Anne Arundel County
Department of Public Works
Bureau of Watershed Protection and Restoration

Fiscal Year 2022 NPDES MS4 Annual Report
Anne Arundel County
Permit Number: 20-DP-3316 MD0068306

December 2022

Anne Arundel County
Bureau of Watershed
Protection
& Restoration

Fiscal Year 2022 Annual Report for
Anne Arundel County
National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer System Discharge Permit
Permit Number: 20-DP-3316 MD0068306

Submitted to:

Water Sciences Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

December 2022

Submitted by:

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Table of Contents

List of Figures

List of Tables

List of Appendices

I. Introduction

This Annual Report describes compliance activities for the County and State Fiscal Year 2022 (July 1, 2021 through June 30, 2022) in association with the Anne Arundel County National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit (Permit number 20-DP-3316, MD0068306). The current permit was issued on November 5, 2021. This is the first MS4 Annual Report prepared under this permit.

The MS4 Annual Report describes the components of the stormwater management program and associated implementation status, and summarizes monitoring programs implemented by Anne Arundel County (County) including data collection and analysis. Digital data and specific reports for the major programs conducted during the reporting term can be found within the report's **Appendices**. Digital data found in **Appendix A** is submitted in the format consistent with the MS4 Geodatabase structure as described in the November 2021 document entitled *National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4), Draft Supplement to the Geodatabase Design and User's Guide, Version 1.2 Draft Updates (MDE 2021).* As requested by MDE staff, County comments on the 2021 MS4 Geodatabase and the accompanying Draft Supplement to the User's Guide are summarized as a *NarrativeFile* in **Appendix A**.

II. MS4 Program

Components of the County's MS4 Program were established to address the requirements outlined in the County's NPDES MS4 Permit. The major components also address Stormwater Waste Load Allocation (SW-WLA) associated with the issued Total Maximum Daily Loads (TMDLs), and overall water quality improvements within the County's waterways. Program components include the following:

- Countywide Storm Drain Inventory
- Countywide Impervious Area Inventory
- Urban Stormwater Best Management Practices Inventory
- Water Quality Improvement Projects Inventory
- Countywide Stormwater Management Program
- Countywide Erosion and Sediment Control Program
- Illicit Discharge Detection and Elimination Program
- Management and Maintenance of County-owned facilities (e.g., roads)
- Public Education and Outreach
- Stormwater Restoration Activities and Practices
- Countywide TMDL Implementation

- Assessment of Controls Monitoring (i.e., BMP Effectiveness, Watershed Assessment, PCB source tracking)
- Program Funding

The County believes the above programs and practices address the major water quality interests within County watersheds. Monitoring efforts have shown that implementation of these programs results in the improvement of water quality. County efforts in these program areas during the reporting period are described under the appropriate permit condition sections in **Part IV** of this report.

III. Water Quality

The NPDES MS4 Permit issued to Anne Arundel County in November 2021 requires implementation of a stormwater management program to effectively prohibit pollutants in stormwater discharges, to attain applicable WLAs as set forth in approved TMDLs, and to comply with all provisions of the permit. Compliance with permit conditions shall constitute compliance with the Clean Water Act (§402(p)(3)(B)(iii)) and adequate progress toward compliance with Maryland's water quality standards and any U.S. Environmental Protection Agency (EPA) approved stormwater WLAs.

Anne Arundel County endeavors to manage, implement, and enforce a stormwater management program in accordance with the Clean Water Act and corresponding NPDES regulations. The activities undertaken in support of permit compliance, and documented herein, show progress toward reducing pollutants in stormwater discharges, prohibiting unauthorized discharges to the County's storm drain system, and attaining stormwater WLAs for established TMDLs.

IV. Standard Permit Conditions

A. Permit Administration

Anne Arundel County shall designate an individual to act as a liaison with the Maryland Department of the Environment (MDE) for the implementation of this permit. The County shall provide the coordinator's name, title, address, phone number, and email address. Additionally, the County shall submit in its annual reports to MDE an organizational chart detailing personnel and groups responsible for major NPDES program tasks in this permit. MDE shall be notified in annual reports of any changes in personnel or organization relative to NPDES program tasks.

For Fiscal Year 2022 (FY22), Anne Arundel County's NPDES MS4 Permit coordination was performed by the Department of Public Works (DPW) Bureau of Watershed Protection and Restoration (BWPR). **Figure 1** (below) shows the County's organizational chart for FY22. The program coordinators during this reporting year are listed below.

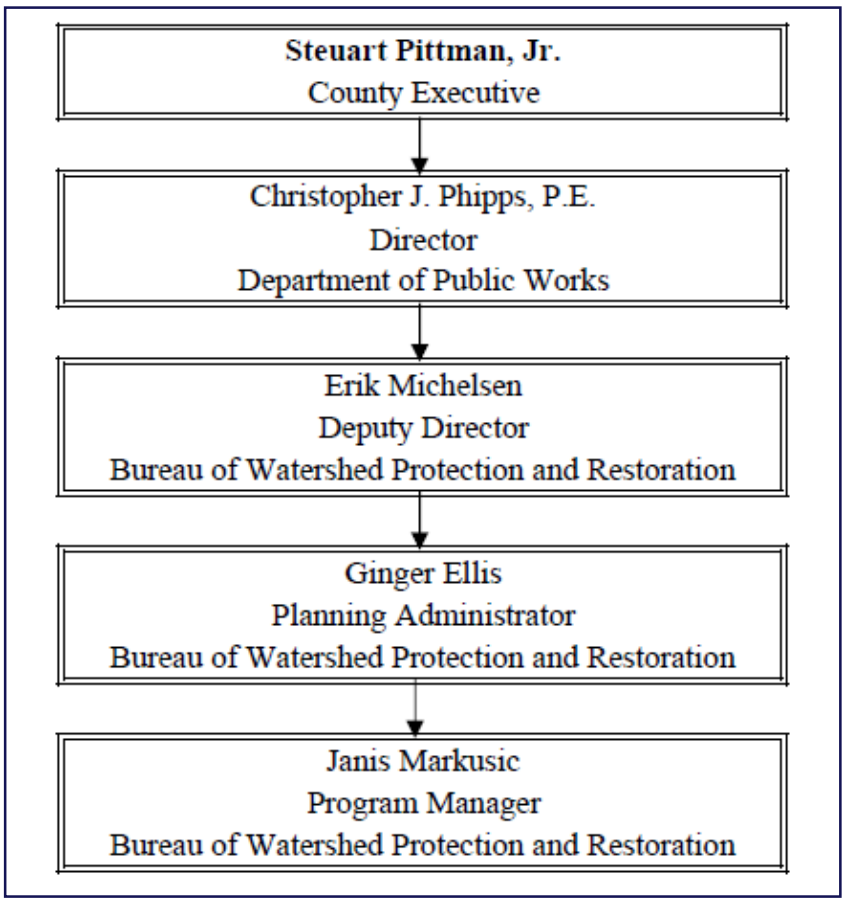

Figure 1. Organizational chart for NPDES MS4 Permit administration (FY22).

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Additional County staff responsible for components of the NPDES MS4 Permit requirements during FY22 include those listed below.

Department of Public Works (DPW)
Bureau of Watershed Protection and Restoration

- Jens Geratz, Engineer Manager, Restoration Implementation

Administers the CIP Restoration Project Implementation unit responsible for design and construction of BWPR stream restoration projects.

- Karen Jennings, Senior Engineer, Restoration Implementation

Manages design and construction of watershed restoration projects.

- Vacant, Senior Engineer, Restoration Implementation (1/2021-11/2021)
- Nasrin Dahlgren (11/2021 - present)

Manages design and construction of watershed restoration projects.

- Nasrin Dahlgren, Project Manager, Restoration Implementation (through 11/2021)
- Vacant (11/2021 – present)

Manages design and construction of watershed restoration projects.

- Gerry Inglesby, Project Manager, Restoration Implementation (through 6/2022)
- Vacant (6/2022 – present)

Manages design and construction of watershed restoration projects.

- Larry Mathena, Project Manager, Restoration Implementation

Manages design and construction of watershed restoration projects.

- Joe Ports, Project Manager, Restoration Implementation

Manages design and construction of watershed restoration projects.

- Jeff Ratteree, Project Manager, Restoration Implementation

Manages design and construction of watershed restoration projects.

- Gregory LeBlanc, Project Manager, Restoration Implementation

Manages design and construction of watershed restoration projects.

- Brenda Morgan, Engineer Manager, Modeling and Analysis

Administers the Modeling and Analysis Unit responsible for providing water quality, pollutant loading, and impervious area data management, analysis, tracking and reporting for NPDES MS4 permit,

TMDL and the County's Phase II Watershed Implementation Plan (WIP); and Stormwater Remediation Fee oversight and support.

- Joshua Thompson, Ph.D. Senior Engineer, TMDL Support

Administers the TMDL Support Program; manages watershed assessment contracts; manages the technical engineering and water quality models in support of NPDES MS4 Permit activities, individual TMDL compliance, and the Phase II WIP; coordinates data, tracking, and reporting of impervious surface reduction and pollutant load credit; manages the County's impervious surface and land cover GIS layers; and documents the locations and descriptions of watershed restoration projects.

- Brennan Smith, Engineer III, TMDL Support

Maintains, updates, and provides quality control of GIS data layers (e.g., impervious surfaces, land cover) that support the engineering and water quality models utilized for supporting NPDES MS4 and TMDL Restoration Plan activities.

- Jennifer Tam, GIS Specialist, TMDL Support

Provides GIS analysis to support the engineering and water quality models utilized for supporting NPDES MS4 and TMDL compliance activities. Maintains, updates and provides quality control of GIS data.

- Sally Szydlowski, Program Manager, Stormwater Fee

Administers the SW Remediation Fee Support Unit, oversees fee assessment, appeals and credit processing and tracking. Assists with Historic BMP record database update and input into MS4 Geodatabase.

- Melissa Bragg, Program Specialist II, Stormwater Fee

Provides program management support to the Modeling and Analysis Stormwater Remediation Fee Unit carrying out assignments related to fee assessment, appeals and credit processing and tracking, and stormwater Best Management Practice (BMP) performance review.

- Bertha Berrios, GIS Specialist, Stormwater Fee

Assists the Stormwater Remediation Fee Unit with researching and tracking fee assessment, appeals and credits.

- Chris Victoria, Water Quality Compliance Specialist, Ecological Assessment and Evaluation

Assists in documenting ecological condition of County watersheds and waterways and conducts applied research to ensure the credibility of BWPR monitoring and assessment. Assists with NPDES MS4 Permit compliance and TMDL and watershed support.

- Douglas Griffith, Planner II, Ecological Assessment and Evaluation

Provides consultant oversight for stormwater monitoring, biological monitoring, and geomorphic assessment of County stream reaches including those identified in Part IV. F of this permit. Assists Program Manager with implementation of the Illicit Discharge Detection and Elimination (IDDE) Program as identified in Part IV.D.3 of this permit, and assists in the development of TMDL Restoration Plans and plan implementation.

- Bryan Perry, Program Specialist II, Ecological Assessment and Evaluation

Provides program support for surface water and biological monitoring projects and coordinates projects with ecological restoration permit requirements.

- Rachel Antonio, Program Specialist I, Ecological Assessment and Evaluation (through 4/2022)
- Vacant (4/2022 – present)

Provides technical support for surface water, stormwater, and ecological monitoring projects

- Vacant, Public Education and Outreach Specialist (8/2021 – 2/2022)
- Sally Albright (2/2022 – present)

Fulfills the public education and outreach requirements of the County's NPDES MS4 permit ensuring that continual outreach regarding the development of watershed assessments and restoration plans, and TMDL compliance, is achieved and public input is solicited and incorporated. Administers the public outreach and support to all BWPR units.

- Sally Albright, Grants Administrator (through 2/2022)
- Vacant (2/2022 – present)

Identifies and secures grant funding for watershed restoration projects and projects that further the mission of the Bureau of Watershed Protection and Restoration. Acting Public Education and Outreach Specialist between August 2021 and February 2022.

- Mike Hrubiak, Financial Services Senior Management Assistant (11/2021 – present)

Provides management, oversight and accountability for all revenue and expenditures associated with the Watershed Protection and Restoration Fund (WPRF). Ensures that the integrity of the dedicated revenue fund and structure is maintained to support compliance with the MS4 permit.

- Mike Hrubiak, Financial Services Management Assistant II (through 11/2021)
- Vacant (11/2021 – present)
- Position re-classification to Management Assistant I effective 7/1/22

Supports the Sr. Management Assistant in tracking revenues and expenditures associated with the WPRF. Processes procurements for environmental restoration work.

- Maria Ramallosa, Financial Services Management Aide

Supports the Financial Management Assistants in tracking revenues and expenditures associated with the WPRF, processing procurements for restoration work, tracking invoicing, and maintaining established reports to ensure Fund integrity.

- Richard Davis, Engineer Administrator, Stormwater Infrastructure Program (SIP)

Administers the Stormwater Infrastructure Program that is responsible for the inspection, repair and maintenance of closed storm drain and culvert systems and maintains (public) stormwater management practices.

- Ken Pensyl, Senior Engineer, SIP (through 7/2022)
- Vacant (7/2022 – present)

Administers the Stormwater Management Maintenance Program that is responsible for the inspection, repair and maintenance of DPW maintained (public) stormwater management practices.

- Ryan Rich, Construction Inspection Supervisor, SIP

Manages, inspects and maintains a subset of urban stormwater BMPs that are the responsibility of DPW. Investigates stormwater management practices complaints and provides construction inspection services for resulting projects.

- Chuck Henney, Program Specialist II, SIP (through 8/2021)
- Vacant (8/2021 – 1/2022)
- Zach Bradley (1/2022 – present)

Manages, inspects and maintains a subset of urban stormwater best management practices that are the responsibility of DPW. Investigates BMP and SWM pond complaints and provides construction inspection services for resulting projects

- Bob Murphy, Senior Engineer, SIP

Administers the Culvert & Storm Drain Section that is responsible for the inspection, repair and maintenance of publicly owned storm drain/culvert systems.

- Vacant, Engineer III, SIP (3/2021 – 8/2022)
- Abiy Geleta (8/2022 – present)

Northern District storm drainage and culverts project manager.

- Robert Savidge, Engineer III, SIP

Central/Southern District storm drainage and culverts project manager

- Rick Larrimore, Construction Inspector Supervisor - Northern District, SIP

Investigates storm drainage complaints and provides construction inspection services for drainage projects in the northern district

- Daniel Verrette, Construction Inspector Supervisor - Central & Southern Districts, SIP

Investigates storm drainage complaints and provides construction inspection services for drainage projects in the central and southern districts.

- Vacant, Construction Inspector Supervisor, SIP

Video inspection of culverts and closed storm drain systems. Responsibilities of this position were reallocated in FY22 to other SIP staff.

Department of Public Works (DPW)
Bureau of Engineering

- Jeff Cox, Engineer (GIS) Manager, Technical Engineering,

Provides managerial support and oversight for geographic information systems (GIS) data collection and geodatabase development activities associated with urban best management practices (BMPs) and closed storm drain system records.

- Ty Manning, GIS Specialist, Watershed Support, Technical Engineering

Provides Quality Control services for GIS data collection for BMPs created through the grading permit process.

- Richard Beier, GIS Specialist, Watershed Support, Technical Engineering

Performs BMP GIS data capture for newly constructed BMPs created through the grading permit process. Assists with updates to GIS layers for Closed Storm Drain system piping and structures.

- Steve Britschge, Program Manager, Technical Engineering

Provides direct oversight of the Closed Storm Drain and BMP GIS layers maintenance and publishing processes.

Department of Public Works (DPW)
Bureau of Highways (BOH)

- Alex Baquie, Deputy Director, Bureau of Highways

Oversees the Bureau responsible for all maintenance activities associated with the County's roads including Road Operations, Infrastructure Management, and Traffic Engineering.

- Blake Lightcap, Engineer Administrator, Infrastructure Management Division (IMD)

Administers the Infrastructure Management Division and oversees the capital program associated with publicly owned roadways including pavement management.

- James Small, Chief Road Operations Division, Bureau of Highways

Administers the County's Road Operation Division; maintains the Bureau's permit coverage under the MDE General Permit No. 12-SW (General Discharge Permit for Stormwater Associated with Industrial Activity); develops and implements Stormwater Pollution Prevention Plans (SWPPPs) associated with seven Road Operations district yard facilities; documents the use of pesticides, herbicides, fertilizers, and deicing materials associated with road maintenance activities; implements the County's street sweeping and inlet cleaning programs; directs the County's winter weather deicing program, conducts roadside litter clean-up activities; and provides support for volunteer watershed and stream clean-up activities.

Department of Public Works (DPW)
Bureau of Utility Operations (BUO)

- Larry Parsons, Utility Administrator, Infrastructure

Responsible for water and sewer line repairs, fire hydrant repair, and water system maintenance. Also responsible for SWPPP implementation and ensuring compliance with the MDE General Permit No 12-SW (General Discharge Permit for Stormwater Associated with Industrial Activity) for the BUO Central Utility Operations Center.

- Christian Tait, Regulatory Compliance Manager, Wastewater Operations

Responsible for SWPPP development/implementation and ensuring compliance with the MDE General Permit No. 12-SW (General Discharge Permit for Stormwater Associated with Industrial Activity) for BUO Water Reclamation Facilities. Oversees Utility Operations compliance with individual NPDES point source permits for County Water Reclamation Facilities as well as pre-treatment requirements.

Department of Public Works (DPW)
Bureau of Waste Management Services (WMS)

- Rhody Holthaus, Deputy Director

Responsible for ensuring implementation of the WMS facilities' permit coverage under the MDE General Permit No. 12-SW (General Discharge Permit for Stormwater Associated with Industrial Activity) for the County's three landfill facilities.

- Mark Morris, Environmental Monitoring Manager

Responsible for maintaining the Waste Management Services facilities' permit coverage under the MDE General Permit No. 12-SW (General Discharge Permit for Stormwater Associated with Industrial Activity), and for the development and implementation of SWPPPs associated with the County's three landfill facilities.

Department of Inspections & Permits (I&P)

- Raghavenderrao Badami, P.E., Acting Assistant Director (6/2021 – 10/2021)
- Raghavenderrao Badami, P.E., Assistant Director (10/2021 – present)

Oversees implementation of the County's Erosion and Sediment Control Program and Stormwater Management Program that are the responsibility of the Department of Inspections and Permits

- Raghavenderrao Badami, P.E. Engineer Manager, Engineering Division (through 10/2021)
- Raghavenderrao Badami, P.E. Acting Engineer Manager, Engineering Division (10/2021 – 9/2022)
- Hala Flores, P.E., Engineer Manager, Engineering Division (9/2022 – present)

Oversees the review of stormwater management on development projects and ensures that the requirement for all proposed new stormwater management plans comply with the Environmental Site Design (ESD) standards in accordance with the County Code, State Code, and the current edition of Maryland Stormwater Management Design Manual.

- John Igbinovia, P.E., Code Enforcement Administrator

Administers the County's Stormwater Management Program and the County's Erosion and Sediment Control Program to ensure compliance with State regulations. Tracks, inspects, and enforces all permits for private and public stormwater management BMPs related to new development and redevelopment projects. Oversees triennial inspection of stormwater BMPs. Tracks development projects disturbing more than one acre and reports this information to MDE as required by the Program and the NPDES MS4 Permit. Oversees staff who respond to County Environmental Compliance Hotline and provides follow-up enforcement for IDDE Program.

- Jim Johnson, Code Enforcement Administrator – Critical Area Program

Supervise the County's Code Compliance Division, including investigation of non-permitted and environmental complaints, forestry program management, and building site review processes to ensure compliance with County construction code, and federal, State and local laws. Tracks standard grading plans required when disturbance is less than 5,000 sq.ft.

- Stephen Trumpler, Stormwater Inspection Supervisor, Watershed Program (through 8/2021)
- John Igbinovia, P.E. Acting Stormwater Inspection Supervisor (8/2021-8/2022)
- Bradlee Burnham, Stormwater Inspection Supervisor (8/2022 – present)

Manages stormwater inspection staff responsible for inspecting private stormwater BMPs, construction inspection of water quality restoration projects (County and private), and supervises illicit discharge enforcement.

- Stormwater Inspection Staff

Seven (7) inspector positions are dedicated to the stormwater management program and there are 2 vacancies as of the end of FY22. The FY22 stormwater inspection staff is listed below.

Andrew Fertig	Mary Ford	Andrew Hein	Michael McNeill	Joseph Wells
Zach Bradley (through 01/2022) Vacant (01/2022 – present)		Dennis Gills (through 12/2021) Vacant (12/2021-present)		

- Stormwater Strike Team

Two (2) inspectors and one (1) senior engineer (currently vacant) comprise the stormwater strike team. Work primarily is to review, research, and investigate drainage complaints (new development and legacy/historical) and associated issues, and to identify sources of pollution. This team will work closely with the inspection staff, the I&P Engineer Manager, and the I&P Engineering Division staff for field inspection, review of downstream analysis, addressing stability and capacity issues of conveyances downstream of development projects (as a part of plan review, approval, permitting), review of outfalls including channels, streams, and pipes. The team will be a part of preconstruction meetings and inspections of offsite downstream conveyances, restoration, and rehabilitation.

Natalie Norberg (Inspector)	Jean Janvier (Inspector)	Vacant (Sr. Engineer)

Anne Arundel Soil Conservation District (AASCD)

- John Czajkowski, District Manager

Oversees development plan review for erosion and sediment control compliance.

Anne Arundel Department of Health
Bureau of Environmental Health

- Don Curtian, Deputy Director

Oversees the Housing and Food Protection Services and Sanitary Engineering divisions of the Environmental Health Bureau, including Environmental Sanitarian response to hotspots associated with food service facilities that are identified through the IDDE program. Oversees programs associated with administering the Bay Restoration Fund within the County, and recreational water quality monitoring at designated bathing beaches.

- Sharon Pawlowski, R.S., Program Manager

Provides support and response for IDDE program compliance with respect to food service facilities within the County, ensuring good housekeeping for disposal of waste cooking oil/grease and trash dumpsters.

- Kellen Hamill, Housing Protection Services Supervisor

Provides support and response for IDDE program compliance with respect to violations of the Property Maintenance Code including reports of rubbish, garbage, or other sanitation issues associated with residential areas within the County.

B. Legal Authority

Anne Arundel County shall maintain adequate legal authority to meet this permit's requirements in accordance with NPDES regulations at 40 CFR §122.26 throughout the term of this permit. In the event that any provision of its legal authority is found to be invalid, the County shall notify MDE in writing within 30 days and make the necessary changes to maintain adequate legal authority within one year of notification. All changes shall be included in the County's annual report.

Anne Arundel County maintains the authority to comply with the terms of this permit. As documented in prior MS4 Annual Reports, this includes implementation of the 2000 Maryland Stormwater Design Manual (MDE 2009) as well as the 2007 Stormwater Management Act. Over the past decade, and as reported in previous MS4 Annual Reports, the County Code was revised to incorporate these stormwater management requirements and subsequently renumbered. The entire County Code can be found online through the County website at www.aacounty.org/our-county/county-code/, under the link for the County Code.

