



City of Richmond, Virginia

MS4 Program Plan

Reporting Period: October 1, 2018 – September 30, 2023

Permit Number: VAR0063177

In compliance with the Virginia Stormwater Management Program (VSMP) Integrated Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4)



MS4 Program Plan

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ACRONYMS & ABBREVIATIONS

Bay	Chesapeake Bay
BMP	Best management practice
COR	City of Richmond
CWA	Clean Water Act
DEQ	Virginia Department of Environmental Quality
DPU	Richmond Department of Public Utilities
DPW	Richmond Department of Public Works
EMA	Easement and Maintenance Agreement
EPA	United States Environmental Protection Agency
GIS	Geographic information systems
HHW	Household Hazardous Wastes
HUC	Hydrologic unit code
IDDE	Illicit discharge detection and elimination
MS4	Municipal separate storm sewer system
RCAA	Richmond Animal Care & Control
SPCA	Society for the Prevention of Cruelty to Animals
SWMF	Stormwater Management Facility
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total maximum daily load
VPDES	Virginia Pollution Discharge & Elimination System Permit
VSMP	Virginia Stormwater Management Program

INTRODUCTION

The City of Richmond is an independent city located in the central part of the Commonwealth of Virginia and is surrounded by Henrico & Chesterfield Counties. Approximately 16,791 acres of the city drains to a combined sewer system. The other 23,240 acres drains to a small Municipal Separate Storm Sewer System (MS4). A *municipal separate storm sewer* means “a conveyance or system of conveyances otherwise known as a municipal separate storm sewer system, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains:

1. Owned or operated by a federal, state, city, town, county, district, association, or other public body, created by or pursuant to state law, having jurisdiction or delegated authority for erosion and sediment control and stormwater management, or a designated and approved management agency under § 208 of the *Clean Water Act (CWA)* that discharges to surface waters;
2. Designed or used for collecting or conveying stormwater;
3. That is not a combined sewer; and
4. That is not part of a publicly owned treatment Utilities.

In July 2018, the US Census Bureau estimated the City’s population to be 228,783 and that the City is within an Urbanized Area and thus subject to the *Integrated VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems*, which became effective October 1, 2018 and will expire on September 30, 2023 when a new permit cycle is expected to become effective.

The MS4 permit requires the City to develop a MS4 Program Plan (this document). Modifications to the MS4 Program Plan are expected throughout the life of the permit as part of the iterative process to reduce pollutant loadings and to protect water quality.

The following MS4 Program Plan is a management tool developed by staff for the City of Richmond to comply with the six minimum control measures of the integrated permit. The only enforceable requirements are those included in the VPDES permit. **Section MCM 1** through **Section MCM 6** describe the City of Richmond’s plan to comply with the corresponding minimum control measures (MCM) listed below:

1. Public Education and Outreach
2. Public Involvement/Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff
5. Post-Construction Stormwater Management
6. Pollution Prevention/Good Housekeeping for Municipal Operations

A description of the roles and responsibilities, policies and procedures, measurable goals, and implementation schedules, if applicable, are provided for each MCM in their corresponding section or in an associated appendix. Note: policies and procedures are internal documents intended to provide program plan implementation guidance to staff. As the VPDES permit requires establishment of policies and procedures for various program components but does not

dictate the details of the policies and procedures, the City of Richmond reserves the right to update and revise any internal policies and procedures at anytime and in any manner.

The Program Plan will be evaluated for appropriateness and updated annually as necessary. The objective of this Program Plan is to provide the framework for the City of Richmond to continually evaluate the effectiveness of the stormwater management program in reducing nonpoint source pollution from MS4 regulated areas during the permit term.

Annual reports summarizing the collective efforts and program changes from the previous reporting year will be submitted to the Department of Environmental Quality (DEQ) by March 31 of each year.

Documents incorporated by reference as part of this Plan are presented in **Table 1**, below:

Table 1 – Referenced Documents

Document Title	Version	Date	Available Location
Clean Water Act	NA	November 27, 2002	https://www.epa.gov/sites/production/files/2017-08/documents/federal-water-pollution-control-act-508full.pdf
Floodplain Management, Erosion and Sediment Control, and Drainage	18	February 7, 2019	https://library.municode.com/va/richmond/codes/code_of_ordinances?nodeId=PTIICICO_CH14FLMAERSE_CODR
City's Virginia Stormwater Management Program Policy and Procedure Manual	NA	March 2018	Available upon request
Integrated VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems	NA	October 1, 2018	http://www.richmondgov.com/PublicUtilities/StormwaterUtility/index.aspx .
City of Richmond Bacteria TMDL Action Plan	NA	October 24, 2016	Available upon request
MS4 Outfall Map and Information Table	NA	NA	Available upon request

Unless otherwise noted, the majority of the documents above can be viewed at the COR's Stormwater Utility webpage: <http://www.richmondgov.com/PublicUtilities/StormwaterUtility/index.aspx>.

MINIMUM CONTROL MEASURES

MCM 1 - Public Education and Outreach

Permit Requirements (Part IV.E.1.f)

The Public Education and Outreach Plan shall include:

1. A list of the high-priority stormwater issues the permittee will communicate to the public as part of the public education and outreach program.
2. The rationale for selection of each high-priority stormwater issue and an explanation of how each education or outreach strategy is intended to have a positive impact on stormwater discharges.
3. Identification of the public audience to receive each high-priority stormwater message.
4. The strategies from Table 1 of **Part IV.E.1.d** to be used to communicate each high-priority stormwater message.
5. The anticipated time periods the messages will be communicated or made available to the public.

Responsible Parties (Refer to Appendix A)

Department of Public Utilities:

1. Public Education & Outreach Coordinator
2. MS4 Operations Manager
3. Public Information Manager

Program Description

The City of Richmond has developed a public education and outreach program designed to:

- increase the public's knowledge of how to reduce stormwater pollution and how citizens can connect their actions to cleaner water while placing a priority on reducing impacts to impaired waters and other local water pollution concerns,
- increase the public's knowledge of hazards associated with illegal discharges and improper disposal of waste, including pertinent legal implications, and
- implement a diverse program with strategies that are targeted toward individuals or groups most likely to have significant stormwater impacts.

The COR has chosen three high-priority stormwater issues to meet the overarching goal of educating the public in accordance with the program priorities stated above, as presented in **Table 2**, next page.

Table 2 – Public Education and Outreach Plan

High Priority Issue	Pet Waste	General Stormwater Awareness	Litter Awareness
Rationale for Selection	The goal of the program is to minimize the degree of pet waste runoff to reduce the bacteria loads entering Richmond’s local waterways.	The goal of the program is to educate residents on stormwater and its impact on the environment to improve the quality and minimize the quantity of urban runoff from residential areas.	The goal of the program is to minimize the degree of litter entering the storm-sewer system and local waterways to achieve higher water quality.
Identification of Public Audience	Pet owners	City residents & school-age students	Pedestrians
Strategy from Table 1	Traditional written & alternative materials	Traditional written, alternative, signage, & media materials	Traditional written, alternative, & signage materials
Anticipated Time Period Message will be Communicated	<p>The “Scoop the Poop” campaign targets the following community events which take place throughout the year: Blessing of the Animals and Bark in the Park.</p> <p>The COR distributes literature and pet waste goodie bags to local area rescue & adoption centers, including the RACC, on a continuous basis.</p>	<p>The city coordinates a rain barrel project with Richmond Elementary Schools that is conducted in the early spring of each year.</p> <p>The “Cleaner Water Faster” campaign will distribute a stormwater newsletter to utility customers annually and billboards will be on display in various locations across the city for 60 days once per year.</p>	The City’s litter awareness campaign and storm drain marking events will be conducted annually in the spring/summer.
Intended Impact	<p>Pet waste is a large contributor to the high bacteria count found in many Richmond streams. Pet owners need to be aware that pet waste is not fertilizer and that pet waste runoff impacts the health of our streams.</p> <p>The “Scoop the Poop” campaign helps the many pet owners in the city become aware of this issue and motivates them to pick up their pet’s waste and prevent high bacteria counts from accumulating in Richmond’s waterways.</p>	When urban runoff enters local storm-sewer systems, it typically contains high concentrations of nutrients, sediment, and bacteria. By engaging in a local rain barrel project, educational information is disseminated to school-age students and residents and encourages them to become stewards in reducing urban runoff and preventing pollution.	Litter in urban storm drains and receiving waters can cause significant impairments to the riverine environment and wildlife. When individuals choose to litter, they may not realize the full impact of their actions. By educating pedestrians about the impact of litter waste, residents will be encouraged to be more responsible with how they dispose of their waste.
Materials Used	Pet waste bags, key chains, and literature on the importance of keeping pet waste bacteria out of the waterways.	Informational inserts in utility bills, billboards, rain barrels, and media.	Informational inserts in utility bills and storm drain marker installations.

Measurable Goals

The City's goal is to reduce the bacteria loads to receiving streams, educate residents on ways to reduce the volume of urban stormwater runoff and associated pollutants, and to reduce litter to the MS4 through running an effective Public Education and Outreach Program. The Public Education and Outreach Coordinator will annually evaluate the effectiveness of the City's Public Education and Outreach efforts at addressing the City's high priority issues, and will document the following in the Annual Report:

- Number of pet waste bags distributed;
- Number of rain barrels donated; and
- Number of storm drains marked.

Additional information on the City's Public Education and Outreach program can be found on the City's Stormwater Utility Webpage located here:

<http://www.richmondgov.com/PublicUtilities/StormwaterUtility/index.aspx>.

MCM 2 - Public Involvement and Participation

Permit Requirements (Part IV.E.2.e)

The Program Plan shall include:

1. The webpage address where mechanisms for the public to report (i) potential illicit discharges, improper disposal, or spills to the MS4, (ii) complaints regarding land disturbing activities, or (iii) other potential stormwater pollution concerns.
2. The webpage address that contains the methods for how the public can provide input on the permittee's MS4 program.
3. A description of the public involvement activities to be implemented by the permittee, the anticipated time period the activities will occur, and a metric for each activity to determine if the activity is beneficial to water quality. An example of metrics may include the weight of trash collected from a stream cleanup, the number of participants in a hazardous waste collection event, etc.

Responsible Parties (Refer to Appendix A)

Department of Public Utilities:

1. Public Education & Outreach Coordinator
2. MS4 Operations Manager
3. Public Information Manager
4. Environmental Compliance Officer

Program Description

The COR maintains an MS4 webpage that hosts the COR's effective MS4 permit and coverage letter, the current MS4 Program Plan and previous Annual Reports:

<http://www.richmondgov.com/PublicUtilities/StormwaterWhatIsIt.aspx>.

The webpage provides a link with a form for feedback on the MS4 Program, and links to RVA311, where the public can report potential illicit discharges, improper disposal, spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater concerns.

The COR maintains electronic records of all input or complaints received on the MS4 Program Plan, as well as City responses.

The COR will participate in the following activities, as presented in **Table 3**, to encourage public involvement with stormwater and environmental activities.

Table 3 – Public Involvement and Participation Table

Public Involvement Activities	Description	Anticipated Time Periods	Metrics
Volunteer Monitoring Program (Monitoring)	The City of Richmond will sponsor a training event in support of the City's volunteer monitoring program.	The City will engage in this activity annually and result in one training event per permit year.	The number of participants per training event will be documented in the annual report.
Watershed Cleanup (Restoration)	The City of Richmond will continue to participate in local watershed cleanup events, as sponsor and/or host. Events that the City has participated in the past include Enrichmond's local restoration event called "Earth Day of Service" which engages citizens in hands-on clean-up activities across the city and "Clean the Bay Day" which engages citizens across the Chesapeake Bay to take action and clean-up a local area. The City may choose to participate in these events or others to fulfill the watershed cleanup participation commitment.	The City will engage in at least one restoration activity annually.	The number of participants per event will be documented in the annual report.
Household Hazardous Waste Collection Events (Collection Event)	Household Hazardous Waste (HHW) has been identified by the City as a significant potential source of illicit discharge to the storm sewer system. To help prevent such discharges, the city has sponsored an HHW program. In addition to HHWs, the program also accepts solvents, paints and automotive fluids.	The City will sponsor an HHW collection event for all residents at least two times per year.	The number of barrels of hazardous waste collected per event will be documented in the annual report.

Measurable Goals

The City's goal is an effective public involvement and participation program. The Public Education and Outreach Coordinator will annually evaluate the effectiveness of the Public Involvement and Participation activities by analyzing the associated metrics tracked for each activity presented in **Table 3**. Should the COR be unable to execute one of the programs specified above, an appropriate substitute program will be identified and completed as an alternative.

MCM 3 - Illicit Discharge Detection and Elimination

Permit Requirements (Part IV.E.3.d)

The Program Plan shall include:

1. The MS4 map and information table required by **Part IV.E.3.a**. The map and information table may be incorporated into the MS4 program plan by reference. The map shall be made available to the department within 14 days upon request.
2. Copies of written notifications of new physical interconnections given by the permittee to other MS4s.
3. The IDDE procedures described in **Part IV.E.3.c**.

Responsible Parties (Refer to Appendix A)

Department of Public Utilities:

1. MS4 Operations Manager
2. Environmental Compliance Officer
3. GIS Analyst

Program Description

The COR has developed and maintains an accurate MS4 Map that includes, at a minimum, the permit requirements listed in **Part IV.E.3.a.1**. The COR has also developed and maintains an information table for each outfall or point of discharge that includes the requirements listed in **Part IV.E.3.a.2**. The COR's outfall map and information table are maintained by the Department of Utilities GIS Division and is available upon request. Copies of written notifications of new or discovered physical interconnections given to other MS4s will be included as an appendix to the Program Plan, as developed.

The COR prohibits any unauthorized non-stormwater discharges into the storm sewer system through the City's Stormwater Code found on the following webpage:

https://library.municode.com/va/richmond/codes/code_of_ordinances?nodeId=CORIVI010.

The *Standard Operating Procedure for Detecting and Eliminating Non-Stormwater Discharges to the MS4* and the *Standard Operating Procedure for MS4 Outfall Screening*, are included in **Appendices C and D**, respectively. The city performs outfall dry weather screening per **Part IV.E.3.c**. Outfalls are prioritized for field screening by the City in accordance with the Standard Operating Procedures referenced above. Dry weather discharges, if observed, are investigated in accordance with the Standard Operating Procedures. Any detections suspected of being sanitary sewage or significantly contaminated discharges shall take priority. Enforcement actions and legal penalties shall be used for incidents of illicit discharge, when necessary, by the City. Incidents of illicit discharges, as well as the outcome of investigations and any follow up investigations or actions will be tracked in the City's database.

Measurable Goals

The City's goal is to reduce or eliminate non-stormwater discharges. Progress toward reaching the goal is measured by permit compliance, including annual updates to the MS4 Map, annual dry weather screening, and tracking and eliminating prohibited non-stormwater discharges to the MS4. The Environmental Compliance Officer will annually evaluate the City's progress, by

tracking and reporting on the permit requirements in the Annual Report.

MCM 4 - Construction Site Stormwater Runoff Control

Permit Requirements (Part IV.E.4.b)

The Program Plan shall include:

1. The local ordinance citations for the Virginia Erosion and Sediment Control Program (VESCP) program.
2. A description of the legal authorities utilized to ensure compliance with **Part IV.E.4.a** to control construction site stormwater runoff control such as ordinances, permits, orders, specific contract language, policies, and inter-jurisdictional agreements.
3. Written inspection procedures to ensure the erosion and sediment controls are properly implemented and all associated documents utilized during inspection including the inspection schedule.
4. Written procedures for requiring compliance through corrective action or enforcement action to the extent allowable under federal, state, or local law, regulation, ordinance, or other legal mechanisms.
5. The roles and responsibilities of each of the permittee's departments, divisions, or subdivisions in implementing the construction site stormwater runoff control requirements in **Part IV.E.4**.

Responsible Parties (Refer to the VSMP Policies and Procedures Manual for a detailed breakdown of roles and responsibilities)

Department of Public Utilities

1. MS4 Operations Manager
2. Site Inspection Supervisor
3. Water Resources Plan Reviewers

Program Description

The City currently implements a program to control construction site stormwater runoff consistent with the permit requirements. The program is authorized by the City of Richmond Code Chapter 14 - *Floodplain Management, Erosion and Sediment Control, and Drainage*. Refer to the City's *Virginia Stormwater Management Program Policy and Procedure Manual* for compliance with the Program Plan requirements listed above. Additional program information and supporting guidance can be found at the following webpage:

<http://www.richmondgov.com/PublicUtilities/WaterResources.aspx>

Measurable Goals

The City's goal is to operate a compliant Erosion and Sediment Control Program. The MS4 Operations Manager will annually evaluate the City's efforts at maintaining permit compliance by reporting on the total number of construction inspections and associated enforcement actions in the Annual Report.

