List of Supporting Documents and Attachments*<br>• Water Compliance Inspection Reports (Example: NPDES DC0021199 (page 2 of 45)) |
| | Other | *List of Supporting Documents and Attachments*<br>• Nine Minimum Controls Annual Report for CSS (Example: Section 3 Site Detail Plans) |
| | Report Generator | Section 3) Inspection Forms<br>• *Conservation Landscaping (BayScaping)* |



RiverSmart Homes
Clean Water Starts in Your Yard

**BayScaping Inspection Report**

**Site Address:**_____ **Name of Inspecto**
**Contractor:** _____ **Date of Site Visit:**
**Date of Installatic**

▫ **Site Visit Photo**

**Check if completed:**

▫ BayScaping measures at least 120 square feet.
**Notes:**_____

▫ If a downspout is extended onto the BayScaping, its outfall is protected (i.e. with river roc
blocked by debris.
**Notes:**_____

▫ Garden is clear of weeds and there is no other encroaching vegetation (turf, English Ivy, e
evidence of erosion.
**Notes:**_____

▫ Garden at time of site visit is consistent with initial design sketch.
**Notes:**_____

▫ Garden has a minimum 2-3" hardwood mulch layer.
**Notes:**_____

▫ Plants are alive and thriving.
**Notes:**_____

**General Comments/Notes for Follow-Up With Homeowner:**

RiverSmart Home
Clean Water Starts in Your Yard

| | Circle the appropriate ranking below |
|---|---|
| 0 | This task has not been completed, plant material has died or feature has be erosion. Weeds have taken over garden. |
| 1 | 0-25% or less of the plant material is alive. Garden or tree is badly in need mulching. |
| 2 | 26- 50% of plant material looks alive. Garden is in need of water, weeding |
| 3 | 51-75% of plant material or tree appears alive. Garden could use moderate |
| 4 | More than 75% of plant material is alive, but could use some light mulchin |
| 5 | Garden is thriving. Feature looks healthy and alive, mulch is at least 3" de |

| | | |
|---|---|---|
| **Sector(s): WasteWater Treatment** | | |
| **QAPP Title: Waste Water Treatment Section (**Applicable to facilities named in Table D1(b) and CSS/CSO**)** | | |
| | **BMP Verification Component** | **QAPP Section** |
| | | • NPDES Compliance Inspection forms.<br>DI) *Verification* (Blue Plains SCADA system)<br>*List of Supporting Documents and Attachments*<br>• Water Compliance Inspection Reports |
| **5** | **How Often Reviewed (Cycle of review)** | |
| | 1-2 years | Inspection schedules based on Facility type. Refer to Section D1-*Verification* (Table D1(b)) |
| | 5 years | |
| | 10 years | NA |
| | Other | |
| **6** | **Independent Verification of Finding** | |
| | Is this a requirement? | Independent verification is a federal and DOEE requirement. |
| | Internal Independent | Each facility has dedicated staff who verifies self-monitoring. |
| | External Independent | Annual inspections by DOEE and EPA staff are independent verification of facilities self-monitoring and self-verification.<br>*List of Supporting Documents and Attachments*<br>• DC Water Clean Rivers Project Construction Management Plan (Sec 3.10.7- Third-Party Inspections (IVA)) |

| | | |
|---|---|---|
| **Sector(s): WasteWater Treatment** | | |
| **QAPP Title: Waste Water Treatment Section (**Applicable to facilities named in Table D1(b) and CSS/CSO**)** | | |
| | **BMP Verification Component** | **QAPP Section** |
| | **BMP Data Validation** | |
| **7** | **Quality Assurance/Spot Checking** | |
| | Who-qualifications/training /certification | **WWTP:**<br>D1) *Verification*<br>• Supervisory Control and Data Acquisition (SCADA).<br>EPA and DOEE trained staff; NPDES Training<br>*List of Supporting Documents and Attachments*<br>• Permit Audit Inspection (PAI)<br>• US EPA NPDES Compliance Inspection Manual - Appendix A (Training and Development for Compliance Inspectors/Field Investigators<br>**CSS Green Infrastructure:**<br>*List of Supporting Documents and Attachments*<br>• Appendices E (pages: 687-709) and F (pages: 709-720) of the first amendment to the DC WASA LTCP. |
| | Method to select BMP for follow-up check | **WWTP:**<br>*D: DATA* VALIDATION AND USABILITY<br>**D1: Environmental Information Review**<br>Data Review, Verification, and Validation *Information Review*<br>• Permitted Facility Inspection Schedules<br>**CSS Green Infrastructure:**<br>*List of Supporting Documents and Attachments*<br>• Appendices E (pages: 687-709) and F (pages: 709-720) of the first amendment to the DC WASA LTCP. |

