# City of Richmond, Virginia
# Department of Public Utilities
# Integrated CSS and MS4
# 2024 Annual Report

March 31, 2025

Unnamed Tributary at Pine Camp Arts and Community Center Before

Stream at Pine Camp Arts and Community Center - After

# Table of Contents

# List of Tables



# List of Figures

# List of Abbreviations

| | |
|---|---|
| CSS | combined sewer system |
| DPU | Department of Public Utilities |
| DWF | dry weather flow |
| DWO | dry weather overflow |
| I/I | inflow and infiltration |
| MG | million gallons |
| MGD | million gallons per day |
| MS4 | Municipal Separate Storm Sewer System |
| NMC | nine minimum controls |
| SCM | six minimum controls |
| WWTP | Richmond Wastewater Treatment Plant |

## Section 1

# General Information

## Permittee Name

City of Richmond

## System Name

City of Richmond, Department of Public Utilities (DPU)

Richmond Wastewater Treatment Plant (WWTP), Richmond Combined Sewer System (CSS) and Richmond Municipal Separate Storm Sewer System (MS4)

## VPDES Permit No.

VA0063177

## Reporting Period

January 1, 2024, through December 31, 2024

## Certification Statement

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Scott Morris 3/31/2025

Scott Morris, DBA, P.E., Director of Public Utilities Date

## Section 2

# Combined Sewer System (CSS)

The metered results of the volume and number of overflows for each combined sewer overflow (CSO) outfall based on the measured storm event data for the 2024 reporting period are presented in Tables 2-1 and 2-2 below, respectively. A map of the CSS outfalls is presented in Appendix A.

**Table 2-1. Metered Overflow Volume (MG)**

| CSO Outfall | Jan 2024 | Feb 2024 | Mar 2024 | Apr 2024 | May 2024 | Jun 2024 | Jul 2024 | Aug 2024 | Sep 2024 | Oct 2024 | Nov 2024 | Dec 2024 | Total FY24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04 | 11 | 1.0 | 4.0 | 0.3 | 1.7 | 0.4 | 5.6 | 1.5 | 2.5 | 1.8 | 0 | 0 | 30 |
| 05 | 120 | 28 | 76 | 3.1 | 7.8 | 0.2 | 20 | 3.6 | 11 | 3.9 | 0.8 | 0.4 | 275 |
| 06 | 904 | 302 | 829 | 75 | 125 | 9.5 | 492 | 58 | 97 | 50 | 23 | 21 | 2985 |
| 07 | 0 | 0 | 0 | 0 | 0.2 | 0.2 | 0.2 | 0.1 | 0 | 0 | 0 | 0 | 0.8 |
| 09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0.2 | 0.3 | 0 | 0 | 0.6 |
| 11 | 3.0 | 0.6 | 2.6 | 0.2 | 1.1 | 0.5 | 2.5 | 1.1 | 0.7 | 0 | 0 | 0 | 12 |
| 12 | 0.7 | 0 | 0 | 0 | 0.1 | 0.1 | 0.4 | 0.1 | 0 | 0 | 0 | 0 | 1.4 |
| 14 | 17 | 0.3 | 1.6 | 0 | 1.3 | 0.3 | 3.3 | 2.0 | 2.4 | 3.4 | 0 | 0 | 32 |
| 15 | 4.2 | 0.1 | 0.1 | 0 | 0.8 | 0 | 1.7 | 0.8 | 0.1 | 0 | 0 | 0.1 | 7.8 |
| 16 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 |
| 17 | 1.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0 | 0 | 0 | 2.2 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 225 | 36 | 51 | 2.0 | 16 | 1.3 | 36 | 8.5 | 35 | 5.0 | 1.6 | 0.2 | 418 |
| 24 | 1.3 | 0 | 0 | 0 | 0 | 0 | 1.2 | 7.9 | 2.3 | 2.9 | 0 | 0 | 16 |
| 25 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.1 | 0 | 0 | 0 | 0 | 0.8 |
| 26 | 1.3 | 0 | 0.1 | 0 | 0 | 0 | 2.2 | 1.2 | 0 | 0 | 0 | 0 | 4.8 |
| 31 | 6.6 | 0.4 | 1.0 | 0 | 1.1 | 0.4 | 9.9 | 2.9 | 0.1 | 0 | 0 | 0 | 22 |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 34 | 1.7 | 0.5 | 0.8 | 0.1 | 1.2 | 0.8 | 4.8 | 1.5 | 0.4 | 0 | 0 | 0 | 12 |
| 35 | 0.5 | 0.2 | 0.4 | 0.1 | 0.4 | 0.1 | 1.3 | 0.3 | 0.1 | 0 | 0 | 0 | 3.6 |
| 39 | 0.6 | 0 | 0.1 | 0 | 1.2 | 0.2 | 1.6 | 0.3 | 0 | 0 | 0 | 0 | 4.0 |
| 40 | 29 | 8.3 | 10 | 0.6 | 24 | 0.7 | 11 | 8.4 | 2.1 | 0 | 0.4 | 0.3 | 95 |