During FY22 there were no updates to the County Code that affected legal authority to meet Permit requirements. In FY21, updates to County Code pertained to County Bill 67-20 and resulted in amendments to Article 16, Title 4. The provisions of County Bill 67-20, pertaining to stormwater management practices owned or maintained by HOAs, became effective on January 1, 2021 (FY21). A copy of this legislation was provided in Appendix B of the FY21 MS4 Annual Report.

The County Stormwater Management Practices and Procedures Manual (Manual) was revised May 1, 2017. The revised Manual became effective October 30, 2017, and a copy of MDE's approval letter was submitted with the FY18 MS4 Annual Report. There were no updates to the Manual in FY22.

As documented in the FY20 MS4 Annual Report, MDE conducted the triennial stormwater management program review as a Statewide review of jurisdictions' programs. This review was completed via surveys and interactive trainings. County participation in these activities occurred in

both FY20 and FY21. The next triennial stormwater management program review has not been scheduled.

In fall 2020, MDE reviewed the County's delegated erosion and sediment control enforcement authority. Based on the review findings and subsequent communications, MDE granted continued delegation of authority through June 30, 2023. A copy of that delegation letter, dated April 29, 2021, is found in **Appendix B**.

As reported in previous MS4 Annual Reports, Anne Arundel County established a Watershed Protection and Restoration Program (Program) in 2013, as mandated by Maryland Environmental Code Ann §4-202.1. Concurrent with the beginning of FY21, the Program became the stand-alone Bureau of Watershed Protection and Restoration (BWPR) within the Department of Public Works. The BWPR continues to maintain and administer the Watershed Protection and Restoration Special Revenue Fund established under Article 13 Title 7 §4-11-119 of the Anne Arundel County Code.

C. Source Identification

Sources of pollutants in stormwater runoff jurisdiction-wide shall be identified by the County and linked to specific water quality impacts on a watershed basis. A georeferenced database shall be submitted annually in accordance with Maryland Department of the Environment, National Pollutant Discharge Elimination System, Municipal Separate Storm Sewer System, Geodatabase Design and Users Guide (i.e., MS4 Geodatabase) or as noted below that includes information on the following:

1. Storm drain system

All infrastructure, major outfalls, inlets, and associated drainage areas delineated (submitted as a supplemental geodatabase):

In 2008, Anne Arundel County completed a Countywide inventory of storm drain inlets, manholes, outfalls, culverts, and pipes for all County watersheds. This inventory is continuously updated and the information is incorporated into County storm drain maps and the County GIS.

As of the end of June 2022 there were 39,599 storm drain inlets, 1,024.1 miles of storm drain pipes, and 6,552 storm drain outfalls in the County's infrastructure inventory. In FY22, a significant number of outfall points were discovered to be non-existent or misclassified features. These corrections are reflected in this year's infrastructure tallies.

The major storm drain outfalls, a subset of all storm drain outfalls (see definition below), were then identified in the GIS by querying for storm drain structures with no hydraulic connection to any other downstream storm drain structure and based on outfall diameter. Next, the upstream contributing areas of these major storm drain outfalls were delineated using GIS. According to 40 CFR 122.26, a

major municipal separate storm drain outfall is defined as a single outfall pipe with an internal diameter of 36 inches or greater or its equivalent (discharge from other than circular pipe which is associated with a 50-acre or greater drainage area); or a single outfall pipe with an internal diameter of 12 inches or greater or its equivalent (discharge from other than a circular pipe associated with a 2-acre or greater drainage area) that discharges stormwater from industrially zoned lands. Of the 6,552 storm drain outfalls in the FY22 County inventory, 2,484 are categorized as major outfalls.

Updates to the MS4 Geodatabase *Outfall* feature class in FY22 include the removal of 10 previously submitted major outfall records (**Table 1**) and the addition of 76 new major outfalls. For reporting purposes, an additional 22 minor outfalls are included with the major outfalls in the MS4 Geodatabase Outfall feature class because these minor outfalls were screened as part of the Illicit Discharge Detection and Elimination (IDDE) Program (Part IV.D.3).

The major storm drain outfalls and corresponding drainage areas are included in the accompanying MS4 Geodatabase (feature classes *Outfall* and *OutfallDrainageArea*, **Appendix A**). An additional geodatabase, also included in **Appendix A** of this report, contains the County's complete storm drain system, including major and minor outfalls, inlets, pipes, and other storm drain infrastructure.

Table 1. Changes to existing outfall database records in FY22.

MDE_OUTFALL_ID	LOCAL_OUTFALL_ID	COMMENT
AA21OUT110156	O10O004	Local Outfall ID was updated in the County database and found to be a duplicate. Outfall was therefore deleted.
AA21OUT000025	P07O002	Local Outfall ID was updated in the County database and found to be a duplicate. Outfall was therefore deleted.
AA21OUT000026	P07O001	Local Outfall ID was updated in the County database and found to be a duplicate. Outfall was therefore deleted.
AA16OUT000151	V15O003	Local outfall was removed in the County database and therefore deleted.
AA16OUT000954	Q20O011	Local outfall was removed in the County database and therefore deleted.
AA16OUT001318	R17O004	Local outfall was removed in the County database and therefore deleted.
AA16OUT001260	R19O015	Local outfall was removed in the County database and therefore deleted.
AA21OUT000012	H09O037	Local outfall was removed in the County database and therefore deleted.
AA21OUT000015	H05O010	Local outfall was removed in the County database and therefore deleted.
AA21OUT110115	Not available	Local Outfall ID was updated in the County database and found to be a duplicate. Outfall was therefore deleted

The County will continue to update the storm drain inventory and incorporate the information in the County storm drain maps and the County GIS.

2. Industrial and commercial sources

Industrial and commercial land uses and sites that the County has determined have the potential to contribute significant pollutants (to be submitted as a supplemental geodatabase).

The NPDES MS4 Permit requires that sources of pollutants in stormwater runoff be identified and linked to specific water quality impacts on a watershed basis. Compliance with this permit requirement includes the annual submittal, in GIS format with associated tables, of the "…industrial and commercial land uses and sites that the County has determined have the potential to contribute significant pollutants." A methodology for determining these land uses and the associated outfalls is described below. These outfalls and land use data are included in the Industrial & Commercial Sources Geodatabase in **Appendix A**. The outfalls are a subset of the major outfalls found in the Outfall feature class of the MS4 Geodatabase of this report.

Major storm drain outfalls are defined by the Clean Water Act (40 CFR 122.26) as follows:

> *A municipal separate storm sewer outfall that discharges from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than circular pipe which is associated with a drainage area of more than 50 acres); or for municipal separate storm sewers that receive stormwater from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a single pipe with an inside diameter of 12 inches or more or from its equivalent (discharge from other than a circular pipe associated with a drainage area of two acres or more).*

To meet the Part IV.C.2 requirement of identifying commercial and industrial land uses and sites having the potential to contribute pollutants to the storm drain system, and to correlate this requirement with that found in Part IV.D.3.c, the County developed a GIS coverage and geodatabase predicated on intersecting the following GIS layers and data:

- Industrial and commercial polygons from Anne Arundel County 2020 Land Cover; and
- County closed storm drain system major outfall drainage areas.

Specifically, if a drainage area to an outfall contained commercial and/or industrial land uses, that outfall and its drainage area were included in the Industrial & Commercial Sources Geodatabase in **Appendix A**.

Forty-three (43) of the 76 new outfalls added to the County's MS4 Geodatabase Outfalls feature class in FY22 were identified for inclusion in the Industrial & Commercial Sources Geodatabase. The final updated data set, with a total of 1,354 commercial and industrial outfalls, is included in the Industrial & Commercial Sources Geodatabase in **Appendix A**.

3. Urban best management practices

Stormwater management facility data for new and redevelopment, including outfall locations and delineated drainage areas

Information on the County's stormwater management facilities (e.g., urban BMPs, alternative BMPs, restoration BMPs) is incorporated into the MS4 Geodatabase (**Appendix A**). With the advent of the November 2021 MS4 Geodatabase schema, the data associated with the BMPPOI feature class, BMP table, and RestBMP feature class are condensed into a single feature class. The County is working to align its BMP data with the new MS4 Geodatabase format while concurrently transitioning BMPs and their associated inspection records into a single central repository. In this year's MS4 Geodatabase the County will maintain these data as three separate datasets. The County anticipates full implementation of MDE's 2021 MS4 database schema for FY23.

In FY22, the County is submitting 15,271 BMP POIs (*BMPPOI* feature class); as noted in the comments of this feature class, 142 of these POIs solely represent restoration BMPs and therefore have no associated record in the BMP table. The *BMP* table includes records for 26,969 BMPs, 195 BMPs with a status of "Removed." There are 14,981 drainage areas delineated for these BMPs (*BMPDrainageArea* feature class), with multiple BMPs represented by a common drainage area to a single POI.

The County continued to collect BMP data in FY22 from newly completed grading permits. These data are entered from as-built plans into a database structure and geospatial framework developed to manage the County's BMP inventory. Quality assurance and quality control procedures (QA/QC) are performed, providing review and verification of BMP information, including but not limited to: BMP type, location, drainage area, water quality treatment, built date, and any modifications to a BMP resulting from subsequent land development or other changes in site condition.

For older BMPs, there are mandatory data fields that will never be populated because either the data are missing from the plan drawings or the design of the BMP pre-dated the type of information required. For example, sometimes, certain practices are identified on a set of as-built drawings as contributing to the stormwater management required for a site, but these practices no longer fit into a current suite of BMP practices; or BMP practices are only vaguely indicated on the plans and lack clear drainage areas. The County understands that certain data are mandatory for crediting purposes, but the County is also required to perform triennial inspections and report on all BMPs regardless of their contribution to TMDL or managed impervious surface crediting. In our efforts to report on all BMPs and to account for these data formatting issues, this year the County continued its practice of incorporating error codes into the MS4 Geodatabase and the reader is referred to the ReadMe document associated with the MS4 Geodatabase (**Appendix A)** for explanations of null and/or blank values and for explanation of error codes. For example, the "99999" error code represents a missing descriptive value (e.g., location, permit number). Dates coded as "1/1/1899" are used for missing or

inapplicable values. For example, in the *BMP* table, projects that are proposed but not complete do not have the mandatory built-date and are coded "1/1/1899".

4. Impervious surfaces

Public and private land cover delineated, controlled and uncontrolled impervious areas based on, at a minimum, Maryland's hierarchical eight-digit sub-basins

The impervious surface dataset currently in use by the County was derived from imagery captured in early 2020 for the State of Maryland's High-Resolution Aerial Ortho-photography. This dataset was improved and refined after a thorough multi-year comparison between 2014, 2017 and 2020 data captures. For a full accounting of the multi-year analysis, please see the County's FY21 MS4 Annual Report.

The County began drafting a scope of work in FY22 for a change detection update to its impervious surface dataset based on the State's scheduled imagery capture in 2023. The County will revise and update its controlled and uncontrolled impervious areas when this new dataset becomes available. In addition, the County plans to expand its multi-year comparison to include the 2023 impervious dataset to improve its accounting for growth over time and better inform the planning required to maintain progress towards achieving the County's MS4 and TMDL goals and improve water quality.

a. Controlled vs. Uncontrolled Impervious Surface Analysis

i. Jurisdictional and Non-Jurisdictional Land within the County

For NPDES MS4 reporting, the County is responsible for accounting for all impervious surface and BMP information pertaining to County-owned land and private lands directly under the jurisdiction of the Anne Arundel County government. Land areas that are outside the stormwater authority of Anne Arundel County include the City of Annapolis, Baltimore Washington International Thurgood Marshall Airport (BWI), Fort George G. Meade, the Patuxent Research Refuge, State Highway and Federal Highway roads, and State and Federal facilities. As the County does not maintain data regarding the stormwater management associated with federal, State, or municipal land not under its jurisdiction, these lands were excluded from the analysis of controlled versus uncontrolled impervious areas.

ii. Controlled Impervious Areas

For the purposes of this analysis, the County considered a controlled impervious area to be any impervious surface within the drainage area of an existing structural or ESD BMP. This includes BMPs that were constructed for the purposes of stormwater management related to new development or re-development, or for restoration. Alternative BMPs, such as those that provide equivalent impervious management credit (e.g., inlet cleaning, stream restoration, shoreline stabilization, etc.), were not included.

The County did not exclude structural or ESD BMPs from this analysis based on practice type or the level of stormwater management provided by a BMP when designating an impervious area as

controlled. Guidance from MDE does not allow MS4 impervious surface baseline or restoration credit for practices such as dry ponds and does not consider less than 1-inch of water quality treatment as full management of an impervious surface. However, in other contexts, such as in the Phase 6 Chesapeake Bay Model, dry ponds are considered to provide some water quality treatment. The County has already made a full accounting according to MDE guidance of the baseline water quality management provided for all impervious surfaces (see Appendix H of the FY18 MS4 Annual Report) and provides updates in its annual reports regarding impervious restoration credit (see Part IV.E.1), so the County opted not to duplicate, in this report section, analyses already presented elsewhere.

Table 2 provides the results of the impervious area analysis using the revised 2020 impervious dataset, showing that 10,634 impervious acres (30%), out of a total of 35,259 acres under County jurisdiction, are subject to some degree of stormwater control by a BMP. The percentage of controlled versus uncontrolled impervious surface is approximately the same for both County and private lands, with 27% vs. 73% and 31% vs. 69%, respectively.

Table 2. Controlled vs. uncontrolled impervious acreage for Anne Arundel County jurisdictional land based on the 2020 impervious surface dataset.

MDE 8-Digit Watershed Name	MDE 8-Digit Watershed Code	Controlled Impervious Acres			Uncontrolled Impervious Acres			All Impervious Acres
		County	Private	County & Private	County	Private	County & Private	County & Private
Baltimore Harbor	02130903	446	1,925	2,371	1,654	3,802	5,456	7,827
Bodkin Creek	02130902	70	121	191	180	415	595	786
Little Patuxent River	02131105	325	1,186	1,511	530	1,502	2,032	3,543
Lower North Branch Patapsco River	02130906	228	1,253	1,481	421	1,462	1,883	3,364
Lower Patuxent River	02131101	0	3	3	24	105	129	132
Magothy River	02131001	450	797	1,247	983	2,332	3,315	4,562
Middle Patuxent River	02131102	14	55	69	183	820	1,003	1,072
Severn River	02131002	583	1,679	2,262	1,131	3,171	4,302	6,564
South River	02131003	288	837	1,125	829	2,228	3,057	4,182
Upper Patuxent River	02131104	52	181	233	237	885	1,122	1,355
West Chesapeake Bay	02131005	19	44	63	192	623	815	878
West River	02131004	13	65	78	197	719	916	994
Total		2,488	8,146	10,634	6,561	18,064	24,625	35,259

5. Monitoring locations

Locations established by the County for chemical, biological, and physical monitoring of watershed restoration efforts and the 2000 Maryland Stormwater Design Manual, unless participating in the pooled monitoring program, as described in PART IV.G.

For the duration of FY22, Anne Arundel County participated in the Pooled Monitoring Program for both the BMP Effectiveness and Watershed Assessment monitoring requirements of Part IV.G. As such, there are no monitoring locations reported for FY22. Additional information pertaining to this participation is found in PART IV.G.

6. Water quality improvement projects

Restoration projects implemented in accordance with PART IV.E.3 including stormwater BMPs, programmatic initiatives, and alternative control practices in accordance with the Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated Guidance for National Pollutant Discharge Elimination System Stormwater Permits (2021), (hereafter 2021 Accounting Guidance), including projects proposed, under construction, and completed with associated drainage areas delineated.

The NPDES MS4 Permit requires the reporting of watershed restoration projects that are under design, under construction, and completed during the reporting year. The County updates the inventory of watershed restoration projects as new projects progress through each design phase or are completed. These projects are documented in the MS4 Geodatabase (**Appendix A**) across four feature classes: *BMP*[1]*, AltBMPLine*, *AltBMPPoint*, and *AltBMPPoly.*

This report section summarizes the inventory of the watershed restoration projects, while Part IV.E. (Stormwater Restoration) and Part IV.F (Countywide TMDL Stormwater Implementation Plan) detail the corresponding water quality improvements. The fifth generation MS4 permit that was issued on November 5, 2021 requires 2,998 impervious acres to be treated by November 4, 2026. **Table 3** provides a summary of the FY22 project inventory, including 262 new restoration projects completed and 95 projects currently under construction or design.

[1] The BMP feature class was split between the *BMP* and *RestBMP* feature classes within MDE's 2021 MS4 database schema. However, in FY22 the County is submitting all upland restoration and new development BMPs in a hybrid schema to allow time for the transition of these BMPs and their associated inspection records into one central repository. The County anticipates full implementation of MDE's 2021 MS4 database schema for FY23.

Table 3. FY22 Restoration BMP project inventory summary.

	Projects Completed in FY22	Projects Completed – Cumulative through FY22[1]	Projects Under Design or Under Construction in FY22[2]
Restoration BMPs			
- ESD	0	9	3
- Structural	6	22	31
Alternative Restoration BMPs			
- street sweeping *(annual practice)* [3]	256 lane miles	256 lane miles	-
- impervious surface elimination	0	1	1
reforestation	0	0	1
- catch basin and storm drain cleaning *(annual practice)* [3]	140 tons/yr.	175 tons/yr.	-
- stream restoration	2 (2,179 ft.)	15 (19,992 ft.)	46 (102,968 ft.)
- outfall stabilization	2 (1,463 ft.)	7 (4,335 ft.)	9 (5,375 ft.)
- shoreline management	5 (6,544 ft.)	15 (13,872 ft.)	4 (3,340 ft.)
- septic pumping *(annual practice)* [3]	20,747 units/yr.	9,566 units/yr.	-
- septic denitrification[4]	224	415	0
- septic connections to WWTP[4]	23	49	0
Total number of projects (excl. annual practices)	262	533	95

[1]The cumulative totals include only those projects that are counted toward the 5th Generation permit.
[2]Three ESD and 18 structural BMPs in the *BMP* feature class, as well as five stream restoration projects in the *AltBMPLine* feature class, with an implementation status of "Under Design" are on hold or cancelled (see comments in MS4 Geodatabase) and are not included in these tallies.
[3]For annual practices, "Projects Completed – Cumulative through FY22" is the average annual quantity of materials collected (street sweeping and catch basin cleaning) or number of units serviced (septic pumping), during the period when the 4th Generation permit was in force. Averages for street sweeping and septic pumping are based on FY16-FY18 implementation, and the average for catch basin cleaning is based on FY17-FY18 implementation.
[4] Septic denitrification systems and septic connections to WWTP are not included in the County's BMP inventory while under design and construction due to the unique funding mechanisms and planning processes these BMPs require. While the County expects additional BMPs of these two types to be completed in FY23, neither are included in the BMP inventory until project completion, when exact locations and other information required for the MS4 Annual Geodatabase become available.

All new watershed restoration projects that have progressed to the schematic (30%) design phase as of the end of FY22 have been added to the appropriate feature classes in the MS4 Geodatabase. In FY22, the County identified two previously unreported septic connections to wastewater treatment plants, one of which was completed under the fourth generation MS4 permit and one was completed under the fifth generation MS4 permit. In FY22, one existing septic denitrification unit was replaced. No additional credit was claimed by the County, however, the built date and permit number for this record were updated.

D. Management Programs

The following management programs shall be implemented jurisdiction-wide by the County. These management programs are designed to control stormwater discharges and reduce associated pollutant loadings to the maximum extent practicable (MEP) and shall be maintained for the term of this permit. Additionally, these programs shall be integrated with other permit requirements to promote a comprehensive adaptive approach toward solving stormwater discharge water quality problems. Annual reports for the County's management programs shall be in accordance with PART V. A of this permit and the MS4 Geodatabase.

1. Stormwater Management

An acceptable stormwater management program shall be maintained in accordance with the Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland. Activities to be undertaken by the County shall include, but not be limited to:

a. Implement the 2000 Maryland Stormwater Design Manual

Implementing the stormwater management design policies, principles, methods, and practices found in the latest version of the 2000 Maryland Stormwater Design Manual. This includes:

i. Complying with the Stormwater Management Act of 2007 (Act) by implementing Environmental Site Design (ESD) to the MEP for all new and redevelopment projects.

ii. Tracking the progress toward satisfying the requirements of the Act and identifying and reporting annually the problems and modifications necessary to implement ESD to the MEP; and

iii. Reporting annually the modifications that have been or need to be made to all ordinances, regulations, and new development plan review and approval processes to comply with the requirements of the Act.

The County continues to maintain an acceptable stormwater management program in accordance with the NPDES MS4 Permit and Annotated Code of Maryland. As noted in prior Annual Reports, the 2000 Maryland Stormwater Design Manual was fully implemented by the County. This condition was then superseded by the Maryland Stormwater Management Act of 2007. During FY22, the Department of Inspections & Permits (I&P) continued the requirement that all proposed new stormwater management plans comply with the Environmental Site Design (ESD) standards in accordance with the County Code, State Code, and the current edition of Maryland Stormwater Management Design Manual.

A comprehensive review and update to the County's Stormwater Management Practices & Procedures Manual was completed in FY18 and approval was received from MDE on October 30, 2017. The approval letter was submitted with the FY18 MS4 Annual Report. There were no formal updates to the Practices & Procedures Manual in FY22. Stormwater facility design and maintenance guidance was provided to the development community, citizens, and other stakeholders in the form of "Blue

Notices" posted to the I&P webpage here: www.aacounty.org/departments/inspections-and-permits/blue-notices/.

In fall 2020 (FY21), MDE implemented a Statewide stormwater program triennial review by gathering information via survey and conducting interactive online training sessions. The online sessions were designed to refresh the local jurisdictions' understanding of stormwater program legal and regulatory authorities and ensure that program requirements continue to be interpreted correctly and consistently when reviewing stormwater management design plans and when interpreting stormwater management policy. The County successfully participated in each of the online interactive workshops held in the fall of 2020 (FY21). Information or updates pertaining to the next stormwater program triennial review have not yet been provided to the County.

As previously reported, from 2018 through August 2021 the County's Stormwater Workgroup (Workgroup), a group comprised of developers, engineers, homeowners' association (HOA) and Non-governmental Organization (NGO) representatives, realtors, County agencies, and representatives of the building trades, routinely communicated with program approval authorities to discuss issues of concern, identify recommendations, and develop an action plan for each of those recommendations. The Workgroup's cooperative efforts resulted in actions related to stormwater management associated with development and with long-term maintenance of BMPs. These actions included creation of a one-stop BMP public portal and the addition of stormwater BMPs (private and publicly owned/maintained) to the public facing County mapping applications. Additionally, legislation (Bill 67-20) addressing responsibility requirements for stormwater practices to be owned/maintained by HOAs was approved by County Council and became effective on January 1, 2021 (FY21). This legislation amended Article 16 Title 4 to require the grading permit applicant to post warranty and security to correct any BMP deficiencies that occur within a 2-year warranty period. This bill was previously presented in Appendix B of the FY21 MS4 Annual Report.