| | | |
|---|---|---|
| **Sector(s): WasteWater Treatment** | | |
| **QAPP Title: Waste Water Treatment Section (**Applicable to facilities named in Table D1(b) and CSS/CSO**)** | | |
| | **BMP Verification Component** | **QAPP Section** |
| | Method to select the number of BMPs to review | **WWTP:**<br>*D: DATA* VALIDATION AND USABILITY<br>**D1: Environmental Information Review**<br>Data Review, Verification, and Validation *Information Review*<br>• Permitted Facility Inspection Schedules<br>• Point Source Sector *Validation*<br><br>**CSS Green Infrastructure:**<br>*List of Supporting Documents and Attachments*<br>• Appendices E (pages: 687-709) and F (pages: 709-720) of the first amendment to the DC WASA LTCP. |
| | Other | **CSS Green Infrastructure:**<br>*List of Supporting Documents and Attachments*<br>• Appendices E (pages: 687-709) and F (pages: 709-720) of the first amendment to the DC WASA LTCP. |
| **8** | **Data Entry of BMP Implementation** | |
| | What is the system? | **WWTP:**<br>**Site specific. Dependent on NPDES permit requirements. D: DATA VALIDATION AND USABILITY**<br>**D1: Environmental Information Review**<br>Data Review, Verification, and Validation<br><br>**CSS Green Infrastructure:**<br>BMP information collected and stored within both GIS and Maximo (asset management system). |
| | Who enters data (training/certification) ? | Qualified and responsible facility representatives identified in the NPDES permit. |
| | Does the system connect to NEIEN? | Section D1) *Validation* (ICIS NPDES discussion) |
| | System in place prevent double counting | NA (NPDES Permitted Facilities) |

| Sector(s): WasteWater Treatment | | |
|---|---|---|
| **QAPP Title: Waste Water Treatment Section (**Applicable to facilities named in Table D1(b) and CSS/CSO**)** | | |
| | **BMP Verification Component** | **QAPP Section** |
| **9** | **External Provided Data Validation Meeting CBP Partnership Guidance** | |
| | Method to validate data | Section D1) *Validation* |
| | Who will validate data (training/certification) ? | Section D1) *Validation*<br>• EPA CBPO Point Source Data Manager and DOEE using the Point Source App |
| **10** | **Historic Data Verification** | |
| | System to re-certify or remove | Section D1) *Validation*<br>• EPA Region 3 (Permitting Authority)<br>• EPA CBPO PS Data Manager. |
| | Who will verify historic data training/certification)? | |
| | Documentation of action | |
| | **BMP Performance** | |
| **11** | Does state collect data to assess BMP Performance? | Effluent limitations, self-monitoring and reporting under NPDES permit requirements that are consistent with the TMDL wasteload allocations<br><br>EPA working collaboratively with DOEE.<br><br>DC Water (Clean Waters )<br><br>DC Water (Clean Waters) and EPA as part of the CBP performance requirement. |
| | System used to collect BMP performance data? | |
| | Who collects BMP performance data? | |
| | Who analyses collected data and report to CBP? | |

***Sections 2 -3) Data Verification and Validation Methods***

For the purposes of reporting BMP data, validation is defined as a QA/QC check of a data record. It is preferred that validation reviews are independent and that validation methods are based on a visual field check of an adequate statistical sample. The minimum procedure is to conduct a basic database or paper check of an adequate statistical sample.

Examples of independent and multi-layered data reviews are more prevalent in the District's high priority sectors, especially for the District's major point source (Blue Plains) and the Urban Stormwater sector. Discharge Monitoring Reports are prepared by DC Water and reviewed by EPA during preparation of the point source input deck. Stormwater BMP data is entered by engineers or designers during plan submission, checked by DOEE plan review staff, then again by on-the-ground inspectors, and finally, the NEIEN data manager before submission to CBPO. A final layer of data validation is performed during reviews of CBPO progress submission feedback reports. A discussion of DOEE's one-time verification of historic data record is included in A5: Section 2) *1998 Storm Water Regulations*.