MCM 5 - Post Construction Stormwater Management

Permit Requirements (Part IV.E.5.h)

The Program Plan shall include:

1. A copy of the VSMP approval letter issued by the department.
2. Written inspection procedures and all associated documents utilized in the inspection of privately-owned stormwater management facilities.
3. Written procedures for compliance and enforcement of inspection and maintenance requirements for privately owned BMPs.
4. A description of the legal authorities utilized to ensure compliance with **Part IV.E.5.a** for post-construction stormwater runoff control such as ordinances (provide citation as appropriate), permits, orders, specific contract language, and inter-jurisdictional agreements.
5. Written inspection procedures and all associated documents utilized during inspection of stormwater management facilities owned or operated by the permittee.
6. The roles and responsibilities of each of the permittee's departments, divisions, or subdivisions in implementing the post-construction stormwater runoff control program.
7. The stormwater management facility spreadsheet, or database incorporated by reference, and the location or link where the spreadsheet or database can be reviewed.

Responsible Parties (Refer to the VSMP Policies and Procedures Manual for a detailed breakdown of roles and responsibilities)

Department of Public Utilities

1. MS4 Operations Manager
2. Site Inspector Supervisor

Program Description

The City currently implements a program to control post-construction site stormwater runoff consistent with the permit requirements. The program is authorized by the City of Richmond Code Chapter 14 - *Floodplain Management, Erosion and Sediment Control, and Drainage*. A copy of the City's VSMP Approval Letter issued by the Department is presented in **Appendix E**.

The SCM tracking database is presented in **Appendix F**.

- The COR will use the *DEQ Construction Stormwater Database* (<https://apps.deq.virginia.gov/swcgp>) or other application as specified by the Department to report each stormwater management facility installed after July 1, 2014, to address the control of post-construction runoff from land disturbing activities for which the permittee is required to obtain a *General VPDES Permit for Discharges of Stormwater for Construction Activities*.
- No later than March 31 of each year, the COR will electronically report the stormwater management facilities and BMPs implemented between January 1 and December 30 of each year using the *DEQ BMP Warehouse* (<http://apps.deq.virginia.gov/BMP>) and associated reporting template for any practices not reported in accordance with Part IV.E.5.f including stormwater management facilities installed to control post-development stormwater runoff from land disturbing activities less than one acres in

accordance with the Chesapeake Bay Preservation Act regulations (9VAC25-830) and for which a *General VPDES permit for Discharges of Stormwater from Construction Activities* was not required.

Refer to the *City's Virginia Stormwater Management Program Policy and Procedure Manual* for compliance with the remaining Program Plan requirements listed above. Additional program information and supporting guidance can be found at the following webpage:
<http://www.richmondgov.com/PublicUtilities/WaterResources.aspx>.

Measurable Goals

The City's goal is to require installation of post-construction stormwater control measures (SCM) in accordance with the VSMP, and to effectively track inspection and required maintenance of all SCM in accordance with the requirements of the permit. The MS4 Operations Manager will annually evaluate the City's progress toward post-construction stormwater management goals by reporting on the permit requirements as detailed in **Appendix A.3.(11)** in the Annual Report.

MCM 6 - Pollution Prevention and Good Housekeeping

Permit Requirements (Part IV.E.6.p)

The Program Plan shall include:

1. The written procedures for the operations and maintenance activities as required by **Part IV.E.6.a**.
2. A list of all high-priority facilities owned or operated by the permittee required in accordance with **Part IV.E.6.c**, and whether or not the facility has a high potential to discharge.
3. A list of lands for which turf and landscape nutrient management plans are required in accordance with **Part IV.E.6.i and j**, including the following information:
 - a. The total acreage on which nutrients are applied.
 - b. The date of the most recently approved nutrient management plan for the property.
 - c. The location in which the individual turf and landscape nutrient management plan is located.
4. A summary of mechanisms the permittee uses to ensure contractors working on behalf of the permittee implement the necessary good housekeeping and pollution prevention procedures, and stormwater pollution plans as appropriate.
5. The written training plan as required in **Part IV.E.6.m**.

Responsible Parties (Refer to Appendix A)

Department of Public Utilities

1. MS4 Operations Manager
2. O&M Operations Manager
3. Environmental Compliance Officer

Program Description

The COR has developed and implemented Pollution Prevention and Good Housekeeping

Standard Operating Procedures (SOPs) designed to minimize or prevent illicit pollutant discharge from daily operation and maintenance activities such as: equipment maintenance, waste disposal, utility operations, bulk storage, and the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers. The specific SOPs for these activities are incorporated by reference in **Appendix G**.

The City has developed a list of high-priority facilities that have a high-potential to discharge (reviewed annually) that can be found in **Appendix H**. The only applicable land owned by the City of Richmond to which nutrients are applied is City Stadium. The City requires contractors to implement pollutant prevention and good housekeeping procedures through procurement contract language. A training plan and schedule developed in accordance with **Part IV.E.6.m** is included in **Appendix I**.

Measurable Goals

The City's goal is to continue implementing Pollution Prevention and Good Housekeeping protocols for staff performing daily operations. The Environmental Compliance Officer will annually evaluate progress toward meeting the City's goal by ensuring maintenance of high priority facility SWPPPs, implementation of Nutrient Management Plans as needed, and by ensuring Contractors are held to the same standards as employees. The MS4 Operations Manager will annually evaluate progress toward meeting the City's training goals by tracking training.

APPENDIX A

MS4 ROLES AND RESPONSIBILITIES

The City of Richmond's Public Utilities Department coordinates the City's municipal separate storm sewer system (MS4) program within the Stormwater Utility. The Stormwater Utility manages the MS4 permit, operations and maintenance of the MS4 storm sewer system, onsite active construction & permitting, post-construction BMP inspection, and the illicit discharge program. The Chief Administrative Officer is responsible for providing the appropriate certification for documents. The Director of Public Utilities oversees the Stormwater Utility. The Department of Public Utilities, Department of Public Works, the Department of Parks and Recreation, the Police Department and the Richmond Fire Department are the major contributors to Richmond's MS4 Program although it is recognized that this is a citywide effort.

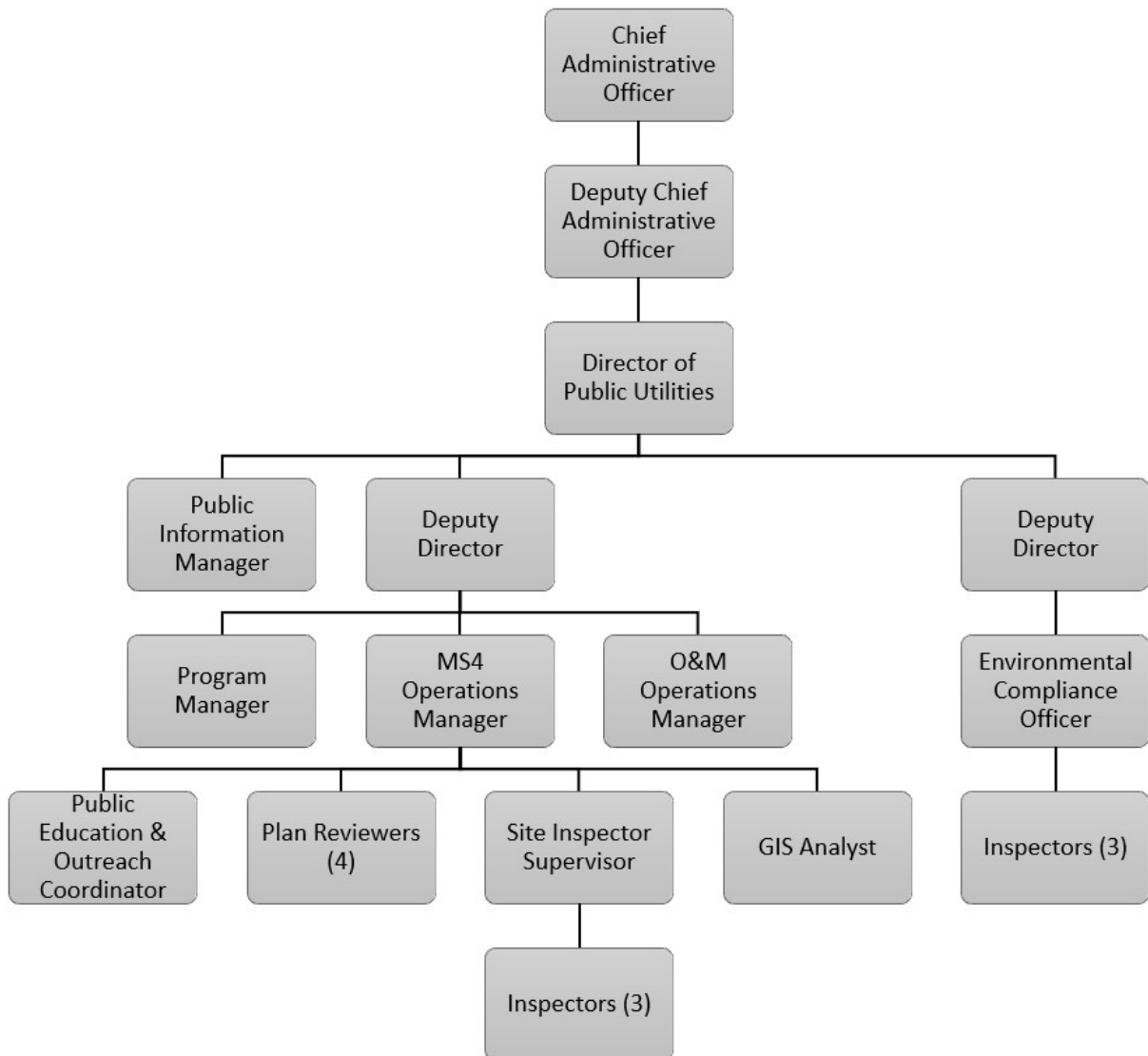


FIGURE 1. STORMWATER UTILITY ORG CHART

CONTACT INFORMATION

Principal Executive Officers

Title: Chief Administrative Officer
Name: Selena Cuffee-Glenn
Address: 900 E Broad Street, 2nd floor
Richmond, VA 23219
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Title: Deputy Chief Administrative Officer
Name: Robert Steidel
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Richmond, VA 23219
Phone: (804) 646-1378
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Duly Authorized Representatives

Title: Director of Public Utilities
Name: Calvin Farr
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Title: Program Manager
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Title: MS4 Operations Manager
Name: Jonét Prévost-White
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Title: Environmental Compliance Officer
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Title: Public Education & Outreach Coordinator
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Title: GIS Analyst
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APPENDIX B

PART IV – MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)**Discharge Authorization and Special Conditions**

- A. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge stormwater and those authorized non-stormwater discharges described in 9VAC25-890-20 D in accordance with this permit from the small municipal separate storm sewer system identified in the permit application into surface waters within the boundaries of the Commonwealth of Virginia.
- B. The permittee shall develop, implement, and enforce a MS4 program designed to reduce the discharge of pollutants from the small MS4 to the maximum extent practicable (MEP) in accordance with this permit, to protect water quality, and to satisfy appropriate water quality requirements of the State Water Control Law and its attendant regulations. The permittee shall utilize the legal authority provided by the laws and regulations of the Commonwealth of Virginia to control discharges to and from the MS4 to the maximum extent practicable. This legal authority may be a combination of statute, ordinance, permit, policy, specific contract language, order, or inter-jurisdictional agreements. The MS4 program shall include the minimum control measures (MCM) described in Part IV.E.
- C. The MS4 program plan.
 - 1. The MS4 program plan shall include, at a minimum, the following written items:
 - a. The roles and responsibilities of each of the permittee's divisions and departments in the implementation of the requirements of the permit tasked with ensuring that the permit requirements are met;
 - b. If the permittee utilizes another entity to implement portions of the MS4 program, a copy of the written agreement. The description of each party's roles and responsibilities, including any written agreements with third parties, shall be updated as necessary;
 - c. For each of the MCM in Part IV.E, the following information shall be included:
 - (1) Each specific requirement as listed in Part IV.E for each MCM;
 - (2) A description of the BMPs or strategies that the permittee anticipates will be implemented to demonstrate compliance with the permit conditions in Part IV.E;
 - (3) All standard operating procedures or policies necessary to implement the BMPs;
 - (4) The measurable goal by which each BMP or strategy will be evaluated; and
 - (5) The persons, positions, or departments responsible for implementing each BMP or strategy.
 - d. A list of documents incorporated by reference including the version and date of the document being incorporated.
 - 2. The permittee shall update the MS4 program plan to meet the requirements of this permit no later than December 31, 2018 and shall post the most up-to-date version of the MS4 program plan on the permittee's stormwater website or location where the MS4 program plan can be obtained as required by Part IV.E.2 within 30 days of updating the MS4 program plan. Until such time that the MS4 program plan is updated in accordance with Part IV.E, the permittee shall continue to implement the MS4 program plan in effect at the time that coverage was issued under this permit.
 - 3. Revisions to the MS4 program plan are expected throughout the life of this permit as part of the iterative process to reduce pollutant loading and protect water quality to the MEP. As such, revisions made in accordance with this permit as a result of the iterative process do not require modification of this permit. The

permittee shall summarize revisions to the MS4 program plan as part of the annual report as described in Part I.A.4.

4. The permittee may demonstrate compliance with one or more of the MCMs in Part IV.E through implementation of separate statutory or regulatory programs provided that the permittee's MS4 program identifies and fully describes any program that will be used to satisfy one or more of the minimum control measures of Part IV.E. If the program that the permittee is using requires the approval of a third party, the program shall be fully approved by the third party, or the permittee shall be working toward getting full approval. Documentation of the program's approval status, or the progress toward achieving full approval, shall be included in the annual report required by Part I.A.4. The permittee shall remain responsible for compliance with the permit requirements if the other entity fails to implement one or more components of the control measures.
5. The permittee may rely on another entity to satisfy the permit requirements to implement a minimum control measure if:
 - a. The other entity, in fact, implements the control measure;
 - b. The particular control measure, or component thereof, is at least as stringent as the corresponding permit requirement;
 - c. The other entity agrees to implement the control measure on behalf of the permittee; and
 - d. The agreement between the parties is documented in writing and retained by the permittee with the MS4 program plan for as long as the agreement is active.

The permittee shall remain responsible for compliance with requirements of the permit and shall document in the annual reports required in accordance with Part I.A.4 that another entity is being relied on to satisfy all or part of the state permit requirements. The permittee shall provide the information required in Part I.A.4.

6. If the permittee relies on another governmental entity regulated under 9VAC25-870-380 to satisfy all of the state permit obligations, including the obligation to file periodic reports required by Part I.A.4, the permittee must note that fact in the registration statement, but is not required to file the periodic reports. The permittee remains responsible for compliance with the state permit requirements if the other entity fails to implement the control measures or components thereof.

D. Annual reporting requirements.

The annual report shall be performed in accordance with Part I.A.4 (Integrated CSS and MS4 Annual Reporting) of this permit.

E. Minimum control measures.

1. Public education and outreach.

- a. The permittee shall implement a public education and outreach program designed to:
 - (1) Increase the public's knowledge of how to reduce stormwater pollution, placing priority on reducing impacts to impaired waters and other local water pollution concerns;
 - (2) Increase the public's knowledge of hazards associated with illegal discharges and improper disposal of waste, including pertinent legal implications; and

- (3) Implement a diverse program with strategies that are targeted toward individuals or groups most likely to have significant stormwater impacts.
- b. The permittee shall identify no less than three high-priority stormwater issues to meet the goal of educating the public in accordance with Part IV.E.1.a. High-priority issues may include the following examples: Chesapeake Bay nutrients, pet wastes, local receiving water impairments, TMDLs, high-quality receiving waters, and illicit discharges from commercial sites.
- c. The high-priority public education and outreach program, as a whole, shall:
- (1) Clearly identify the high-priority stormwater issues;
 - (2) Explain the importance of the high-priority stormwater issues;
 - (3) Include measures or actions the public can take to minimize the impact of the high-priority stormwater issues; and
 - (4) Provide a contact name and telephone number, website or location where the public can find out more information.
- d. The permittee shall use two or more of the strategies listed in Table 1 below to communicate to the public the high-priority stormwater issues identified in accordance with Part IV.E.1.b including how to reduce stormwater pollution.