During FY22 and after implementation of Bill 67-20, the County continued work to address BMP hand-off between the developer and the HOA. Effective December 1, 2021, the County requires "hand-off" meetings between the developer, the HOA, and County staff. These meetings occur only after the stormwater BMP as-built drawings are received and approved by the County. The purpose of these Hand-Off meetings is to ensure HOAs have the necessary information about the stormwater management practices they own and are responsible for maintaining. The Blue Notice (IP-21-17) for stormwater BMP Hand-Off meetings, the Hand-Off memo and the bulletin for HOAs are found in **Appendix B** of this report and online here: www.aacounty.org/departments/inspections-and-permits/blue-notices/21-17.pdf

b. Maintain stormwater management program information

Maintaining programmatic and implementation information related to the stormwater management program including, but not limited to:

i. Number of Concept, Site Development, and Final plans received and number of those approved. Plans re-submitted as a result of revision or in response to comments should not be considered as a separate project;
ii. Number of redevelopment projects received and number of those approved;
iii. Number of stormwater exemptions issued; and
iv. Number and type of waivers received and issued, including those for quantity control, quality control, or both. Multiple requests for waivers may be received for a single project and each should be counted separately, whether part of the same project or plan.

The County continues collection of programmatic and implementation information related to stormwater management associated with development activities. During FY22, County records indicate the following activities (**Table 4**).

Table 4. Concept, Site Development, Final Development, and Redevelopment Plans received in FY22.

Type	Number of Projects Received
Concept Plan(a)	105
Site Development Plan(a)	121
Final Development Plan(b)	81
Final Redevelopment Plan(c)	0
Stormwater Exemptions	0
Waiver Requests Received	0
Waiver Requests Approved	0

Notes:
Concept Plan and Site Development Plan based on submittal date for each unique project number
Final Plan based on unique grading permit number
Redevelopment data only available for Final Redevelopment Plan. Dates queried July 1, 2021 through February 22, 2022. New permit module system in place after 2/22/22 is not setup to track redevelopment projects.

Of note, the County implemented a new permit tracking system (Accela) in February 2022. That system does not provide a means to track the number of redevelopment projects received and reviewed and, thus, the redevelopment plan data presented in **Table 4** and the MS4 Geodatabase (**Appendix A**) represents a partial year (7/1/21 through 2/22/22). The deficiency was identified to the parties responsible for making programming corrections and steps are being taken to address this for future reporting.

c. Maintain construction inspection information

Maintaining construction inspection information according to COMAR 26.17.02 for all ESD treatment practices, structural stormwater management facilities, and stable stormwater conveyance and capacity to receiving waters, including the number of inspections conducted and violation notices issued by the County.

Stormwater construction inspections are conducted by the County's erosion control inspectors in conjunction with the required erosion and sediment control plan inspections. All stormwater construction violations must be resolved and abated prior to the completion of the associated grading permit. For the reporting period, the following inspections were performed:

- 1299 Stormwater Construction Inspections
- 193 Stormwater Correction Notices

d. Preventative maintenance inspections

Conducting preventative maintenance inspections, according to COMAR 26.17.02, of all ESD treatment systems, structural stormwater management facilities, and stable stormwater conveyance and capacity to receiving waters, at least on a triennial basis. Documentation identifying the ESD systems and structural stormwater management facilities inspected, the number of maintenance inspections, follow-up inspections, the enforcement actions used to ensure compliance, the maintenance inspection schedules, and any other relevant information shall be submitted in the County's annual reports.

In response to MDEs FY21 Annual Report review comments, that the County consider planning an annual stormwater management facility inspections rate, the County continues to work toward that goal. Preventative maintenance inspection responsibility is split between DPW and I&P staff, with I&P staff responsible for the vast majority (approximately 95%) of facility inspections. Within DPW, achieving the required triennial inspections involves identifying those facilities due for inspections and implementing a minimum inspection rate per month to ensure all required inspections are achieved. In FY22, this protocol allocated a minimum of 30 inspections per month to DPW staff. I&P staff utilize a similar protocol for identifying facilities to be inspected in any given year with a focus on those facilities on cycle for their triennial inspection. While the current protocols are effective for planning purposes, in FY21 the efficiency with which I&P staff are able to achieve the inspection rates was affected by COVID-19 and by staff turnover.

In FY22, I&P staff were able to increase the number of inspections conducted and in FY23 they are on track to exceed the FY22 rate. During FY23, I&P staff continue to work toward an annual inspection rate (e.g., 400 facilities per month) to ensure all BMPs remain in compliance with State regulations. In FY23, the County will continue implementing and refining these inspection rate protocols while enhancing staff abilities to more efficiently inspect stormwater management facilities through the development/implementation of an inspection application for field tablets.

The State and County Stormwater Management Codes require preventive maintenance inspections once during the first year of operation and every three years thereafter for all stormwater management facilities. For the reporting period, the following maintenance inspections were performed:

- 6,618 Three-Year Maintenance Inspections;
- 286 Three-Year Maintenance Correction Notices; and
- 12 Three-Year Maintenance Violation Notices.

There were 6,618 three-year inspections of stormwater BMPs conducted in FY22 and included in the *BMPInspections* table of the MS4 Geodatabase (**Appendix A**). In addition to these inspections, the County's stormwater management inspection staff performed numerous site visits in response to property owners requesting guidance, to obtain permission for site access in some situations, and to follow up on required maintenance activities.

The inspection staff also review previously issued and current correction notices to confirm and ensure compliance. When additional action was required to bring a facility into compliance, additional Phase I enforcement notices were issued as appropriate. In prior reports the County documented the inspection process, including issuance of correction notices and Phase 1, 2, and 3 violation notices. During the FY22 reporting period, all correction notices were successfully enforced at the Phase 1 and Phase 2 levels; there were no Phase 3 violation notices required. Additional information relating to inspection and enforcement activities in FY22 is provided in the *SWM* table of the MS4 Geodatabase (**Appendix A**).

Alternative BMP inspections are now compiled into a single table in the MS4 Geodatabase (*AltBMPInspections*). This table includes 1,677 records for FY22. Among these are records for programmatic inspections associated with annual BMP practices (vacuum street sweeping, inlet and catch basin cleaning, and septic pumpouts), imagery reviews for shoreline stabilizations, site inspections for stream restorations, and septic system upgrade (SEPD) inspections which are conducted via a service provider visit from MDE's Best Available Technology Management Network (BATMN). SEPD inspection results are housed in MDEs BATMN database. It should be noted that 413 of the SEPD inspection records are annotated with an error code in the inspection date field to indicate SEPD BMPs that were due for inspection this year, but for which the MDE inspection record is incomplete and should be revisited by MDE.

Lastly, restoration stormwater BMPs are also subject to maintenance inspection to ensure their efficacy within the landscape. The FY22 *RestBMPInspections* table contains 33 restoration BMP inspection records.

2. Erosion and Sediment Control

An acceptable erosion and sediment control program shall be maintained by the County and implemented in accordance with the Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland. Activities to be undertaken by the County shall include, but not be limited to:

a. Delegation of Authority

Implementing program improvements identified in any MDE evaluation of the County's erosion and sediment control enforcement authority;

The County continues to maintain MDE delegation of erosion and sediment control enforcement authority. Correspondence pertaining to this continued delegation of authority, through June 30, 2023, was provided in the FY21 Annual Report (Appendix B).

During the FY21 delegation of authority annual review, major modifications of plans without SCD approval, and locations of stormwater management facilities not effectively protected during construction, were identified by MDE. On January 14, 2021, MDE staff met with the County and SCD and the County resolved to take necessary steps including working with SCD to improve its program. Please see the February 17, 2021 Anne Arundel SCD Board of Supervisors Resolution 2021-1 in **Appendix B**, which is a policy to address how SCD and the County will handle changes to an approved plan once construction has commenced. This policy also outlines field changes that require immediate attention but fall outside of the changes that trigger a redlined plan prepared by a qualified professional for SCD review and approval. Direction has been provided to the inspectors and development community to ensure that stormwater management facilities are adequately protected during construction.

In early FY23, the County applied for continued delegation of authority and an in-person field review is scheduled for late October. Additional details regarding this field review and continued delegation will be provided in the FY23 Annual Report.

Communication to effect program improvements include issuing Blue Notices to the development community and stakeholders. Blue notices provide information and guidance on both Stormwater Management and Erosion and Sediment Control topics, and can be found here: www.aacounty.org/departments/inspections-and-permits/blue-notices/

b. Responsible Personnel Certification

Ensuring that construction site operators have received training regarding erosion and sediment control compliance and hold a valid Responsible Personnel Certification as required by MDE; and

Anne Arundel County continues to require a valid Responsible Personnel Certification be held by construction site operators and includes a place on the approved construction plans for the

cardholders' name and certification number. Moreover, the County checks for a designated cardholder at the project pre-construction meeting.

c. Quarterly grading information

Reporting quarterly, information regarding earth disturbances exceeding one acre or more. Quarters shall be based on calendar year and submittals shall be made within 30 days following each quarter. The information submitted shall cover permitting activity for the preceding three months.

Based on previous guidance from MDE, submission of quarterly reports is not required provided that the Construction General Permit Activity Database continues to be submitted with the annual report. Information regarding grading permits from the County's Construction General Permit Activity Database is provided in the *QuarterlyGradingPermits* feature class and *QuarterlyGradingPmtInfo* table of the MS4 Geodatabase submittal (**Appendix A**).

3. Illicit Discharge Detection and Elimination

The County shall implement an inspection and enforcement program to ensure that all discharges into, through, or from the MS4 that are not composed entirely of stormwater are either issued a permit by MDE or eliminated. Activities shall include, but not be limited to:

a. Outfall screening prioritization

Reviewing all County outfalls to prioritize field screening efforts in areas with the greatest potential for polluted discharges. The County must submit the process developed to prioritize outfall screenings to MDE for approval with the first year annual report.

b. Outfall screening plan and schedule

Submitting a plan and schedule for field screening the prioritized outfalls for MDE's approval with the first year annual report. The plan and schedule shall include the annual screening of at least 150 outfalls. Each outfall having a dry weather discharge shall be sampled at the time of screening using a chemical test kit. An alternative program may be submitted by the County for MDE's approval that methodically identifies, investigates, and eliminates illegal discharges into, through, or from the County's MS4;

Anne Arundel County has developed, and continues to maintain, an extensive program designed to detect and eliminate illicit discharges into the municipal storm drain system and upland pollutant sources resulting from dumping, poor housekeeping, and other non-permitted activities. The program includes the dry-weather inspection of a minimum of 150 storm drain outfalls annually. This outfall inspection records the presence of dry-weather flow, the structural integrity of the outfall, and relevant maintenance issues.

In compliance with permit requirements, **Appendix C** includes the County IDDE Outfall Screening Prioritization Process for FY22 through FY26. This document includes both the prioritization process

description as well as the field screening schedule for FY22 through FY26. The County will address MDE comments or required changes to this draft and submit the final prioritization process document with the FY23 MS4 Annual Report.

Each year, the Anne Arundel County NPDES MS4 Program Manager, or a delegated staff member, coordinates with the support consultant to review priority assessment areas in the County that should be investigated for possible illicit discharges to the stormwater system. GIS desktop analysis is used to identify target outfalls primarily draining commercial, industrial, and residential land uses. As deemed appropriate, the County also revisits outfalls that had exhibited illicit discharge during previous assessments to confirm illicit discharge elimination. By assessing a different area of the County each year and incorporating the option of returning to sites that exhibited possible illicit discharge conditions in previous survey periods, the County achieves an area-wide review of likely sources of dry-weather discharge throughout the permit period.

The area targeted for the FY22 field effort was focused within a geographic area defined by Route 100 to the south, I-97 to the east, and the County boundary to the west and north. In total, field crews successfully inspected 150 major and minor outfalls draining commercial, industrial, and residential land uses, including outfalls located on four County-owned properties (police and fire facilities) within the target area. Also included were outfalls in the vicinity of Marley Station Mall in Glen Burnie (outside of the target area), which were screened as part of a special investigation into consistently high bacteria counts observed during bacteria Trend Monitoring in the Marley Creek watershed. Details regarding the results of this special investigation can be found in the Anne Arundel County Illicit Discharge Detection and Elimination Program Report: July 2021 – June 2022 (Fiscal Year 2022) (**Appendix C**).

Anne Arundel County's GIS coverage of storm drains and closed storm drain utility grids provided the base data for maps to guide field activities. These maps assisted field crews in identifying the extent of the storm drain systems, locations of outfalls, and any contributing businesses or facilities. The maps included parcels for commercial and industrial facilities and their storm drain systems for screening efforts, as per the guidance provided by MDE (MDE 1997).

The complete Standard Operating Procedures (SOPs) for the IDDE program can be found in **Appendix C**. Additionally, methods for field screening dry weather discharge, source tracking, and enforcement are also described in the complete Anne Arundel County Illicit Discharge Detection and Elimination Program Report: July 2021 – June 2022 (Fiscal Year 2022) (**Appendix C** and MS4 Geodatabase *NarrativeFiles*).

c. Commercial and industrial visual survey

Conducting annual visual surveys of commercial and industrial areas as identified in PART IV.C.2 above for discovering, documenting, and eliminating pollutant sources. Areas surveyed and the results of the survey shall be reported annually;

During the permitting period, field personnel perform a visual inspection of accessible commercial and industrial sites within the target screening areas that have the potential to contribute significant pollutants (a.k.a. potential upland pollutant sources). The inspections are designed to identify poor housekeeping, dumping, and other non-permitted discharges (e.g., vehicle wash water) that may be intercepted by the County's storm drain system. Methods for visual inspections for upland pollution, as well as reporting and enforcement of upland pollution sources, are also described in the complete Anne Arundel County Illicit Discharge Detection and Elimination Program Report: July 2021 – June 2022 (Fiscal Year 2022) (**Appendix C**).

For the FY22 reporting period, field crews evaluated approximately 250 commercial and industrial polygons for evidence of upland pollutant sources. As a result, field crews identified 12 upland pollutant sources within the target areas while conducting these routine visual inspections; these sources demonstrated the potential to discharge pollutants into County storm drains or Waters of the United States. Staff reported upland pollutant sources to the County MS4 Program Manager; the Program Manager or designee sent copies of the reports to I&P or the Health Department, as appropriate, to initiate corrective action. Complete investigation details, including site-specific reports, agency responses, and corrective actions are found in **Appendix C.**

Four (4) County-owned and improved properties (three police facilities and one fire station) were visually screened for potential upland pollution source identification in FY22. Stormwater maintenance needs and/or possible upland pollution source were identified at three of the properties. Site-specific reports are included in the IDDE Annual Report found in **Appendix C.** Observations from screenings conducted at County-owned improved properties will be used to inform the development and implementation of Good Housekeeping Plans, as applicable, under the current MS4 permit. Good Housekeeping Plans will include actions that recognize vehicle washdown activities and material storage, two potential pollution sources observed during inspections of County-owned properties. Inspection reports from these screenings were also shared with the County's Facilities Construction and Planner Coordinator.

d. IDDE Standard Operating Procedures (SOP)

Maintaining written standard operating procedures for outfall screenings, illicit discharge investigations, annual visual surveys of commercial and industrial areas, responding to illicit discharge complaints, and enforcement implementation;

The County maintains an IDDE SOP document for consultants and County staff. The SOP is revisited every year prior to outfall screening and revised as needed. The SOP can be found in **Appendix C.**

e. County Code prohibition on illicit discharges

Maintaining an ordinance, or other regulatory means, that prohibits illicit discharges into the storm sewer system;

f. IDDE enforcement program

Maintaining a program to address and respond to illegal discharges, dumping, and spills; and

To "spill, dump or dispose of any material or substance other than natural stormwater runoff to a storm drain or watercourse unless authorized by a valid NPDES permit issued by the State of Maryland" is defined as a violation under § 16-5-101(6) of the Anne Arundel County Code.

There are two departments within the County government that address reports of illegal dumping and spills. I&P is the County agency primarily responsible for enforcing regulations regarding spills and illegal dumping into both publicly and privately owned storm drain systems. The Health Department addresses complaints specifically relating to food service facilities (e.g., overflowing dumpsters or waste grease containers) and documents violations during regular facility inspections.

Twenty-eight (28) illicit discharge, dumping, or storm drainage complaints were reported to I&P during the FY22 reporting period; these cases were supplemental to the IDDE survey results for outfalls and the commercial and industrial facilities as described above. The complaints included referrals from the Department of Public Works as part of the department's IDDE Program and referrals from other sources. Illicit discharge complaints and referrals are logged into the I&P Compliance Case Database; this is used to track cases from the receipt of a complaint or referral to closure. Case numbers facilitate tracking the progress of any individual Illicit Discharge complaint or referral received by I&P. Compliance case data pertinent to the complaints received during the FY22 reporting year are documented in **Appendix C**. All complaints and referrals were investigated and enforced as appropriate.

I&P applies a progressive approach to enforcement regarding illicit discharges. In general, Phase I enforcement begins with coordination with MDE, as applicable, for joint investigation. If the violator has an active Maryland NPDES General Permit for Discharges of Stormwater Associated with Industrial Activity (SW Industrial GP a.k.a. 12-SW Permit), MDE takes over full enforcement authority. If no SW Industrial GP is active, I&P will issue a Correction Notice to the violator to address the violation within a timeframe specific to type of incident. If the violation still exists upon follow-up inspection, I&P will issue a Notice of Non-Compliance, again with an incident-specific timeframe for remediation. If the violation has still not been addressed, I&P may issue a citation based on County Code Class A, B, or C fines schedule. If there is no compliance with Phase I enforcement actions, I&P will proceed with Phase II enforcement, which entails the issuance of a violation notice via certified

mail. If there is no compliance with Phase II enforcement, I&P will proceed with Phase III enforcement, which entails sending the case file to the Office of Law for further legal action. Significant violations are screened with the County Office of Law for possible criminal enforcement as authorized in the County Code, or for referral to MDE for enforcement under the State Code. During the FY22 reporting period, it was not necessary to issue any civil citations for failure to eliminate illicit storm drain discharges.

For the FY22 reporting period, the Health Department addressed three (3) issues reported to the Department by County consultants during the reporting period. Details regarding the reported conditions, agency responses, and corrective actions are in **Appendix C**.

The Anne Arundel County Department of Health may choose to issue civil citations for violations of the Anne Arundel County Property Maintenance Code regarding rubbish, garbage, or sanitation. Before the issuance of a citation, property owners are issued a written warning in the form of a Notice of Violation, giving the property owner 30 days to correct the violations before legal action is taken. If violations are not corrected following the issuance of a Notice of Violations, a citation may be issued. After a citation is issued, it is attempted to be served by a third-party server. Upon service, the property owner has 20 days to pay the fine and correct the violation, or 15 days to elect - via written response - to stand trial. After 20 days have passed since the initial inspection, the property is re-inspected for compliance. If the citation was unable to be served, the property is re-inspected immediately after receiving notice it was unable to be served. If violations remain at that point, the Department of Health may file for injunction. Once a citation or injunction is referred to the Office of Law, the property is re-inspected every 30 days until the trial date or until the violation is corrected. No civil citations were issued by the Department of Health in FY22 for violations stemming from IDDE-related surveys.

As part of its general activities associated with food service facilities, the Health Department has protocols for abatement of leaking or overflowing dumpsters. Enforcement is conducted under State of Maryland Regulations dealing with Food Service Facilities (COMAR 10.15.03.19) which requires that each facility retain a sufficient number of durable refuse containers capable of holding the facility's garbage between periods of removal; the containers must be adequately covered and not leaking. Violation of this regulation would be marked on the food facility inspection report and would require correction typically within 30 days of the investigation. Failure to comply by the second re-inspection would result in $175 re-inspection fees until compliance is achieved.

g. FY22 IDDE findings and enforcement

Using appropriate enforcement procedures for investigating and eliminating illicit discharges, illegal dumping, and spills. When a suspected illicit discharge discovered within the County's jurisdiction is either originating from or discharging to an adjacent MS4, the County must coordinate with that MS4 to resolve the investigation. Significant discharges shall be reported to MDE for enforcement and/or permitting.

A full report of the procedures and data collected from the illicit detection and elimination field investigations is found in the Illicit Discharge Detection and Elimination – FY 2022 Annual Report (**Appendix C**); relevant digital data are included in the *IDDE* table of the MS4 Geodatabase provided in **Appendix A**. The complete report (**Appendix C**) contains details of the findings from the FY22 reporting period, and the corrective actions associated with these sites. The full report also includes details regarding the resolution of previously unresolved cases described in prior reporting years. Closed investigations where the discharge source was not able to be identified (e.g., inconclusive) will be prioritized for future re-screening, and open cases will continue to be investigated with results reported in FY23.

Of the screened outfalls containing dry-weather flow during the initial screenings in the FY22 reporting period, four yielded a result above the action-criteria limit for one or more of the tested contaminants:

- Outfall K02O001 - Dry weather flow exceeded the action criteria for fluoride on the first visit and second visits but flow ceased but investigators could not determine the source of the discharge.
- Outfall G06O006 - Dry weather flow exceeded the action criteria for pH and detergents on the initial visit and a leaking fire hydrant was observed. During the second visit flow had ceased and a sample could not be obtained; the hydrant was observed to be no longer leaking.
- Outfall J07O019 – Dry weather flow exceeded the action criteria for detergents on the initial visit. Active washing of equipment was observed behind a business within the outfall drainage area. During the second visit flow had ceased and a sample was unable to be obtained.
- Outfall J03O006 – During the initial visit, the outfall was found to have extensive contamination from a bright blue substance. A sample was not taken out of concern for personnel and equipment safety. The blue pollutant was observed throughout the storm drain system leading back to a commercial loading dock and warehouse. The case was referred to MDE.

Complete investigation details, including a site-specific report, agency responses, and detailed corrective actions, are found in the Illicit Discharge Detection and Elimination – 2022 Annual Report (**Appendix C**). All four outfalls will be revisited in FY23.

The County consultant's field teams identified three (3) locations where physical issues significantly affected stormwater infrastructure within the targeted areas of Anne Arundel County during the FY22 reporting period. The site-specific reports were then forwarded to SIP for appropriate corrective action. Complete investigation details, including site-specific reports, agency responses, and corrective actions, are found in **Appendix C**.

4. Property Management and Maintenance

a. Anne Arundel County Government SW Industrial GP Facilities

Coverage under Maryland's NPDES General Permit for Discharges of Stormwater Associated with Industrial Activity (SW Industrial GP) is typically required at facilities where the following activities are performed: maintenance or storage of vehicles or equipment; storage of fertilizers, pesticides, landscaping materials, hazardous materials, or other materials that could pollute stormwater runoff. The County shall:

- *Ensure that a Notice of Intent (NOI) has been submitted to MDE for each County-owned industrial facility requiring coverage under the SW Industrial GP; and*
- *Submit with the annual report a list of County properties currently covered under the industrial stormwater permit.*

Anne Arundel County's Water Reclamation Facilities (WRFs) NPDES wastewater discharge permits are current or continue in force pending MDE issuance of a revised permit. NPDES wastewater discharge permit reapplications for the below-listed County-owned WRFs (**Table 5**), except Cox Creek WRF, were submitted to MDE as required and are pending issuance.

Table 5. County Water Reclamation Facility discharge permits.