| Table 2-2. Metered Number of Overflow Occurrences | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CSO Outfall | Jan 2024 | Feb 2024 | Mar 2024 | Apr 2024 | May 2024 | Jun 2024 | Jul 2024 | Aug 2024 | Sep 2024 | Oct 2024 | Nov 2024 | Dec 2024 | Total FY24 |
| 04 | 2 | 2 | 3 | 3 | 6 | 3 | 4 | 4 | 2 | 1 | 2 | 1 | 33 |
| 05 | 2 | 3 | 3 | 2 | 5 | 2 | 4 | 3 | 2 | 1 | 1 | 1 | 29 |
| 06 | 3 | 3 | 2 | 3 | 6 | 7 | 5 | 4 | 2 | 1 | 1 | 1 | 38 |
| 07 | 1 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 7 |
| 09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 5 |
| 11 | 3 | 2 | 5 | 2 | 5 | 3 | 5 | 5 | 2 | 0 | 0 | 0 | 32 |
| 12 | 1 | 0 | 0 | 0 | 2 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 8 |
| 14 | 2 | 1 | 4 | 1 | 4 | 2 | 5 | 2 | 2 | 1 | 0 | 0 | 24 |
| 15 | 2 | 1 | 2 | 0 | 3 | 1 | 5 | 2 | 2 | 0 | 1 | 1 | 20 |
| 16 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 2 | 3 | 3 | 1 | 6 | 4 | 5 | 2 | 2 | 1 | 1 | 1 | 31 |
| 24 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 1 | 1 | 0 | 0 | 9 |
| 25 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 6 |
| 26 | 1 | 0 | 1 | 0 | 1 | 0 | 5 | 2 | 0 | 0 | 0 | 0 | 10 |
| 31 | 1 | 1 | 1 | 0 | 2 | 1 | 5 | 2 | 1 | 0 | 0 | 0 | 14 |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 34 | 3 | 2 | 5 | 2 | 4 | 3 | 5 | 3 | 2 | 0 | 0 | 0 | 29 |
| 35 | 2 | 2 | 3 | 3 | 6 | 3 | 4 | 3 | 2 | 1 | 2 | 1 | 32 |
| 39 | 1 | 0 | 1 | 0 | 7 | 6 | 5 | 2 | 0 | 0 | 0 | 0 | 22 |
| 40 | 2 | 1 | 3 | 3 | 6 | 4 | 4 | 4 | 2 | 0 | 2 | 1 | 32 |

Section 3

# CSS and MS4 Nine Minimum Controls (NMC) and Six Minimum Controls (MCM)

## 3.1 Operation and Maintenance of the CSS (NMC 1)

### 3.1.1 Inspection and Maintenance of CSS Control Structures and Pump Stations

The City follows a regular schedule for inspection and maintenance of regulators, CSO outfalls, and pump stations. The schedule of performance of the City's O&M program is summarized in Tables 3-1 and 3-2 below. Equipment inspection, screen cleaning, and debris removal are part of the regular activities.