TABLE 1 STRATEGIES FOR PUBLIC OUTREACH AND EDUCATION	
STRATEGIES	EXAMPLES (provided as examples and are not meant to be all inclusive or limiting)
Traditional written materials	Informational brochures, newsletters, fact sheets, utility bill inserts, or recreational guides for targeted groups of citizens
Alternative materials	Bumper stickers, refrigerator magnets, t-shirts, or drink koozies
Signage	Temporary or permanent signage in public places or facilities, vehicle signage, bill boards, or storm drain stenciling
Media materials	Information disseminated through electronic media, radio, televisions, movie theater, or newspaper
Speaking engagements	Presentations to school, church, industry, trade, special interest, or community groups
Curriculum materials	Materials developed for school-aged children, students at local colleges or universities, or extension classes offered to local citizens
Training materials	Materials developed to disseminate during workshops offered to local citizens, trade organization, or industrial officials

- e. The permittee may coordinate its public education and outreach efforts with other MS4 permittees; however, the permittee shall be individually responsible for meeting all of its state permit requirements.
- f. The MS4 program plan shall include:
- (1) A list of the high-priority stormwater issues the permittee will communicate to the public as part of the public education and outreach program;
 - (2) The rationale for selection of each high-priority stormwater issue and an explanation of how each education or outreach strategy is intended to have a positive impact on stormwater discharges;

- (3) Identification of the public audience to receive each high-priority stormwater message;
 - (4) The strategies from Table 1 of Part IV.E.1.d to be used to communicate each high-priority stormwater message; and
 - (5) The anticipated time periods the messages will be communicated or made available to the public.
2. Public involvement and participation.
- a. The permittee shall develop and implement procedures for the following:
 - (1) The public to report potential illicit discharges, improper disposal, or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns;
 - (2) The public to provide input on the permittee's MS4 program plan;
 - (3) Receiving public input or complaints;
 - (4) Responding to public input received on the MS4 program plan or complaints; and
 - (5) Maintaining documentation of public input received on the MS4 program and associated MS4 program plan and the permittee's response.
 - b. No later than three months after the effective date of this permit, the permittee shall develop and maintain a webpage dedicated to the MS4 program and stormwater pollution prevention. The following information shall be posted on this webpage:
 - (1) The effective VPDES integrated permit and coverage transmittal letter;
 - (2) The most current MS4 program plan or location where the MS4 program plan can be obtained;
 - (3) The annual report for each year of the term covered by this permit;
 - (4) A mechanism for the public to report potential illicit discharges, improper disposal, or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns in accordance with Part IV.E.2.a.(1); and
 - (5) Methods for how the public can provide input on the permittee's MS4 program in accordance with Part IV.E.2.a.(2).
 - c. The permittee shall implement no less than four activities per year from two or more of the categories listed in Table 2 below to provide an opportunity for public involvement to improve water quality and support local restoration and clean-up projects.

TABLE 2 PUBLIC INVOLVEMENT OPPORTUNITIES	
Public involvement opportunities	Examples (provided as example and are not meant to be all inclusive or limiting)
Monitoring	Establish or support citizen monitoring group
Restoration	Stream or watershed clean-up day, adopt-a-water way program,
Educational events	Booth at community fair, demonstration of stormwater control projects, presentation of stormwater materials to schools to meet applicable

	education Standards of Learning or curriculum requirements, watershed walks, participation on environmental advisory committees
Disposal or collection events	Household hazardous chemicals collection, vehicle fluids collection
Pollution prevention	Adopt-a-storm drain program, implement a storm drain marking program, promote use of residential stormwater BMPs, implement pet waste stations in public areas, adopt-a-street program.

d. The permittee may coordinate the public involvement opportunities listed in Table 2 with other MS4 permittees; however, each permittee shall be individually responsible for meeting all of the permit requirements.

e. The MS4 program plan shall include:

- (1) The webpage address that contains mechanisms for the public to report (i) potential illicit discharges, improper disposal, or spills to the MS4, (ii) complaints regarding land disturbing activities, or (iii) other potential stormwater pollution concerns;
- (2) The webpage address that contains the methods for how the public can provide input on the permittee's MS4 program; and
- (3) A description of the public involvement activities to be implemented by the permittee, the anticipated time period the activities will occur, and a metric for each activity to determine if the activity is beneficial to water quality. An example of metrics may include the weight of trash collected from a stream cleanup, the number of participants in a hazardous waste collection event, etc.

3. Illicit discharge detection and elimination.

a. The permittee shall develop and maintain an accurate MS4 map and information table as follows:

- (1) A map of the storm sewer system owned or operated by the permittee within the Census Urbanized Area identified by the 2010 decennial census that includes, at a minimum:

(a) MS4 outfalls discharging to surface waters, except as follows:

- (i) In cases where the outfall is located outside of the MS4 permittee's legal responsibility, the permittee may elect to map the known point of discharge location closest to the actual outfall; and
- (ii) In cases where the MS4 outfall discharges to receiving water channelized underground, the permittee may elect to map the point downstream at which the receiving water emerges above ground as a outfall discharge location. If there are multiple outfalls discharging to an underground channelized receiving water, the map shall identify that the outfall discharge location represents more than one outfall. This is an option a permittee may choose to use and recognized the difficulties in accessing outfalls to underground channelized stream conveyances for purposes of mapping, screening or monitoring.

(b) A unique identifier for each mapped item required in Part IV.E.3;

(c) The name and location of receiving waters to which the MS4 outfall or point of discharge discharges;

(d) MS4 regulated service area;

- (e) Conveyances; and
 - (f) Stormwater management facilities owned or operated by the permittee.
- (2) The permittee shall maintain an information table associated with the storm sewer system map that includes the following information for each outfall or point of discharge for those cases in which the permittee elects to map the known point of discharge in accordance with Part IV.E.3.a.(1)(a):
- (a) A unique identifier as specified on the storm sewer system map;
 - (b) The latitude and longitude of the outfall or point of discharge;
 - (c) The estimated regulated acreage draining to the outfall or point of discharge;
 - (d) The name of the receiving water;
 - (e) The 6th Order Hydrologic Unit Code of the receiving water;
 - (f) An indication as to whether the receiving water is listed as impaired in the Virginia 2016 305(b)/303(d) Water Quality Assessment Integrated Report;
 - (g) The predominant land use for each outfall discharging to an impaired water; and
 - (h) The name of any EPA approved TMDLs for which the permittee is assigned a wasteload allocation.
- (3) No later than July 1, 2019, the permittee shall submit to DEQ a GIS-compatible shapefile of the permittee's MS4 map as described in Part IV.E.3.a. If the permittee does not have an MS4 map in a GIS format, the permittee shall provide the map as a PDF document.
- (4) No later than December 31 of each year, the permittee shall update the storm sewer system map and outfall information table to include any new outfalls constructed or TMDLs approved or both during the immediate preceding reporting period.
- (5) The permittee shall provide written notification to any downstream adjacent MS4 of any known physical interconnection established or discovered after the effective date of this permit.
- b. The permittee shall prohibit, through ordinance, policy, standard operating procedures, or other legal mechanism, to the extent allowable under federal, state, or local law, regulations, or ordinances, unauthorized non-stormwater discharges into the storm sewer system. Non-stormwater discharges or flows identified in 9VAC25-890-20 D 3 shall only be addressed if they are identified by the permittee as a significant contributor of pollutants discharging to the MS4. Flows that have been identified by the department as de minimis discharges are not significant sources of pollutants to surface water.
- c. The permittee shall maintain, implement and enforce illicit discharge detection and elimination (IDDE) written procedures designed to detect, identify, and address unauthorized non-stormwater discharges, including illegal dumping, to the small MS4 to effectively eliminate the unauthorized discharge. Written procedures shall include:
- (1) A description of the legal authorities, policies, standard operating procedures or other legal mechanisms available to the permittee to eliminate identified sources of ongoing illicit discharges including procedures for using legal enforcement authorities.

- (2) Dry weather field screening protocols to detect, identify, and eliminate illicit discharges to the MS4. The protocol shall include:
 - (a) A prioritized schedule of field screening activities and rationale for prioritization determined by the permittee based on such criteria as age of the infrastructure, land use, historical illegal discharges, dumping or cross connections.
 - (b) A schedule to screen all outfalls annually;
 - (c) A mechanism to track the following information:
 - (i) The unique outfall identifier;
 - (ii) Time since the last precipitation event;
 - (iii) The estimated quantity of the last precipitation event;
 - (iv) Site descriptions (e.g., conveyance type and dominant watershed land uses);
 - (v) Whether or not a discharge was observed; and
 - (vi) If a discharge was observed, the estimated discharge rate (e.g., width and depth of discharge flow rate) and visual characteristics of the discharge (e.g., odor, color, clarity, floatables, deposits or stains, vegetation condition, structural condition, and biology).
 - (3) A timeframe upon which to conduct an investigation to identify and locate the source of any observed unauthorized non-stormwater discharge. Priority of investigations shall be given to discharges of sanitary sewage and those believed to be a risk to human health and public safety. Discharges authorized under a separate VPDES or state permit require no further action under this permit.
 - (4) Methodologies to determine the source of all illicit discharges. If the permittee is unable to identify the source of an illicit discharge within six months of beginning the investigation then the permittee shall document that the source remains unidentified. If the observed discharge is intermittent, the permittee shall document that attempts to observe the discharge flowing were unsuccessful.
 - (5) Methodologies for conducting a follow-up investigation as necessary for illicit discharges that are continuous or that the permittee expects to occur more frequently than a one-time discharge to verify that the discharge has been eliminated;
 - (6) A mechanism to track all illicit discharge investigations to document the following:
 - (a) The date that the illicit discharge was initially observed;
 - (b) The results of the investigation, including the source, if identified;
 - (c) Any follow-up to the investigation;
 - (d) Resolution of the investigation; and
 - (e) The date that the investigation was closed.
- d. The MS4 program plan shall include:

- (1) The MS4 map and information table required by Part IV.E.3.a. The map and information table may be incorporated into the MS4 program plan by reference. The map shall be made available to the department within 14 days upon request;
 - (2) Copies of written notifications of new physical interconnections given by the permittee to other MS4s; and
 - (3) The IDDE procedures described in Part IV.E.3.c.
4. Construction site stormwater runoff control.
 - a. The permittee shall utilize its legal authority, such as ordinances, permits, orders, specific contract language, and inter-jurisdictional agreements, to address discharges entering the MS4 from regulated construction site stormwater runoff. The permittee shall control construction site stormwater runoff by implementing the Virginia Erosion and Sediment Control Program (VESCP) consistent with the Virginia Erosion and Sediment Control Law (§ 62.1-44.15:51 et seq. of the Code of Virginia) and Virginia Erosion and Sediment Control Regulations (9VAC25-840). The permittee shall require implementation of appropriate controls to prevent nonstormwater discharges to the MS4, such as wastewater, concrete washout, fuels and oils, and other illicit discharges identified during land disturbing activity inspections of the MS4. The discharge of nonstormwater discharges other than those identified in 9VAC25-890-20 D through the MS4 is not authorized by this state permit.
 - b. The permittee's MS4 program plan shall include:
 - (1) The local ordinance citations for the Virginia Erosion and Sediment Control Program (VESCP) program;
 - (2) A description of the legal authorities utilized to ensure compliance with Part IV.E.4.a to control construction site stormwater runoff control such as ordinances, permits, orders, specific contract language, policies, and inter-jurisdictional agreements;
 - (3) Written inspection procedures to ensure the erosion and sediment controls are properly implemented and all associated documents utilized during inspection including the inspection schedule;
 - (4) Written procedures for requiring compliance through corrective action or enforcement action to the extent allowable under federal, state, or local law, regulation, ordinance, or other legal mechanisms; and
 - (5) The roles and responsibilities of each of the permittee's departments, divisions, or subdivisions in implementing the construction site stormwater runoff control requirements in Part IV.E.4.
5. Post-construction stormwater management for new development and development on prior developed lands.
 - a. The permittee shall address post-construction stormwater runoff that enters the MS4 from the following land-disturbing activities by implementing an approved Virginia Stormwater Management Program (VSMP) consistent with the Virginia Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and VSMP Regulations (9VAC25-870) as well as develop an inspection and maintenance program in accordance with Part IV.E.5.b and c.
 - b. The permittee shall implement an inspection and maintenance program for those stormwater management facilities owned or operated by the permittee that discharges to the MS4 as follows:
 - (1) The permittee shall develop and maintain written inspection and maintenance procedures in order to ensure adequate long-term operation and maintenance of its stormwater management facilities;

- (2) The permittee shall inspect stormwater management facilities owned or operated by the permittee no less than once per year. The permittee may choose to implement an alternative schedule to inspect these stormwater management facilities based on facility type and expected maintenance needs provided that the alternative schedule and rationale is included in the MS4 program plan; The alternative inspection frequency shall be no less than once per five years; and
 - (3) If during the inspection of the stormwater management facility conducted in accordance with Part IV.E.5.b.(2), it is determined that maintenance is required, the permittee shall conduct the maintenance in accordance with the written procedures developed under Part IV.E.5.b.(1).
- c. The permittee shall:
- (1) Implement an inspection and enforcement program for stormwater management facilities not owned by the permittee (i.e., privately owned) that includes:
 - (a) An inspection frequency of no less than once per five years for all privately owned stormwater management facilities that discharge into the MS4; and
 - (b) Adequate long-term operation and maintenance by the owner of the stormwater management facility by requiring the owner to develop and record a maintenance agreement, including an inspection schedule to the extent allowable under state or local law or other legal mechanism;
 - (2) Utilize its legal authority for enforcement of the maintenance responsibilities if maintenance is neglected by the owner; and
 - (3) The permittee may develop and implement a progressive compliance and enforcement strategy provided that the strategy is included in the MS4 program plan.
- d. The permittee shall maintain an electronic database or spreadsheet of all known permittee-owned or permittee-operated and privately owned stormwater management facilities that discharge into the MS4. The database shall also include all BMPs implemented by the permittee to meet the Chesapeake Bay TMDL load reduction as required in Part IV.F. A database shall include the following information as applicable:
- (1) The stormwater management facility or BMP type;
 - (2) The stormwater management facility or BMPs location as latitude and longitude;
 - (3) The acres treated by the stormwater management facility or BMP, including total acres, pervious acres, and impervious acres;
 - (4) The date the facility was brought online (MM/YYYY). If the date brought online is not known, the permittee shall use June 30, 2005;
 - (5) The 6th Order Hydrologic Unit Code in which the stormwater management facility is located;
 - (6) Whether the stormwater management facility or BMP is owned or operated by the permittee or privately owned;
 - (7) Whether or not the stormwater management facility or BMP is part of the permittee's Chesapeake Bay TMDL action plan required in Part IV.F or local TMDL action plan required in Part IV.G, or both;
 - (8) If the stormwater management facility or BMP is privately owned, whether a maintenance agreement exists; and

- (9) The date of the permittee's most recent inspection of the stormwater management facility or BMP.
- e. The electronic database or spreadsheet shall be updated no later than 30 days after a new stormwater management facility is brought online, a new BMP is implemented to meet a TMDL load reduction as required in Part IV.F or G, or discovered if it is an existing stormwater management facility.
- f. The permittee shall use the DEQ Construction Stormwater Database or other application as specified by the department to report each stormwater management facility installed after July 1, 2014, to address the control of post-construction runoff from land disturbing activities for which the permittee is required to obtain a General VPDES Permit for Discharges of Stormwater from Construction Activities.
- g. No later than March 31 of each year, the permittee shall electronically report the stormwater management facilities and BMPs implemented between January 1 and December 30 of each year using the DEQ BMP Warehouse and associated reporting template for any practices not reported in accordance with Part IV.E.5.f including stormwater management facilities installed to control post-development stormwater runoff from land disturbing activities less than one acre in accordance with the Chesapeake Bay Preservation Act regulations (9VAC25-830) and for which a General VPDES Permit for Discharges of Stormwater from Construction Activities was not required.
- h. The MS4 program plan shall include:
 - (1) A copy of the VSMP approval letter issued by the department;
 - (2) Written inspection procedures and all associated documents utilized in the inspection of privately owned stormwater management facilities; and
 - (3) Written procedures for compliance and enforcement of inspection and maintenance requirements for privately owned BMPs.
 - (4) A description of the legal authorities utilized to ensure compliance with Part IV.E.5.a for post-construction stormwater runoff control such as ordinances, permits, orders, specific contract language, and inter-jurisdictional agreements;
 - (5) Written inspection procedures and all associated documents utilized during inspection of stormwater management facilities owned or operated by the permittee;
 - (6) The roles and responsibilities of each of the permittee's departments, divisions, or subdivisions in implementing the post-construction stormwater runoff control program; and
 - (7) The stormwater management facility spreadsheet, or database incorporated by reference, and the location or link where the spreadsheet or database can be reviewed.
- 6. Pollution prevention and good housekeeping for facilities owned or operated by the permittee within the MS4 service area.
 - a. The permittee shall maintain and implement written procedures for those activities at facilities owned or operated by the permittee, such as road, street, and parking lot maintenance; equipment maintenance; and the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers designed to:
 - (1) Prevent illicit discharges;
 - (2) Ensure the proper disposal of waste materials, including landscape wastes;