Facility	Permit	Permit Coverage Period
Annapolis WRF	12DP0838A	Oct. 1, 2015 – Sept. 30, 2020
Broadneck WRF	14DP0677A	Nov. 1, 2017 – Oct. 31, 2022
Broadwater WRF	14DP0813A	Nov. 1, 2017 – Oct. 31, 2022
Cox Creek WRF	14DP0698	Jan. 1, 2020 – Dec. 31, 2024
Maryland City WRF	11DP2393A	April 1, 2015 – Mar. 31, 2020
Patuxent WRF	11DP0132A	April 1, 2015 – Mar. 31, 2020
Piney Orchard WRF	15DP1936A	July 1, 2019 – Feb. 28, 2022

The Maryland SW Industrial GP, Permit 12SW or 12SR, became effective January 2014. County-owned facilities requiring general discharge permit coverage submitted NOIs to MDE. These facilities, their General Permit Number, the date MDE received the NOIs and Stormwater Pollution Prevention Plans (SWPPPs), and the permit coverage period are listed in **Table 6.** The SW Industrial GP coverage 12SW or 12SR expired at the end of 2018 and MDE administratively extended the permit term until a new permit (20SW) is issued.

MDE issued the new SW Industrial GP (20SW) on November 18, 2022 with an effective date of February 1, 2023 (FY23). All County-owned facilities covered under the 12SW or 12SR permit must submit a new NOI and updated SWPPPs no later than July 31, 2023 to prevent a lapse in coverage. The final permit and associated documents can be found here: mde.maryland.gov/programs/Permits/WaterManagementPermits/Pages/stormwater.aspx.

Table 6. County facilities with SW Industrial GP coverage.

Facility	Permit	NOI Number	NOI & SWPPP Received by MDE	Permit Coverage Period
Bureau of Highways (BOH) – Northern District Road Yards				
Dover Road Yard	12-SW-1176	MDR001176	July 8, 2014	Sept. 12, 2014 – Dec. 31, 2018
Mountain Rd Road Yard	12-SW-1181	MDR001181	July 8, 2014	Aug. 21, 2014 – Dec. 31, 2018
BOH – Central District Road Yards				
Odenton Road Yard	12-SW-1177	MDR001177	July 8, 2014	Aug. 21, 2014 – Dec. 31, 2018
Crownsville Road Yard	12-SW-1179	MDR001179	July 8, 2014	Aug. 21, 2014 – Dec. 31, 2018
St. Margaret's Road Yard	12-SW-1182	MDR001182	July 8, 2014	Aug. 21, 2014 – Dec. 31, 2018
BOH – Southern District Road Yards				
Davidsonville Road Yard	12-SW-2298	MDR002298	July 8, 2014	Aug. 21, 2014 – Dec. 31, 2018
Friendship Road Yard	12-SW-1180	MDR001180	July 8, 2014	Aug. 21, 2014 – Dec. 31, 2018
Bureau of Waste Management Services (WMS)				
Millersville Landfill & Resource Recovery Facility (MLFRRF)	12-SW-1304A	MDR001304	July 16, 2019	Aug. 15, 2014 – Dec. 31,2018
Northern Recycling Center (NRC)	12-SW-0298A	MDR000298	Dec. 7, 2018	Aug. 15, 2014 – Dec. 31, 2018
Southern Recycling Center (SRC)	12-SW-0297A	MDR000297	Dec. 7, 2018	Aug. 18, 2014 – Dec. 31, 2018
Bureau of Utility Operations (BUO)				
Annapolis WRF	12-SW-0756	MDR000756	May 20, 2014	June 16, 2014 – Dec. 31, 2018
Broadneck WRF	12-SW-0758	MDR000758	June 27, 2014	July 30, 2014 – Dec. 31, 2018
Broadwater WRF	12-SW-0757	MDR000757	June 18, 2014	June 26, 2014 – Dec. 31, 2018
Cox Creek WRF	12-SW-0760	MDR000760	June 30, 2014	Aug. 11, 2014 – Dec. 31, 2018
Patuxent WRF	12-SW-2459	MDR002459	June 27, 2014	Aug. 6, 2014 – Dec. 31, 2018
Maryland City WRF	12-SW-0761	MDR000761	June 11, 2014	July 14, 2014 – Dec. 31, 2018
Piney Orchard WRF	12-SR-0727	MDR000727	Nov 18, 2014	Jan. 16, 2015 – Dec. 31, 2018
Anne Arundel County Utility Operations Center	12-SW-2345	MDR002345	July 16, 2014	Sept. 8, 2014 – Dec. 31, 2018

At a minimum, each facility performs quarterly and annual inspections as well as staff training on stormwater pollution prevention plans (SWPPPs). Compliance documentation, as required by the SW Industrial GP, is maintained at each facility and is available for inspection upon request. Information specific to these facilities and their permit compliance activities is presented in the *MunicipalFacilities* table of the MS4 Geodatabase. Annual SWPPP implementation activity is found below.

Bureau of Highways (BOH) Stormwater Pollution Prevention Plan Development and Implementation

During the FY22 reporting period the following items related to the SW Industrial GP at the County's Road Operations Yards were completed:

- Implemented each SWPPP, including
    - Performed routine facility inspections of each facility, at least quarterly;
    - Completed quarterly outfall visual assessments of each facility;
    - Completed comprehensive annual inspections of each facility;
    - Provided training to Road District personnel during the reporting period to support SWPPP implementation;
    - Completed an internal document review during comprehensive annual inspections of each facility;
    - Continued maintenance improvements to further prevent stormwater impacts, including
        - Use of coir log wattles and/or straw bales to protect inlets,
        - Use of asphalt curbing to contain bulk road maintenance materials, and
        - Added wooden bulkheads to entryway of salt barns, in addition to straw bales;
- Completed underground storage tank testing and inspection of Bureau of Highways facilities using Maryland Department of the Environment Certified UST Inspectors for the following conditions:
    - Annual testing of spill buckets (catchment basins) at two facilities in March 2022;
    - Third Party Inspections at two facilities in calendar year 2022 based upon MDE notification; and
    - Five-year tank tightness testing and five-year containment sump testing completed at all applicable facilities.

The MDE Water and Science Administration Compliance Program conducted an inspection of the Northern District Road Operations Yard (Mountain Road Yard – SW Industrial GP 12-SW-1181) in April and again in November 2021. This compliance inspection revealed that the facility should be conducting quarterly benchmark monitoring for the inlet cleaning and street sweeping dewatering facilities, and the County should submit a modified NOI. During FY22, the County addressed the inspection findings. In August 2022, MDE conducted a follow-up compliance inspection. As part of this inspection, discussion between the County and MDE subsequently determined than an updated NOI was not required but the quarterly benchmark monitoring should be conducted at facilities with storm drain inlet debris dewatering activities.

Bureau of Waste Management Services (WMS) Stormwater Pollution Prevention Plan Development and Implementation

The State's SW Industrial GP 12-SW also applies to the three County-owned facilities managed by WMS identified in **Table 6.** During the reporting period, annual comprehensive SWPPP compliance inspections were performed at these facilities in November 2021 and will be performed again in November 2022; visual inspections occur on a quarterly basis. In addition, the stormwater management facilities at these sites are routinely inspected and all identified repairs are immediately reported and scheduled for maintenance. WMS employs two environmental technicians who inspect and manage the stormwater facilities to ensure proper function.

Bureau of Utility Operations Stormwater Pollution Prevention Plan Development and Implementation

During this reporting period, Anne Arundel County's Bureau of Utility Operations (BUO) continued SWPPP implementation specific to the seven WRF facilities and the Utilities Operations Center site listed in **Table 6**. In support of the NOI and in compliance with the SWPPP, staff perform monthly inspections, quarterly dry weather inspections, quarterly wet weather inspections, annual comprehensive site inspections, annual record review, and annual training to ensure compliance. Records are maintained at each facility.

b. Good Housekeeping Plan

The County shall develop, implement, and maintain a good housekeeping plan (GHP) for County-owned properties not required to be covered under Maryland's SW Industrial GP where activities listed in Part IV.D.4.a (above) are performed. The GHP shall be submitted to MDE by the County in its' third year annual report and implemented thereafter. A standard GHP may be developed for all County-owned property or separate GHPs may be developed for properties with similar use (e.g., recreation and parks properties), and school properties. The GHP shall include but not be limited to:

i. Description of property management activities;
ii. Map of locations of properties covered by the GHP;
iii. List of potential pollutants and their sources resulting from facility activities;
iv. Written procedures designed to reduce the potential for stormwater pollution from property activities including illicit discharges, dumping, and spills;
v. Written procedures for annually assessing county properties to prevent the discharge of pollutants, spills, and leaks into its MS4;
vi. Written procedures for performing stormwater conveyance system inspections for removing debris that may cause clogging, backups, and flooding; and
vii. Annual training for all appropriate County staff and contractors regarding best management practices for preventing, reducing, and eliminating the discharge of pollutants during property activities.

The County will develop a Good Housekeeping Plan (GHP) for those qualifying properties, as described above, and submit to MDE for review and concurrence no later than the third annual report under this Permit (i.e., FY2024 Annual Report due on or before December 31, 2024). Subsequent to MDE concurrence, the County will implement the GHPs and appropriate pollution prevention procedures at the qualifying properties, and initiate annual GHP training associated with those properties.

Although the GHPs are not yet developed and implemented, pollution prevention training associated with County facilities registered for coverage under the SW Industrial GP continued throughout FY22. The number of County personnel trained in SWPPP implementation and good housekeeping practices, associated with the SW Industrial GP and related SWPPPs, is found in the *MunicipalFacilities* table of the MS4 Geodatabase (**Appendix A**).

c. Maintenance of County-owned Properties

The County shall continue to implement a program to reduce pollutants associated with maintenance of County-owned properties including, but not limited to, local roads and parks. The maintenance program shall include the following activities where applicable:

i. Street Sweeping

Street sweeping in the amount identified in Appendix B of the Permit and annually updated thereafter.

Anne Arundel County's street sweeping program is intended to provide a continuous level of street cleanliness while keeping debris (including litter and floatables) and pollutants out of storm drains, creeks, rivers, and ultimately the Chesapeake Bay.

The County's neighborhood streets are relatively clean because of the work of conscientious residents who assist us by keeping the areas in front of their homes free of litter and debris. Residential streets were not included in the County's program for routine street sweeping during the reporting period. Roads with higher traffic volumes are prioritized to maximize collection. The primary focus of the County's street sweeping program is on main thoroughfares (arterial roads, local and collector streets, roads with high traffic volume), business parks and industrial areas, County park-and-ride lots, NPDES priority areas, and facility parking lots subject to SWPPP implementation. These areas were scheduled for twice-monthly street sweeping.

During Fiscal Year 22, the County swept 6,654 curb miles, which equates to 554.5 curb miles per month – the same as the last reporting period. Accomplishments may vary 5% annually depending on disposal costs and other factors. The current funding level supports sustainable accomplishment of approximately 6,800 curb miles annually, a 40% increase over the initial FY16 levels.

ii. Storm Drain Inlet and Conveyance System

Cleaning storm drain inlets and conveyance system in the amounts identified in Appendix B of the Permit and annual updated thereafter.

Anne Arundel County BOH conducts manual and mechanical storm drain inlet cleaning throughout the County. For FY22, the County manually cleaned and removed debris from catch basins, inlets, and outlets of pipes to maintain proper drainage for 3,465 structures. This is a 15% decrease from the previous reporting period in which 4,084 structures were cleaned by hand.

In addition, the County inspects catch basins, manholes, and associated pipes to identify structures for cleaning with a sewer vacuum or power rodder. A total of 1,660 structures required cleaning with a sewer vacuum, an increase decrease of 61% from the last reporting period in which 4,274 were cleaned with a sewer vacuum. A total of 44,180 linear feet of pipe were cleaned, a decrease of 51% from the last reporting period in which 90,979 linear feet were cleaned.

During the reporting period, the County cleaned and removed debris from roadside inlet and outlet ditches and concrete swales, removed leaves from ditch lines and curbs using a leaf vacuum, and cleaned and reshaped roadside ditches by machine for a total of 33,713 feet during the reporting period. This is a decrease of 51% from the last reporting period in which the County cleaned 68,528 linear feet.

iii. Pesticide/Herbicide/Fertilizer Use

Reducing the use of pesticides, herbicides, fertilizers, and other vegetation management chemicals. This can include but is not limited to:

- *Developing and implementing an Integrated Pest Management Plan according to EPA guidelines;*
- *Custom fertilizer property management plans based on soil testing;*
- *Targeted or "spot" application of pesticides;*
- *Alternative and organic fertilizers;*
- *Manual weed removal, mowing, and trimming;*
- *Annual training and applicator certification and licensing as required by the Maryland Department of Agriculture to ensure accurate application of chemicals according to manufacturer's recommendations;*
- *Subcontracting to certified pest control applicator licensed business for some or all of properties;*
- *Piloting biological pest control programs; and*
- *Establishing "no mow" areas.*

The quantities of pesticides, herbicides and fertilizers used on County-owned properties for vegetation management and pest control are listed in the *ChemicalApplication* table of the FY222 MS4 Geodatabase (**Appendix A**). Anne Arundel County makes a financial contribution annually to support Maryland Department of Agriculture (MDA) programs for spongy moth (previously known as gypsy moth) control (mda.maryland.gov/plants-pests/Pages/spongy_moth_program.aspx) and for mosquito control (mda.maryland.gov/plants-pests/Pages/mosquito_control.aspx). The County does not maintain information regarding the quantity of materials used by these State programs.

Herbicide use associated with road maintenance performed by the BOH is limited to the application of glyphosate (e.g., Roundup™) on County rights-of-way to control vegetative growth around guardrails, concrete structures, and prior to crack sealing operations in the traveled portion of the roadway. A total of 40.85 gallons of glyphosate was used during the reporting period. This is a 9.2% decrease over the previous reporting period in which a total of 45 gallons was applied. The change can be largely attributed to the total number of application cycles scheduled during the reporting period. The BOH recorded no other herbicide, pesticide, or fertilizer application.

The BOH continues to employ a contractor who holds a Pest Control Applicator Certificate. The applicator categories are 3A - Ornamental, 3C - Turf, and 6 - Right-of-Way. The contractor is required to attend re-certification training per MDA guidelines to include Integrated Pest Management and

pesticide safety. Each time there is chemical use, a pesticide report is completed and filed, which is available to be reviewed during MDA's biennial inspection.

Anne Arundel County Facilities Maintenance Division (FMD), Horticulture Unit, maintains landscaping on County properties including all Administrative Buildings, Libraries, Police and Fire Stations, Senior Centers, and Health Centers throughout the County. The fertilizer and the herbicides applied to these properties inFY22 are listed in **Table 7**. The quantities of each are included in the FY22 MS4 Geodatabase *ChemicalApplication* table.

Table 7. Herbicides and fertilizers used by the FMD Horticulture Unit in FY22.

Trade Name	Active Compound
Ortho GroundClear	Glyphosate
Monsanto RoundUp Quick Pro	Glyphosate
Monsanto RoundUp Liquid	Glyphosate
Sedgehammer granular	Halosulfuron-methyl 5%
Gordons Brushmaster	2,4-D,2-ethylhexyl ester 18.85% 2,4-DP,2-ethylhexyl ester 9.24% Dicamba 3.01%
Lesco 20-20-20 fertilizer	Nitrogen, Phosphorus, Potassium

Landfills and recycling centers managed by WMS do not use herbicides to control unwanted woody and herbaceous vegetation. Weeds and other problematic vegetation at these facilities are removed almost entirely by physical and mechanical means. Occasionally, however, limited application of herbicide (RoundUp, active ingredient glyphosate) is used around the WMS Administrative Building and parking lot. During FY22, however, the WMS did not use any herbicide application. In addition, fertilizer use on WMS properties such as the side slopes to Cell 9 or on closed Cell 567 are limited to only when grass needs nutrients to encourage proper growth that helps with the prevention of soil erosion and limits runoff.

WMS employs a contractor who holds a Pest Control Applicator Certificate. Pesticides are applied indoors at WMS facilities and outside around buildings. In FY22, outside pesticide use included the active ingredients Bifenthrin, Bromodiolone, Orthoboric Acid, and Brodifacoum. Quantities of each chemical used are found in the FY22 MS4 Geodatabase *ChemicalApplication* table. Each time there is a chemical application, a pesticide report is completed and filed.

Anne Arundel County Recreation and Parks (AACRP) is committed to providing parks with pest-free environments through the implementation of preventive methods, integrated pest management (IPM), and chemical strategies when necessary. Because AACRP properties, facilities, and programs are often contiguous physically, programmatically, geographically, and operationally to Anne Arundel County Public School properties, it was deemed imperative that there be a high degree of standardization, commonality, and uniformity in pest management philosophy. The AACRP Turf Division staff are MDA licensed applicators (fertilizer and pesticide) and, during the reporting period,

applied the herbicides Ranger Pro (glyphosate liquid) and Amine 400 (2,4-D) and the fungicide Propiconazole on certain AACRP athletic fields and around County swim center buildings. These chemicals are applied only as and where needed. No fertilizers were applied during the growing season in FY22. Quantities of chemicals used are included in the FY22 MS4 Geodatabase *ChemicalApplication* table and are also routinely reported to MDA as required.

The County-owned Compass Pointe and The Preserve at Eisenhower Golf Courses are operated by AACRP via contract with Indigo Sports. These golf course properties are subject to a course-specific intensive pesticide, herbicide, and fertilizer turf management program. The grass types on each of the golf courses' fairways and tees are not the same so there are differences in the turf maintenance programs between the courses. The turf management programs are carried out by MDA licensed applicators (certified pesticide and certified fertilizer applicators) and all turf management applications are reported to MDA in a timely manner, as required. For FY22, the quantities of pesticides, herbicides, and fertilizers applied to these managed turf areas are reported in the MS4 Geodatabase *ChemicalApplication* table.

Of note, the Preserve at Eisenhower Golf Course was recently redeveloped via a partnership between the AACRP and the BWPR. Working closely with Golf Course Architect Andrew Green, the new golf course increased the property's wetlands by 13 acres. The redevelopment included on-site stream restoration, boardwalk construction, and overall environmental improvements that resulted in a more sustainable landscape that will conserve water and require less chemical inputs to maintain. To the extent possible, chemicals used on this course are organic and/or alternative fertilizers. For more information on the conservation efforts at this golf course, please visit the Preserve at Eisenhower webpage.

Integrated Pest Management (IPM)

The maintenance plan for all FMD properties and rights-of-way includes IPM. Key elements include the following:

- Use of herbicides only when pulling or cutting weeds have not proven effective;
- Use of insecticides only when natural methods have not proven effective;
- Elimination of fertilizer use, proper use of hand weeding and mulching, and sparing use of herbicides on roadway medians;
- Limiting fertilizer use on FMD properties, and using only when grass needs nutrients to encourage proper growth that helps with the prevention of soil erosion and limits runoff;
- Selecting disease- and insect-resistant plants for new plantings; and
- Selecting the least toxic product available, using appropriate storage facilities and techniques, and compliance with all applicable laws and regulations.

During the reporting period, the AACRP continued implementation of an IPM program for County parks and athletic facilities. The IPM plan is required pursuant to County legislation that became

effective July 1, 2013, and that modified Article 14 of the County Code by adding §14-1-105 (Integrated Pest Management Plan). Article 14 of the County Code can be found online at www.aacounty.org/our-county/county-code/index.html. Pursuant to this legislative requirement, the public is provided prior notification of pesticide application at Recreation and Parks public facilities. Key elements of the IPM program at AACRP facilities include the following actions:

- Minimize the amount and toxicity of pesticides used in the park facilities;
- Eliminate unnecessary pesticide applications;
- Provide IPM education to the public, park users and park staff;
- Improve landscape and grounds cleanliness;
- Utilize only Licensed, Certified and Registered Technician pesticide applicators;
- Reduce or eliminate exposure of children, vulnerable adults, nursing mothers with infants and pets to pesticide applications; and
- Provide universal public and staff notification.

d. Winter weather deicing and anti-icing program

i. Salt Management Plan

The County shall reduce the use of winter weather deicing and anti-icing materials, without compromising public safety, by developing a County Salt Management Plan (SMP) to be submitted to the Department in its third year annual report and implemented thereafter. The SMP shall be based on the guidance provided on best road salt management practices described in the Maryland Department of Transportation, State Highway Administration's Maryland Statewide Salt Management Plan, developed and updated annually as required by Maryland Code. The County's SMP shall include, but not be limited to:

- *A plan for evaluation of new equipment and methods, and other strategies for continual program improvement;*
- *Training and outreach:*
    - *Creating a "Salt Academy" that annual provides County winter weather operator personnel and contractors with the latest training in deicer and anti-icer management, or the participation of County personnel and contractors in a "Salt Academy" administered by another MS4 permittee or State agency; and*
    - *Developing and distributing best salt management practices outreach for educating residents within the County.*

In 2014, after the promulgation of a Statewide Salt Management Plan, the County's BOH developed the Department of Public Works Salt Management Plan to outline the practices intended to effectively manage road salt for winter maintenance activities within the County. The Salt Management Plan is organized into the following areas:

- Winter maintenance policies;
- Trends and data analysis;
- Materials ordering, delivery, storage, handling and record keeping;

- Equipment upgrading, calibration and washing;
- Snow and ice control training;
- Weather forecasting, storm response, environmentally sensitive areas;
- Technology review; and
- Public outreach and education.

Near-Term Goals incorporated in the Salt Management Plan include:

- Winter Maintenance Policies: The Department has established level of service and maintenance standards which have been generally accepted by the community at large. These policies form the foundation for program delivery and can have a significant effect on the environment. The goal is to review the various departmental standards relating to the winter maintenance program and seek endorsement for the level of service and maintenance policies.
- Record Keeping: One of the keys to an effective winter maintenance program is to place the right amount of material in the right place at the right time. At the present time, the record of material usage is tracked manually and reconciled with the residual inventory but should be enhanced to document salt usage by route, by vehicle, and by storm.
- Winter Maintenance Training: A thorough understanding of good housekeeping practices, the measures of snow and ice control and the expectations of program delivery will result in a greater probability of success with the salt management plan. For this reason, it is essential that all staff involved with winter operations be provided with Winter Maintenance and Operations Training.
- Communications: The goal in this area is to communicate the Department's winter maintenance program and salt management initiatives to staff and to the public. The prime focus in this area will be to increase public awareness in the role of deicing materials in snow and ice control through the development of appropriate information on the Department's webpage.
- GPS Upgrade: It is recommended that the Snow Operations fleet be upgraded by installing an Automated Vehicle Location system (AVL). Strategic and tactical decision making during a storm response, informed by an AVL system, improves effectiveness, resource allocation, and potentially reduces storm response duration. The GPS data provided by an AVL can assist with the analysis of complaints, trouble spots, and claims against the County. This is possible because the location of a truck can be pinpointed in time throughout the storm with a high level of accuracy.

Longer Term Goals identified in the Salt Management Plan include:

- Equipment Upgrading: It is intended that the winter maintenance fleet be capable of delivering appropriate levels of deicing materials within a full range of climatic conditions. The most cost-effective way of fleet upgrading is to consider changes as vehicles within the fleet come up for replacement. In this regard, as the salt spreader fleet comes up for replacement within the County's heavy equipment replacement program, the vehicles are to be equipped with electronic controllers, infrared thermometers, and pre-wet capabilities. The equipment upgrades will improve the capability of placing the right amount of deicing material in the right place, at the

right time and allow for an increased level of data collection which, in turn leads to more effective use of salt.