**Table 3-1. CSS Control Structure O&M Program**

| CSO Control Structures | Inspection Interval | Maintenance | |
|---|---|---|---|
| | | Interval | Type |
| Dry Weather Regulators (29)<br>Wet Weather Regulators (10) | Monthly | Monthly | Preventative Maintenance |
| CSO Outfalls (25) | Monthly | Monthly | Preventative Maintenance |

**Table 3-2. CSS Pump Station O&M Program**

| Pump Station | Capacity (MGD) | | Estimated Dry Weather Peak (MGD) | Inspection/ Maintenance Interval |
|---|---|---|---|---|
| | Firm | Installed | | |
| Douglasdale | 7.5 | 13.0 | 2.2 | Daily |
| Hampton/McCloy | 0.9 | 1.7 | 0.4 | Daily |
| Upham Brook | 8.6 | 13.0 | 0.3 | Daily |

If major repairs are deemed necessary at the inspection, a work order is initiated, and the repairs are scheduled.

### 3.1.2 Sewer Flushing and Cleaning

The City follows a regular schedule for routine sewer line flushing and cleaning. Maintenance activities performed on the collection system during the 2024 reporting period are summarized in Table 3-3 below.

**Table 3-3. Sewer System Maintenance Activities**

| Activity | Interval | Quantity |
|---|---|---|
| Sewer Cleaning | Annually | 41.1 miles |
| CCTV Inspection | Annually | 33.9 miles |

### 3.1.3 Catch Basin Cleaning

The City follows a regular schedule for routine catch basin cleaning. The City cleaned 3,234 catch basins throughout the CSS during the 2024 reporting period.

## 3.2 Use of Collection System for Storage (NMC 2)

### 3.2.1 Information regarding storage at Shockoe Retention Basin and Hampton/McCloy Tunnel

Storage is provided in the Shockoe and Hampton/McCloy CSO areas through existing retention facilities.

- The Shockoe facilities serve about 8,000 acres of the CSS and comprise a 35-milliongallon (MG) retention basin with upstream in-line storage of approximately 15 MG in diversion structures and arch and box sewers.
- The Hampton/McCloy tunnel serves about 1,012 acres of the CSS and comprises a 7.2 MG retention tunnel.

### 3.2.2 Sewer Re-lining Activities to reduce Inflow and Infiltration (I/I)

The City implements a sewer lining program annually to reduce I/I. The City lined 4.6 miles of sewer during 2024.

### 3.2.3 Operation of WWTP influent pumping to fill intercepting system

During wet weather events the Main Pumping Station operates up to 140-MGD to maximize flow to the WWTP. The Main Pumping Station is operated ahead of anticipated wet weather events to lower the hydraulic grade line in the collection system to create additional storage capacity in the interceptor system. As the wet weather event begins, the Main Pumping Station's flowrate is increased above 75-MGD at a lower elevation to maximize flow through the WWTP, before the interceptor inline storage is utilized. As the wet weather continues, combined sewage is stored in the interceptor system before overflows occur.