- (3) Prevent the discharge of wastewater or permittee vehicle wash water or both into the MS4 without authorization under a separate VPDES permit;
 - (4) Require implementation of best management practices when discharging water pumped from utility construction and maintenance activities;
 - (5) Minimize the pollutants in stormwater runoff from bulk storage areas (e.g., salt storage, topsoil stockpiles) through the use of best management practices;
 - (6) Prevent pollutant discharge into the MS4 from leaking municipal automobiles and equipment; and
 - (7) Ensure that the application of materials, including fertilizers and pesticides, is conducted in accordance with the manufacturer's recommendations.
- b. The written procedures established in accordance with Part IV.E.6.a shall be utilized as part of the employee training program at Part IV.E.6.m.
- c. Within 12 months of state permit coverage, the permittee shall identify which of the high-priority facilities have a high potential of discharging pollutants. The permittee shall maintain and implement a site-specific stormwater pollution prevention plan (SWPPP) for each facility identified. High priority facilities that have a high potential for discharging pollutants are those facilities that are not covered under a separate VPDES permit and which any of the following materials or activities occur and are expected to have exposure to stormwater resulting from rain, snow, snowmelt or runoff:
- (1) Areas where residuals from using, storing or cleaning machinery or equipment remain and are exposed to stormwater;
 - (2) Materials or residuals on the ground or in stormwater inlets from spills or leaks;
 - (3) Material handling equipment;
 - (4) Materials or products that would be expected to be mobilized in stormwater runoff during loading or unloading or transporting activities (e.g., rock, salt, fill dirt);
 - (5) Materials or products stored outdoors (except final products intended for outside use where exposure to stormwater does not result in the discharge of pollutants);
 - (6) Materials or products that would be expected to be mobilized in stormwater runoff contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers;
 - (7) Waste material except waste in covered, nonleaking containers (e.g., dumpsters);
 - (8) Application or disposal of process wastewater (unless otherwise permitted); or
 - (9) Particulate matter or visible deposits of residuals from roof stacks, vents or both not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater runoff.
- d. Each SWPPP as required in Part IV.E.6.c shall include the following:
- (1) A site description that includes a site map identifying all outfalls, direction of stormwater flows, existing source controls, and receiving water bodies;
 - (2) A description and checklist of the potential pollutants and pollutant sources;

- (3) A description of all potential nonstormwater discharges;
 - (4) Written procedures designed to reduce and prevent pollutant discharge;
 - (5) A description of the applicable training as required in Part IV.E.6.m;
 - (6) Procedures to conduct an annual comprehensive site compliance evaluation;
 - (7) An inspection frequency of no less than once per year and maintenance requirements for site-specific source controls. The date of each inspection and associated findings and follow-up shall be logged in each SWPPP;
 - (8) A log of each unauthorized discharge, release, or spill incident reported in accordance with Part V.G including the following information:
 - (a) Date of incident;
 - (b) Material discharged, released, or spilled; and
 - (c) Estimated quantity discharged, released or spilled;
- e. No later than December 31 of each year, the permittee shall review any high-priority facility owned or operated by the permittee for which a SWPPP has not been developed to determine if the facility has a high potential to discharge pollutants as described in Part IV.E.6.c. If the facility is determined to be a high-priority facility with a high potential to discharge pollutants, the permittee shall develop a SWPPP meeting the requirements of Part IV.E.6.d no later than June 30 of the following year.
 - f. The permittee shall review the contents of any site specific SWPPP no later than 30 days after any unauthorized discharge, release, or spill reported in accordance with Part V.G to determine if additional measures are necessary to prevent future unauthorized discharges, releases, or spills. If necessary, the SWPPP shall be updated no later than 90 days after the unauthorized discharge.
 - g. The SWPPP shall be kept at the high-priority facility with a high potential to discharge and utilized as part of staff training required in Part IV.E.6.m. The SWPPP and associated documents may be maintained as a hard copy or electronically as long as the documents are available to employees at the applicable site.
 - h. If activities change at a facility such that the facility no longer meets the criteria of a high-priority facility with a high potential to discharge pollutants as described in Part IV.E.6.c, the permittee may remove the facility from the list of high-priority facilities with a high potential to discharge pollutants.
 - i. The permittee shall maintain and implement turf and landscape nutrient management plans that have been developed by a certified turf and landscape nutrient management planner in accordance with § 10.1-104.2 of the Code of Virginia on all lands owned or operated by the permittee where nutrients are applied to a contiguous area greater than one acre. If nutrients are being applied to achieve final stabilization of a land disturbance project, application shall follow the manufacturer's recommendations.
 - j. If the permittee owns land regulated under § 10.1-104.4 of the Code of Virginia, including state agencies, state colleges and universities, and other state government entities, the permittee shall continue to implement turf and landscape nutrient management plans in accordance with this statutory requirement.
 - k. The permittee shall not apply any deicing agent containing urea or other forms of nitrogen or phosphorus to parking lots, roadways, and sidewalks, or other paved surfaces.

- l. The permittee shall require through the use of contract language, training, standard operating procedures, or other measures within the permittee's legal authority, that contractors employed by the permittee and engaging in activities with the potential to discharge pollutants use appropriate control measures to minimize the discharge of pollutants to the MS4.
- m. The permittee shall develop a training plan in writing for applicable staff that ensures the following:
 - (1) Field personnel received training in the recognition and reporting of illicit discharges no less than once per 24 months;
 - (2) Employees performing road, street, and parking lot maintenance receive training in pollution prevention and good housekeeping associated with those activities no less than once per 24 months;
 - (3) Employees working in and around maintenance, public works, or recreational facilities receive training in good housekeeping and pollution prevention practices associated with those facilities no less than once per 24 months;
 - (4) Employees and contractors hired by the permittee who apply pesticides and herbicides are trained or certified in accordance with the Virginia Pesticide Control Act (§ 3.2-3900 et seq. of the Code of Virginia). Certification by the Virginia Department of Agriculture and Consumer Services (VDACS) Pesticide and Herbicide Applicator program shall constitute compliance with this requirement;
 - (5) Employees and contractors serving as plan reviewers, inspectors, program administrators, and construction site operators obtain the appropriate certifications as required under the Virginia Erosion and Sediment Control Law and its attendant regulations;
 - (6) Employees and contractors implementing the stormwater program obtain the appropriate certifications as required under the Virginia Stormwater Management Act and its attendant regulations; and
 - (7) Employees whose duties include emergency response have been trained in spill response. Training of emergency responders such as firefighters and law-enforcement officers on the handling of spill releases as part of a larger emergency response training shall satisfy this training requirement and be documented in the training plan.
- n. The permittee shall maintain documentation of each training event conducted by the permittee to fulfill the requirements of Part IV.E.6.m for a minimum of three years after the training event. The documentation shall include the following information:
 - (1) The date of the training event;
 - (2) The number of employees attending the training event; and
 - (3) The objective of the training event.
- o. The permittee may fulfill the training requirements in Part IV.E.6.m, in total or in part, through regional training programs involving two or more MS4 permittees; however, the permittee shall remain responsible for ensuring compliance with the training requirements.
- p. The MS4 program plan shall include:
 - (1) The written procedures for the operations and maintenance activities as required by Part IV.E.6.a;

- (2) A list of all high-priority facilities owned or operated by the permittee required in accordance with Part IV.E.6.c, and whether or not the facility has a high potential to discharge;
- (3) A list of lands for which turf and landscape nutrient management plans are required in accordance with Part IV.E.6.i and j, including the following information:
 - (a) The total acreage on which nutrients are applied;
 - (b) The date of the most recently approved nutrient management plan for the property; and
 - (c) The location in which the individual turf and landscape nutrient management plan is located.
- (4) A summary of mechanisms the permittee uses to ensure contractors working on behalf of the permittee implements the necessary good housekeeping and pollution prevention procedures, and stormwater pollution plans as appropriate; and
- (5) The written training plan as required in Part IV.E.6.m.

TMDL Special Conditions

F. Chesapeake Bay TMDL Special Condition.

1. The following definitions apply to Part IV.F and G of this permit for the purpose of the Chesapeake Bay TMDL special condition for discharges in the Chesapeake Bay Watershed:

"Existing sources" means pervious and impervious urban land uses served by the MS4 as of June 30, 2009.

"New sources" means pervious and impervious urban land uses served by the MS4 developed or redeveloped on or after July 1, 2009.

"Pollutants of concern" or "POC" means total nitrogen, total phosphorus, and total suspended solids.

"Transitional sources" means regulated land disturbing activities that are temporary in nature and discharge through the MS4.

2. Reduction requirements. No later than the expiration date of this permit, the permittee shall implement measures to reduce the load of total nitrogen, total phosphorus, and total suspended solids from existing developed lands served by the MS4 as of June 30, 2009, within the 2010 Census Urbanized Area by at least 40% of the Level 2 (L2) Scoping Run Reductions. The 40% reduction is the sum of (i) the first phase reduction of 5.0% of the L2 Scoping Run Reductions based on the lands located within the 2000 Census Urbanized Areas required by June 30, 2018; (ii) the second phase reduction of at least 35% of the L2 Scoping Run based on lands within the 2000 Census Urbanized Areas required by June 30, 2023; and (iii) the reduction of at least 40% of the L2 Scoping Run, which shall only apply to the additional lands that were added by the 2010 expanded Census Urbanized Areas required by June 30, 2023. The required reduction shall be calculated using Table 3 below as applicable:

TABLE 3 CALCULATION SHEET FOR ESTIMATING EXISTING SOURCE LOADS AND REDUCTION REQUIREMENTS FOR THE JAMES RIVER								
		A	B	C	D	E	F	G
Pollutant	Subsource	Loading rate (lbs/ac/yr) ¹	Existing developed lands as of 6/30/09 served by the MS4 within the 2010 CUA (acres) ²	Load (lbs/yr) ³	Percentage of MS4 required Chesapeake Bay total L2 loading reduction	Percentage of L2 required reduction by 6/30/2023	40% cumulative reduction Required by 6/30/2023 (lbs/yr) ⁴	Sum of 40% cumulative reduction (lb/yr) ⁵
Nitrogen	Regulated urban impervious	9.39			9%	40%		
	Regulated urban pervious	6.99			6%	40%		
Phosphorus	Regulated urban impervious	1.76			16%	40%		
	Regulated urban pervious	0.5			7.25%	40%		
Total Suspended Solids	Regulated urban impervious	676.94			20%	40%		

	Regulated urban pervious	101.08			8.75%	40%		
¹ Edge of stream loading rate based on the Chesapeake Bay Watershed Model Progress Run 5.3.2. ² To determine the existing developed acres required in Column B, the permittee should first determine the extent of their regulated service area based on the 2010 Census Urbanized Area (CUA). Next, the permittee will need to delineate the lands within the 2010 CUA served by the MS4 as pervious or impervious as of the baseline date of June 30, 2009. ³ Column C = Column A x Column B. ⁴ Column F = Column C x Column D x Column E. ⁵ Column G = The sum of the subsource cumulative reduction required by 6/30/23 (lbs/yr) as calculated in Column F.								

3. No later than the expiration date of this permit, the permittee shall offset 40% of the increased loads from new sources initiating construction between July 1, 2009, and June 30, 2019, and designed in accordance with 9VAC25-870 Part II C (9VAC25-870-93 et seq.) if the following conditions apply:

- a. The activity disturbed one acre or greater; and
- b. The resulting total phosphorous load was greater than 0.45 lb/acre/year, which is equivalent to an average land cover condition of 16% impervious cover.

The permittee shall utilize Table 4 of Part IV.F.4 to develop the equivalent pollutant load for nitrogen and total suspended solids for new sources meeting the requirements of this condition.

4. No later than the expiration date of this permit, the permittee shall offset the increased loads from projects grandfathered in accordance with 9VAC25-870-48 that begin construction after July 1, 2014, if the following conditions apply:

- a. The activity disturbs one acre or greater; and
- b. The resulting total phosphorous load was greater than 0.45 lb/acre/year, which is equivalent to an average land cover condition of 16% impervious cover.

The permittee shall utilize Table 4 below to develop the equivalent pollutant load for nitrogen and total suspended solids for grandfathered sources meeting the requirements of this condition.

TABLE 4 RATIO OF PHOSPHORUS LOADING RATE TO NITROGEN AND TOTAL SUSPENDED SOLIDS LOADING RATES FOR CHESAPEAKE BAY BASINS			
Ratio of Phosphorus to Other POCs (Based on All Land Uses 2009 Progress Run)	Phosphorus Loading Rate (lbs/acre)	Nitrogen Loading Rate (lbs/acre)	Total Suspended Solids Loading Rate (lbs/acre)
James River Basin	1.0	5.2	420.9

5. Reductions achieved in accordance with the General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems effective July 1, 2013, shall be applied to the total reduction requirements to demonstrate compliance with Part IV.F.2, F.3, and F.4.
6. Reductions shall be achieved in each river basin as calculated in Part IV.F.3 or for reductions in accordance with Part IV.F.3 and F.4 in the basin in which the new source or grandfathered project occurred.
7. Loading and reduction values greater than or equal to 10 pounds calculated in accordance with Part IV.F.2, F.3, and F.4 shall be calculated and reported to the nearest pound without regard to mathematical rules of precision. Loading and reduction values of less than 10 pounds reported in accordance with Part IV.F.2, F.3, and F.4 shall be calculated and reported to two significant digits.
8. Reductions required in Part IV.F.2, F.3, and F.4 shall be achieved through one or more of the following:
 - a. BMPs approved by the Chesapeake Bay Program;
 - b. BMPs approved by the department; or
 - c. A trading program described in Part IV.F.9.
9. The permittee may acquire and use total nitrogen and total phosphorus credits in accordance with § 62.1-44.19:21 of the Code of Virginia and total suspended solids in accordance with § 62.1-44.19:21.1 of the Code of Virginia for purposes of compliance with the required reductions in Part IV.F.2.a through F.2.d, F.3, and F.4, provided the use of credits has been approved by the department. The exchange of credits is subject to the following requirements:
 - a. The credits are generated and applied to a compliance obligation in the same calendar year;
 - b. The credits are generated and applied to a compliance obligation in the same tributary;
 - c. The credits are acquired no later than June 1 immediately following the calendar year in which the credits are applied;
 - d. No later than June 1 immediately following the calendar year in which the credits are applied, the permittee certifies on a credit exchange notification form supplied by the department that the permittee has acquired the credits;
 - e. Total nitrogen and total phosphorus credits shall be either point source credits generated by point sources covered by the Watershed Permit for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed general permit issued pursuant to § 62.1-44.19:14 of the Code of Virginia, or nonpoint source credits certified pursuant to § 62.1-44.19:20 of the Code of Virginia;

- f. Sediment credits shall be derived from one of the following:
 - (1) Implementation of BMP in a defined area outside of an MS4 service area, in which case the necessary baseline sediment reduction for such defined area shall be achieved prior to the permittee's use of additional reductions as credit; or
 - (2) A point source wasteload allocation established by the Chesapeake Bay total maximum daily load, in which case the credit is the difference between the wasteload allocation specified as an annual mass load and any lower monitored annual mass load that is discharged as certified on a form supplied by the department.
 - g. Sediment credits shall not be associated with phosphorus credits used for compliance with the stormwater nonpoint nutrient runoff water quality criteria established pursuant to § 62.1-44.15:28 of the Code of Virginia.
10. No later than 12 months after the permit effective date, the permittee shall submit an updated Chesapeake Bay TMDL action plan for the reductions required in Part IV.F.2, F.3, and F.4 that includes the following information:
- a. Any new or modified legal authorities, such as ordinances, permits, policy, specific contract language, orders, and inter-jurisdictional agreements, implemented or needing to be implemented to meet the requirements of Part IV.F.2, F.3, and F.4.
 - b. The load and cumulative reduction calculations for each river basin calculated in accordance with Part IV.F.2, F.3, and F.4.
 - c. The total reductions achieved as of July 1, 2018, for each pollutant of concern in each river basin;
 - d. A list of BMPs implemented prior to July 1, 2018, to achieve reductions associated with the Chesapeake Bay TMDL including:
 - (1) The date of implementation; and
 - (2) The reductions achieved.
 - e. The BMPs to be implemented by the permittee prior to the expiration of this permit to meet the cumulative reductions calculated in Part IV.F.2, F.3, and F.4, including as applicable:
 - (1) Type of BMP;
 - (2) Project name;
 - (3) Location;
 - (4) Percent removal efficiency for each pollutant of concern; and
 - (5) Calculation of the reduction expected to be achieved by the BMP calculated and reported in accordance with the methodologies established in Part IV.F.7 for each pollutant of concern; and
 - f. A summary of any comments received as a result of public participation required in Part IV.F.11, the permittee's response, identification of any public meetings to address public concerns, and any revisions made to Chesapeake Bay TMDL action plan as a result of public participation.
11. Prior to submittal of the action plan required in Part IV.F.10, the permittee shall provide an opportunity for public comment on the additional BMPs proposed to meet the reductions not previously approved by the department in the first phase Chesapeake Bay TMDL action plan for no less than 15 days.