- Environmentally Sensitive Areas: Concentrations of chloride in the environment can have negative environmental impacts and the Statewide Salt Management Plan suggests a program to assess the levels of impact due to winter maintenance. Initially, the environmentally sensitive areas can be identified and ranked starting with the most vulnerable areas (highest ranked); a monitoring program can be developed, where appropriate, to explore the level of impact resulting from the County's winter maintenance practices. Over time, where appropriate, action plans are to be developed to reduce the chloride impacts on the environment.

In 2021-2022, the BOH continued its efforts to reduce the use of winter weather deicing materials through application of best practices and improvement of materials, equipment calibration, employee training, and effective decision making. The County issued contracts to continue a Countywide anti-icing program during the 2021-2022 season, procured additional heavy-duty dump trucks equipped with the latest spreader controller technology and on-board liquid application capability, and continued to equip its plow fleet with AVL tracking hardware to monitor and optimize snow removal operations.

The BOH continued its use of a maintenance decision support system (MDSS), which uses real-time data from our Road Weather Information System (RWIS). The RWIS system is a series of pavement and bridge deck sensors and other instruments installed along certain County-owned bridges and roadways. The integration of RWIS data into an MDSS allows the management team to select the most appropriate winter treatment for actual weather conditions in each area of the County during a winter storm event. Studies have shown use of an MDSS can help reduce the use of deicing chemicals.

Annual training on proper snow plowing techniques and safety is also offered to both County and County contractor personnel responsible for maintaining the County's roadways during inclement winter weather. The training includes information on the application of deicing products and proper application rates. Training sessions are held in October and November each year. Approximately 135 County personnel and 95 contractor staff attended the training sessions in FY22 (see the MS4 Geodatabase *MunicipalFacilities* table in **Appendix A**). Of the County staff participating in this training, 67 staff were from BOH, 4 staff were from Bureau of Utilities/Utility Operations Center, and 64 additional County staff were from departments not reflected in the *MunicipalFacilities* table.

These training sessions present the concept of "Sensible Salting" to all winter operations personnel (County and contractors). "Sensible Salting" training creates an awareness of the need to protect the environment and is another way of saying "Enough and no more." Sufficient salt is required to produce the desired safety and mobility to achieve the level-of-service goal. "Excess" applications add cost but no further benefit, and harm the environment.

The Sensible Salting Practices include:

- Limited Salting during the Late Evening/Early Morning Hours (11:00 p.m. – 4:00 a.m.): During these hours, salting is not as effective due to low traffic volumes. In the late evening/early morning hours, the goal is to ensure passable roads which means only intersections, hills, curves, and bridges will be salted. Beginning at 4:00 a.m., the BOH prepares the roads for rush hour.
- Limited Salting on Secondary Roads: Secondary Roads (local streets) will be plowed as often as possible, but will only be salted at intersections, hills, curves, bridges, and school zones. "Spot Salting" will also be used when necessary.
- Proper Calibration of Equipment: All equipment will be calibrated to ensure that desired application rates are applied correctly and over-salting is avoided.

In addition to proper training for County staff and contractors, the County also provides outreach information to the general public regarding County roadway snow operations. This information is provided through the County's webpage at aacounty.org/departments/public-works/highways/snow-information/. Included on this page is a link to the YouTube video describing snow removal from roadways in the County as well as information on the level of plowing and deicing measures residents can expect during winter weather conditions. Informational documents found on this page include Frequently Asked Questions pertaining to snow removal, a Winter Travel Guide, a Snow Information Booklet, and an Environmental Stewardship statement pertaining to the County's winter highway maintenance activities. The County also maintains and publicizes a snow removal status map indicating when area roads were last serviced; and a link for residents to learn what Level of Service to expect for their street.

In addition to outreach on snow removal and deicing activities for County roads, guidance on snow removal and deicing practices for residents and businesses can also be found via the County webpage aacounty.org/departments/public-works/wprp/education-outreach/road-salt/index.html. This guidance describes how much salt to apply and when, the effects of road salt on human and pet health, infrastructure, and the general environment. Best salt application practices are described for individual property owners as well as snow removal professionals. Lastly, the guidance includes links to additional winter weather deicing resources and programs.

ii. Tracking and Reporting

- *Starting with the fourth annual report, during storm events where deicing or anti-icing materials are applied to County roads, track and record the amount of materials used, and snowfall in inches per event, if applicable; and*
- *Report the deicing or anti-icing application by event or date, and the monthly and annual pounds used per lane mile per inch of snow.*

The amounts of deicing materials used by the County BOH during FY22 are found in **Table 8.** Deicing chemical data for the four previous reporting periods are provided as a comparison. The quantity of

deicing chemicals used each year is variable because it is based on actual winter weather conditions including precipitation type, precipitation frequency, and factors such as road surface temperature.

Table 8. Deicing material applied by the Bureau of Highways, FY 2018–2022.

Material	2017-2018	2018–2019	2019–2020	2020-2021	2021-2022
Road Salt (tons)	17,420	12,760	982	7,785.50	11,060.75
Liquid Salt Brine (gal.)	142,850[a]	133,500[a]	40,400[a]	21,900[a]	193,000[a]
Total Salt (tons)	17,563	12,894	1,022	7,807.4	11,253.75
Liquid Calcium Chloride (gal.)	2,900[b]	432[b]	0[b]	0[b]	0[b]
NWS Snow Totals – BWI (in.)	15.4[c]	18.3[c]	1.8[c]	8.9[c]	13.3[c]
NWS Avg. Winter Temp (°F)	36.4	37.5	43.0	40.3	44.5

[a] One ton of rock salt produces 1000 gallons.
[b]Average winter temperature at BWI Thurgood Marshall Airport is 35.1 degrees per the National Weather Service (NWS). Calcium Chloride depresses the freezing point and is used more extensively during colder periods to prevent ice formation and to deice road surfaces. Increased use is likely when average temperature is near or below freezing, or in cases of ice and heavy snowfall.
[c] Average long-term annual snowfall total at BWI Thurgood Marshall Airport is 20.1 inches per the National Weather Service (NWS). Winter 2021-2022 snowfall total at BWI was 13.3 inches. The 2021-2022 winter season saw an increase of salt use due to an increased amount of snow fall when compared to the previous two winter seasons.

Activities at WMS facilities also require the use of deicing materials such as bulk salt and bagged deicing mixtures. In both FY20 and FY21, no bulk salt was used. In FY22 the amount of bulk salt and bagged deicer (mixture of sodium chloride, magnesium chloride, calcium chloride, and potassium chloride) used at each facility was as follows:

- Millersville Landfill and Resource Recovery Facility & Central Recycling Center – 10 tons bulk salt and 3,750 pounds of bagged deicer;
- Northern Recycling Center – 8,750 pounds of bagged deicer; and
- Southern Recycling Center – 800 pounds of bagged deicer.

Additionally, during the reporting period the BUO utilized approximately 9 tons of road salt and approximately 400 pounds of bagged deicer at their facilities (Utility Ops Center and WRFs) to ensure access roads and walkways remained open and safe.

The quantities of deicing materials used by the County in FY22 are found in the *ChemicalApplication* table of the MS4 Geodatabase.

The County is preparing for the more detailed tracking and reporting activities required in this permit. As such, the County will provide these detailed reports in the fourth year (FY2025) annual report.

e. Storm drain system litter and debris removal

The County shall evaluate current litter control problems associated with discharges into, through, or from portions of its MS4. Additionally, the County shall continue to remove from or prevent from

entering its storm drain system 174.5 tons of litter and debris as identified in the first year of permit issuance or as updated annually thereafter.

Anne Arundel County continues to implement a comprehensive litter prevention and cleanup program. A description of the FY22 activities is found in Part IV.D.5 (Public Education). As part of this program, the BOH conducts storm drain system maintenance activities associated with storm drain inlet and catch basin cleaning (CBC). BOH both responds to customer requests for inlet and CBC, and implements a routine maintenance regime based upon a grid map of all closed storm drain infrastructure and outfalls maintained by the County. Each grid is serviced in sequence or as customer requests identify an area needing service. The County also maintains an inventory of problem areas that require cleaning prior to any significant precipitation event.

During FY22, and as noted earlier in Part IV.C.6, storm drain inlet and CBC activities prevented 139.72 tons of litter and debris from entering the County storm drain system. While this weight of material is less than in prior years, the long-term CBC average (FY17-FY22) of material removed is 179.6 tons which exceeds the benchmark listed above and also found in Appendix B of the Permit (174.5 tons).

Additionally, BOH conducts manual litter and trash removal from County roadsides throughout the year. In FY22, 7,464 bags of litter and 1,900 tons of roadside debris (e.g., tires, appliances, furniture, large woody debris) were collected. It should be noted that bag sizes for litter removal were not standardized in FY22 (e.g., 60 gal, 33 gal, and 40 gal bags were used) and, thus, a weight could not be estimated. A uniform bag size will be used in future years' efforts.

f. Annual property management program updates and pollution reductions

The County shall report annually on changes to property management and maintenance programs and the overall pollutant reductions resulting from implementation of the components of the program listed in this section.

The above compliance documentation, pertaining to Part IV.D.4 of the Permit, describes the property management and maintenance programs and activities that occurred during the reporting period. Quantities of materials applied (i.e., deicers, fertilizers, pesticides, herbicides) are found in the MS4 Geodatabase *ChemicalApplication* table (**Appendix A**). The percent change in quantity used, as compared to the prior reporting period, is also included in this table.

Pollutant reductions specific to the alternative BMPs described in this section (e.g., street sweeping) are more fully described in Part IV.E (Stormwater Restorations).

5. Public Education

The County shall continue to implement a public education and outreach program to reduce stormwater pollution and flooding. Education and outreach efforts may be integrated with other aspects of the County's activities. These efforts are to be documented and summarized in each annual report, with details on resources (e.g., personnel and financial) expended and method of delivery for education and outreach. The County shall implement a public outreach and education campaign that includes, but is not limited to:

a. Compliance Hotline

Maintaining a compliance hotline or similar mechanism for public reporting of water quality complaints, including suspected illicit discharges, illegal dumping spills, and flooding problems;

The Department of Inspections & Permits maintains a 24-Hour Environmental Hotline for citizens to report environmentally related complaints including critical area violations, spills, and illegal dumping into the County storm drain system. The Hotline has been in existence since 1988 and has been advertised in numerous ways including the County Inspections and Permits webpage: www.aacounty.org/departments/inspections-and-permits/index.html. The Environmental Hotline number is 410-222-7171.

In addition to the 24-hour environmental hotline, the County webpage provides a link for citizens to submit on-line requests for investigation of environmental concerns or any other observation or issue of concern: www.aacounty.org/services-and-programs/report-a-concern. This on-line reporting interface is in addition to the options for reporting concerns and issues through the mobile app SeeClickFix.com© (SeeClickFix, Inc., 2008-2017) or by dialing 311 (Mon–Fri from 8:00 to 4:30) to reach a County customer service representative. The County is committed to customer service and promptly responds to reported concerns.

In August of 2018, the County implemented a new complaint management system whereby complaints received via the above reporting mechanisms are entered into a database based on one of three major categories (Building, Environment, or Zoning) and assigned to one of numerous subcategories within each major category (e.g., Illegal Discharges is an Environmental subcategory). The complaint is then assigned to an inspector for follow-up and enforcement action, all of which is documented within the database. Information on complaints received and the subsequent actions taken can be viewed via the County's Inspections and Permits webpage by clicking on the hot link "Code Compliance Database" found on the right side of the webpage. This link: www.aacounty.org/departments/inspections-and-permits/code-compliance/review-system/index.html takes you to where case information can be searched by address, Tax ID, or Case ID number. Of note, the Case ID for all environmental complaints begins with "E" followed by the calendar year opened (e.g., 2022).

During this reporting period, 511 building and 601 environmental complaints were documented via the compliance database. Please see **Table 9** below for further breakdown of the FY22 environmental complaints.

Table 9. FY22 environmental complaints from Code Compliance Database.

Environmental Compliance Category	# Complaints
Bog Area	1
Civil Citation Non Complaint	2
Construction in Critical Area	1
Critical Area in Buffer Disturbance	15
Critical Area Clearing/Grading	28
Critical Area Tree Clearing/Buffer	11
Discolored Water complaint	1
Drainage Complaint	38
Exceeding Scope of Permit	15
Floodplain Complaint	3
Forest Conservation Easement Complaint	19
General Complaint/Information Needed	41
Grading w/o Permit	173
Illegal Discharge Complaint	44
Sediment Controls Down/Missing	65
Standard Grading Plan Issued	1
Stock Pile (General)	1
Stormwater Management Issues	26
Tracking Mud onto R-O-W Complaint	5
Tree Clearing (General) Complaint	44
Tree Clearing Over Critical Area	67
Total Environmental Complaints	601

b. Website and social media outreach

Maintaining a website with locally relevant stormwater management information and promoting its existence and use;

c. Additional outreach topics

Providing information to inform the general public about

i. *Water conservation*
ii. *Residential and community stormwater management implementation and facility maintenance*
iii. *Proper erosion and sediment control practices*
iv. *Removing debris from storm drain inlets to prevent flooding*
v. *Proper disposal of household hazardous waste*
vi. *Lawn care and landscape management (e.g., proper use of fertilizers, herbicides, pesticides, ice control and snow removal)*
vii. *Residential care car and washing*
viii. *Litter reduction*
ix. *Reducing, reusing, and recycling solid waste; and*
x. *Pet waste management*

The County shall conduct a minimum of 75 outreach efforts per year. These efforts may include distributing printed materials such as brochures or newsletters; electronic materials such as website pages; mass media such as newspaper articles or public service announcements; and conducted targeted workshops on stormwater management for the public.

The County continues to provide residents with relevant information to make informed decisions regarding water quality issues and environmental stewardship. Several County departments have public education and outreach programs tailored to their specific discipline. In some cases, education and outreach occurs through organizations in partnership with the County. The sum of the annual outreach efforts via in-person efforts, virtual group meetings, webpage views, and other avenues far exceeds the required 75 outreach efforts per year. Examples of some of the outreach activities are described in this section of the report.

Bureau of Watershed Protection & Restoration

To increase stormwater pollution awareness throughout Anne Arundel County, the Bureau of Watershed Protection & Restoration (BWPR) developed a comprehensive education and outreach program.

BWPR Internet Resources

A major component of this initiative was the development of the BWPR's webpage (www.aarivers.org) to provide residents with an overview of the BWPR program and stormwater fee, environmental restoration plans, watershed assessments and information about stormwater

pollution in general. The webpage also provides links to other County departments such as BUO for water conservation tips and I&P for stormwater management and Chesapeake Bay Critical Area information. Below is a listing of BWPR's public facing resources:

- **NEW in FY22: BMP Credit Calculator –** BWPR's credit calculator was developed to assist NGOs and others to estimate potential impervious restoration credit and TMDL reductions from their project.
    - https://www.aacounty.org/departments/public-works/wprp/bmp-credit-calculator/index.html
- **NEW in FY22: Restoration Estimator Tool –** BWPR's restoration estimator tool was developed to assist NGOs and others to explore restoration opportunities, and estimate potential impervious restoration credit and TMDL reductions resulting from project implementation.
    - https://www.aacounty.org/departments/public-works/wprp/restoration-estimator/index.html
- **NEW in FY22: Fish Atlas Report & ArcGIS Story Map –** In 2004, Anne Arundel County began the Countywide Biological Monitoring Program (Program) to better understand the health of the County's non-tidal streams and rivers and the biological communities they support. In the beginning, only stream insect community health was assessed; however, in 2017, the Program expanded to include the fish community. The sampling work underpinning this Story Map, and the related "An Atlas of the Freshwater Fishes of Anne Arundel County, Maryland" document, occurred between 2017 and 2021.
    - https://storymaps.arcgis.com/stories/7be7afff1f9146e79397b0f1d8110387
- **NEW in FY22: Award Winning Projects –** Projects and programs that have received recognition for outstanding merit are all highlighted on this webpage. Awards are sorted by the organization that sponsored the award.
    - https://www.aacounty.org/departments/public-works/wprp/awards/index.html
- **NEW in FY22: Pet Waste Reduction Campaign –** The County BWPR partnered with the Watershed Stewards Academy to implement an outreach campaign encouraging County residents to pick up after their pets. This page details the relationship between pet waste and water quality, as well as tips and resources for proper pet waste management.
    - https://www.aacounty.org/departments/public-works/wprp/education-outreach/pet-waste-reduction/
- **NEW in FY22: Living with Beavers –** As an ecosystem engineer and a keystone species of the Chesapeake Bay watershed, beavers play a major role in protecting our waterways. This page summarizes a brief history of beavers in the U.S., as well as resources for cohabitation with a neighborhood beaver.
    - https://www.aacounty.org/departments/public-works/wprp/education-outreach/beavers/

- **BWPR Annual Reports** – BWPR's FY annual report summarizes the watershed protection and restoration actions initiated by the BWPR and our partners and the fiscal resources used to implement those actions.
    - www.aacounty.org/departments/public-works/wprp/annual-reports/index.html
- **Financial Assurance Plan** - This report constitutes Anne Arundel County's financial assurance plan, required by MDE per State regulations, identifying actions that will be required of the County to meet the requirements of its NPDES MS4 permit along with projected annual and 5-year revenues or other funds that will be used to meet the impervious surface restoration plan requirements of its NPDES MS4 permit.
    - www.aacounty.org/departments/public-works/wprp/financial-assurance-plan/index.html
- **Frequently Asked Questions** – Addresses common questions residents may have about the BWPR and the Watershed Protection and Restoration Fee (WPRF).
    - www.aacounty.org/departments/public-works/wprp/frequently-asked-questions/index.html
- **WPRF Credit Program** – Explains how eligible property owners in Anne Arundel County may reduce their WPRF assessments by up to 50% for proactive and sustainable uses of stormwater runoff controls.
    - www.aacounty.org/departments/public-works/wprp/wprf-credit-program/index.html
- **Stormwater Property Tax Credit Program** - Residential and commercial property owners can receive a credit on their property taxes by installing and maintaining stormwater treatment practices. It provides for a reduction in County property taxes for qualified stormwater improvements.
    - www.aacounty.org/departments/public-works/wprp/stormwater-property-tax/index.html
- **WPRF Appeal Program** – The WPRF Appeal Program is intended for property owners who feel that they have been billed in error.
    - www.aacounty.org/departments/public-works/wprp/wprf-appeal-program/index.html
- **BWPR Highlighted Projects** – Shows in-depth details about some of the restoration projects that are currently underway in the County. This is not an exhaustive list of projects.
    - www.aacounty.org/departments/public-works/wprp/restoration/WPRP_Projects
- **BWPR Restoration Project Interactive Map** – Shows the location and status of all BWPR programmed restoration projects. The link is embedded in the BWPR webpage (aarivers.org) under Watershed Restoration Projects. The map also includes status of non-County projects which includes NGO, private, and Maryland State Highway Administration restoration projects.
    - annearundelmd.maps.arcgis.com/apps/webappviewer/index.html?id=e7e7fb6733e448a8809938140bed9e18

- **WPRF Mapping Application** – Interactive map shows the specific WPRF for each parcel in the County. Residents can also identify impervious surfaces on their property.
    - gis.aacounty.org/portal/apps/webappviewer/index.html?id=ee7d5336874541df8e65b082f2dc4c33
- **BWPR Watershed Application** – Interactive map identifying environmental information regarding watershed studies, stream assessment survey, as well as subwatershed and stream priorities for restoration and preservation.
    - gis.aacounty.org/portal/apps/webappviewer/index.html?id=dac2fecf1fc14077bf0faee596f8cf43
- **BWPR Goals Dashboard** – Shows the number of completed and anticipated projects by type. Also shows progress of impervious surface attainment goal.
    - www.aacounty.org/departments/public-works/wprp/WPRP_Goals
- **Targeted Biomonitoring** – The Anne Arundel County Bureau of Watershed Protection and Restoration's Ecological Assessment & Evaluation Program routinely collects biological, habitat, and geomorphological data from local streams as part of a long term targeted biological monitoring program. The sample sites are located on reaches of interest where certain stream restoration activities have occurred or are planned.
    - www.aacounty.org/departments/public-works/wprp/targeted%20biomonitoring/index.html
- **TMDL Restoration Plans** - BWPR has developed several restoration plans to address certain local water quality impairments for watersheds with an approved Total Maximum Daily Load (TMDL) issued by the Maryland Department of the Environment (MDE) and approved by the U.S. Environmental Protection Agency (EPA). This also includes progress reports as required by the MDE.
    - www.aacounty.org/departments/public-works/wprp/watershed-assessment-and-planning/chesapeake-bay-tmdl/index.html
- **NPDES MS-4 Permit** – Includes a link to the current Anne Arundel County NPDES-MS4 permit and all annual reports as required by MDE.
    - www.aacounty.org/departments/public-works/wprp/npdes-ms4-permit/index.html
- **Education and Outreach** – This section is for educating and motivating students, homeowners, and other stakeholders to take positive personal actions and work together for greater impact. Topics range from watershed identification, understanding impacts of stormwater, responsible boating, winter weather snow and de-icing best practices, and actions residents can take to help minimize stormwater pollution.
    - www.aacounty.org/departments/public-works/wprp/education-outreach/index.html

- **Waterfront Homeowners Guide** - Anne Arundel County is lucky to have over 533 miles of shoreline. This resource outlines opportunities for waterfront homeowners to protect and enhance their waterfront properties and outlines their responsibilities in regard to the Critical Area Law.
    - www.aacounty.org/departments/public-works/wprp/waterfront-homeowners/index.html
- **BMP Maintenance** – Highlights a selection of typical stormwater BMPs found in the region and suggested maintenance actions to keep BMPs functional to ensure water quality is protected.
    - www.aacounty.org/departments/public-works/wprp/bmp_maintenance/index.html
- **Watershed Studies** – Beginning in 2002, the County conducted systematic and comprehensive assessments of the County's watersheds. These assessments were conducted to assess current water quality conditions and prioritize the County's streams and subwatersheds for restoration and preservation to improve the conditions of the County's watersheds.
    - www.aacounty.org/departments/public-works/wprp/watershed-assessment-and-planning/watershed-studies/index.html
- **Biological Monitoring** - In 2004, Anne Arundel County initiated a Countywide Aquatic Biological Monitoring Program. The County program is based upon the Maryland DNR MBSS program, scaled down to a County level. The program is structured such that all major watersheds of the County are sampled in a 5-year period.
    - www.aacounty.org/departments/public-works/wprp/ecological-assessment-and-evaluation/biological-monitoring/index.html
- **Illicit Discharge Detection & Elimination** – Examines the County's Illicit Discharge Detection & Elimination Program and provides resources for residents to identify and report potential illicit discharges.
    - www.aacounty.org/departments/public-works/wprp/illicit-discharge/index.html
- **Storm Drain Marking Program** – The storm drain marking program allows the community to work together to protect our waterways. Volunteers apply educational messages on storm drains to remind residents that whatever goes into storm drains travels untreated to our creeks, streams, and rivers.
    - www.aacounty.org/departments/public-works/wprp/storm-drain-markers/index.html
- **Explore Your Watershed** - Anne Arundel County consists of 12 primary watersheds and hundreds of sub-watersheds and all of them discharge directly into the Chesapeake Bay. Residents can learn about the specific watershed they live in.
    - www.aacounty.org/departments/public-works/wprp/watersheds/index.html
- **Science of Stormwater** - Many people believe that stormwater is "clean" and that it does not harm water quality. This perception is understandable since the amount of pollution from any one spot is not usually significant by itself. This resource explains how stormwater pollution occurs, where it goes, and how to minimize sources of pollution.
    - www.aacounty.org/departments/public-works/wprp/science-of-stormwater/index.html

- **Reduce Stormwater Pollution at Your Home** – Explains simple things property owners can do around their home and yard to help reduce the flow of stormwater pollution to the Bay. Strategies include: pet waste collection and disposal, proper lawn fertilization techniques and alternatives, rainwater collection methods, septic tank maintenance, proper household waste disposal options and alternatives, bay-friendly car maintenance tips, and responsible boating tips.
    - www.aacounty.org/departments/public-works/wprp/think-bay/index.html
- **Responsible Boating** - While most boaters appreciate the natural resources that abound in the watersheds in which they recreate, many are unaware of the impacts boating can have upon those resources.
    - www.aacounty.org/departments/public-works/wprp/clean-boating/index.html
- **Rhode River Bacteria Brochure** – A brochure was distributed to marinas on the Rhode River relating to bacteria pollution. The brochure was targeted to boaters to explain how boating can contribute to bacteria issues in the river.
    - www.aacounty.org/departments/public-works/wprp/education-outreach/Bacteria_Handout_FINAL_2.pdf

In addition to the BWPR webpage, several social media outlets including Facebook (https://www.facebook.com/aawprp) and Twitter (https://twitter.com/AAWPRP) are used to help educate residents about water quality issues and to provide an avenue for timely updates of restoration projects, educational materials, links to local watershed groups, and relevant articles. These social media sites are updated daily and provide residents with an outlet to discuss local stormwater issues and allow the BWPR to continually educate residents about the program.