Portions of the intercepting sewers that convey flow to the WWTP are located at elevations below the lowest CSO outfall overflow elevation. Most of these low-lying intercepting sewers are in the Shockoe CSO drainage area where the lowest overflow elevation is 1.00 feet. Table 3-4 below summarizes the intercepting sewers below the lowest CSO overflow elevation and the corresponding estimated storage capacity.

| Table 3-4. Intercepting Sewers Below Lowest CSO Overflow Elevation | | | |
|---|---|---|---|
| Intercepting Sewer | Diameter (inches) | Length Below (El + 1.00 (feet) | Storage Capacity (MG) |
| Lower Goodes Creek | 72 | 10,905 | 2.61 |
| Twin River Crossings | 66 | 1,100 | 0.39 |
| Hull Street | 60 | 2,700 | 0.40 |
| Shockoe | 96 | 2,700 | 1.02 |
| Gillies Creek | 60 | 2,500 | 0.37 |
| Northside CSO Conveyance (1) | 96, 84, 60 | 2,850 | 0.89 |
| | | Total | 5.68 |
| (1) Northside CSO Conveyance stores CSS to an elevation of 16.0 feet | | | |

### 3.2.4 Tide Gate Inspections

The City routinely inspects and makes necessary repairs to tide gates to reduce tidal intrusion into the collection system. The City follows a regular schedule for inspection and maintenance of tide gates. The schedule of performance of the City's O&M program is summarized in Table 3-5 below. Equipment inspection, and debris removal are part of the regular activities.

| Table 3-5. Tide Gate O&M Program | | | |
|---|---|---|---|
| Gates | Inspection Interval | Maintenance | |
| | | Interval | Type |
| CSO 04 (Bloody Run) Tide Gate | Monthly | Monthly | Preventative Maintenance |
| CSO 05 (Peach Street) Tide Gate | Monthly | Monthly | Preventative Maintenance |
| CSO 06 (Shockoe) Tide Gates (6) | Monthly | Monthly | Preventative Maintenance |
| CSO 14 (Stockton Street) Tide Gate | Monthly | Monthly | Preventative Maintenance |
| CSO 15 (Canoe Run) Tide Gate | Monthly | Monthly | Preventative Maintenance |
| CSO 16 (Woodland Heights) Tide Gate | Monthly | Monthly | Preventative Maintenance |
| CSO 17 (Reedy Creek) Tide Gate | Monthly | Monthly | Preventative Maintenance |
| CSO 18 (42nd Street) Tide Gate | Monthly | Monthly | Preventative Maintenance |
| CSO 19 (Hampton) Flap Gate (2) | Monthly | Monthly | Preventative Maintenance |
| CSO 20 (McCloy) Flap Gate (3) | Monthly | Monthly | Preventative Maintenance |
| CSO 21 (Gordon Avenue) Tide Gate | Monthly | Monthly | Preventative / Corrective Maintenance |

### 3.2.5 Use of Public and Private Stormwater Facilities in the CSS Area

Local retention facilities provide additional stormwater storage in the CSS area. Examples of these types of facilities are shown in Table 3-6 below.

| Table 3-6. Local Stormwater Retention Facilities in the CSS Area | | |
|---|---|---|
| Site | Location | Owner |
| Brander St. Pump Station Holding Pond | Brander St. | City |
| Gordon Ave. Pump Station Holding Pond | Gordon Ave. | City |
| DPU Operations Parking Lot | Commerce Rd. | City |
| Sonoco Products Company | Commerce Rd. | Private (1) |
| BP Products North America | Commerce Rd. | Private (1) |
| Citgo Petroleum Corporation | Maury St. | Private (1) |
| First Energy Corporation | Maury St. | Private (1) |
| Magellan Terminals Holdings, L.P. Richmond Terminal | East First St. | Private (1) |
| Transmontaigne Terminal | Commerce Rd. | Private (1) |
| (1) Industry that retains stormwater on-site during wet weather events and control releases to permit limits at the WWTP | | |

### 3.2.6 Use of Real Time Decision Support System to manage flows during CSO Events

DPU utilizes 99 depth sensors, 55 flow meters, and 13 rain gauges (shown below in Figure 3-2) to monitor the collection system.