12. For each reporting period, the corresponding annual report shall include the following information:

- a. A list of BMPs implemented during the reporting period but not reported to the DEQ BMP Warehouse in accordance with Part IV.E.5.g and the estimated reduction of pollutants of concern achieved by each and reported in pounds per year;
- b. If the permittee acquired credits during the reporting period to meet all or a portion of the required reductions in Part IV.F.2, F.3, or F.4, a statement that credits were acquired;
- c. The progress, using the final design efficiency of the BMPs, toward meeting the required cumulative reductions for total nitrogen, total phosphorus, and total suspended solids; and
- d. A list of BMPs that are planned to be implemented during the next reporting period.

G. Local TMDL special condition

1. The permittee shall develop a local TMDL action plan designed to reduce loadings for pollutants of concern to an impaired water for which a TMDL has been approved by the U.S. Environmental Protection Agency (EPA) as described in Part IV.G.1.a and 1.b:
 - a. For TMDLs approved by the EPA prior to July 1, 2013, and in which an individual or aggregate wasteload has been allocated to the permittee, the permittee shall update the previously approved local TMDL action plans to meet the conditions of Part IV.G.3, G.4, G.5, G.6, and G.7 as applicable, no later than 18 months after the permit effective date and continue implementation of the action plan; and
 - b. For TMDLs approved by EPA on or after July 1, 2013, and prior to June 30, 2018, and in which an individual or aggregate wasteload has been allocated to the permittee, the permittee shall develop and initiate implementation of action plans to meet the conditions of Part IV.G.3, G.4, G.5, G.6, and G.7 as applicable for each pollutant for which wasteloads have been allocated to the permittee's MS4 no later than 30 months after the permit effective date.
2. The permittee shall complete implementation of the TMDL Action Plans as soon as possible. TMDL action plans may be implemented in multiple phases over more than one permit cycle using the adaptive iterative approach provided adequate progress is achieved in the implementation of BMPs designed to reduce pollutant discharges to the MEP and in a manner that is consistent with the assumptions and requirements of the applicable TMDL.
3. Each local TMDL action plan developed by the permittee shall include the following:
 - a. The TMDL project name;
 - b. The EPA approval date of the TMDL;
 - c. The wasteload allocated to the permittee (individually or in aggregate), and the corresponding percent reduction, if applicable;
 - d. Identification of the significant sources of the pollutants of concern discharging to the permittee's MS4 and are not covered under a separate VPDES permit. For the purposes of this requirement, a significant source of pollutants means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL;
 - e. The BMPs designed to reduce the pollutants of concern in accordance with Part IV.G.4, G.5, and G.6;
 - f. Any calculations required in accordance with Part IV.G.4, G.5, or G.6;

- g. For action plans developed in accordance with Part IV.G.4 and G.5, an outreach strategy to enhance the public's education (including employees) on methods to eliminate and reduce discharges of the pollutants; and
- h. A schedule of anticipated actions planned for implementation during this permit term.

4. Bacterial TMDLs.

- a. The permittee shall select and implement at least three of the strategies listed in Table 5 below designed to reduce the load of bacteria to the MS4. Selection of the strategies shall correspond to sources identified in Part IV.G.3.d.

TABLE 5 STRATEGIES FOR BACTERIA REDUCTION STORMWATER CONTROL/MANAGEMENT	
Source	Strategies (provided as an example and not meant to be all inclusive or limiting)
Domestic pets (dogs and cats)	<p>Provide signage to pick up dog waste, providing pet waste bags and disposal containers.</p> <p>Adopt and enforce pet waste ordinances or policies, or leash laws or policies.</p> <p>Place dog parks away from environmentally sensitive areas.</p> <p>Maintain dog parks by removing disposed of pet waste bags and cleaning up other sources of bacteria.</p> <p>Protect riparian buffers and provide un-manicured vegetative buffers along streams to dissuade stream access.</p>
Urban wildlife	<p>Educate the public on how to reduce food sources accessible to urban wildlife (e.g., manage restaurant dumpsters and grease traps, residential garbage, feed pets indoors).</p> <p>Install storm drain inlet or outlet controls.</p> <p>Clean out storm drains to remove waste from wildlife.</p> <p>Implement and enforce urban trash management practices.</p> <p>Implement rooftop disconnection programs or site designs that minimize connections to reduce bacteria from rooftops</p> <p>Implement a program for removing animal carcasses from roadways and properly disposing of the same (either through proper storage or through transport to a licensed facility).</p>
Illicit connections or illicit discharges to the MS4	<p>Implement an enhanced dry weather screening and illicit discharge, detection, and elimination program beyond the requirements of Part IV.E.3 to identify and remove illicit connections and identify leaking sanitary sewer lines infiltrating to the MS4 and implement repairs.</p> <p>Implement a program to identify potentially failing septic systems.</p> <p>Educate the public on how to determine whether their septic system is failing.</p> <p>Implement septic tank inspection and maintenance program.</p> <p>Implement an educational program beyond any requirements in Part IV.E.1 though E.6 to explain to citizens why they should not dump materials into the MS4.</p>
Dry weather urban flows (irrigations, carwashing,	<p>Implement public education programs to reduce dry weather flows from storm sewers related to lawn and park irrigation practices, car washing, power washing and other non-stormwater flows.</p> <p>Provide irrigation controller rebates.</p>

power washing, etc.)	Implement and enforce ordinances or policies related to outdoor water waste. Inspect commercial trash areas, grease traps, wash-down practices, and enforce corresponding ordinances or policies.
Birds (Canadian geese, gulls, pigeons, etc.)	Identify areas with high bird populations and evaluate deterrents, population controls, habitat modifications and other measures that may reduce bird-associated bacteria loading. Prohibit feeding of birds.
Other sources	Enhance maintenance of stormwater management facilities owned or operated by the permittee. Enhance requirements for third parties to maintain stormwater management facilities. Develop BMPs for locating, transporting, and maintaining portable toilets used on permittee-owned sites. Educate third parties that use portable toilets on BMPs for use. Provide public education on appropriate recreational vehicle dumping practices.

5. Local sediment, phosphorus, and nitrogen TMDLs.

- a. The permittee shall reduce the loads associated with sediment, phosphorus, or nitrogen through implementation of one or more of the following:
 - (1) One or more of the BMPs from the Virginia Stormwater BMP Clearinghouse listed in 9VAC25-870-65 or other approved BMPs found on the Virginia Stormwater BMP Clearinghouse website;
 - (2) One or more BMPs approved by the Chesapeake Bay program; or
 - (3) Land disturbance thresholds lower than Virginia's regulatory requirements for erosion and sediment control and post development stormwater management.
- b. The permittee may meet the local TMDL requirements for sediment, phosphorus, or nitrogen through BMPs implemented to meet the requirements of the Chesapeake Bay TMDL in Part IV.F as long as the BMPs are implemented in the watershed for which local water quality is impaired.
- c. The permittee shall calculate the anticipated load reduction achieved from each BMP and include the calculations in the action plan required in Part IV.G.3.g.
- d. No later than 36 months after the effective date of this permit, the permittee shall submit to the department the anticipated end dates by which the permittee will meet each WLA for sediment, phosphorus, or nitrogen. The proposed end date may be developed in accordance with Part IV.G.2.

6. Polychlorinated biphenyl (PCB) TMDLs.

- a. For each PCB TMDL action plan, the permittee shall include an inventory of potentially significant sources of PCBs owned or operated by the permittee that drains to the MS4 that includes the following information:
 - (1) Location of the potential source;
 - (2) Whether or not the potential source is from current site activities or activities previously conducted at the site that have been terminated (i.e. legacy activities); and

- (3) A description of any measures being implemented or to be implemented to prevent exposure to stormwater and the discharge of PCBs from the site.
- b. If at any time during the term of this permit, the permittee discovers a previously unidentified significant source of PCBs within the permittee's MS4 regulated service area, the permittee shall notify DEQ in writing within 30 days of discovery.
7. Prior to submittal of the action plan required in Part IV.G.1, the permittee shall provide an opportunity for public comment proposed to meet the local TMDL action plan requirements for no less than 15 days.
8. The MS4 program plan as required by Part IV.B of this permit shall incorporate each local TMDL action plan. Local TMDL action plans may be incorporated by reference into the MS4 program plan, provided that the program plan includes the date of the most recent local TMDL action plan and identification of the location where a copy of the local TMDL action plan may be obtained.

APPENDIX C

Verification	Originator	Reviewed	Approved	Issued
Initials	JAA / VMR	CG	ELW	ELW
Date	5/23/2012	11/19/2012	11/19/12	11/19/12

Standard Operating Procedure for Detecting and Eliminating Non-Storm Water Discharges to the Municipal Separate Storm Sewer System (MS4)

Person responsible:	DPU Wastewater Pretreatment Personnel		
Area of application:	MS4		
Document location:	Electronic copy at G:\Pretreatment\Pretreatment SOPs 2010		
Original issue date:	05/23/12		
Revisions			
Rev. No.	Date	Description	Reviewed by
001	05/23/2012	Created by John Allen and Vincent Revene	
Recurring action items			
Activity	Responsibility	Frequency	
Review SOP	Environmental Inspector, Tech II	Annually	

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Standard Operating Procedure for Detecting and Eliminating Non-Storm Water Discharges to the Municipal Separate Storm Sewer System (MS4)

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Standard Operating Procedure for Detecting and Eliminating Non-Storm Water Discharges to the Municipal Separate Storm Sewer System (MS4)

1.0 Purpose

- 1.1 To assist managers and field crews conducting MS4 outfall inventories and screenings, illicit discharge characterization and containment, and illicit discharge source tracking and removal activities, as well as enforcement actions.

2.0 Scope

- 2.1 This procedure is applicable to DPU Pretreatment staff and others assisting with MS4 outfall inventory, screening, illicit discharge investigation, and enforcement actions.

3.0 Responsibility

- 3.1 The Environmental Compliance Officer (ECO) is responsible for:
 - 3.1.1 Ensuring the proper, approved forms are used;
 - 3.1.2 Facilitating training for all staff;
 - 3.1.3 Ensuring that all records and documents are properly maintained, controlled and distributed.
 - 3.1.4 Reviewing IDDE investigation findings
 - 3.1.5 Determining appropriate enforcement response
- 3.2 DPU Environmental Inspectors and Technicians are responsible for:
 - 3.2.1 Reading, understanding and following this SOP
 - 3.2.2 Conducting field activities and data collection
 - 3.2.3 Completing appropriate forms
 - 3.2.4 Entering outfall inventory and screening information into the appropriate database
 - 3.2.5 Submitting IDDE investigation findings to the ECO for review
 - 3.2.6 Working with other groups as needed to implement corrective actions

4.0 Definitions

- 4.1 **Storm water:** Water that originates from precipitation events. The term may also be used to describe water that originates with snowmelt or runoff water from overwatering that enters the MS4.

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- 4.2 **MS4:** Municipal Separate Storm Sewer System. A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):
- (i) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body;
 - (ii) Designed or used for collecting or conveying stormwater;
 - (iii) Which is not a combined sewer; and
 - (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.
- 4.3 **Outfall:** A point where a storm water conveyance discharges into streams, lakes, and/or wetlands.
- 4.4 **Illicit Connection (IC):** (i) any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the MS4 including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water to enter the MS4 and any connections to the MS4 from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or (ii) any drain or conveyance connected from a commercial or industrial land use to the MS4 which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.
- 4.5 **Illicit Discharge (ID):** any discharge to a MS4 that is not comprised entirely of stormwater, except discharges pursuant to a Virginia Pollutant Discharge Elimination System or Virginia Stormwater Management Program permit (other than the Virginia Stormwater Management Program permit for discharges from the MS4), discharges resulting from fire fighting activities, and discharges identified by and in compliance with 4 VAC 50-60-1220(C)(2).

5.0 Procedures

5.1 Outfall Inventory and Screening Field Procedure

- 5.1.1 Photograph the outfall with Ricoh Caplio 500SE GPS enabled digital camera or equivalent. Use a dry erase board, spray paint, grease pen or other means to identify outfall in photograph.
- 5.1.2 Capture outfall location using handheld GPS unit and characterize the outfall by completing the Outfall Reconnaissance Inventory Form (ORI). Use field instruments and kits to gather water quality information if dry weather flow is present. Record data on the ORI Form.
- 5.1.3 If dry weather flow is present visually inspect the immediate area for a potential source, take additional photographs, and collect water samples for laboratory analysis of Ammonia, Nitrate, Nitrite, TKN, Total Phosphorus, and E. coli. (Refer to Water Sample Collection SOP). Use a 60cm Secchi Tube to determine if measurable turbidity is present. If

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the Secchi Tube readings are <60cm, or if the outfall is determined to be a probable ID a TSS sample should be taken from the outfall for laboratory analysis. Notify the ECO of obvious IDs immediately.

5.2 Illicit Discharge Response, Characterization and Containment Field Procedure

- 5.2.1 Visually inspect the immediate area for a potential source
- 5.2.2 Thoroughly photo document all aspects and impacts of the incident and surrounding areas
- 5.2.3 Collect samples of the discharged material for laboratory analysis (Refer to Water Sample Collection SOP)
- 5.2.4 Record observations using the ORI or the DPU Illicit Discharge / Accidental Release Investigation Report Form as appropriate
- 5.2.5 Notify the ECO of obvious IDs and immediately begin an investigation to determine the source
- 5.2.6 Investigate likely or potential IDs as soon as practicable
- 5.2.7 Make note of unlikely illicit discharges for comparison during future inspections

5.3 Illicit Discharge Source Tracking Procedure

- 5.3.1 Survey the immediate vicinity to identify potential sources of the illicit discharge
- 5.3.2 Assess upstream points for the presence of the illicit discharge using sight, smell, and field measurement techniques and equipment.
- 5.3.3 Attempt to isolate the source of the discharge quickly by first observing locations where storm sewer lines or waterways intersect. This can significantly reduce the search area.
- 5.3.4 Use other available resources such as laboratory sample analysis, CCTV inspection equipment and Collections Maintenance personnel to assist in identifying the source of the illicit discharge

5.4 Illicit Source Removal Procedure

- 5.3.1 If the source of the illicit discharge is found to be on private property, the owner of the property will be notified and informed of their obligation to immediately stop the illicit discharge and begin implementing corrective actions
- 5.3.2 If the source of the illicit discharge is found to be caused by activities at a municipal facility Pretreatment personnel will work with the appropriate City department to correct the issue. If the source is determined to be a damaged or improperly connected sanitary sewer line, Pretreatment will work with the Collections Maintenance group to correct the issue.

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- 5.3.3 Follow-up inspections will be performed by Pretreatment staff and/or other DPU personnel or Building Inspectors to verify that the illicit discharge is eliminated and any corrective measures are installed in accordance with City of Richmond code requirements

5.5 Enforcement Procedure

- 5.5.1 Refer to the DPU Pretreatment Enforcement Response Plan

6.0 Post Field Activity/Data Management Procedure

- 6.1 Deliver samples to WWTP Laboratory for analysis. This should be done at the end of field activities each day.
- 6.2 Download all GPS data collected into the City's GIS system and submit for verification. This should be done at least every two days.
- 6.3 Download all field photos and place them in the appropriate on the G drive. This should be done as least every two days.
- 6.4 Scan all forms completed and save them as PDF files in the appropriate subfolder on the G drive. This should be done as least once per week.
- 6.4 Enter outfall locations, ORI form information, IDDE investigation information and photographs into the database located at www.MS4web.com. This should be done at least once per week.