BWPR in the Community

The BWPR strives to keep residents apprised of current accomplishments of the program. One of the most effective ways to communicate those milestones is through the local media. Below are some select articles about the BWPR that were published during the reporting period:

- $1.28 Million Announced to Support Watershed Protection and Restoration Projects (June 10, 2022) – https://whatsupmag.com/news/1-28-million-announced-to-support-watershed-protection/
- MD Awards Climate Resilience Grants to 12 Communities (July 27, 2022) – https://www.wboc.com/news/md-awards-climate-resilience-grants-to-12-communities/article_e5f25864-0dd7-11ed-bff2-8b2a266f0d06.html

The BWPR also increases exposure by nominating notable projects/programs for recognition in local, regional, and national awards. Below are the awards highlighting the BWPR projects and programs that were received during the reporting period.

- **National Association of Counties 2022 Achievement Awards** – BWPR's Full Delivery of Water Quality Improvements "Turnkey" Program was awarded "Best in Category – County Resiliency" in May of 2022. The Turnkey Program was implemented in 2017 to expedite the

process of restoring our local waterways and driving down costs through public-private partnerships.

- **Water Environment Federation 2022 Water Quality Improvement Award** – BWPR's Turnkey Program received additional recognition through WEF's Water Quality Improvement Awards in June of 2022.
- **Water Environment Federation 2022 Public Communication & Outreach Program Award** – BWPR and the Anne Arundel Watershed Stewards Academy were recognized in June of 2022 for implementing innovative, transferrable outreach mechanisms that engage County residents in Bay restoration.

The following (**Table 10**) is a list of informational presentations and events in which the BWPR participated during the reporting period:

Table 10. BWPR outreach events in FY22.

Date	Organization/Event	Topic
9/15/21	Chesapeake Stormwater Network Webcast	Outreach Successes & Lessons Learned w/ WSA
9/17/21	County Fair Children's Day	Pet Waste Campaign Outreach
9/26/21	SPCA Walk for the Animals	Pet Waste Campaign Outreach
10/26/21	CWP Agricultural Symposium	St. Dixon Sod Farm SPSC w/ CBT and U&A
10/28/21	ACWA	Nutrients Permitting Workshop
11/8/21	Bay Journal	Waters Way Panel Discussion
11/17/21	Baltimore City DPW	Stream restoration field tour
12/1/21	MDE	Jabez hearing
1/20/22	MBSS MS4 Jurisdiction Bio Sampling Workshop	Seasonal Habitat Condition Comparison: RBP and MPHI
2/15/22	WSA Local Government Discussion	BWPR program
2/25/22	WSA Conference	BWPR Update, AAWR grant program and BWPR residential resources
2/28/22	Society of Wetland Scientists	Cat Branch - Integrated stream and wetland restoration
3/4/22	CBLP Level I Project Tour	Touring Mayapple Park and Health Dept sites with CBLP students
3/10/22	MWMC	Annual Streams Monitoring Roundtable
3/12/22	Pip Moyer STEAM Fair	Watershed demonstrations, BWPR outreach
3/14/22	AACPS Envirothon Training Day	Aquatics training for AACPS students in Envirothon, Grades 9-12
3/16/22	Facebook Announcement	Fish Atlas Story Map and Report from EAE Team
3/21/22	Virtual Community Meeting	Harting Farm Stream Restoration
3/23/22	Legal Notice in Capital & MD Gazette	1 month Public Comment Period for West River Sediment TMDL Plan
3/24/22	ACEC Environmental Committee	BWPR program
3/30/22	Virtual Community Meeting	Najoles Rd Stream Restoration
4/4/22	AACPS Envirothon Competition	Envirothon competition judge
4/6/22	Pet Waste Campaign Spokesdog Contest	Judging and awarding of "Stop POOllution in its Tracks" Spokesdog
4/11/22	Virtual Community Meeting	Homestead Gardens Outfall Retrofit

Date	Organization/Event	Topic
4/19/22	Virtual Community Meeting	Evergreen Towsers/Waugh Chapel Stream Restoration
4/21/22	Chesapeake Conservation Corps Virtual Job Fair	Sharing professional development opportunities with potential CCC interns
4/23/22	Earth Day Clean-Up in Glen Burnie	Sharing BWPR outreach materials
4/24/22	Earth Day Clean-Up in Pasadena	Clean-up event at Beachwood Park with MRA and Rec & Parks
5/2/22	Arundel Rivers Federation Board of Directors	West River Watershed Sediment TMDL Restoration Plan
5/3/22	WSA Stormwater Success ESD 201	County stormwater funding/credit opportunities
5/4/22	Landscape Exchange Network for Socio-Environmental Systems (LENS)	SERC tour and GIS discussion
5/4/22	Virtual Community Meeting	Ferndale Branch Stream Restoration
5/5/22	CBT Treasure the Chesapeake Gala	Supporting local restoration
5/7/22	AACo Watershed Stewards Academy	Stormwater Success Course - Field Tour
5/9/22	Arnold Preservation Council (several HOAs in Arnold)	County stormwater funding/credit opportunities
5/11/22	Virtual Community Meeting	BMP 876 (Rock Creek Stream Restoration)
5/13/22	Magothy River Middle STEAM Night	Sharing public stormwater resources, natural filter and watershed demo
5/15/22	CANCELLED - Ferndale Day/Parade	Tabling and sharing Ferndale Stream Restoration info
5/20/22	Center for Watershed Protection	Maintaining Forests in Stream Corridor Restoration
5/21/22	Ft. Meade Public Works Job Fair	SIP employment outreach
5/21/22	Public Works Week in Baltimore	Watershed model, highlighted projects, WSA
5/24/22	Arundel Rivers Federation Staff	West River Watershed Sediment TMDL Restoration Plan
5/31/22	Severn River Commission	Annapolis WRF tour
6/14/22	BeaverCon	Beaver BMP
6/16/22	Region 2 Small Area Committee	BWPR and the GDP
6/23/22	Virtual Community Meeting	Glen Burnie Business Park outfall
6/24/22	MD Department of Planning	Interview with Anne Arundel County: Integrating Climate Change Adaptation into Water Resource Planning
6/27/22	Region 4 Small Area Committee	BWPR and the GDP
6/28/22	Region 7 Small Area Committee	BWPR and the GDP

In addition to the above public outreach events and meetings, BWPR Project Managers provide continuous updates to members in the communities where our restoration projects occur. In many cases, feedback from the local community is taken into account from the design process through construction. BWPR's Education & Outreach Coordinator also fields public inquiries for technical assistance, either directly from residents or forwarded from the DPW Customer Relations Office. Correspondence with County residents through the BWPR in FY22 is summarized in **Table 11** below:

Table 11. BWPR resident correspondence in FY22.

Initial Contact	Resident Watershed	Questions/Concerns	Resolutions
7/6/21	Severn River	Standing water in backyard	Shared potential contractors and tax credit opportunities
7/23/21	Herring Bay	Eroding HOA-owned shoreline immediately behind private residences;	Shared information about contractors and grants for shoreline work, as well

Initial Contact	Resident Watershed	Questions/Concerns	Resolutions
		interest in replacing old concrete blocks with living shoreline	as contacts for invasive species management
9/14/21	Magothy River	Stormwater drainage issues on South Drive, lack of inlets along road, draining toward outdated corrugated pipe draining directly into the Magothy	Invited Bob Murphy and Rick Davis from the Stormwater Infrastructure Program to identify retrofit opportunities and discuss County infrastructure capacity; shared resources for independent site analysis and fee credit applications
11/1/21	Patapsco River	Concerned about sediment deposition in the creek in front of his house, identified multiple restoration opportunities, most on private property	Resident is working with SIP staff to address County SWM retrofits/maintenance near his property
11/5/21	Severn River	Eroding private shoreline with dock	Shared tax credit information, list of local contractors, WSA contact and resources
11/8/21	West River	Installed a private living shoreline, interested in earning tax credit	Shared tax credit information and requested that she share plans with our office for review
11/18/21	Severn River	Epping Forest conducted a SWM assessment and is interested in implementing restoration projects outlined in the assessment	Shared local grant opportunities, tax incentive information, and WSA resources
1/20/22	West River	Eroding shoreline on private property	Shared Full Delivery information, provided contractor list
1/27/22	West River	Interest in learning about BWPR funding/support opportunities for private SWM	Shared Watershed Restoration grant details, tax incentives information, and link to BWPR annual report
2/25/22	South River	Eroding shoreline on private property	Visited with Sarah K from CBT; shared Full Delivery information, provided contractor list
3/19/22	Patapsco River	Heavy debris in the water in front of private home	Shared link to a local debris removal company
3/30/22	South River	South River High School senior interested in learning about the program	Shared BWPR resources and expressed willingness to support a job shadowing experience with BWPR staff
4/7/22	Patapsco River	Elizabeth Landing HOA interested in restoring eroding shoreline	Staff visited site with HOA, shared resources about VMPs and restoration in the Critical Area
4/12/22	South River	Issues with private well	Forwarded to Mary Ford at I&P to clarify maintenance obligations
4/19/22	unknown	Inquiry about educational resources to support oil spill lab/lesson at Old Mill High	Forwarded information about Health Dept FSDS and Private Well Fund
4/27/22	Magothy River	Private property owner with BMP required for mitigation, wanted to know his obligations for maintenance	No resolution yet - called back and left voicemail on 5/17, no response
5/3/22	Patapsco River	Howard County Watershed Steward, inquiry about storm drain marker costs	Explained difference between voluntary BMPs and BMPs required for mitigation and shared contacts for Mary Ford at I&P for questions regarding mitigation requirements
5/6/22	unknown	Private homeowner with flooding/erosion concerns in her backyard; reached out to us on Facebook after the Ferndale Branch OPZ Community Meeting	Shared recent purchase information for 100 storm drain markers
5/10/22	Patapsco River	Stormwater drainage concerns at Summers Run Road, interest in community restoration project	Connected with Karen Jennings, who visited on-site and identified the area as relatively stable compared to most County streams, and relatively low priority for restoration. Recommendations were made to

Initial Contact	Resident Watershed	Questions/Concerns	Resolutions
			minimize mowing near the water's edge.
5/11/22	Severn River	Met at Magothy River Middle STEAM night	Shared contacts for Severn Riverkeeper and Severn River Association to initiate site visit
5/13/22	unknown	Request for storm drain markers	Discussed common misunderstandings with regard to pet waste and the County's outreach campaign resources
5/17/22	Severn River	Watershed Steward candidate interested in capstone associated with BWPR restoration work	Shared storm drain marking program information and requested install details
6/1/22	Severn River	Private waterfront owner interested in public restoration support	Toured Forked Creek, Lower Mill pre-restoration, and Ulmstead Point Park rain gardens
6/1/22	West River	(Facebook direct message) - expressed concerns about HOA (Creekside at Osprey Landing) installing a community dog park in a waterfront community open space that is also next to his house	Shared info about Full Delivery program, shared contacts for 3 contractors previously successful with the program

Watershed Restoration Grant Program

Successful conservation and preservation of the County's watersheds takes teamwork. To that end, in 2014 the Anne Arundel County Department of Public Works, in partnership with the Chesapeake Bay Trust, created the Anne Arundel County Watershed Restoration Grant Program, a community grant program to support watershed restoration activities throughout the County to improve water quality in local streams and rivers.

The grant program engages local nonprofit organizations, landowners, and communities in efforts to restore the County's waterways; provides resources to these groups to enable them to implement greening and water quality projects; and assists Anne Arundel County's efforts to meet the requirements of its State and federal stormwater permit and local waterway cleanup plans. This program encourages on-the-ground restoration activities that reduce stormwater flow and pollutants and engage Anne Arundel County residents in these activities.

Below (**Table 12**) is a list of organizations that were awarded funding from Anne Arundel County for water quality restoration projects in 2021. Implementation of these projects will result in approximately 100 acres of treated impervious area.

Table 12. Projects awarded BWPR grant funding in FY22.

Organization	Project Description	Watershed	Funding Amount	Match Amount
Severn Riverkeeper	Chestnut Hill Cove (Ph. III) Stream Restoration	Patapsco River (Stoney Creek)	$299,890	$460,861
Severn Riverkeeper	Shipley's Retreat Stream Restoration	Severn River (Severn Run)	$300,151	$1,172,087
Arundel Rivers Federation	Honeysuckle Drive Living Shoreline	South River (Selby Bay)	$177,427	$537,400
Arundel Rivers Federation	Turkey Point (Paca Drive) Bio-Swale	South River (Selby Bay)	$31,514	$0

Organization	Project Description	Watershed	Funding Amount	Match Amount
Pines Community Improvement Association	Pines Park Micro-Bioretention	Severn River (Chase Creek)	$24,479	$9,449
TOTAL			$833,461	$2,179,797

More information about the grant program can be found at www.cbtrust.org.

Bureau of Utility Operations

The County BUO is tasked with providing safe, clean drinking water and to manage the collection and processing of wastewater in public service areas throughout the County. As such, a major aspect of the BUO outreach program focuses on water conservation.

Resources have been developed to promote water saving actions, including the distribution of toilet tank leak detection kits. In addition to leak detection, other water conservation tips include the use of commercial car washes, limiting or eliminating lawn watering, use of low-flow showerheads, and the use of rain barrels to harvest rainwater for use in gardens.

The following (**Table 13**) is a list of informational presentations and events in which the BUO participated during the reporting period:

Table 13. BUO outreach events in FY22.

Date	Event
7/13/2021	DPW Presentation & Tour for Summer Interns
7/14/2021	Adler Design Meeting
7/28/2021	Stem Programming Virtual Meeting
8/11/2021	Caught up with ABI & CR
10/15/2021	Co-op Meeting with Managers to discuss co-op and see the classrooms
11/9/2021	Adler Design delivery
11/19/2021	CAT-N Co-op Meeting
12/8/2021	ABI Meeting w BUO update
12/9/2021	Adler Design Install
12/13/2021	Save the Bay Call
1/12/2022	Well Display Installed
2/1/2022	Water Sense Partner Webinar
2/1/2022	Peer Call -Building blocks of trust between community Organizations & Utilities
2/25/2022	CSAWWEA/CWEA Student Career Fair
3/7/2022	Discuss CAT-N Program with Personnel
3/9/2022	Interview by Columnist for Bay Weekly
3/20/2022	AAWDC & AACPS Career Fair
3/22/2022	BUO Complex Tour w. Student from Career Fair
3/23/2022	Scout Outreach

Date	Event
3/30/2022	Adler Planning Meeting
4/6/2022	AACO AMI Communications Strategy Workshop
4/21/2022	Earth Day BUO Complex Cleanup
4/23/2022	Trade School Fair
4/26/2022	Graduating AACPS H.S. Seniors Hiring Event
5/12/2022	CAT-N Student Mock Interviews
5/21/2022	DPW Public Works Experience
6/28/2022	Tour YH2O group from Baltimore

The BUO produces an "Annual Water Quality Report" as required by the Safe Drinking Water Act which summarizes the state of the County's drinking water sources and production methods. The reports are found on the BUO webpage and are mailed to all direct bill customers. More details can be found here: www.aacounty.org/departments/public-works/utilities/forms-and-publications/water-quality-reports/index.html

Sanitary Sewer Overflows caused by sewer system obstructions, damage, or flows in excess of sewer capacity can have a significant impact on local water quality. Sanitary Sewer Overflows that have occurred in the County during FY2021 can be found here: gis.aacounty.org/portal/apps/webappviewer/index.html?id=5df56f6b83cf4314b32edd13c62ba6fd
The BUO works in partnership with the Anne Arundel County Department of Health to notify the community when a Sanitary Sewer Overflow causes a closure to a local waterway.

With nearly 1,800 miles of sewer lines throughout its service area, BUO appreciates notification from the public if a sewer backup is suspected. Citizens are directed to call the 24-hour Emergency Services at 410-222-8400 at any time to report water or sewer emergencies in Anne Arundel County.

Bureau of Highways (BOH)

The County BOH performs maintenance activities to keep the County's roads safe and in good condition. The BOH is also responsible for roadside maintenance, drainage maintenance, and snow removal.

Roadside maintenance is mainly performed by three Road Districts. Some examples of the additional services performed in County-maintained roadways include:

- **Litter/Debris Removal** - Litter and debris are picked up along all County-maintained roadways. Residents may request litter/debris removal within the County-maintained road right-of-way by contacting their local Roads District.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Roadside_Maintenance/litterdebris-removal

- **Leaf Removal/Recycling** - Residents may request removal of leaves that have accumulated on County-owned roadways or ditches and are causing a hazard or blocking the flow of water by contacting their local Roads District. The following link explains relevant County services, and suggests opportunities for homeowners to manage leaves responsibly.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Roadside_Maintenance/leaf-removalrecycling

Drainage maintenance is performed by various divisions within BOH including Road Operations and Infrastructure Management. Some examples of the services performed in County-maintained roadways include:

- **Culvert & Closed Storm Drain Program** - The Bureau of Highways is responsible for the inventory, inspection, and maintenance of the County's culverts and closed storm drain systems. The Road Operations Division performs routine maintenance on these systems. The Infrastructure Management Division, inventories and inspects these systems via a programmed approach. There are approximately 85,000 components in the inventory at this time. These components include inlets, manholes, pipes, culverts and outfalls. Residents may request Storm Drain System Maintenance by contacting their local Roads District.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/culvert--closed-storm-drain-program
- **Ditch/Curb and Gutter Cleaning** - BOH completes necessary ditch or curb and gutter cleaning work on County-maintained property, reducing sediment and debris traveling to the bay during periods of inclement weather. Keeping ditches and curb lines free of debris also protects the citizen's investment in County infrastructure by ensuring that these structures do not overflow and cause stormwater to pond on roadways causing safety issues and pavement damage. Residents may request Ditch/Curb and Gutter Cleaning by contacting their local Roads District.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/ditchcurb-and-gutter-cleaning
- **Drainage Construction** – BOH constructs new drainage systems including inlets, pipes, headwalls, and/or placement of outfall protection on County-maintained property. By completing necessary drainage construction work on County-maintained property, we help control the flow of water and sediment into the bay. Residents may request Drainage Construction by contacting their local Roads District.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/drainage-construction
- **Drain Pipe Cleaning** - Drainage pipes are critical to carry the flow of water under the road so that it may continue its natural drainage course. Pipe obstructions may result in flooding and/or damage to the roadway surface. Work under this activity includes cleaning and removing debris from pipes and flushing pipes using a power rodder to remove any obstructions. Residents may request Drain Pipe Cleaning by contacting their local Roads District.

    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/drain-pipe-cleaning
- **Drain Pipe Repair/Replacement** - Work in this activity includes the repair or replacement of pipes, depending on the degree of deterioration. This activity is scheduled throughout the year, however, in the presence of a safety hazard, work is scheduled when detected. Residents may request Drain Pipe Repair/Replacement by contacting their local Roads District.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/drain-pipe-repair-and-replacement
- **Emergency Storm Drain Program** - The BOH is responsible for resolving flooding or water ponding problems that are caused by storm runoff from County-maintained roadways. Residents may request flooding and/or ponding assistance by contacting their local Roads District.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/emergency-storm-drain-program
- **Erosion Control** – The County repairs eroded areas caused by water coming from a County-owned or County-maintained road. To reduce water pollution and prevent erosion, material such as topsoil, jute mats, grass seed, rip rap, etc. is placed on County-maintained property. Residents may request Erosion Control by contacting their local Roads District.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/erosion-control
- **Rain Gardens** – The BOH provides information on relevant County requirements for rain gardens and outlines opportunities for homeowners to use rain gardens to provide flood control, groundwater recharge, and water-cooling benefits, while removing many types of pollutants and other contaminants from stormwater runoff.
    - www.aacounty.org/services-and-programs/rain-gardens
- **Storm Drain Cleaning** - Cleaning of storm drain inlets on County-owned property reduces sediment traveling to the Bay. Work is completed on a rotating basis using a vactor (vacuum) truck on approximately 25,850 inlets. Inlets are cleaned every 3 years with special attention given during and after rainfall events to insure proper drainage. Residents may request Storm Drain Cleaning by contacting their local Roads District.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/storm-drain-cleaning
- **Storm Drain Repair** - Repair to storm drain inlets and manholes on County-maintained property reduces sediment and protects investment in our infrastructure by preventing deterioration of the road network due to consistent ponding on streets. In addition, road shoulders and side slopes are protected from erosion caused by the flow of uncontrolled water. Residents may request Storm Drain Repair by contacting their local Roads District.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/storm-drain-repair
- **Stormwater Management Facilities** - The BOH currently manages the maintenance of approximately 700 County-owned stormwater facilities. These facilities generally serve single-

family residential developments. Other BMP's found in apartment and townhome complexes, industrial and business centers, or in developments under construction are privately maintained. Services provided on County-maintained BMP's include mowing, inspection, and general maintenance of these devices. Residents may report a problem with a County-maintained BMP by contacting the Infrastructure Management Division (IMD). Inquiries regarding privately maintained BMPs are directed to the Department of Inspections and Permits.