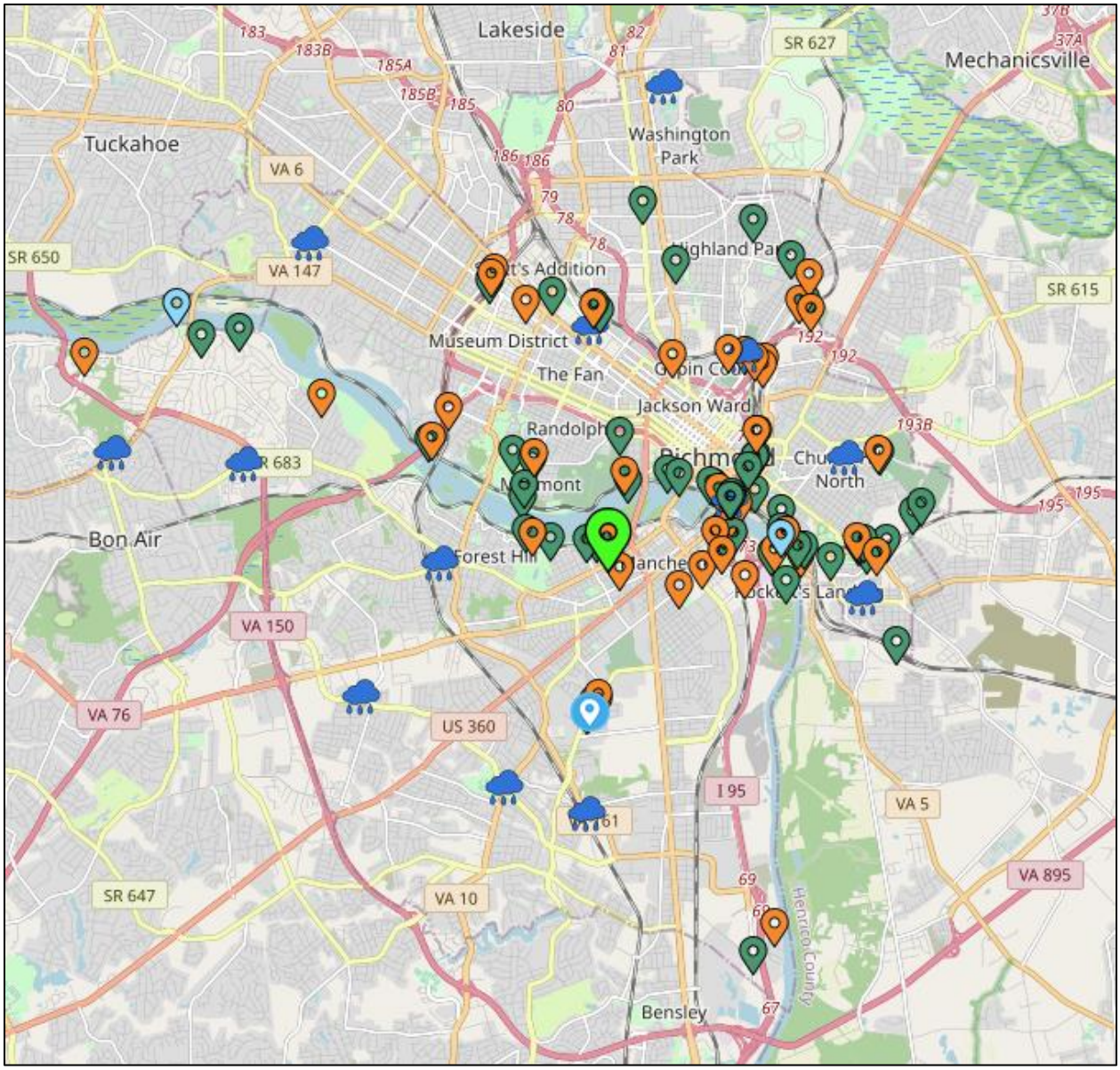



**Figure 3-1: Collection System Monitoring System**

The data can be displayed in real time, as shown below in Figure 3-3.