7.0 Task Specific Requirements

- 7.1 Training in IDDE investigation and MS4 outfall inventory procedures
- 7.2 Familiarity with water sampling procedures
- 7.3 Ability to navigate rough terrain and work in varying conditions outdoors

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Standard Operating Procedure for Detecting and Eliminating Non-Storm Water Discharges to the Municipal Separate Storm Sewer System (MS4)

8.0 Safety

- 8.1 Do not enter swiftly moving water that is more than 6 inches deep
- 8.2 Be on the lookout for and avoid poison ivy, ticks, spiders, dogs, snakes and other wildlife
- 8.3 Be careful when attempting to cross wet rocks, concrete or wood as the surface may be extremely slippery
- 8.4 Enter an ICE (In Case of Emergency) number into your cell phone and have it set in speed dial
- 8.5 Wear rubber boots or waders at all times when in water
- 8.6 Use all appropriate PPE
- 8.7 Do not enter confined spaces unless you have received the appropriate training and have the equipment necessary to do so safely
- 8.8 Always work with at least one other person

9.0 Equipment and Supplies

- 9.1 Field Equipment may include:
 - City identification
 - Waterproof waders or rubber boots
 - Disposable gloves
 - Hand sanitizer
 - High visibility safety vests
 - Safety glasses
 - First aid kit
 - Cell phone
 - System map
 - ORI forms
 - Field book
 - Handheld GPS unit
 - YSI Pro Series meter with ammonium, DO, pH, specific conductance probes
 - pH meter or litmus strips
 - CHEMetrics Detergents test kit
 - H2SO4 preserved, 250 mL, polyethylene sample bottles
 - E. coli sample bottles

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Standard Operating Procedure for Detecting and Eliminating Non-Storm Water Discharges to the Municipal Separate Storm Sewer System (MS4)

- Cooler with ice or frozen ice packs
- Digital camera (spare batteries)
- Water velocity meter
- Dry erase board
- Clip board, pencils, pens, permanent and dry erase markers
- Flashlight (spare batteries)
- Mirror
- Folding wood ruler or tape measure
- Watch with second hand or stopwatch
- Calculator
- Green spray paint and flagging tape
- Machete or bush axe
- Pepper spray

9.2 Color printer

9.3 Computer with ArcGIS Desktop, Microsoft Office and internet access

10.0 References / Related Documents

- 10.1 Center for Watershed Protection, R. Pitt. [University of Alabama]. 2004. *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*. 378 p.
- 10.2 Code of the City of Richmond, Chapter 106, Article VIII, Division 3 - ILLICIT DISCHARGE AND CONNECTION
- 10.3 Water Sample Collection SOP
- 10.4 Outfall Reconnaissance Inventory/ Sample Collection Field Sheet (ORI Form)
- 10.5 DPU Illicit Discharge / Accidental Release Investigation Report Form
- 10.6 DPU Pretreatment Enforcement Response Plan

APPENDIX D

Verification	Originator	Reviewed	Approved	Issued
Initials Date	JAA 2/17/2011	JRB 3/1/12	ELW 5/1/12	5/1/12

Standard Operating Procedure for MS4 Outfall Screening

Person responsible: DPU Wastewater Pretreatment Personnel			
Area of application: MS4			
Document location: Electronic copy at G:\Pretreatment\Pretreatment SOPs 2010			
Original issue date: 05-01-2012			
Revisions			
Rev. No.	Date	Description	Reviewed by
001	2/17/2011	Created by John Allen	
Recurring action items			
Activity	Responsibility	Frequency	
Review SOP	Environmental Inspector, Tech II	Annually	

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Verification	Originator	Reviewed	Approved	Issued
Initials	JAA	JRB	ELW	
Date	2/17/2011	3/1/12	5/1/12	5/1/12

Standard Operating Procedure for MS4 Outfall Screening

1.0 Purpose

- 1.1 To assist managers and field crews conducting inventories and illicit discharge screening of storm water drainage system (MS4) outfalls

2.0 Scope

- 2.1 This procedure is applicable to DPU Wastewater Pretreatment and others assisting with MS4 outfall inventory and illicit discharge screening activities

3.0 Responsibility

- 3.1 The Environmental Compliance Officer (ECO) is responsible for:
- 3.1.1 Ensuring the proper approved forms are used;
 - 3.1.2 Facilitating training for all staff;
 - 3.1.3 Ensuring that all records and documents are properly maintained, controlled and distributed.
- 3.2 DPU Environmental Inspectors and Technicians are responsible for:
- 3.2.1 Reading, understanding and following this SOP
 - 3.2.2 Conducting field activities and data collection
 - 3.2.3 Completing appropriate forms
 - 3.2.4 Completing and submitting Weekly ID/IC Discovery Report to the ECO

4.0 Definitions

- 4.1 **Stormwater:** Water that originates from precipitation events. The term may also be used to describe water that originates with snowmelt or runoff water from overwatering that enters the MS4.
- 4.2 **MS4:** Municipal Separate Storm Sewer System. A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):
- (i) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body;
 - (ii) Designed or used for collecting or conveying stormwater;
 - (iii) Which is not a combined sewer; and
 - (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.
- 4.3 **Outfall:** A point where a storm water conveyance discharges into streams, lakes, and/or wetlands.
- 4.4 **Illicit Connection (IC):** (i) any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the MS4 including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water to enter the MS4 and any connections to the MS4 from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized

Verification	Originator	Reviewed	Approved	Issued
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Standard Operating Procedure for MS4 Outfall Screening

enforcement agency or (ii) any drain or conveyance connected from a commercial or industrial land use to the MS4 which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

- 4.5 **Illicit Discharge (ID):** any discharge to a MS4 that is not comprised entirely of stormwater, except discharges pursuant to a Virginia Pollutant Discharge Elimination System or Virginia Stormwater Management Program permit (other than the Virginia Stormwater Management Program permit for discharges from the MS4), discharges resulting from fire fighting activities, and discharges identified by and in compliance with 4 VAC 50-60-1220(C)(2).

5.0 Procedures

5.1 Field Procedure

- 5.1.01 Ensure outfall is accessible and inspect only if safe to do so.
- 5.1.02 Photograph the outfall with Ricoh Caplio 500SE GPS enabled digital camera or equivalent. Use a dry erase board, spray paint, grease pen or other means to identify outfall in photograph.
- 5.1.03 Capture outfall location using handheld GPS unit and characterize the outfall by completing the Outfall Reconnaissance Inventory Form (ORI). Use field instruments and kits to gather water quality information if dry weather flow is present. Record data on the ORI Form.
- 5.1.04 If dry weather flow is present visually inspect the immediate area for a potential source, take additional photographs, and collect water samples for laboratory analysis of Ammonia, Nitrate, Nitrite, TKN, Total Phosphorus, and E. coli. (Refer to Water Sample Collection SOP). Use a 60cm Secchi Tube to determine if measurable turbidity is present. If the Secchi Tube readings are <60cm, or if the outfall is determined to be a probable ID a TSS sample should be taken from the outfall for laboratory analysis. Notify the ECO of obvious IDs immediately.

5.2 Post Field Activity/Data Management Procedure

- 5.2.1 Deliver samples to WWTP Laboratory for analysis. This should be done at the end of field activities each day.
- 5.2.2 Download all GPS data collected into the City's GIS system and submit for verification. This should be done at least every two days.
- 5.2.3 Download all field photos and place them in appropriate subfolder in the Outfall Inventory folder on the G drive. This should be done at least every two days.
- 5.2.4 Scan all ORI forms completed and save them as PDF files in the appropriate subfolder in the Outfall Inventory folder on the G drive. This should be done at least once per week.
- 5.2.4 Enter outfall locations, ORI form information and photographs into database located at www.MS4web.com. This should be done at least once per week.
- 5.2.5 Complete Weekly ID/IC Discovery Report and submit to the ECO. Report will contain photos, maps and information regarding the locations and characteristics of all potential, suspect and obvious ID/ICs discovered during the week's field activities. This report should be prepared and submitted to the ECO no later than 16:00 on Friday of each week.

Verification	Originator	Reviewed	Approved	Issued
Initials	JAA	JRB	ELW	
Date	2/17/2011	3/1/12	5/1/12	5/1/12

Standard Operating Procedure for MS4 Outfall Screening

5.3 Task Specific Requirements

- 5.3.1 Training in IDDE and MS4 outfall inventory procedures
- 5.3.2 Familiarity with water sampling procedures
- 5.3.3 Ability to navigate rough terrain and work in varying conditions outdoors

5.4 Safety

- 5.4.1 Do not enter swiftly moving water that is more than 6 inches deep
- 5.4.2 Be on the lookout for and avoid poison ivy, ticks, spiders, dogs, snakes and other wildlife
- 5.4.3 Be careful when attempting to cross wet rocks, concrete or wood as the surface may be extremely slippery
- 5.4.4 Enter an ICE (In Case of Emergency) number into your cell phone and have it set in speed dial
- 5.4.5 Wear rubber boots or waders at all times when in water
- 5.4.6 Use all appropriate PPE
- 5.4.7 Do not enter confined spaces unless you have received the appropriate training and have the equipment necessary to do so safely
- 5.4.8 Always work with at least one other person

5.5 Equipment and Supplies

5.5.1 Field Equipment:

- City identification
- Waterproof waders or rubber boots
- Disposable gloves
- Hand sanitizer
- High visibility safety vests
- Safety glasses
- First aid kit
- Cell phone
- System map
- ORI forms
- Field book
- Handheld GPS unit
- YSI Pro Series meter or other pH meter
- CHEMetrics Detergents test kit
- 20 – H2SO4 preserved, 250 mL, polyethylene sample bottles
- 20 – E. coli sample bottles
- Cooler and frozen ice packs
- Digital camera (spare batteries)

Verification	Originator	Reviewed	Approved	Issued
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Date	2/17/2011	3/1/12	5/1/12	5/1/12

Standard Operating Procedure for MS4 Outfall Screening

- Water velocity meter
- Dry erase board
- Clip board, pencils, pens, permanent and dry erase markers
- Flashlight (spare batteries)
- Mirror
- Folding wood ruler or tape measure
- Watch with second hand or stopwatch
- Calculator
- Green spray paint and flagging tape
- Machete or bush axe
- Pepper spray

5.5.2 Color printer

5.5.3 Computer with ArcGIS Desktop, Microsoft Office and internet access

6.0 References / Related Documents

- 6.1 Center for Watershed Protection, R. Pitt. [University of Alabama]. 2004. *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*. 378 p.
- 6.2 Code of the City of Richmond, Chapter 106, Article VIII, Division 3 - ILLICIT DISCHARGE AND CONNECTION
- 6.3 Water Sample Collection SOP (in development)
- 6.4 Outfall Reconnaissance Inventory/ Sample Collection Field Sheet (ORI Form)

APPENDIX E



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

May 1, 2015

Mr. Dwight C. Jones, Mayor
City of Richmond
900 E. Broad Street
Richmond, VA 23219

Dear Mayor Jones:

In accordance with §62.1-44.15:27 G of the Virginia Stormwater Management Act (Act), the Department of Environmental Quality (DEQ) has completed the review of City of Richmond's final Virginia Stormwater Management Program (VSMP) application package submitted on March 24, 2015. Based on this review, DEQ has determined that the City of Richmond's VSMP is consistent with the Act, the VSMP regulation and the General VPDES Permit for Discharges of Stormwater from Construction Activities.

In light of this determination, DEQ approves City of Richmond's VSMP and the City is authorized to continue operating a VSMP. Please note that this approval is based on the content of the application package. Any changes made to the documents in the package after the approval date, including changes to the adopted ordinance, may necessitate DEQ evaluation as part of its compliance review of your approved VSMP.

Thank you for your cooperation in developing a VSMP. We look forward to continuing to assist the City with the implementation of its VSMP.

Sincerely,

A handwritten signature in black ink, appearing to read "David K. Paylor".

David K. Paylor

cc: Melanie Davenport, Director, Water Division
Frederick Cunningham, Director, Office of Water Permits
Joan Salvati, Manager, Local Government Stormwater Programs

APPENDIX F

GPS Coordinates Latitude	GPS Coordinates Longitude	HUC 12	VAHU6 (6th Order)	Impaired Water Segments within VAHU6	Drains to:	SCM	Total Treated Area (Acres)	Impervious Treated Area (Acres)	Pervious Treated Area (Acres)	Date Brought Online	Owner Type	Maintenance Agreement	Most Recent Inspection
37.5379450	-77.5478520	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Infiltration Trench	0.03	0.03	0	7/20/2007	Private	None	6/27/2017
37.5523690	-77.5799990	20802050606	JM85	James River, James River UT (XZE), Slate River, Salles Creek, Salles Creek UT	MS4	Forebay	351.2	58.91	292.29	5/12/2014	Private	None	5/12/2014
37.5238530	-77.4412160	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Bio-filtration	1.17	1.05	0.12	2/16/2008	Private	None	10/21/2016
37.5223350	-77.4434890	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Raingarden/basin	0.71	0.5	0.21	9/21/2012	Private	None	9/28/2017
37.5174070	-77.4561950	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Hydraulic Detention	0.52	0.18	0.34	9/27/2011	Private	None	3/15/2019
37.5174070	-77.4561950	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Hydraulic Detention	0.94	0.29	0.65	9/27/2011	Private	None	3/15/2019
37.5737650	-77.4727710	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XYP)	CSS	Grassed Swale	0.09	0.04	0.05	9/27/2014	Private	None	6/24/2014
37.5737650	-77.4727710	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XYP)	CSS	Grassed Swale	0.15	0.12	0.03	9/27/2014	Private	None	6/24/2014
37.5067330	-77.4790500	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.46	0.46	0	1/15/2010	Private	None	5/15/2014
37.5067330	-77.4790500	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.5	0.5	0	1/15/2010	Private	None	5/15/2014
37.5067330	-77.4790500	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.32	0.32	0	1/15/2010	Private	None	5/15/2014
37.5067330	-77.4790500	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.5	0.5	0	1/15/2010	Private	None	5/15/2014
37.5067330	-77.4790500	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.33	0.33	0	1/15/2010	Private	None	5/15/2014
37.5067330	-77.4790500	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.5	0.5	0	1/15/2010	Private	None	5/15/2014
37.5067330	-77.4790500	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.36	0.36	0	1/15/2010	Private	None	5/15/2014

37.5067330	-77.4790500	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Piped Detention	11.55	10.71	0.84	1/15/2010	Private	None	5/15/2014
37.5803680	-77.5387340	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Piped Detention	0.52	0.52	0	7/15/2010	Private	None	3/19/2019
37.4788250	-77.4799730	20802060102	JL02	Falling Creek, Falling Creek Reservoir, Falling Creek UT, Horners Run, James River Tidal Freshwater (Upper) Estuary, Licking Creek, Pocoshock Creek	MS4	Detention Basin	0.22	0	0.22	11/9/2010	Private	None	5/12/2014
37.4760390	-77.4828900	20802060102	JL02	Falling Creek, Falling Creek Reservoir, Falling Creek UT, Horners Run, James River Tidal Freshwater (Upper) Estuary, Licking Creek, Pocoshock Creek	MS4	Concrete Swale with Weir for Detention	0.45	0.23	0.22	3/2/2012	Private	None	6/29/2017
37.5414510	-77.5112840	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Bioretention filter	0.125	0.125	0	9/10/2009	Private	None	10/27/2016
37.5602150	-77.4930730	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Piped Detention	0.9	0.67	0.23	4/16/2010	Private	None	6/27/2017
37.5602150	-77.4930730	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Piped Detention	0.66	0.45	0.21	4/16/2010	Private	None	6/27/2017
37.5602150	-77.4930730	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Piped Detention	1.4	0.66	0.74	4/16/2010	Private	None	6/27/2017
37.5605980	-77.4959580	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Filterra™	0.777	0.59	0.187	5/2/2012	Private	None	6/25/2018
37.5605980	-77.4959580	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Filterra™	0.749	0.572	0.177	5/2/2012	Private	None	6/25/2018
37.5605980	-77.4959580	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Piped Detention	2.15	1.663	0.487	5/2/2012	Private	None	6/25/2018
37.5374360	-77.4211930	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Piped Detention	2.02	1.65	0.37	6/26/2015	Private	None	6/26/2015
37.5556040	-77.4374120	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Extended Detention Pond	9.62	7.526	2.094	12/4/2012	Private	Draft to City Attorney; but no record of receipt in law as of 9/21/18	6/25/2018
37.5634420	-77.4429630	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	StormTech Chamber System	1.83	1.83	0	1/7/2009	Public	Not required	8/6/2018
37.5547410	-77.5639800	20802050606	JM85	James River, James River UT (XZE), Slate River, Salles Creek, Salles Creek UT	MS4	Filterra™	0.26	0.26	0	9/30/2009	Private	None	10/27/2016
37.5547410	-77.5639800	20802050606	JM85	James River, James River UT (XZE), Slate River, Salles Creek, Salles Creek UT	MS4	Filterra™	0.75	0.75	0	9/30/2009	Private	None	10/27/2016