*Expired BMPs, Double Counting, and External Data Providers*

Discussion of expired BMPs in relation to data reviews, verification, and validation have been consolidated in this document by the responsible program, sector, or BMP in other sections of this document.

- The treatment of expired BMPs and BMP lifespans is addressed primarily in Sections A5: Project Task Description (*BMP Lifespans*) and ***Error! Reference source not found.***.

- Discussions on processes to avoid double counting are addressed in Sections *A6:* Information/Data Quality Objectives and Performance/Acceptance Criteriaand **Error! Reference source not found.**.

- Discussions related to external data providers can be found in Sections *A6: Information/Data Quality Objectives and Performance/Acceptance Criteria*, A7: Distribution *List*

- *Table* A7-1: Customers and Stakeholders

| Name | Organization |
|---|---|
| Auston Smith | EPA Region 3 |
| Durga Ghosh | EPA Region 3 |
| Ruth Cassilly | EPA Region 3 |
| Richard Jackson | DOEE - Director |
| Jonathan Champion | DOEE – Water Quality Division |
| Alicia Ritzenthaler | DOEE – Water Quality Division |
| Matt Gallagher | DOEE – Water Quality Division |
| Meredith Upchurch | DOEE – Regulatory Review Division |
| Matt Johnson | DOEE – Regulatory Review Division |

## A8: Project Organization

Best management practices (BMP) data provided to the Chesapeake Bay Program Office (CBPO) by DOEE consists of point source reductions from DC Water, urban BMPs that treat stormwater from new development or redevelopment, retrofits of existing areas, and non-structural BMPs such as street sweeping, urban stream restoration work, and tree planting. The District's primary reductions come from upgrades to the Blue Plains Advanced Wastewater Treatment Plant (Blue Plains), the Long Term Control Plan to reduce combined sewer overflows, and from permitted stormwater treatment facilities installed as a part of new development or redevelopment of areas larger than 5,000 square feet.

*Program and/or Project Organization and Responsibilities*

***DOEE***

The Watershed Protection Division (WPD) Restoration Branch, Regulatory Review Division (RRD), Inspection and Enforcement Division (IED), and the Water Quality Division (WQD) are charged with compiling, geo-coding, and processing the stormwater BMPs installed and non-structural stormwater BMP activities. DOEE WPD, RRD, IED, and WQD collect stormwater BMP data from sources described below, verify implementation location through geo-coding, and organize this information and report it to the CBP. DOEE has multiple roles and responsibilities for assuring QA/QC of data reported to CBP. The overarching oversight for QA/QC within DOEE is the responsibility of the DOEE Quality Management Officer (QMO), currently Richard Jackson. These roles are broken out by DOEE branches below. Key individuals at DOEE are listed in Table A8-1.

*DOEE Water Quality Division (WQD) Planning and Reporting Branch* – Collects the street sweeping data from the Department of Public Works (DPW), performs QA/QC, GIS analysis, and reports to the Bay Program. They also coordinate the collection of data on BMPs installed on federal lands, performs QA/QC, and ensures it does not duplicate records of BMPs in the DOEE SSGS.

*DOEE Regulatory Review Division (RRD)* – Tracks, reviews, and records all plans for new development or redevelopment in the District. The Stormwater and Green Area Ratio Branch ensures that all permitted construction over 50 square feet has a plan to have appropriate erosion and sediment control devices in place and that all permitted construction over 5,000 square feet has plans to install stormwater suitable BMPs. The Stormwater and Green Area Ratio Branch records all submitted construction plans in DOEE's SGS which they manage and performs QA/QCs on.

*DOEE Inspection and Enforcement Division*– Inspects sites under construction to make sure that they are in compliance with erosion and sediment control regulations, performs inspections during the installation of BMPs, the final inspection on constructed BMPs, and maintenance inspections of installed BMPs. This Division aims to inspect all installed BMPs every five years to ensure that they are in good working order. A process for owner-conducted Self-Inspections/ Self-Reporting (SISR) of stormwater BMPs was developed to increase stormwater management compliance amongst the regulated

community. If the BMPs require maintenance, landowners are required to perform the required maintenance to bring it into compliance. The Inspection and Enforcement Division maintains records of inspections in DOEE's SGS database and QA/QCs recorded data.