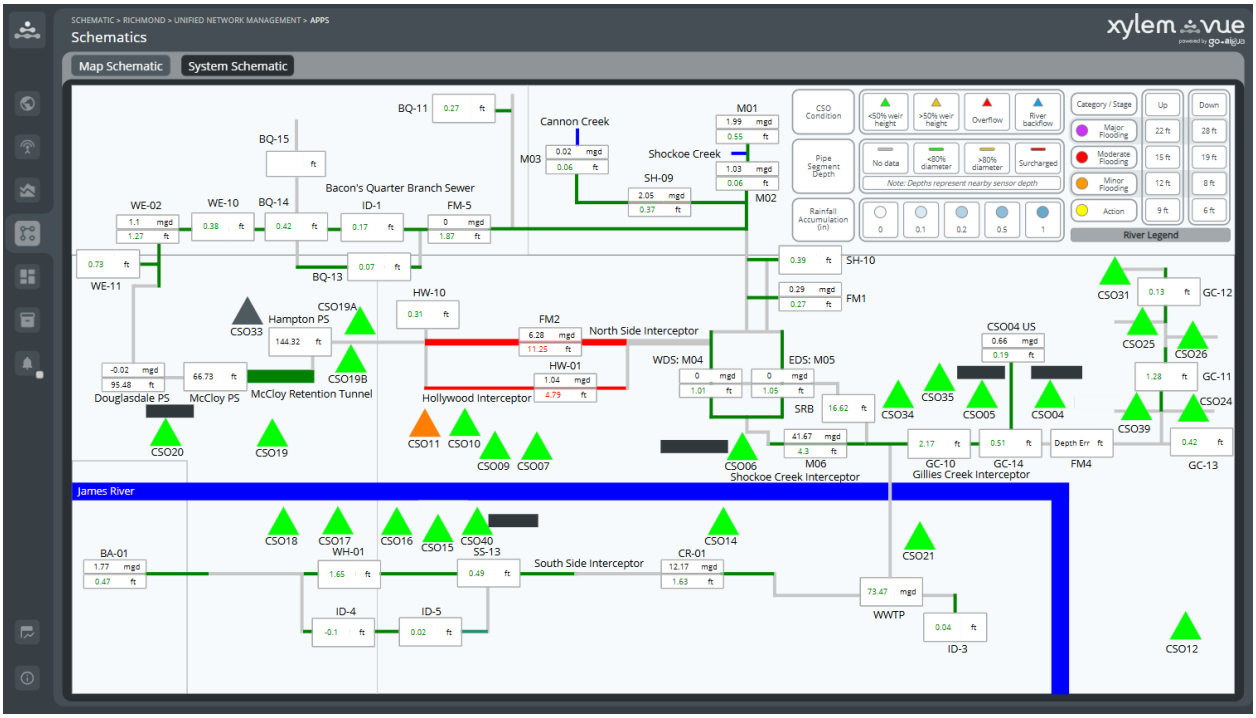



**Figure 3-2: Real Time Collection System Data Display**

The collected data is also utilized in the *Richmond CSO Map Notification*, which is available to the public, that displays outfalls that are currently overflowing or have overflowed in the past 48 hours.

https://apps.emnet.net/richmond-pub-map-app/?city=47&config=5c0cacee-7e95-4eea-922d-c736c83eb4b9