37.5547410	-77.5639800	20802050606	JM85	James River, James River UT (XZE), Slate River, Salles Creek, Salles Creek UT	MS4	Filterra™	1.05	1.05	0	9/30/2009	Private	None	10/27/2016
37.5547410	-77.5639800	20802050606	JM85	James River, James River UT (XZE), Slate River, Salles Creek, Salles Creek UT	MS4	Filterra™	1.05	1.05	0	9/30/2009	Private	None	10/27/2016
37.5547410	-77.5639800	20802050606	JM85	James River, James River UT (XZE), Slate River, Salles Creek, Salles Creek UT	MS4	Filterra™	0.23	0.23	0	9/30/2009	Private	None	10/27/2016
37.5536610	-77.5939180	20802050606	JM85	James River, James River UT (XZE), Slate River, Salles Creek, Salles Creek UT	MS4	Extended Detention	0.89	0.89	0	9/1/2009	Private	None	9/30/2015
37.4669050	-77.4274780	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Filterra™	0.22	0.16	0.06	7/22/2009	Private	None	7/3/2014
37.4669050	-77.4274780	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Filterra™	0.16	0.12	0.04	7/22/2009	Private	None	7/3/2014
37.4669050	-77.4274780	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Filterra™	0.11	0.08	0.03	7/22/2009	Private	None	7/3/2014
37.5221670	-77.4506690	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Piped Detention	0.69	0.69	0	11/24/2014	Private	None	4/12/2019
37.5240250	-77.4526440	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Tank Detention	0.36	0.36	0	11/12/2014	Private	None	11/12/2014
37.5731250	-77.5425660	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Grassed Swale	5.07	1.85	3.22	7/10/2014	Private	None	9/29/2015
37.5721820	-77.5415730	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XVP)	MS4	Filterra™	0.54	0.38	0.16	4/27/2011	Private	Not required	9/15/2016
37.5554100	-77.5362290	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Grassed Swale	3.25	0.27	2.98	6/30/2008	Private	None	6/27/2017
37.5220760	-77.4409030	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Detention Pond	1.08	0	0	3/5/2009	Public	Not required	10/25/2018
37.4753570	-77.4259720	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Detention Basin	37.3	17.7	19.6	4/15/2014	Private	None	4/12/2019
37.4548170	-77.4226990	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Detention Basin	0.89	0.89	0	11/2/2009	Public	Not required	10/16/2018
37.5262670	-77.4209990	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Bioretention Basin	0.41	0.236	0.174	6/1/2014	Public	Not required	8/6/2018

37.5630990	-77.4251020	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Wet Pond	7.92	4.51	3.41	2/5/2015	Private	None	2/5/2015
37.5209220	-77.4410720	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	StormTech Underground Detention	0.4	0.32	0.08	4/8/2008	Public	Not required	1/30/2019
37.5185980	-77.4317060	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Infiltration Trench	0.91	0.74	0.17	9/20/2011	Private	None	10/24/2016
37.5336040	-77.4348980	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Manufactured System - Storm Filter	0.55	0.55	0	4/17/2015	Private	None	4/17/2015
37.5320250	-77.4284150	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Focal Point™	0.82	0.82	0	4/1/2014	Private	None	4/5/2019
37.5303460	-77.4250260	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Stormpure Unit	0.107	0.107	0	4/20/2007	Private	None	9/29/2015
37.5299640	-77.4254530	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Stormpure Unit	0.15	0.15	0	5/16/2007	Private	None	6/30/2016
37.5276490	-77.4204790	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Filterra™	0.06	0.06	0	11/7/2008	Private	None	7/10/2018
37.5276490	-77.4204790	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Filterra™	0.06	0.06	0	11/7/2008	Private	None	7/10/2018
37.5417949	-77.4310947	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Bioretention Cell	0.08	0.08	0	10/13/2011	Private	Yes	10/31/2016
37.5374400	-77.4242920	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Rain Garden	0.388	0.384	0.004	11/16/2011	Private	None	4/18/2019
37.5335620	-77.4299320	20802060102	JL02	Falling Creek, Falling Creek Reservoir, Falling Creek UT, Horners Run, James River Tidal Freshwater (Upper) Estuary, Licking Creek, Pocoshock Creek	CSS	Filterra™	0.3	0.3	0	9/10/2007	Public	Not required	10/16/2018
37.5335620	-77.4299320	20802060102	JL02	Falling Creek, Falling Creek Reservoir, Falling Creek UT, Horners Run, James River Tidal Freshwater (Upper) Estuary, Licking Creek, Pocoshock Creek	CSS	Filterra™	0.24	0.22	0.02	9/10/2007	Public	Not required	10/16/2018
37.5263900	-77.4191740	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Detention Pond	1.05	0.68	0.37	12/11/2012	Private	none	2/2/2018
37.5263900	-77.4191740	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Filterra™	0.41	0.32	0.09	12/11/2012	Private	none	2/2/2018
37.5174560	-77.4149630	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Stormceptor™	1.5	1.5	0	4/1/2011	Private	Yes*	11/10/2016

37.5300480	-77.4128020	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Bioretention	0.58	0.46	0.12	5/1/2013	Public	Not required	10/15/2018
37.5300480	-77.4128020	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Bioretention	0.56	0.37	0.19	5/1/2013	Public	Not required	10/15/2018
37.5300480	-77.4128020	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Planter	0.42	0.3	0.12	10/9/2013	Public	Not required	10/15/2018
37.5300480	-77.4128020	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Planter	0.62	0.27	0.35	10/9/2013	Public	Not required	10/15/2018
37.5300480	-77.4128020	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Planter	0.37	0.37	0	10/9/2013	Public	Not required	10/15/2018
37.5467640	-77.4230350	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Underground detention	5.67	2.86	2.81	3/12/2015	Public	Not required	2/8/2019
37.4764100	-77.4786680	20802060102	JL02	Falling Creek, Falling Creek Reservoir, Falling Creek UT, Horners Run, James River Tidal Freshwater (Upper) Estuary, Licking Creek, Pocoshock Creek	MS4	Bioretention				5/1/2013	Public	Not required	11/13/2018
37.5081600	-77.4918590	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XVP)	MS4	Bioretention Cell	0.63	0.63	0	5/1/2013	Private	yes	10/27/2016
37.5081600	-77.4918590	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XVP)	MS4	Raintank	2.69	0.99	1.7	5/1/2013	Private	None	10/27/2016
37.5336300	-77.5414740	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Detention Basin	0.49	0.26	0.23	12/1/2006	Private	None	6/29/2017
37.5306240	-77.5421750	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Bioretention	1.13	1.13	0	1/16/2015	Public	Not required	10/24/2018
37.5306240	-77.5421750	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Mid-Parking WQ Swale	0.33	0.33	0	1/17/2015	Public	Not required	10/24/2018
37.5306240	-77.5421750	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Lower-Parking WQ Swale	1.49	1.49	0	1/18/2015	Public	Not required	10/24/2018
37.5306240	-77.5421750	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.81	0.81	0	1/19/2015	Public	Not required	10/24/2018
37.5306240	-77.5421750	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.46	0.46	0	1/20/2015	Public	Not required	10/24/2018
37.5306240	-77.5421750	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Underground Extended Detention	11.83	11.83	0	1/21/2015	Public	Not required	10/24/2018

37.5306240	-77.5421750	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Wet Pond	13.05	13.05	0	1/22/2015	Public	Not required	10/24/2018
37.5780830	-77.5358430	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Piped Detention	1.06	0.68	0.38	12/6/2010	Private	None	9/29/2015
37.5500910	-77.4894640	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XYP)	CSS	Bioretention Basin	0.1343	0.0723	0.062	7/28/2015	Public	Not required	8/8/2018
37.5625160	-77.5148960	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Infiltration Trench	0.043	0.043	0	10/1/2011	Private	None	6/27/2017
37.5625160	-77.5148960	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Infiltration Trench	0.039	0.039	0	10/1/2011	Private	None	6/27/2017
37.5055720	-77.5256150	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Detention Basin	4.2	2.52	1.68	3/19/2009	Private	None	10/21/2016
37.5269850	-77.4368130	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra	0.32	0.32	0	active permit	Private	draft to applicant	never issued
37.54144	-77.48714	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Rain Garden Level 1				Under construction 05/22/2019	Private	Instrument #150002480	
37.5232810	-77.4410020	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Biofiltration Swale	1.17	1.05	0.12	2/16/2008	Private	None	5/12/2014
37.5224530	-77.4422990	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Detention Basin	0.25			11/16/2009	Public	Not required	11/14/2018
37.5223430	-77.4418150	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	StormTech Chamber North	1.08	1.06	0.02	3/5/2009	Public	Not required	11/14/2018
37.54131	-77.48672	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Rain Garden Level 1				Under construction 03/22/2019	Private	Instrument #150002482	under construction
37.5223430	-77.4418150	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	StormTech Chamber West	0.25	0.19	0.06	3/5/2009	Public	Not required	11/14/2018
37.54125	-77.48661	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Rain Garden Level 1				Under construction 03/22/2019	Private	Instrument #150002483	under construction
37.5223430	-77.4418150	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	StormTech Chamber East	0.4	0.31	0.09	3/5/2009	Public	Not required	11/14/2018
37.54142	-77.48606	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Rain Garden Level 1				Under construction 03/22/2019	Private	Instrument #150002484	under construction

37.5155070	-77.4512710	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Detention Basin	1.25	0.44	0.81	5/15/2014	Private	None	5/15/2014
37.5239560	-77.4383470	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Bioretention	0.23	0.23	0	12/30/2015	Private	Instrument #160010258	active permit
37.5239560	-77.4383470	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Piped Detention	0.54	0.54	0	12/30/2015	Private	Instrument #160010258	active permit
37.4931790	-77.4884390	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Detention Pond	1.16	0.98	0.18	9/24/2013	Private	None	11/13/2018
37.4917220	-77.4930950	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Hydraulic Structure - Ditch	8.5	3.28	8.49	5/10/2010	Private	None	4/30/2015
37.5076220	-77.4345780	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Detention Basin	2.54	2.54	0	1/3/2014	Private	None	1/3/2019
37.5076220	-77.4345780	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Detention Basin	3.28	3.28	0	1/3/2014	Private	None	1/3/2019
37.5199550	-77.5098650	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Detention Basin	0.46	0.19	0.27	5/10/2013	Private	None	7/2/2018
37.5166730	-77.5188770	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Piped Detention	0	0	0	1/14/2009	Private	None	10/21/2016
37.4997940	-77.4460220	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Hydraulic Detention/Ditch	0.67	0.2	0.47	4/9/2008	Private	None	10/21/2016
37.4879190	-77.4469760	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Contech CDS Vortex Separator	0.51	0.51	0	8/1/2013	Private	None	7/3/2018
37.4713520	-77.4431300	20802060102	JL02	Falling Creek, Falling Creek Reservoir, Falling Creek UT, Horners Run, James River Tidal Freshwater (Upper) Estuary, Licking Creek, Pocoshock Creek	MS4	Reduction in Impervious Area - No SCM Required	0.65	0.52	0.13	7/25/2014	Private	reduction in Impervious area no Maintenance agreement needed	7/25/2014
37.5675470	-77.4863320	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Piped Detention	0.19	0.16	0.03	6/24/2011	Private	None	5/12/2014
37.5456251	-77.4745972	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.073	0.073	0	1/13/2012	Private	None	2/20/2017
37.5766560	-77.5173570	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Piped Detention	0.207	0.12	0.087	6/28/2012	Private	None	6/27/2017
37.5813320	-77.5131910	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Piped Detention	1.3	0.704	0.596	5/5/2014	Private	None	5/5/2014

37.5543290	-77.5050430	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Vegetated Filter Strip	0.94	0.28	0.66	8/5/2013	Private	None	8/9/2018
37.5260350	-77.4458620	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Piped Detention	1.86	1.86	0	4/10/2013	Private	None	7/5/2018
37.5716860	-77.4194790	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Piped Detention	0.414	0.324	0.09	Active permit	Private	None	Not Completed
37.5485920	-77.4150390	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Parking Lot Detention	0.44	0.32	0.12	3/13/2014	Private	None	3/11/2019
37.5633044	-77.4762319	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Green Alley - Permeable Pavers Between West Franklin St & Monument Ave at 3200 Block	2.18	2.18	0	6/25/2012	Public	Not required	7/18/2018
37.5314910	-77.4981190	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Bioretention	0.035	0.035	0	7/27/2012	Private	None	7/18/2018
37.5318740	-77.4982160	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Bioretention	0.063	0.063	0	5/4/2013	Private	None	7/18/2018
37.5701940	-77.4701540	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Bioretention	1.16	1.16	0	9/24/2008	Private	None	6/27/2017
37.5701940	-77.4701540	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Underground Cistern	0.93	0.93	0	9/24/2008	Private	None	6/27/2017
37.5378880	-77.4233630	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Underground Storage Tank	0.78	0.71	0.06	2/25/2012	Private	None	11/16/2016
37.5339100	-77.4242090	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Piped Detention	0.36	0.36	0	1/14/2014	Private	None	1/16/2019
37°-32'-0.388"	-77°-25'3"-0.755"	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Underground Storage Tank	0.055	0.044	0.011	7/7/2015	Private	Yes	7/7/2015
37.3215554	-77.2429837	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Vortex Filter	0.69	0.56	0.13	12/14/2011	Private	Yes but not signed by CAO	1/2/2017
37.3215554	-77.2429837	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Vortex Filter	0.99	0.79	0.2	12/14/2011	Private	Yes but not signed by CAO	1/2/2017
37.3215554	-77.2429837	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Vortex Filter	0.08	0.01	0.07	12/14/2011	Private	Yes but not signed by CAO	1/2/2017
37.5472660	-77.4380920	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Piped Detention	0.129	0.129	0	9/14/2011	Private	Yes but not signed by CAO	2/20/2017

37.5370241	-77.4025805	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Bioretention Cell	2.91	1.46	1.46	8/3/2011	Private	none	7/10/2018
37.5673970	-77.4671820	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Rain Tank A	0.99	0.99	0	12/9/2008	Private	None	2/8/2018
37.5673970	-77.4671820	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Rain Tank B	1.14	1.14	0	12/9/2008	Private	None	2/8/2018
37.5748800	-77.4745160	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Piped Detention	0.57	0.57	0	1/27/2015	Private	None	1/27/2015
37.5619130	-77.4510880	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Detention Pond	3.48	2.26	1.22	8/15/2014	Private	None	8/15/2014
37.4968150	-77.4393010	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Bioretention	2.44	0.54	1.9	4/14/2015	Public	None	11/13/2018
37.5606870	-77.4753500	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Infiltration Trench	0.162	0.147	0.015	9/13/2014	Private	None	8/27/2014
37.5669830	-77.5150440	20802060403	JL18	Chickahominy River, North Run, Upham Brook, Upham Brook UT (XAR), Upham Brook UT (XXP)	MS4	Infiltration Trench	0.26	0.135	0.125	1/18/2013	Private	None	2/8/2018
37.5254180	-77.4444720	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Piped Detention	0.836	0.689	0.147	6/11/2014	Private	None	6/11/2014
37.5250280	-77.4448780	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Piped Detention	0.883	0.684	0.199	7/11/2012	Private	None	7/7/2017
37.5244050	-77.4450190	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Infiltration Trench	0.129	0.075	0.054	7/27/2011	Private	None	10/21/2016
37.5233310	-77.4440900	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Cistern	0.101	0.101	0	6/18/2010	Private	None	10/21/2016
37.5233310	-77.4440900	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Permeable Paver (north)	0.037	0.022	0.015	6/18/2010	Private	None	10/21/2016
37.5233310	-77.4440900	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Permeable Paver (south)	0.038	0.015	0.023	6/18/2010	Private	None	10/21/2016
37.5234100	-77.4445370	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Piped Detention	0.201	0.105	0.051	5/2/2013	Private	None	8/1/2018
37.5020040	-77.5014490	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Detention Basin and Parking Lot Detention	0.51	0.51	0	9/19/2007	Private	None	6/29/2017