*DOEE Watershed Protection Division*– Compiles, geo-codes, QA/QCs the information on stormwater BMPs installed and non-structural stormwater BMP activities from the various reporting agencies, divisions and branches. DOEE WPD then works with WQD to report the voluntary BMP data to the CBP including the location of the BMP, the type of BMP installed, the volume capture of the BMP, and the number of acres treated by the BMP. DOEE WPD and WQD also QA/QC and report the inspection, maintenance and/or removal of any previously installed and reported BMP.

***DC Water***

DC Water is tasked with overseeing and implementing upgrades to Blue Plains and to the Combined Sewer System (CSS). These upgrades are closely tracked by DC Water and are regulated by the EPA as a part of its discharge permit and its Long Term Control Plan. DC Water also monitors discharges from the CSS and Blue Plains, QA/QC's these point source loads, and submits load data to the Metropolitan Washington Council of Governments (MWCOG) for reporting to the CBP. This information is obtained by DOEE through the new Point Source App which retrieves information from the ICIS-NPDES database. DC Water is also responsible for installation of grey and green infrastructure as determined by the Long Term Control Plan. The permitting of green infrastructure for stormwater treatment under the Long Term Control Plan is regulated and permitted by DOEE RRD Building Permit Plan Review Branch and their installation and maintenance is overseen by DOEE IED. DOEE RRD keeps a database of all permitted stormwater BMPs and of all inspection and enforcement efforts. Key individuals at DC Water are listed in Table A8-1.

***District Department of Transportation (DDOT) Urban Forestry Division (UFD)***

DDOT Urban Forestry Division (UFD) is responsible for tracking the number and location of trees planted in the public right of way. UFD performs QA/QC on this data and then provides it to DOEE Restoration Branch, who reviews, standardizes, and incorporates the information into the tracking & reporting database. UFD will be expanding their tree management (including planting) to DC owned parklands and DCPS public school lands. Key individuals at DDOT are listed in Table A8-1.

***District Department of Public Works (DPW)***

DPW is responsible for tracking the lane miles swept, how often they are swept, the type of sweeper used, and the location of street sweeping activities as a part of the District's street sweeping efforts.

DPW works with GeoTab to track and obtain Automated Vehicle Location (AVL) on it's sweepers and vehicles. This allows the location and activities to be tracked. GPS data along with relevant activity and sweeper status is recorded when vehicles are operating. At the end of the reporting period, Sweeper GPS data is extracted, exported, and sent to DOEE as an Excel Workbook with each sweeper vehicle as a worksheet.

Key individuals at DPW are listed in Table A8-1.

***Federal Agencies***

Federal agencies are responsible for installing BMPs on federal lands, which make up almost a third of land area in the District. Federal agencies are required to submit stormwater management plans to DOEE for stormwater plan review and approval, as all other projects are required to do in the District. If federal agencies fail to follow stormwater regulations, the federal agencies can report their activities directly to WQD; however projects not properly permitted and inspected may not be accepted by DOEE nor reported to the Bay Program. Key individuals at federal agencies (including DOD, AOC, USACE, GSA, USDA, and NPS) are listed in Table A4(1).

Table A8-1: Reporting Agencies, Contact Person, BMP Types, and data management system.

| Type | Agency/ Organization | Type of BMP | Contact Person | Database |
|---|---|---|---|---|
| Local | DDOT UFD | Urban Tree Planting | earl.eutsler@dc.gov | ArGIS Layer |
| Local | Casey Trees | Urban Tree Planting | mhansen@caseytrees.org | ArGIS Layer |
| Local | DOEE WPD | Urban Tree Planting | erica.carlsson@dc.gov | Custom Excel Report |
| Local | DPW | Street Sweeping | david.koehler@dc.gov | GeoTab |
| Local | DOEE RRD | New Development & Redevelopment | matt.johnson2@dc.gov | Quick Base/SGS |
| Local | DOEE WPD | Stream Restoration | josh.burch@dc.gov | Custom Excel Report |
| Federal | EPA CBPO | Wastewater-Point Source App | thynge.megan@epa.gov | Online platform tool |
| Local | DC Water | Wastewater-significant | diran.adalian@dcwater.com | Discharge Monitoring Reports |
| Local | DC Water | Wastewater/CSS | John.Cassidy@dcwater.com | Clean Rivers Project |
| Local | DOEE WQD | Wastewater-non significant | alicia.ritzenthaler@dc.gov | Custom Excel Report |
| Local | DOEE | Overarching QA/QC | richard.jackson@dc.gov | QA/QC |
| Federal | AOC | New Development & Redevelopment | dhelmann@aoc.gov | NEIEN Excel Template |
| Federal | AOC | New Development & Redevelopment | jherr@aoc.gov | NEIEN Excel Template |
| Federal | USACE | New Development & Redevelopment | amy.m.guise@usace.army.mil | NEIEN Excel Template |
| Federal | DOD | New Development & Redevelopment | ashley.l.kelly10.civ@us.navy.mil | NEIEN Excel Template |
| Federal | DOD | New Development & Redevelopment | Pearl.Ashitey@jacobs.com | NEIEN Excel Template |
| Federal | DOD | New Development & Redevelopment | evan.m.miles2.civ@us.navy.mil | NEIEN Excel Template |
| Federal | DOD | New Development & Redevelopment | kevin.dubois@navy.mil | NEIEN Excel Template |