    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/stormwater-management-facilities

- **Street Sweeping** - Anne Arundel County's street sweeping program is designed to keep debris out of storm drains, our creeks, rivers and ultimately the Chesapeake Bay. The list of roads included in the street sweeping program is available for viewing. Street sweeping data is shared on social media and in the BWPR Annual Report.
    - www.aacounty.org/departments/public-works/highways/road-maintenance/Drainage_Maintenance/street-sweeping

Snow removal on County-maintained roads is performed by the BOH. The BOH is dedicated to ensuring the safety of the traveling public while providing timely service to our citizen and business communities during inclement weather by planning and executing its winter operation activities on more than 6,700 County-maintained roads and streets, and doing it in an environmentally friendly way.

De-icing materials are an effective tool for maintaining safe winter road conditions. The BOH strives to only apply as much salt as necessary to achieve safe driving conditions. Use of salt management data is shared on social media and in the BWPR Annual Report.

The County's winter de-icing strategy and resources are discussed in **Part IV.D.4.d** of this MS4 Annual Report, and are explained on the County webpage at www.aacounty.org/departments/public-works/highways_/snow-information/index.html. This webpage succinctly explains the County's efforts toward winter preparations, what citizens and business should expect during snow storms, what County citizens can do to help during inclement weather events, and general winter weather tips.

Bureau of Waste Management Services (WMS)

The County's WMS is responsible for collecting recycling, yard waste and trash from over 169,000 curbside customers. This Bureau also is responsible for the operation of the Millersville Landfill and Resource Recovery Center and the County's three Recycling Centers.

The Recycling and Waste Reduction Division of WMS administers an extensive outreach program geared toward residential and commercial recycling and other source reduction strategies and promotes the proper disposal of household hazardous waste (HHW) materials. During FY22, efforts continued to promote the exclusion of plastic bags, wrap, and film from the recycling stream.

Outreach pertinent to HHW disposal has been reported in previous MS4 Annual Reports. Additional information on HHW disposal is available on the County's website at: www.aacounty.org/services-and-programs/household-hazardous-waste-drop-off-days. The County's WMS typically holds six (6) resident-only HHW collection events each year. In FY22, one (1) event was hosted at each of the three County Recycling Centers and three (3) events were held at the County's Heritage Office Complex. These events accounted for the proper disposal of 173 tons of HHW, successfully keeping these materials out of our landfills, roadside ditches, storm drains, and waterways. These collection events are vital to keeping harmful toxins out of our landfill, and discourage the improper disposal of hazardous materials. All HHW materials collected at the events are packaged, transported, and disposed of by a licensed hazardous waste contractor.

WMS also provides information such as what can be recycled; ways to get recycling and composting bins; dealing with yard waste and grass cycling; source reduction; amounts recycled in different areas of the County; local events that promote recycling; and question-and-answer forums at outreach events, in County offices, through the County website (www.recyclemoreoften.com), and on the Anne Arundel County Recycling Division Facebook page (www.facebook.com/annearundelrecycling/). The current Countywide recycling rate is 35%.

Department of Health

The Anne Arundel County Department of Health has published a fact sheet series entitled "Health Matters" (see examples in 2014 Annual Report). These fact sheets are distributed at events run by the Department of Health. Environmental health information can also be found on their website (www.aahealth.org/environmental-health). Some of the topics addressed include

- Recreational Water Quality: Water quality and swimming or fishing in Anne Arundel County rivers and creeks;
- Bay Restoration Fund (BRF) Program: for nitrogen-reducing pretreatment units for septic systems to be installed within the Chesapeake Bay Critical Area; and
- Onsite Sewage Disposal Systems and Private Water Wells Program; collapsed septic tanks, overflowing septic systems and failing septic systems interim health and safety requirements.

Recreational Water Quality

The Anne Arundel County Department of Health continues to publicize a seasonal water quality information line (410-222-7999) on the Department of Health's website (www.aahealth.org/recreational-water-quality).The water quality information line alerts the public to current advisories and closures of recreational water as the result of sewage spills and bacterial exceedances from over 80 bathing beaches that the Department monitors from Memorial Day through Labor Day. The Department also promotes an e-alert system so an individual can be notified by e-mail when the Department has an advisory or closure of recreational waters. Individuals can sign up for the e-alert system on the Department of Health's website. In addition, water quality

advisories are communicated via the Department's Facebook and Twitter pages. The Department recommends no direct water contact for 48 hours after a significant rain event (½-inch or more of rain) due to predicted elevated bacteria levels.

The Department of Health, in conjunction with MDE and the Maryland Department of Health and Mental Hygiene, promotes the Maryland Healthy Beaches campaign (www.marylandhealthybeaches.com). The campaign makes people aware of everyone's impact to the waterways in the State of Maryland. One of the campaign's major focus areas is the importance of picking up pet waste.

The Anne Arundel County Department of Health also issues a closure when a sewage spill, leak, or other problem indicates human waste has impacted the water. Subscribers to the Department's Recreational Water Quality E-mail Alerts receive an e-mail notifying them when County waterways are closed and reopened. Alerts can also be received via text messages by following the Department of Health on Twitter or Facebook.

Bay Restoration Fund (BRF)

The Department of Health promotes the BRF Program. This program provides grant funding to qualified applications for assistance to install nitrogen reducing pretreatment units in conjunction with an onsite sewage disposal system that is in the Chesapeake Bay Critical Area. The grant funds up to 100% of the cost of the treatment unit and a two-year service and maintenance program for repairs of failing systems in the Critical Area. Additionally, the grant funds can be used to help qualified applicants connect to existing public sewer system. These connections can be funded if the existing dwelling, currently served by a septic system, is located where public sewer is available and immediately abuts the property. The Department of Health administers this grant, awarded by the Maryland Department of the Environment.

The FY22 BRF-funded projects are included in the County's *AltBMPPoint* feature class of the MS4 Geodatabase (**Appendix A**). Implementation of these projects provide a direct reduction to the nitrogen load that is reaching the Chesapeake Bay.

Onsite Sewage Disposal Systems and Well Program

The Department of Health publicizes information about onsite sewage disposal systems and private water wells on their website, www.aahealth.org. Guidelines and videos about maintaining septic systems are available at www.aahealth.org/guidelines-for-maintaining-your-septic-system.

Department of Inspections & Permits (I&P)

The Department of Inspections and Permits (I&P) strives to provide the citizens of Anne Arundel County with the highest inspection standards consistent with the adopted codes and regulations. This is accomplished through the consistent and equitable application of regulations in the built and

natural environment through plan reviews, inspections, enforcement, and the issuance of permits and licenses.

The I&P website contains general information available to the public regarding erosion and sediment control, stormwater management, buffer management, grading and permits, the Chesapeake Bay Critical Area, invasive species, and sensitive areas. This information can be found at www.aacounty.org/departments/inspections-and-permits/about-us. Examples of the available information are found below.

- Blue Notices: Stormwater facility design and maintenance guidance is provided to the development community, citizens, and other stakeholders in the form of "Blue Notices" posted to the I&P webpage.
    - www.aacounty.org/departments/inspections-and-permits/blue-notices/ .
- Hazard Tree Factsheet: The purpose of this fact sheet is to educate homeowners, homeowner associations, and residents regarding hazard trees and how they can monitor for these trees, what to look for and what to do if a hazard tree is on their property.
    - https://www.aacounty.org/departments/inspections-and-permits/forms-and-publications/hazard-tree-fact-sheet.pdf

Additional environmental information found within the Forestry Division component of the I&P webpage includes the Emergent Grasses Program (www.aacounty.org/departments/inspections-and-permits/forestry/marsh-grasses/). This program is a County supported effort between the I&P and the Department of Recreation and Parks to facilitate shoreline stabilization. Through this program, County residents with qualifying living shoreline or other tidal projects can apply for emergent marsh grasses for planting on appropriate sites at no cost. These plantings help with the preservation, rehabilitation, and reconstruction of shorelines.

I&P in the Community

County inspectors and forestry staff regularly consult with homeowners on site visits with regard to erosion control, steep slopes, as well as native vegetation and invasive control in the Critical Area. Forestry staff work with property owners and communities when there is large scale decline and death of vegetation such as resulted from the Emerald Ash Borer and Oak Decline, regarding both vegetation loss and ways to mitigate the loss.

In partnership with Watershed Stewards Academy, local non-profits and other watershed groups, County staff participate in various presentations and information sharing to address stormwater BMP maintenance and construction. This outreach can occur both in the office and in the field, and conveys important educational information to homeowners, HOAs and maintenance/construction contractors. County staff also work with property owners on proactive measures such as the benefits of protecting natural areas and restoring areas with native plantings, assistance with the design and installation native plantings throughout the county, as well as invasive species control projects.

Anne Arundel Soil Conservation District

For more than 75 years, farmers have turned to the Anne Arundel Soil Conservation District (AASCD, the District) as a trusted source of knowledge and technical expertise in managing and protecting soil and water resources on their farms. Today, farmers, developers, businesses, environmental groups, and government agencies rely on the District to help them meet nutrient and sediment reduction goals outlined in the County's Watershed Implementation Plan to protect and restore the Chesapeake Bay by 2025.

Agricultural Programs

The Maryland Phase III Watershed Implementation Plan was published on August 23, 2019, and agriculture is well on its way to reducing the nutrients and sediment reaching the Bay, reducing nitrogen levels by 20%, phosphorus by 26% and sediment by 28% since 2017. This success is largely due to the on-the-ground efforts of AASCDs soil conservation professionals, who work with farmers to develop Soil Conservation and Water Quality Plans (SCWQPs) that address natural resource and environmental concerns for their farms. These plans usually include a menu of best management practices (BMPs) that can be installed to protect soil and water resources. Cover crops and streamside buffers are often recommended to prevent nutrients from crop fields and nurseries from entering waterways. Livestock fencing, watering facilities, and improved pasture management practices help farmers protect streams from livestock impacts.

In FY22, the AASCD developed/updated 57 SCWQPs encompassing 4,639 acres for County farms. These plans included more than 258 (57 WIP) BMPs. The design, installation and construction supervision of these practices are the responsibility of the District's technical staff. See **Table 14** for FY22 accomplishments.

Table 14. Anne Arundel Soil Conservation District agricultural BMPs FY22.

Best Management Practice	Achieved (acres)	Percent of WIP Goal Achieved (%)	2025 WIP III Goal (acres)
Cover Crops – Traditional	4701	101	4667
Soil Conservation & Water Quality Plans (cumulative acres)	12,633	90	14,000
Prescribed Grazing (acres)	338.3	26	1500
Horse Pasture Management (acres)	100	25	400
Land Retirement to Open	80	15	538

Urban Programs

Construction and road building projects can have a significant impact on water quality. The District is authorized to review and approve erosion and sediment control plans for projects in the County. This ensures that environmental safeguards are in place to minimize soil erosion, nutrient runoff and sediment buildup in local waterways. In FY22, the District reviewed 1,044 erosion and sediment

control plans for construction projects on 11,500 acres. Approximately 280 of these plans were new submittals totaling 618 disturbed acres and 764 were revised plans totaling 1,868 disturbed acres. To further protect the County's valuable natural resources, the District also provides recommendations to homeowners with drainage, erosion, and shoreline erosion concerns.

Conservation Partners

The AASCD works with local, State, and federal agencies to carry out its mission, including the Maryland Department of Agriculture, Natural Resources Conservation Service, Farm Service Agency, University of Maryland Extension, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Southern Maryland Resource Conservation and Development, and U.S Navy.

Anne Arundel County Watershed Stewards Academy

The Anne Arundel County Watershed Stewards Academy (WSA) was created in 2009 as a partnership between Arlington Echo Outdoor Education Center and the Anne Arundel County Department of Public Works to build capacity within communities to reduce pollutants entering our waterways via stormwater runoff. The BWPR continues to provide critical support in connecting Stewards and communities with watershed studies, planning, and restoration efforts.

As noted in previous MS4 Annual Reports, the WSA developed and refined training and resources for Stewards to employ community-based social marketing to affect pollutant reducing behavior changes such as pet waste disposal, removal of leaves from impervious surfaces, and reduction in fertilizer use. Using face-to-face surveys, Stewards are taught to measure a baseline of behavior and measure a behavior change. They are also supported with template tools and sample behavior change campaigns for use in their own community. Further details can be found on the WSA website at aawsa.org.

2022 WSA Successes:

- Hosted 21 outreach and continuing education events, 2 short courses and the 15 session Watershed Steward Certification Course (over 120 hours of training and outreach to over 1,100 attendees)
- Reached 19,121 residents, providing technical assistance or environmental education.
- Planted 27,295 native perennial plants and shrubs, along with 3,033 trees for a total of 30,328 plants in the ground.
- Led more than 575 restoration projects
- Stewards donated 10,265 volunteer hours towards restoration, education, and outreach in their communities
- Removed 250,000 square-feet of invasive species

WSA 14th Certification Course

- WSA recruited 26 Stewards as part of the 14th Certification Course

Outreach Events

During this reporting period, WSA hosted several events to keep Stewards and Consortium Members engaged including those listed below.

- WSA Field Conference (September 2021): WSA's March 2021 Annual Conference was held virtually due to the COVID-19 pandemic. To complement the conference and meet the desire for in-person connection, WSA hosted a follow-on Field Conference in fall 2021. Attendees visited workshops across the County ranging from the ecological renovation of The Preserve at Eisenhower Golf Course to native landscape design.
- WSA Annual Conference (February 2022): For the second time, WSA's annual conference was held virtually, drawing 169 attendees. For added engagement, WSA held additional in-person and virtual events during the week leading up to the conference. The conference was held over two days and featured 14 sessions, including two plenary sessions, both focused on equity and inclusion in our organization and watershed. Additionally, we held a Stewards Only session to allow Stewards to network, connect, and plan out the year ahead. The Conference program can be viewed at aawsa.squarespace.com/2022-conference.
- Networking and Continuing Events: As in FY21, WSA's traditional continuing education events were once again limited by COVID-19, so we offered additional virtual opportunities. These included tour of the new Anne Arundel County GIS System website, trainings on our new reporting database, and a panel on Environmental Justice offered in partnership with Anne Arundel County Public Library. In total, WSA offered 14 Continuing Education/Networking drawing over 680 attendees.
- Mentoring: New this year, WSA paired Master Watershed Stewards with Steward Candidates, from the current certification course, as a form of networking and support while candidates plan and execute their projects.

Restoration Project Monitoring

WSA staff and Steward volunteers monitored 18 projects due for the triennial inspection. WSA is continuing to track Steward sponsored projects. Inspections are summarized on a project data sheet. For FY22, two projects were found to have failed due to lack of maintenance from project leads and have been removed from the inventory. The complete project inventory list is maintained in Google Docs for the WSA staff and Steward Volunteers. The inspection information is shared with County staff as requested. These project inspections are not included in the County's MS4 Geodatabase as some of the required data are not available. As this information is refined, and the mandatory data are collected, the County will review and consider incorporating into the MS4 Geodatabase.

RiverWise Congregations

Over the past year, WSA has

- Overseen and supported projects at 18 congregations
- Trained 9 Master Watershed Stewards from 7 congregations
- Continued to build relationships with Congregational Stewards from 7 congregations who participated in WSA's 2020 Short-Course Training

Clean Water Communities

WSA continued to work with the communities of Glen Isle, Columbia Beach, Millstone Village, and Pines on the Severn to achieve their Clean Water Communities benchmarks. To learn more about Pines on the Severn progress or the Glen Isle community success story, please visit the webpage aawsa.org/cwc-about

Stormwater Success Program

The following Stormwater Success activities were conducted during this reporting period.

- The Stormwater Success Short Course for HOAs and Property Managers was held virtually and the course content developed into webinars. The short course provides property managers and HOA leaders with information and resources to help them reduce pollution coming from their properties while addressing key concerns including flooding, maintenance of stormwater management devices, reducing management costs, and engaging residents to reduce pollution from pet waste, litter and other sources. To read about the program and to review course materials, visit aawsa.org/stormwater-success .
- The in-person tour, which took place over the weekend of May 7-8, 2022, was held in two communities in Severn, MD and exposed the participants to different kinds of stormwater ponds that were in different states of maintenance and also a community that was built with ESD principles. County stormwater inspectors participated in the tour to answer questions. Stormwater Success was offered in both fall 2021 and spring 2022, with more than 45 people attending at least one of the sessions.

Replant Anne Arundel

A summary of Replant Anne Arundel can be found here: aawsa.org/replant-2, and a presentation about Replant Anne Arundel County may be found here: drive.google.com/file/d/1un4QU6qOwH5JvAlJ3og53s4kVYXM3cjD/view?usp=sharing

Accomplishments during the reporting period are listed below.

- Tree Troopers: 47 Tree Troopers were trained over the course of fall 2021 and spring 2022. Their projects will be installed in fall 2022.
- Groves of Gratitude: WSA facilitated a fall tree sale called "Groves of Gratitude". This sale provided County residents access to trees in the form of single trees or pre-designed "grove" packages. Groves of Gratitude distributed 400 trees to over 70 County residents in fall 2021.

- Backyard Buffers: In spring 2022, WSA distributed 1,800 bare roots seedlings, provided by the Maryland Department of Natural Resources, to over 80 County residents.
- Tree Ambassadors: In FY22, WSA created a new program focused on engaging underrepresented communities in the County, funded through the CBT Urban Trees Grant program. Through WSA's work with Abel Olivo of Defensores de la Cuenca (www.defensoresdelacuenca.org/), the limitations to Replant's accessibility within the County were identified. In response to these limitations, WSA incorporated stipend awards to participants that go through the Tree Ambassador program. Through this program (planned during FY 2021-2022 and executed during FY 2023-2024), Tree Ambassadors are trained through a bilingual version of the Tree Trooper training and then tasked with recruiting "Tree Hosts" who will receive trees in their communities. The Tree Ambassador will work closely with the Tree Hosts to complete a planting project and facilitate the ongoing project maintenance. To fit the criteria of the Urban Tree grant, each Tree Ambassador will focus on areas of high priority. At the time of this report, WSA has recruited five Tree Ambassadors; three from the Brooklyn Park area, and two representing communities in Annapolis.

RePollinate Anne Arundel

Inspired by the RePlant Anne Arundel Program, Watershed Stewards, in collaboration with Anne Arundel County Master Gardeners and the USGS Bee Lab, grow and distribute native plants. More information about this new program may be found here: aawsa.org/repollinatenativeplantdistribution.

From My Backyard to Our Bay

This booklet, originally created in partnership with Anne Arundel Soil Conservation District, and the Bureau of Watershed Protection and Restoration explains water quality issues and outlines steps residents can take to reduce pollution and improve water quality. An update was completed in 2021 to add new and more relevant information. The final proof of From My Backyard to Our Bay can be found here: https://drive.google.com/file/d/1qFM3QPRetInQdPaJ4LvSP8sas4kOqC84/view

Stop POOllution in its Tracks

WSA supported AACO to develop a social marketing and outreach campaign aimed at reducing bacterial pollution by encouraging residents to pick up and dispose of pet waste in order to: Stop POOllution. WSA has provided technical assistance in community based social marketing at all stages of the campaign, and helped to connect community leaders from pilot communities to the campaign. In preparation for a wider launch, WSA developed a resource web page to support the campaign at https://aawsa.org/pick-up-pet-waste/.

Arlington Echo Outdoor Education Center - Chesapeake Connections

Chesapeake Connections is the Outdoor Education outreach program of Arlington Echo which connects Anne Arundel County classroom instruction with a series of relevant hands-on experiences that lead to environmental stewardship. The staff at Arlington Echo Outdoor Education Center

provide support and expertise to complete yearlong environmental service-learning projects. The service-learning projects are incorporated into each school's curricula and involve using community areas or school grounds for environmental restoration activities. The program works to restore and/or create bogs, raingardens, and manage runoff areas on school grounds or in the community to treat stormwater pollution.

The County partners with the Chesapeake Connections program to provide hands-on experiences for Anne Arundel County students through the planting of native trees and other vegetation at BWPR restoration projects. No projects were planted with Chesapeake Connections in FY22 due to continuing COVID restrictions. At the time of submitting this report, one (1) project is scheduled to be planted with Chesapeake Connections in FY23, and more opportunities are expected as COVID restrictions ease over time.

E. Stormwater Restoration

In compliance with §402(p)(3)(B)(iii) of the CWA, MS4 permits must require stormwater controls to reduce the discharge of pollutants to the MEP and such other provisions as MDE determines appropriate for the control of such pollutants. Additionally, by regulation at 40 CFR §122.44, BMPs and programs implemented pursuant to this permit must be consistent with applicable stormwater WLAs developed under EPA established or approved TMDLs (see Appendix A to the Permit). The impervious acre restoration requirements and associated pollutant reductions described below for the County are consistent with Maryland's Phase III WIP for the Chesapeake Bay TMDL and 2025 nutrient load targets, and for local TMDL implementation targets described by the County in its TMDL Watershed Restoration Plans.

1. Annual Alternative Control Practices

Annual alternative control practices used by the County to meet the prior MS4 permit's impervious acre restoration requirement shall be (a) continued annually at the same level of implementation (e.g., street lane miles swept, septic systems pumped) under this permit, (b) replaced with 199 impervious acres using stormwater management BMPs, programmatic initiatives, or alternative control practices in accordance with the 2021 Accounting Guidance, or (c) a combination of (a) and (b).

Anne Arundel County continued annual alternative control practices in FY22 at the same level of implementation as the previous permit. The County performed 6,654 lane miles of street sweeping, which equates to 256 miles every two weeks – the same annual effort since FY19. The street sweeping program collected 172.86 tons of material from County-maintained streets in FY22.

Anne Arundel County BOH conducts manual and mechanical storm drain inlet cleaning throughout the County. For FY22, the County removed 139.7 tons of debris from catch basins, inlets, and outlets of pipes to maintain proper drainage. While this year's tonnage is slightly less than the 174.5 tons

noted in Appendix B of the Permit, the County is still on track to maintain a long-term annual average that meets the permit requirement. .

The County also recognized a significant increase in septic pumping this year, well above the required implementation level. In FY22, over 20 million gallons of septage was pumped in Anne Arundel County. This is equivalent to 20,747 units, compared to the previous permit average of 9,566 units per year. The County is confident in its ability to maintain its annual programmatic credits and remain in compliance with its permit goals into the foreseeable future.

2. Impervious Acre Restoration Requirements

The impervious acre restoration requirements described below are in addition to the requirements listed in Part IV.E.1 of this permit.

a. Impervious Acre Restoration Progress

- *By November 4, 2026, complete restoration of 2,998 impervious acres that have not been treated to the MEP by implementing stormwater BMPs, programmatic initiatives, or alternative control practices in accordance with the 2021 Accounting Guidance.*
- *By November 4, 2022, complete the stormwater BMPs, programmatic initiatives, or alternative control practices listed in the Year 1 BMP Portfolio provided in Appendix B of the Permit. The County may replace individual practices listed in Appendix B with others that meet the requirements of the 2021 Accounting Guidance as long as the total restoration at the end of year one meets the annual restoration benchmark schedule in Table 1 of the Permit. The County shall use the annual restoration benchmark schedule (Table 1 of the Permit) to achieve its impervious acre implementation requirement by the end of the permit term.*
- *In each year's annual report, the County shall*
    - *Submit to MDE a list of BMPs, programmatic initiatives, and alternative control practices to be completed in the following year to work toward meeting the impervious acre restoration benchmark. The list shall be submitted in the same format as the Year 1 BMP Portfolio provided in Appendix B of the Permit. The County may replace individual practices listed in its annual BMP portfolio as long as the total implementation rate at the end of the year meets the annual restoration benchmark schedule in Table 1 of the Permit.*
    - *Evaluate progress toward meeting the annual restoration benchmark according to the schedule in Table 1 of the Permit and adjust the benchmark appropriately based upon (1) actual BMP implementation rates; and (2) anticipated implementation rates and annual restoration benchmark schedule needed in the remaining years of the Permit for meeting the final impervious acre restoration requirement by November 4, 2026.*

Since attaining its fourth generation MS4 permit restoration goal, the County has made excellent progress towards the current permit's goal of 2,998 acres of impervious surface restoration. Anne

Arundel County completed all of the projects listed in the Year 1 BMP Portfolio. A number of other projects were completed during Year 1 of the Permit and these are noted in the normal fashion in the FY22 MS4 Geodatabase. Table 1 in **Appendix D** (and MS4 Geodatabase *NarrativeFiles* table) provides the project by project accounting of the Year 1 BMP Portfolio, including the replacement projects. Table 2 in **Appendix D** (and *NarrativeFiles*) is the County's planned Year 2 BMP Portfolio.