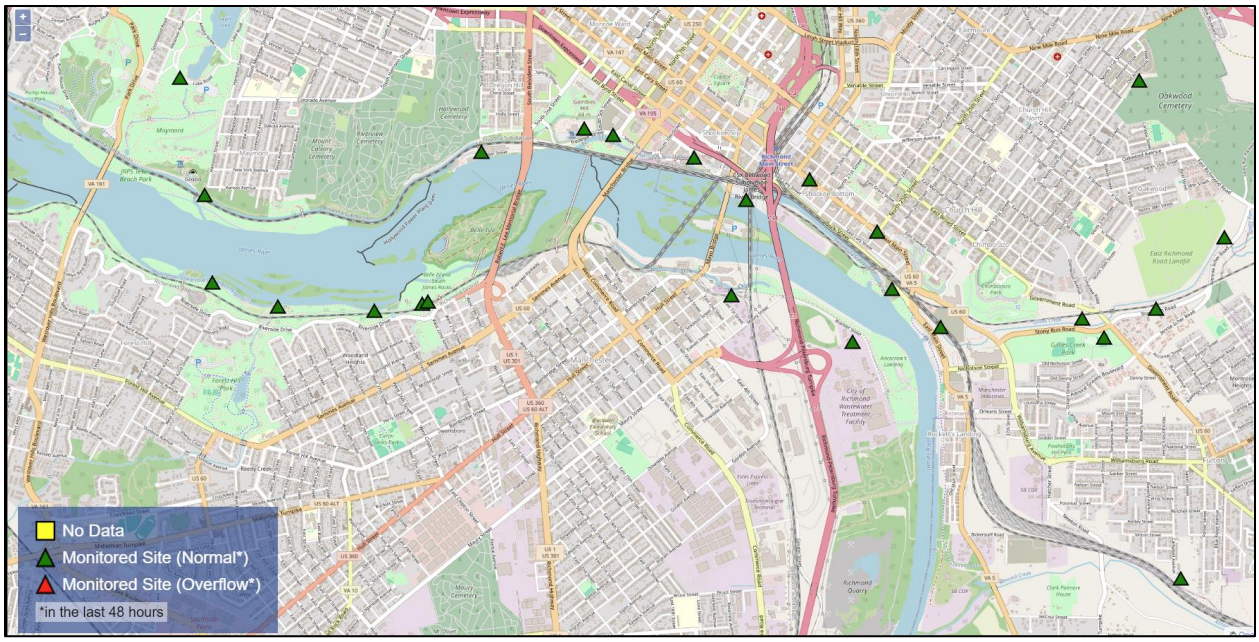



**Figure 3-3: Richmond CSO Notification Map**

## 3.3 Review of Pretreatment Program (NMC 3)

### 3.3.1 Changes or Use of Pretreatment Program Authority to minimize flows during CSO Events

The City administers an industrial pretreatment program as required by the VPDES permit. Industries discharging to the CSS retain stormwater on-site during wet weather events and control releases to permit limits at the WWTP. Information on individual industries which utilize retention facilities is summarized in Section 3.2.5 – Use of Public and Private Stormwater Facilities in the CSS Area. Each industry is issued an Industrial User Permit which includes a section on Discharge of Stormwater.

No modifications were made to the Industrial User Permits over the 2024 year, and no additional changes have been made to minimize flow during a CSO event.

## 3.4 Maximize Flow to the WWTP for Treatment (NMC 4)

### 3.4.1 Operation of WWTP during Precipitation events to show Maximization of Treatment of Wet Weather Flows

The City maximizes flow to the WWTP during wet weather events by performing the following actions:

- Influent flow at the WWTP is increased up to 140 MGD in wet weather conditions (see Figure 3-4).
- Flows up to 140 MGD are treated at the WWTP to permit limits.
    - 75 MGD receives full treatment and disinfection (Primary, Secondary, Tertiary and UV Disinfection)
    - 65 MGD receives primary treatment and UV disinfection (Primary and UV Disinfection)
- Combined sewage is stored in the Shockoe Retention Basin (see Figure 3-5), Hampton/McCloy Tunnel (see Figure 3-6) and the collection system prior to overflow.
- The Shockoe Retention Basin and Hampton/McCloy tunnel are drained as soon as possible once overflow conditions are concluded. During the draining process the WWTP continues to operate at 75 MGD.