| Type | Agency/ Organization | Type of BMP | Contact Person | Database |
|---|---|---|---|---|
| Federal | DOD | New Development & Redevelopment | jennifer.mcdonnell@navy.mil | NEIEN Excel Template |
| Federal | FRA (Fed Railroad Admin) | New Development & Redevelopment | Sydney.schnier@dot.gov | NEIEN Excel Template |
| Federal | FRA (Fed Railroad Admin) | New Development & Redevelopment | David.Valenstein@dot.gov | NEIEN Excel Template |
| Federal | GSA | New Development & Redevelopment | Russell.Clark@gsa.gov | NEIEN Excel Template |
| Federal | GSA | New Development & Redevelopment | Andrew.oetman@gsa.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | lara_hannon@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | Leslie_Frattaroli@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | Nick_Bartolomeo@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | maureen_joseph@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | andrew_landsman@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | rene_senos@nps.gov | NEIEN Excel Template |
| Federal | NPS | New Development & Redevelopment | J_Patrick_Campbell@nps.gov | NEIEN Excel Template |
| Federal | Smithsonian | New Development & Redevelopment | SpoffordM@si.edu | NEIEN Excel Template |
| Federal | Smithsonian | New Development & Redevelopment | trowbridgea@si.edu | NEIEN Excel Template |
| Federal | USDA | New Development & Redevelopment | john.houston@ usda.gov | NEIEN Excel Template |
| Federal | USDA | New Development & Redevelopment | daniel.jewett@ usda.gov | NEIEN Excel Template |

*List of Supporting Documents and Attachments*

98. NEIEN Appendix A (Attached)
99. DOEE Stormwater Management Guidebook (http://doee.dc.gov/node/610622)
100. DOEE Soil Erosion and Sediment Control Handbook (http://doee.dc.gov/node/65302)
101. DOEE Surface and Groundwater System User Manual (http://doee.dc.gov/swdb)
102. Consolidated TMDL Implementation Plan (https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/FINAL%202022%20Consolidated%20TMDL%20Implementation%20Plan%20091320222_0.pdf)
103. DC Water Clean Rivers Project Construction Management Plan (Attached)

104. DC Water CSS Long Term Control Plan – Final Report (https://www.dcwater.com/sites/default/files/Complete%20Long-term%20Control%20Plan.pdf)
105. DC WASA First Amendment to Consent Decree (http://www2.epa.gov/sites/production/files/2015-05/documents/firstamendment-dcwasa-cd.pdf)
106. Permit No. DC0021199 (DC WASA Blue Plains facility) (https://www.epa.gov/npdes-permits/district-columbia-npdes-permits )
107. DC Water Proposal modifying Clean Rivers Project for Green Infrastructure (https://www.dcwater.com/sites/default/files/green-infrastructure-ltcp-modificaitons.pdf )
108. DC Water LTCP Modification for Green Infrastructure Briefing Slides (Attached)
109. District of Columbia NPDES Compliance Monitoring Strategy 2015 (http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/DC%20FY15%20Proposed%20Compliance%20Monitoring%20Strategy%20Report.pdf )
110. DC Water Combined Sewer System Annual and Quarterly Reports (Nine Minimum Controls) (https://dcwater.com/publications?field_document_type_tid=47&field_document_sub_type_tid=50 )
111. US EPA NPDES Compliance Inspection Manual (http://www2.epa.gov/sites/production/files/2013-09/documents/npdesinspect_0.pdf)
112. DDOT Green Infrastructure Standards Maintenance Schedules (http://ddot.dc.gov/GreenInfrastructure)
113. CBPO Partnership Verification Framework (http://www.chesapeakebay.net/documents/Complete%20CBP%20BMP%20Verification%20Framwork%20with%20appendices.pdf)
114. Stream Restoration Functional Lift Documentation (http://www.chesapeakebay.net/channel_files/18279/stream_health__and_the_functional_lift_pyramid.pdf)
115. Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects (http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2013/10/stream-restoration-short-version.pdf)
116. Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed (https://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2019/07/Approved-Verification-Memo-061819.pdf
117. Casey Trees Survivability Report (2014) (Attached)
118. NPDES Compliance Inspector Training Laboratory Analyses Manual. (1990. EPA)
119. Water Compliance Inspection Report (Example: NPDES DC0000248) (http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/Kennedy%20Center%20Compliance%20Inspection%20Report%20FY14.pdf)
120. RiverSmart Washington Project Factsheet