37.5020040	-77.5014490	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Detention Wall - Parking Lot Detention	0.49	0.49	0	9/19/2007	Private	None	6/29/2017
37.5645220	-77.4144820	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Bioretention	0.03	0	0	3/4/2011	Private	None	7/5/2017
37.5664750	-77.4572450	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Piped Detention	0.61	0.48	0.13	2/20/2013	Private	None	3/11/2019
37.5711111	-77.5247222	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Nutrient Credit				active permit	Private	Not required	
37.5297190	-77.4900390	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Rain Garden	0.059	0.039	0.02	10/15/2012	Private	None	7/7/2017
37.5498450	-77.4378360	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Infiltration Trench	0.626	0.626	0	7/6/2011	Private	Yes but not signed by CAO	10/26/2016
37.5497667	-77.4750583	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Pipe Detention	0.09	0.09	0	6/21/2014	Private	Yes	
37.5531960	-77.5755390	20802050606	JM85	James River, James River UT (XZE), Slate River, Salles Creek, Salles Creek UT	MS4	Vegetated Swale	0.0145	0.0145	0	3/28/2008	Private	None	6/27/2017
37.5363889	-77.5458333	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Conserved Area				4/27/2018	Private	Instrument #170004901	4/27/2018
37.5535470	-77.5754850	20802050606	JM85	James River, James River UT (XZE), Slate River, Salles Creek, Salles Creek UT	MS4	Vegetated Swale	0.0163	0.0163	0	3/28/2008	Private	None	6/27/2017
37.5251010	-77.4484320	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Piped Detention	0.77	0.741	0.029	7/16/2014	Private	None	7/16/2014
37.5251010	-77.4484320	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Piped Detention	0.508	0.47	0.038	7/16/2014	Private	None	7/16/2014
37.5214000	-77.4567950	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Piped Detention	0.97	0.76	0.21	10/22/2012	Public	Not required	1/30/2019
37-34-35.8	77-27-01.8	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Pipe Detention	7.74	4.83	2.91		Private	Yes	
37.5366330	-77.4455720	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.16	0.15	0.01	12/6/2012	Private	Not required	10/16/2018
37.5366330	-77.4455720	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Filterra™	0.18	0.14	0.04	12/6/2012	Private	Not required	10/16/2018

37.5418540	-77.4571010	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Rain Garden	0.99	0.53	0.46	5/20/2008	Private	None	9/18/2015
37-28-42.16	77-27-37.42	20802060102	JL02	Falling Creek, Falling Creek Reservoir, Falling Creek UT, Horners Run, James River Tidal Freshwater (Upper) Estuary, Licking Creek, Pocoshock Creek	MS4	Grass Channel	0.79	0.06	0.73	9/7/2018	Public	Not required	
37.5371020	-77.4514070	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Stone Reservoir with underdrain going to CS	0.150	0.038	0.112	3/21/2012	Private	Yes	7/3/2018
37.5636250	-77.5196990	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Infiltration Trench	0.114	0.114	0	3/21/2012	Private	None	6/27/2017
37-33-53.098	77-27-42.889	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Contech Duromaxx	0.88	0.79	0.09	6/9/2017	Public	Not required	
37.5636250	-77.5196990	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Infiltration Trench	0.095	0.095	0	3/21/2012	Private	None	6/27/2017
37-31-19	77-25-20	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Dry Swale Level 1	2.64	1.7	0.94	Still active	Public	Not required	6/27/2018
37.5641060	-77.5193710	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Infiltration System	0.0477	0.0477	0	3/20/2008	Private	None	6/27/2017
37.5496291	-77.5717103	20802050606	JM85	James River, James River UT (XZE), Slate River, Salles Creek, Salles Creek UT	MS4	Stormceptor™	1.48	1.48	0	3/1/2010	Private	None	6/28/2014
37-32-16.2	77-24-06.3	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Bioretention Level 2 (Spec #9)	1.3	0.7	0.6	active permit	Private		
37.4903980	-77.4978100	20802060102	JL02	Falling Creek, Falling Creek Reservoir, Falling Creek UT, Horners Run, James River Tidal Freshwater (Upper) Estuary, Licking Creek, Pocoshock Creek	MS4	Detention Basin	0.93	0.57	0.36	2/19/2008	Private	None	5/12/2014
37.5399730	-77.4875890	20802060102	JL02	Falling Creek, Falling Creek Reservoir, Falling Creek UT, Horners Run, James River Tidal Freshwater (Upper) Estuary, Licking Creek, Pocoshock Creek	MS4	Filterra™	0.32	0.11	0.21	5/15/2013	Private	None	7/10/2018
37.5380550	-77.4189830	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Piped Detention	0.69	0.69	0	3/20/2008	Private	None	7/5/2017
37.5326690	-77.4334720	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Stormceptor™	0.53	0.53	0	9/28/2006	Private	None	9/18/2015
37.4682620	-77.4681700	20802060102	JL02	Falling Creek, Falling Creek Reservoir, Falling Creek UT, Horners Run, James River Tidal Freshwater (Upper) Estuary, Licking Creek, Pocoshock Creek	MS4	Biofilter Media	0.36	0.36	0	6/13/2012	Private	None	5/15/2014
37-33-00.1	77-31-21.6	20802050607	JM86	#NAME?	MS4	Rooftop disconnection	0.09	0.09	0	9/7/2018	Private	Instrument #180005739	9/7/2018

37.4965860	-77.4431000	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Bioretention	0.22	0.17	0.05	6/20/2013	Public	Not required	11/28/2018
37.4965860	-77.4431000	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Bioretention	0.36	0.29	0.07	6/20/2013	Public	Not required	11/28/2018
37.4965860	-77.4431000	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Bioretention	0.67	0.56	0.11	6/20/2013	Public	Not required	11/28/2018
37-30-35.35	77-26-55.19	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Pipe Detention	4.83	4.02	0.81	active permit	Private	draft to Jeff Holder 5/25/17; <u>updated</u> draft to Jeff Holder 12/13/18	Active Permit
37.4965860	-77.4431000	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Bioretention	0.3	0.27	0.03	6/20/2013	Public	Not required	11/28/2018
37.4965860	-77.4431000	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Bioretention	0.35	0.32	0.03	6/20/2013	Public	Not required	11/28/2018
37-30-00.4	77-27-18.0	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Pipe Detention	1.31	0.99	0.32	9/29/2017	Public	Not required	9/29/2017
37-30-00.4	77-27-18.0	20802060101	JL01	#NAME?	MS4	Pipe Detention	1.31	0.99	0.32	4/25/2018	Public	Not required	9/29/2017
37.4965860	-77.4431000	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	MS4	Extended Detention Basin	1.84	1.17	0.67	6/20/2013	Public	Not required	11/28/2018
37.5220530	-77.4448090	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Piped Detention	0.505	0.404	0.101	6/19/2014	Private	None	6/18/2014
37-31-14.695	77-26-46.438	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Pipe Detention	0.16	0.15	0.01	1/30/2018	Private	Instrument #17-12817	1/30/2018
37.5416655	-77.4464686	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Rainwater Tank	1.206	1.004	0.201	5/12/2011	Private	None	10/20/2016
37-31-19.08	77-26-43.673	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	Pipe Detention	1.743	1.146	0.597	2/14/2018	Private	Instrument #17-12816	2/14/2018
		20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Pipe Detention				6/30/2017	Private	Yes	6/30/2017
37.5456700	-77.4586410	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	CSS	StormTech Detention System	0.495	0.495	0	10/4/2007	Private	None	3/11/2019
37.5439444	-77.4896667	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Nutrient Credit	5.8	2	3.8	plan under review	Private	Instrument #190002201	

37-32-38.2	77-29-22.8	20802050607	JM86	James River, Slate River, Powwhite Creek, Rattlesnake Creek, Reedy Creek	MS4	Pond Detention	11.99	3.64	8.35	plan under review	Private	Instrument #190002201	
37.5637780	-77.4357680	20802060101	JL01	Almond Creek, Almond Creek UT (XYA), Broad Rock Creek, Gillies Creek, Goode Creek, James River, James River Tidal Freshwater (Upper) Estuary, Stony Run, XVO and XVP (Almond Creek, UTS)	CSS	Bioretention	0.71	0.41	0	11/12/2011	Public	Not required	10/19/2018

City of Richmond Best Management Practices (BMP) Locations

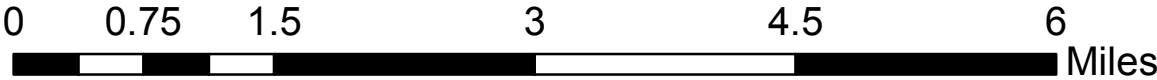
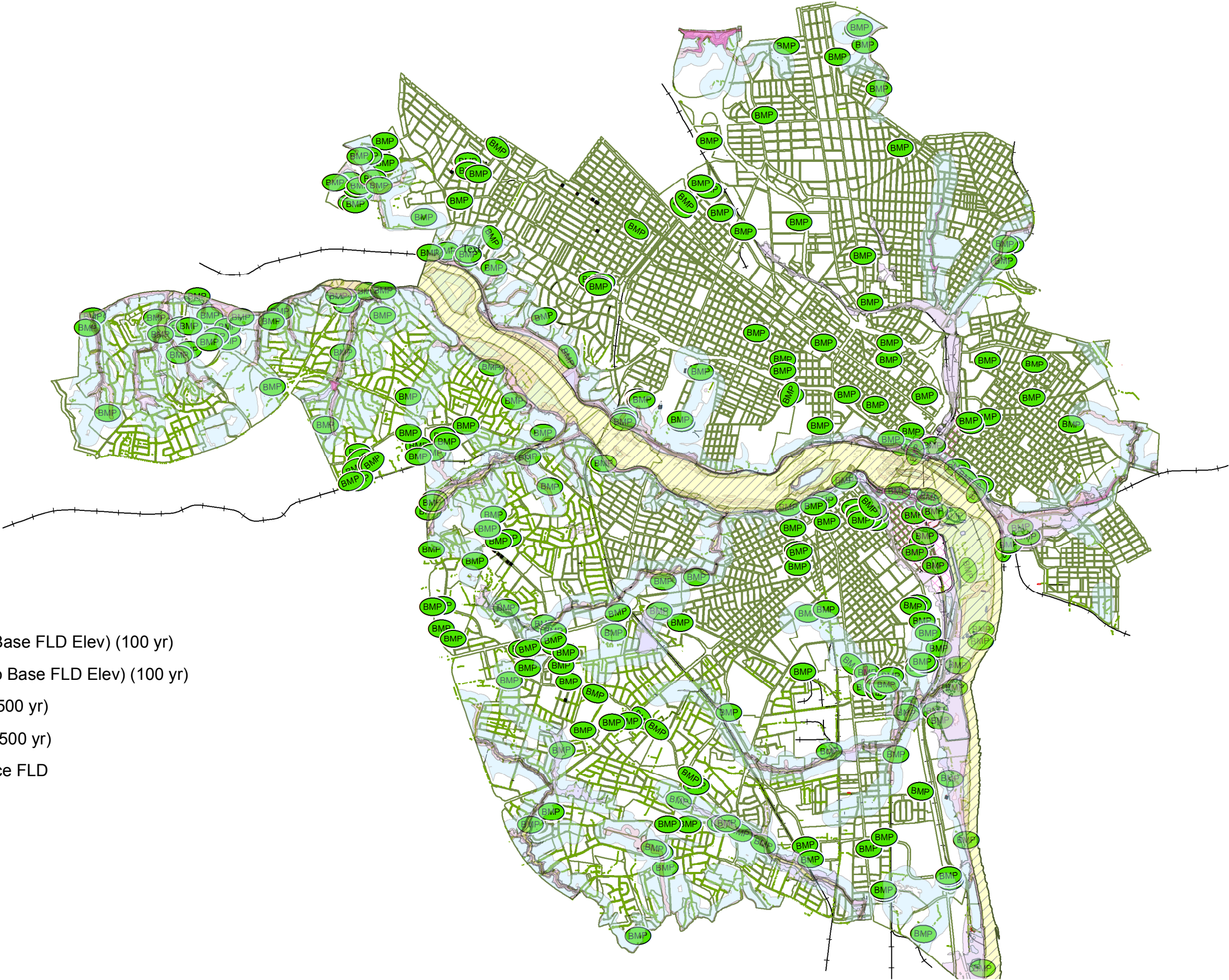


Legend

fema_DFIRM

FLD_ZONE_Revised

- Zone AE: Floodway Areas
- Zone AE: 1% Annu. Chance FLD (Base FLD Elev) (100 yr)
- Zone A: 1% Annu. Chance FLD (No Base FLD Elev) (100 yr)
- Zone X: 0.2% Annu. Chance FLD (500 yr)
- Zone X: 0.2% Protected by Levee (500 yr)
- Zone X: Outside 0.2% Annu. Chance FLD
- Resource Protection Area
- Resource Management Area
- Intensely Developed Areas
- BMP
- BMP Network
- Open Channel
- Railroads (full extent)



APPENDIX G

The following is a list of the City of Richmond's Standard Operating Procedures for Pollution Prevention and Good Housekeeping, incorporated by reference in the Program Plan. SOPs will be made available upon request.

SOP Topic	Dept.	Date Developed	Date Implemented
Vehicle/Equipment Storage & Maintenance	DPU/Operations Center	2015	2015
Chemical Handling/Transporting & Spill Response	DPU/Operations Center	2015	2015
Chemical Application, Storage & Disposal (Herbicides/Pesticides)	DPU/Operations Center	2015	2015
Spill Kits/Spill Leak Response	DPU/Operations Center	2015	2015
Dumpster Skids	DPU/Operations Center	2015	2015
General Refuse/Dumpsters	DPU/Operations Center	2015	2015
Transporting/Storing Mulch	DPU/Operations Center	2015	2015
Storage Yard Materials	DPU/Operations Center	2015	2015
Storm Drain Cleaning	DPU/Operations Center	2015	2015
Parking Lot Maintenance	DPU/Operations Center	2015	2015
Landscaping – Mowing & Trimming	DPU/Operations Center	2015	2015

APPENDIX H

Summary Report High Priority Facilities with SWPPPs

Owner	Facility Name	Facility Address	Operations	SWPPP?	Notes
DPW	Grounds Maintenance	6120 Warwick Road	ESM, MS, PSF	Yes	MS4
DPW	First Tee Public Golf Course	500 School Street	ESM, MS, PSF	Yes	CS
DPR	JRPS Headquarters	4201 Riverside Drive	ESM, MS, VSM	Yes	MS4
DPR	Forest Hill Park Field Office	4001 Stonewall Avenue	ESM, MS, PSF	Yes	CS, MS4
DPR	Byrd Park Field Office	2301 Amelia Street	ESM, MS, PSF	Yes	MS4
DPR	Oakwood Cemetery	3511 E. Richmond Road	ESM, MS	Yes	MS4
DPR	Riverview Cemetery	1305 Randolph Street	ESM, MS, PSF	Yes	CS, MS4
DPR	Maury-Mount Olivette Cemetery	2700 Maury Street	ESM, MS, PSF	Yes	MS4
DPU	DPU Operations Center	400 Jefferson Davis Highway	ESM, MS, PSF	Yes	CS, MS4
DPU	DPU Stormwater O & M	1801 Commerce Road	VMS, ESM, MS	Yes	MS4
DPR	DPR Operations Center	814 Forest Lawn Dr	ESM, MS	Yes	MS4
DPW	Commerce Road Fleet Facility	1700 Commerce Road	VSM, MS	Yes	CMS4
DPW	E. Richmond Road Landfill	3800 E. Richmond Road	MS, RF, VSM	Yes	MS4
DPW	Hopkins Road Facility	3502 Hopkins Road	ESM, MS, SSF, SWF	Permit	MS4
DPW	Urban Forestry	800 Forest Lawn Drive	ESM, VSM	Yes	MS4

CF – composting facilities, ESM = Equipment Storage & Maintenance, MS = Material Storage, PSF = pesticide storage facility, PW = public works, RF = recycling facility, SSF – salt storage facility, SWF = solid waste handling and transfer, VSM = vehicle storage and maintenance

APPENDIX I

City of Richmond MS4 Training Plan

Department/ Facility Being Trained	Approx. Number of Employees Identified for Training	Training Needed					Schedule				
		Road, Street, Utility Construction, and Parking Lot Work Training	Equipment and Vehicle Maintenance Training	Recreational and Public Works Yard Training	Stormwater Awareness	Spill Response	2019	2020	2021	2022	2023
Department of Public Utilities											
Gas & Water & Street lights		x	x	x	x	x		●		●	
SW O & M					x	x		●		●	
Department of Public Works											
Grounds Maintenance (Warwick Road)			x		x	x	●		●		●
Fleet Facility (commerce Road)			x		x	x	●		●		●
Hopkins Road		x		x	x	x	●		●		●
Urban Forestry (forest Lawn)				x	x	x	●		●		●
First Tee (500 School St)			x	x	x	x	●		●		●
Department of Parks & Recreation											
JRPS Headquarters (Riverside Dr.)				x	x	x	●		●		●
Forest Hill Park (Stonewall Ave)				x	x	x	●		●		●
Byrd Park Field office (Amelia St)				x	x	x	●		●		●
Oakwood Cemetery (E Richmond Rd)				x	x	x	●		●		●
Riverview Cemetery (Randolph St)				x	x	x	●		●		●
Maury-Mount Olivette Cemetery				x	x	x	●		●		●
DPR Operations (Forest Lawn)				x	x	x	●		●		●
Police/Fire											
Emergency Responders					x	x		●		●	
Mounted Police					x			●		●	