Table 15 summarizes the County's progress in FY22, as well as the cumulative restoration acreage completed towards the current permit's goal. The County's Year 1 restoration benchmark was set at 20% of the 2,998 acre goal, or approximately 600 acres. By the end of FY22 the County completed 1,535 acres of restoration, 51% of the permit goal, and far exceeded its Year 1 of 20% and its Year 2 benchmark of 40%. The County is confident that even if some projects experience delays, it is well positioned to attain its permit goal by November 2026, as required.

Table 15. FY22 impervious surface restoration – credit accounting summary.

Restoration Project Type	Equivalent Impervious Credit Acres	
	Completed in FY22[2]	Completed – Cumulative through FY22
Restoration BMPs		
- ESD	0	2.6
- structural	15.2	153.5
Alternative Restoration BMPs		
- street sweeping[1]	43.3	168.9
- impervious surface elimination	0	0.1
- reforestation	0	0
- catch basin and storm drain cleaning[1]	29.3	69.8
- stream restoration	33.6	533.7
- outfall stabilization	104.6	282.3
- shoreline management	171.3	464.7
- septic pumping[1]	622.4	287.0
- septic denitrification	35.8	66.6
- septic connections to WWTP	23.5	31.9
TOTAL ACRES	383.9	1,535.4

[1] For annual practices, cumulative attainment values are based on the average equivalent impervious treatment achieved after full implementation of the programs. Averages for street sweeping and septic pumping are based on FY16-FY18 implementation, and catch basin cleaning is based on FY17-FY18 implementation.
[2] Completed total acreage for FY22 does not include acreage tallied for annual practices, which serves as maintenance of the annual practice credits claimed towards the County's fourth generation MS4 permit restoration goal.

b. Nutrient Credits

- *The County may acquire Nutrient Credits for Total Nitrogen (TN), Total Phosphorus (TP), and Total Suspended Solids (TSS) in accordance with COMAR 26.08.11 to meet the restoration requirement of 2,998 equivalent impervious acres. For acquiring Nutrient Credits in place of impervious acre restoration, an equivalent impervious acre shall be based on reducing 18.08 pounds of TN, 2.23 pounds of TP, and 8,046 pounds of TSS. The maximums allowable credits obtained from trades with wastewater treatment plants shall not exceed 1,521 equivalent impervious acres restored.*
- *Any Nutrient Credits acquired by the County for meeting the equivalent impervious acre restoration requirements shall be maintained and verified in accordance with COMAR 26.08.11 and reported to MDE in annual reports unless they are replaced at a 1:1 acre ratio by local stormwater management BMPs, programmatic initiatives, or alternative control practices in accordance with 2021 Accounting Guidance.*
- *The County acquired trading credits, or "Nutrient Credits" (i.e., 47,183 lbs TN, 7,620 lbs TP), 1,185,245 lbs TSS) to restore 2,607 equivalent impervious acres to meet its prior MS4 permit's impervious acre restoration requirement. The balance of these credits not replaced with stormwater management BMPs, programmatic initiatives, or alternative control practices prior to November 5, 2021 shall (a) be continued and verified annually under this permit in accordance with the Maryland Water Quality Trading and Offset program (COMAR 28.08.11) until they are replaced; and (b) be replaced with stormwater management BMPs, programmatic initiatives, or alternative control practices in accordance with the 2021 Accounting Guidance prior to expiration of this Permit.*

As reported in the County's FY19 MS4 Annual Report, the County acquired Nutrient Credits, then converted to equivalent impervious credit, through trades with its wastewater treatment plants in order to meet the 20% impervious surface restoration goal in its fourth generation MS4 permit. The credit acquired through trading was replaced by credit achieved by BMP implementation in FY20; the complete summary and details of the credit replacement may be found in the FY20 MS4 Annual Report. The County met its fourth generation MS4 permit's 20% impervious surface restoration goal as of June 18, 2020. As a result, the County did not participate in any credit trading in FY21.

The County's fifth generation MS4 permit included a new goal of 2,998 acres of impervious surface restoration and a schedule for annual restoration benchmarks. This schedule requires the County to complete 20% of that goal, or 600 acres of equivalent impervious surface restoration, by the end of Year 1 of the permit. The cumulative restoration completed by the end of FY22 (51%) exceeded the 20% implementation benchmark and so the County did not participate in any credit trading in FY22.

F. Countywide TMDL Stormwater Implementation Plan

1. Completed TMDL Implementation Plans

Where Anne Arundel County has submitted an implementation plan for a TMDL identified in Appendix A of the Permit, the County shall, within one year of the effective date of this permit, address all outstanding comments as requested by MDE.

Anne Arundel County submitted the West River Sediment TMDL Restoration Plan Final Draft to MDE as an appendix to the County's FY21 MS4 Annual Report. This TMDL Restoration Plan was previously advertised for public comment (March 23, 2022 to April 23, 2022). The County is awaiting MDE's comments on the plan prior to finalizing the plan. A copy of the Final Draft West River Sediment TMDL Restoration Plan is again included in the FY22 Countywide TMDL Stormwater Plan as an attachment (**Appendix E**).

In April 2019, MDE provided comments on the DRAFT South River Sediment TMDL Documentation of Attainment. In FY22, the County remodeled the South River sediment loads using MDEs TIPP Sediment Spreadsheet Tool and revised the document per MDEs comments. The revised plan, Non-Tidal South River Watershed Sediment TMDL Stormwater Wasteload Allocation Attainment Report (2022) is submitted as an attachment to the FY22 Countywide TMDL Stormwater Plan (**Appendix E**).

2. New TMDL Implementation Plans

Within one year of EPAs approval or establishment of a new TMDL, Anne Arundel County shall submit an implementation plan to MDE for approval. The TMDL implementation plan shall be based on MDE's TMDL analyses, or equivalent and comparable Anne Arundel County water quality analyses, that includes: (a) a list of stormwater BMPs, programmatic initiatives, or alternative control practices that will be implemented to reduce pollutants for the TMDL; (b) a description of the County's analyses and methods, and how they are comparable with MDE's TMDL analyses; and (c) final implementation dates and benchmarks for meeting the TMDL's applicable stormwater WLA. Once approved by MDE, any new TMDL implementation plan shall be incorporated in the Countywide TMDL Stormwater Implementation Plan and subject to the annual progress report requirements under Part IV.F.3 of this permit.

EPA approved the Total Maximum Daily Load of Sediment in the Baltimore Harbor Watershed on January 27, 2022. In FY22 the County initiated the development of a restoration plan to address this TMDL. The draft restoration plan is complete and submitted as an attachment to the FY22 Countywide TMDL Stormwater Plan (**Appendix E**) for MDE review and comment.

3. Annual Progress – Countywide TMDL Stormwater Implementation Plan

For all TMDLs and WLAs listed in Appendix A of the Permit, the County shall annually document, in one Countywide Stormwater TMDL Implementation Plan, updated progress toward meeting these

TMDL WLAs. This Countywide Stormwater TMDL Implementation Plan shall include: (a) a summary of all completed BMPs, programmatic initiatives, alternative control practices, or other actions implemented for each TMDL stormwater WLA; (b) an analysis and table summary of the net pollutant reductions achieved annually and cumulatively for each TMDL stormwater WLA; and (c) an updated list of proposed BMPs, programmatic initiatives, and alternative control practices, as necessary, to demonstrate adequate progress toward meeting MDE's approved benchmarks and final stormwater WLA implementation dates.

Anne Arundel County submitted an initial Countywide TMDL Stormwater Implementation Plan as part of the in FY21 NPDES MS4 Annual Report, documenting progress toward meeting SW-WLAs for all EPA approved TMDLs in Appendix A of the County's permit. The County received review comments on that plan on September 12, 2022 from MDE's Water and Science Administration. The County's FY22 Countywide TMDL Stormwater Implementation Plan addresses the comments received on September 12 and is submitted as **Appendix E**. A separate "Response to Comments" document has also been prepared and is appended to the FY22 Countywide Plan. Additionally, FY22 progress is reported in the *LocalStormwaterWatershedAssessment* table of the MS4 Geodatabase (**Appendix A**). It should be noted that PCB and Bacteria modeling results are not included in this table as modeling was not required nor accomplished for FY22.

4. TMDL Stormwater Implementation Plan Outreach

The County shall provide continual outreach to the public and other stakeholders, including other jurisdictions or agencies holding stormwater WLAs in the same watersheds, regarding its TMDL stormwater implementation plans. The County shall solicit input from the public, collaborate with stakeholders, and incorporate any relevant comments that can aid in achieving local stormwater WLAs. To allow for public participation, the County shall

a. maintain a list of interested parties for notification of TMDL development actions;

The County maintains a list by watershed of interested parties for notification of TMDL development actions. The list is available upon request.

b. provide notice on its' webpage outlining how the public may obtain information on TMDL stormwater implementation plan development and opportunities for comment;

The County provides notice on the County's webpage outlining how the public may obtain information on the development of TMDL stormwater implementation plans and opportunities to provide public comment. This information can be accessed via the following link www.aacounty.org/departments/public-works/wprp/watershed-assessment-and-planning/index.html.

c. provide copies of TMDL stormwater implementation plans to interested parties upon request;

The County provides copies of TMDL stormwater implementation plans to interested parties upon request. No requests were received during FY22.

d. allow a minimum 30-day comment period before finalizing TMDL stormwater implementation plans; and

The County recognizes the importance of public input into both watershed assessments and restoration plans and provides a minimum of 30 days for public comment on draft plans and reports. Draft documents are made available for review and/or download through the County webpage. A minimum number of hard copy reports may also be made available on request. Prior to final acceptance, a summary of the comments received and County responses are incorporated into each document.

During FY22 the County advertised the West River Sediment TMDL Restoration Plan for public comment. The public comment period was open from March 23, 2022 through April 23, 2022. No written public comments were received. However, following closure of the public comment period meetings to discuss the plan were requested by the Arundel Rivers Federation Board of Directors, the Arundel Rivers Federation Staff, and the Anne Arundel Soil Conservation District Office. These meetings were held on May 2, 2022, May 24, 2022 and June 8, 2022 respectively. In FY23, the County will advertise the Baltimore Harbor Sediment TMDL Restoration Plan for public comment. The comment period will begin in January 2023 and extend for a minimum of 30 days.

e. document, in the final TMDL stormwater implementation plans, how the County provided public outreach and adequately addressed all relevant comments.

When the West River Sediment TMDL Restoration plan is finalized, the County will document the public outreach opportunities provided. All future TMDL stormwater implementation plans will also include documentation of public outreach opportunities as well as how draft plan comments are addressed within the plan (e.g., Comment/Response document).

G. Assessment of Controls

Anne Arundel County shall conduct BMP effectiveness, watershed assessment monitoring, and polychlorinated biphenyl (PCB) source tracking for assessing progress toward improving local water quality and restoring the Chesapeake Bay. The 2021 MS4 Monitoring Guidelines: BMP Effectiveness and Watershed Assessments (hereafter 2021 MS4 Monitoring Guidelines) shall be referenced for addressing the technical guidelines and requirements outlined below.

1. BMP Effectiveness Monitoring

By March 5, 2022 or by July 1 of each year, the County shall notify MDE which option is chooses for BMP effectiveness monitoring. The two options are:

a. *Collaborate with MDE in a Pooled Monitoring Advisory Committee administered by the Chesapeake Bay Trust (CBT) for determining monitoring needs and selecting appropriate monitoring studies. For this option, the County shall annually pay $100,000 into a pooled monitoring CBT fund. Enrollment in the program shall be demonstrated through a memorandum of understanding (MOU) between the County and CBT by September 1 of each year (see 2021 MS4 Monitoring Guidelines for MOU terms). The County shall remain in the program for the duration of this permit term; or*

b. *The County shall continue monitoring Church Creek, or select/submit to MDE a new BMP effectiveness monitoring study by March 5, 2022 or by July 1 of each year. Monitoring activities shall occur where cumulative effects of watershed restoration, performed in compliance with this permit, can be assessed. Minimum monitoring criteria include chemical water quality (baseflow and storm event; continuous physicochemical parameters), biological, and physical monitoring.*

Effective January 1, 2021, the County formally began participation in the Pooled Monitoring Program (PMP) coordinated through CBT to meet the BMP Effectiveness Monitoring requirement of this permit. The County continued PMP participation throughout FY22. On March, 1 2022 the County formally notified MDE of the intent to participate in the PMP for the duration of the permit term. Documentation of the County's PMP participation, including the signed BMP Effectiveness Monitoring MOU with CBT, is found in **Appendix F**.

2. Watershed Assessment Monitoring

By March 5, 2022 or by July 1 of each year, the County shall notify MDE which option is chooses for watershed assessment monitoring. The two options are:

a. *Collaborate with MDE in a Pooled Monitoring Advisory Committee administered by the Chesapeake Bay Trust (CBT) for determining appropriate watershed assessment monitoring. To implement the required monitoring, the County shall annually pay up to $172,968 into a pooled monitoring CBT fund. The final cost will be dictated by the chosen proposal. Enrollment in the program shall be demonstrated through an MOU between the County and CBT to be signed by September 1 of each year (see 2021 MS4 Monitoring Guidelines for MOU terms). The County shall remain in the program for the duration of this permit term; or*

b. *The County shall submit a comprehensive plan for watershed assessment and trend monitoring by March 5, 2023 related to stream biology and habitat, bacteria, and chlorides and commence monitoring upon MDE's approval. The comprehensive plan shall follow the 2021 MS4 Monitoring Guidelines and include:*
    i. *Biological and habitat assessment monitoring at randomly selected stream sites using MBSS protocols;*
    ii. *Bacteria (i.e., E. coli, Enterococcus spp., or fecal coliform monitoring; and*
    iii. *Chloride assessment at two locations.*

Effective January 1, 2021, the County formally began participation in the Pooled Monitoring Program (PMP) coordinated through CBT to meet the Watershed Assessment Monitoring requirement of this permit. The County continued full PMP participation in lieu of the required monitoring throughout FY22. Documentation of the County's continued PMP participation, as evidenced in the Watershed Assessment Monitoring MOU with CBT, is found in **Appendix F**.

The County notified MDE, on March 1, 2022, of its intent to continue PMP participation for only the Bacteria and Chloride Watershed Assessment Monitoring requirements in FY23 through the end of the permit term. The County will undertake the stream biological and habitat assessment monitoring requirement. The Watershed Assessment Monitoring MOU Amendment for FY23 through FY26 and a copy of the March 1, 2022 correspondence is found in **Appendix F.** As required in Part 2.b. (above), the County's Comprehensive Plan for Watershed Assessment Monitoring: Biological and Habitat Monitoring (November 2022) is submitted for MDE review and concurrence (**Appendix F**). The County has initiated a five-year Countywide biological monitoring program, with field data collection starting in March 2023. That biological monitoring program meets the required elements, and incorporates certain recommended elements, found in the 2021 MS4 Monitoring Guidelines.

3. PCB Source Tracking

Within one year of permit issuance, the County shall develop a PCB source tracking monitoring plan for all applicable TMDL WLAs where watershed reductions are required to meet water quality standards. The County shall submit results and provide updates annually on the monitoring efforts.

Anne Arundel County currently has two PCB TMDLs with stormwater WLAs, the Baltimore Harbor and Curtis Creek/Bay PCB TMDL and the Patuxent Mesohaline, Oligohaline & Tidal Fresh PCB TMDL.

The County submitted its Baltimore Harbor and Curtis Creek/Bay PCB TMDL Restoration Plan as part of the County's 2016 MS4 Annual Report and in 2019 completed the development of a targeted PCB Action Strategy. Following completion of the action strategy the County engaged in collaboration with MDE's Integrated Water Planning Program staff, and University of Maryland, Baltimore County (UMBC) staff, to develop a trackback-style monitoring strategy utilizing passive samplers to measure time-integrated freely dissolved PCB water column concentration to further investigate watershed sources of PCB. An agreement was reached in which MDE would provide funding for field personnel, while UMBC would provide training, materials and analysis towards the monitoring effort.

Phase I of the monitoring effort began in September 2020 with the deployment of passive surface water PCB sampling devices at 17 locations within the Baltimore Harbor PCB TMDL watershed, as well as two reference locations outside of the TMDL watershed. In November 2020, sediment grab samples were also collected at each of the 19 sites and in early December 2020, the passive samplers were retrieved. During FY22 PCB concentration analysis of both surface water and sediment was

conducted by UMBC staff. The results of the Phase I monitoring are presented in the *PCB Source Tracking in Anne Arundel County, January 12, 2022* report included in **Appendix F**.

Based on the results of the 2020 monitoring, and to further determine geographic sources of PCBs, a Phase II sampling plan was finalized in May 2022. Phase II entails combinations of water column passive sampling, stream bed sediment sampling, pore water sampling, short time passive sampling, and suspended sediment sampling at 12 sites. Phase II sampling will be a collaborative effort between the County, UMBC, and MDE while sample analysis will again be conducted by UMBC. Sampling began in July 2022 and will conclude in late fall 2022. Details of the Phase II monitoring plan are presented in *Proposal for PCB Source Tracking in Anne Arundel County – Phase 2, May 2022* included in **Appendix F**.

Progress on the development of a PCB TMDL Implementation Plan for the Patuxent River was held while MDE finalized the PCB TMDL Implementation Plan Guidance (finalized in September 2022). The County will resume this work effort in mid-FY23.

H. Program Funding

Annually, a fiscal analysis of capital, staffing, operation, and maintenance expenditures necessary to comply with all conditions of the permit shall be submitted to MDE. Adequate program funding to comply with all permit conditions shall be maintained. Lack of funding does not constitute a justification for noncompliance with the permit terms.

This Annual Report covers the reporting period of July 2021 through June 2022, and corresponds to the County's 2022 Fiscal Year (FY22). The summary of funding and expenditures for FY22 is found in the *FiscalAnalyses* table of the MS4 Geodatabase (**Appendix A**). **Table 16** provides the FY22 break down of expenditures by permit condition.

Table 16. FY22 Fiscal Analysis (operating and capital appropriations).

Permit Condition	Fiscal Year 2022
Legal Authority	$0
Source ID	$1,938,341
SW Management	$991,413
Erosion and Sediment Control	$65,000
Illicit Discharge Detection and Elimination	$90,871
Trash and Litter Control	$390,986
Property Management	$10,147,838
Inlet Cleaning	$221,636
Street Sweeping	$325,714
Other Road Maintenance	$0
Public Education	$819,776

Permit Condition	Fiscal Year 2022
Watershed Assessment	$231,217
Watershed Restoration	$22,730,488
Chemical Monitoring Assessment	$342,090
Biological Monitoring Assessment	$122,882
Physical Stream Assessment	$100,560
Stormwater Design Manual Monitoring	$0
TMDL Assessment	$503,425
Annual Report Preparation	$114,909
Total Annual Cost for NPDES MS4 Program	$39,137,145

The WPRP Fund was implemented July 1, 2013 in response to State legislated requirements found in Maryland Environmental Code Ann §4-202.1 (2013). This Fund provides the primary fiscal support for all eligible components of the NPDES MS4 Permit program. Those MS4 permit-requirements not eligible for WPRP funding continue to be supported by the County's annual budget process (general revenue funds).

With the implementation of the WPRP Fund, a dedicated revenue source was created. These revenues for FY22 totaled $23,988,445. A total of 223,153 properties in Anne Arundel County were assessed the fee in FY22, which was the sixth year of the full fee implementation after the phase-in periods. In addition to the stormwater fee revenues, the WPRP Fund realized revenues from investment income as well as interfund recovery. Please refer to the FY22 WPRP Annual Report (**Appendix G**) for additional information. Estimated projections of revenue for FY23 are $24,234,726. These revenues fund the operating budget directly, and the CIP budget indirectly through debt repayment.

During the reporting period, funding for NPDES MS4 Permit compliance was addressed through the County CIP and operating budgets. CIP funding for the current County fiscal year and the next five fiscal years is allocated to the "Stormwater Runoff Controls," "Water Quality Improvements" and "Watershed Protection and Restoration" CIP project classes. Specific line items funded through the CIP include storm drain rehabilitation, closed storm drain repairs and replacement, stormwater infrastructure inspection and maintenance, stormwater facility retrofits, outfall repairs, and stream and ecological restoration projects. The budgets for the "Stormwater Runoff Controls" and "Water Quality Improvements" project classes have been, for the most part, incorporated into the Watershed Protection and Restoration CIP and operating budget items as appropriate. The Watershed Protection and Restoration CIP budgets for FY23 through FY28 total $145,322,454.

The Anne Arundel County operating budget for FY22 also provides permit compliance support through funding of personnel associated with permit compliance actions. Such support is derived primarily from the County's I&P, SCD, and DPW. Each of these agencies has responsibility or provides

support for certain permit requirements and all must work collaboratively to achieve County compliance with permit terms. Additional funding for permit compliance has been included in the operating budgets for the WPRP Fund. Specific line items funded through the operating budget include chemical, biological, and physical stream assessments, public education, grants, and contracted street sweeping.

The Final FY22 BWPR Financial Assurance Plan (FAP) with Executive Summary and the Final County Council Resolution 37-22 approving the FAP is submitted with this Annual Report (**Appendix G,** *NarrativeFiles*). The County's FAP demonstrates sufficient funding to satisfy the projected two-year ISRP costs. Additionally, the complete FY23 approved County budget (operating and capital) is available for review and download at www.aacounty.org/departments/budget-office/current-budget/.

Lastly, with the funding provided by the WPRP Fund, increased staffing began in FY14. Delays due to proposed legislation changes slowed the implementation of the program initially. At the end of FY22 staffing levels were at 82% and additional hiring will be accomplished in FY23. The increase in staffing continues to assist the County to achieve MS4 permit compliance.

V. References

Maryland Department of the Environment (MDE). 1997. Dry Weather Flow and Illicit Discharges in Maryland Storm Drain Systems.

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Maryland Department of the Environment (MDE). 2017. National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4), Geodatabase Design and User's Guide. Version 1.2. Revised May 2017. Prepared by MDE and Maryland Environmental Service (MES) for Environmental Protection Agency (EPA) Chesapeake Bay Regulatory and Accountability Program (CBRAP). Baltimore, MD.

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