(https://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/RiverSmart%20Washington%20Fact%20sheet%20031114.pdf )

121. National Park Service Management Policies (2006) (www.nps.gov/policy/mp2006.pdf)

*Federal Grants Associated with the Program*

m. EPA Section 319(h) Grant
n. EPA Chesapeake Bay Program Implementation Grant
o. EPA Chesapeake Bay Program Regulatory Assistance Program Grant

## A9: Project QAM Independence

DOEE's Planning and Reporting Branch Chief (currently Matthew Gallagher) is DOEE's designated Project Quality Assurance Manager (QAM) for the Chesapeake Bay Program Best Management Practice (BMP) Management, Reporting and Verification Project described in this QAPP. The QAM has oversight authority and responsibilities for planning, documenting, coordinating, and assessing effectiveness of the QAPP as well as authority to access and discuss quality-related issues with DOEE's Quality Management Officer (QMO). The QAM maintain independence by not having direct involvement in the environmental information operations described in this QAPP.

## A10: Project Organization Chart and Communications

Figure A10-1: Project organization chart for BMP reporting

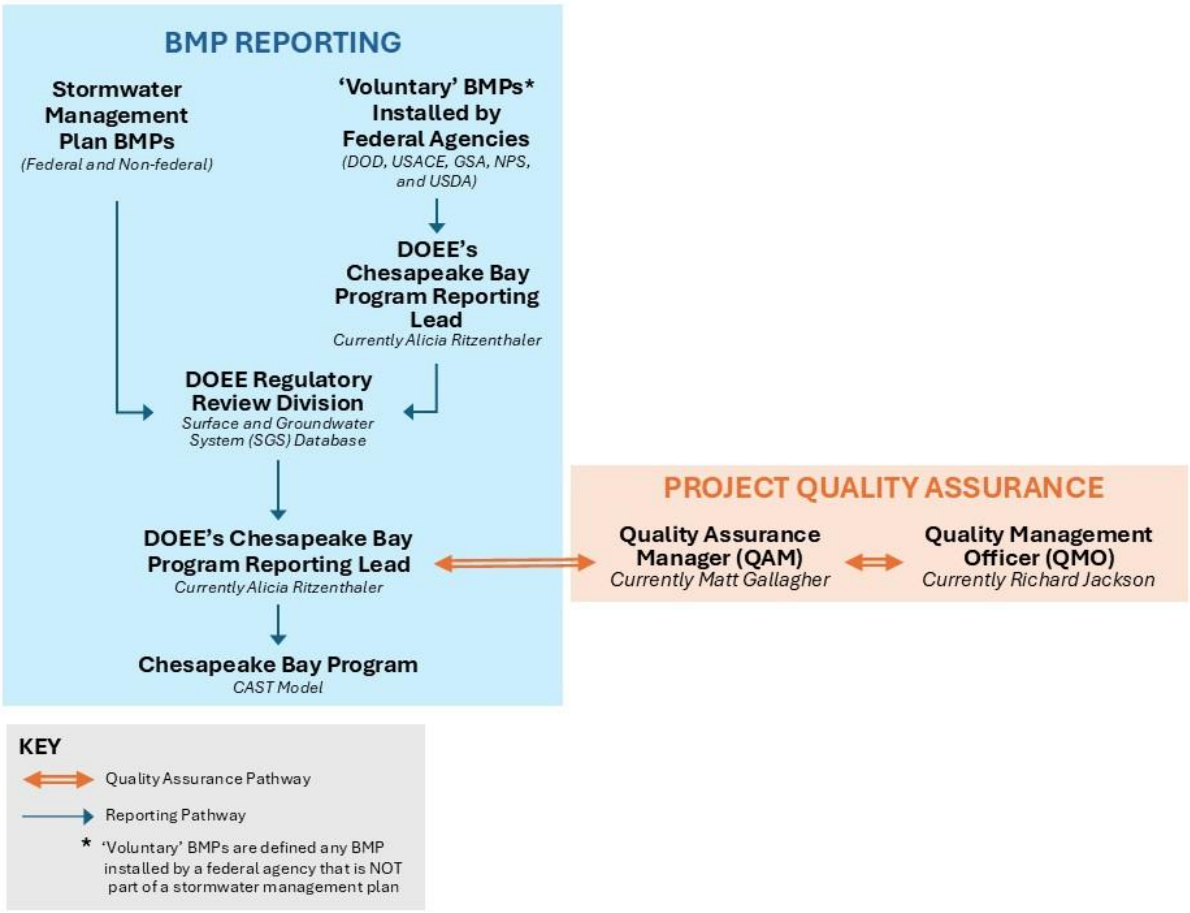
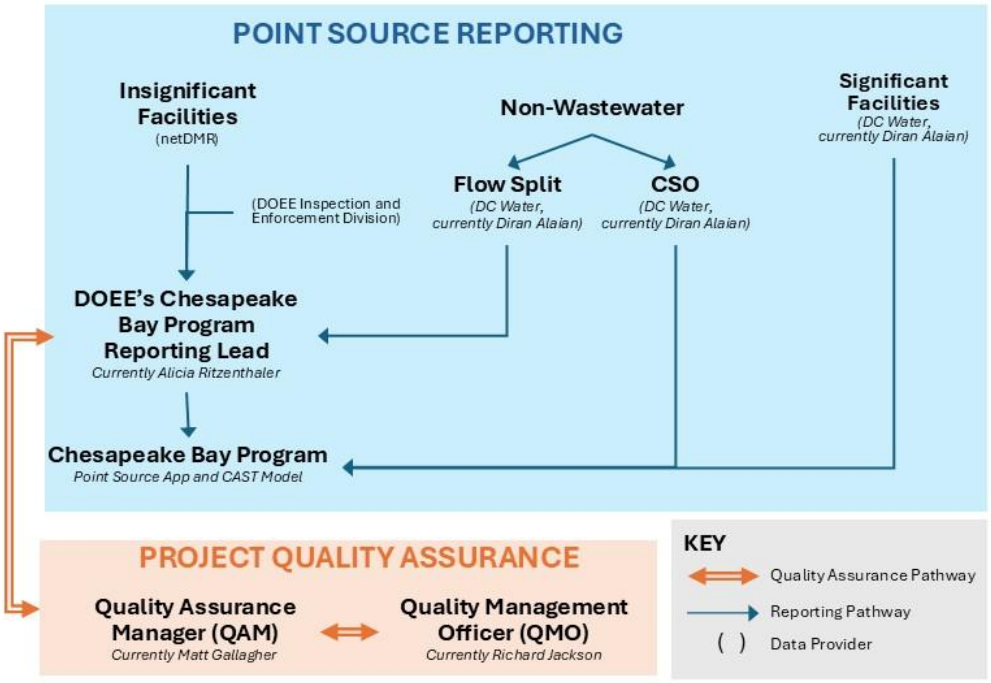

BMP REPORTING
Stormwater Management Plan BMPs
(Federal and Non-federal)
'Voluntary' BMPs* Installed by Federal Agencies
(DOD, USACE, GSA, NPS, and USDA)
DOEE's Chesapeake Bay Program Reporting Lead
Currently Alicia Ritzenthaler
DOEE Regulatory Review Division
Surface and Groundwater System (SGS) Database
DOEE's Chesapeake Bay Program Reporting Lead
Currently Alicia Ritzenthaler
Chesapeake Bay Program
CAST Model
PROJECT QUALITY ASSURANCE
Quality Assurance Manager (QAM)
Currently Matt Gallagher
Quality Management Officer (QMO)
Currently Richard Jackson
KEY
Quality Assurance Pathway
Reporting Pathway
* 'Voluntary' BMPs are defined any BMP installed by a federal agency that is NOT part of a stormwater management plan

Figure A10-2: Project organization chart for point source reporting




- A11: Personnel Training/Certification, and **Error! Reference source not found.**.

## D2: Usability Determination

N/A