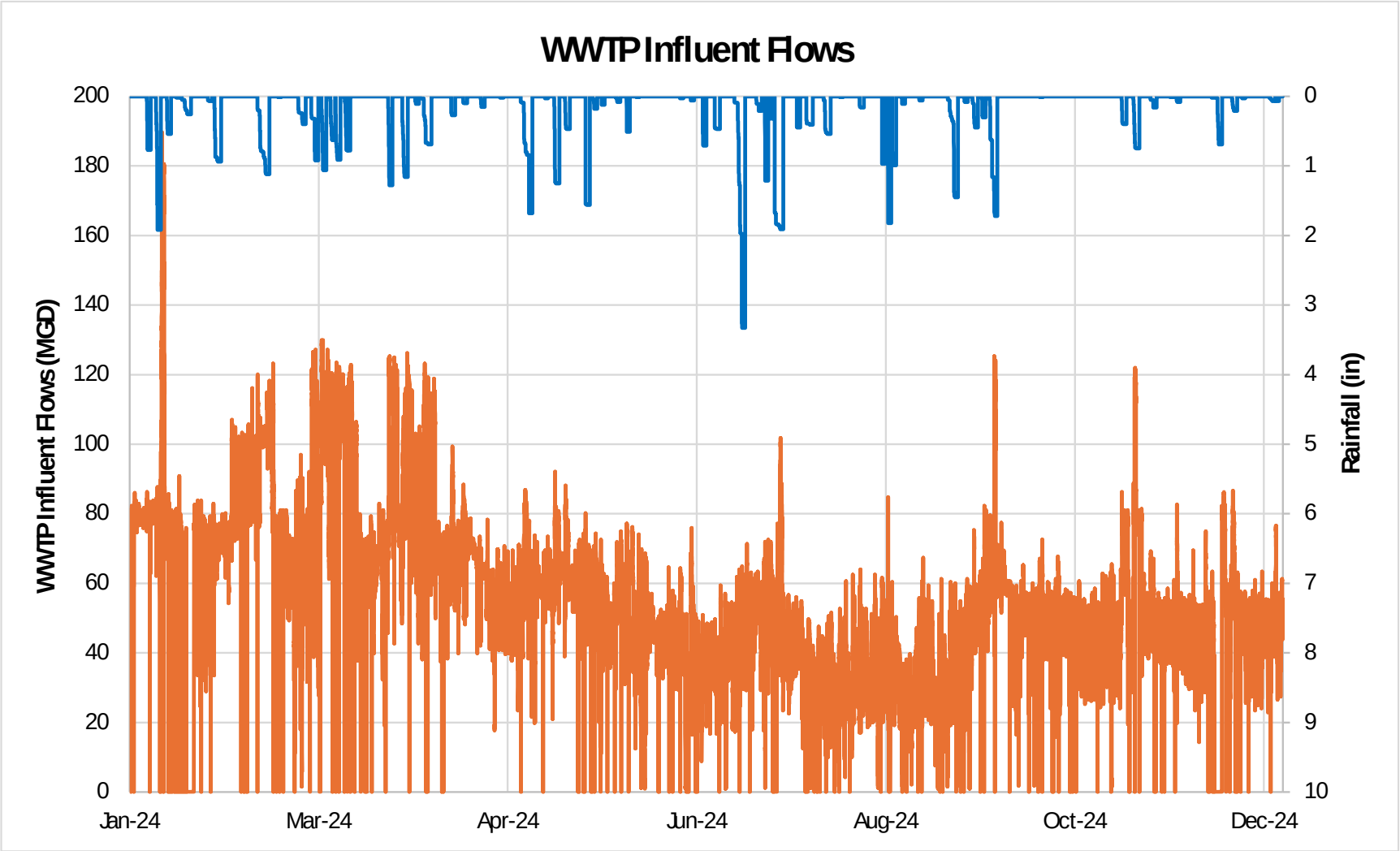



**Figure 3-4: WWTP Influent Flows**

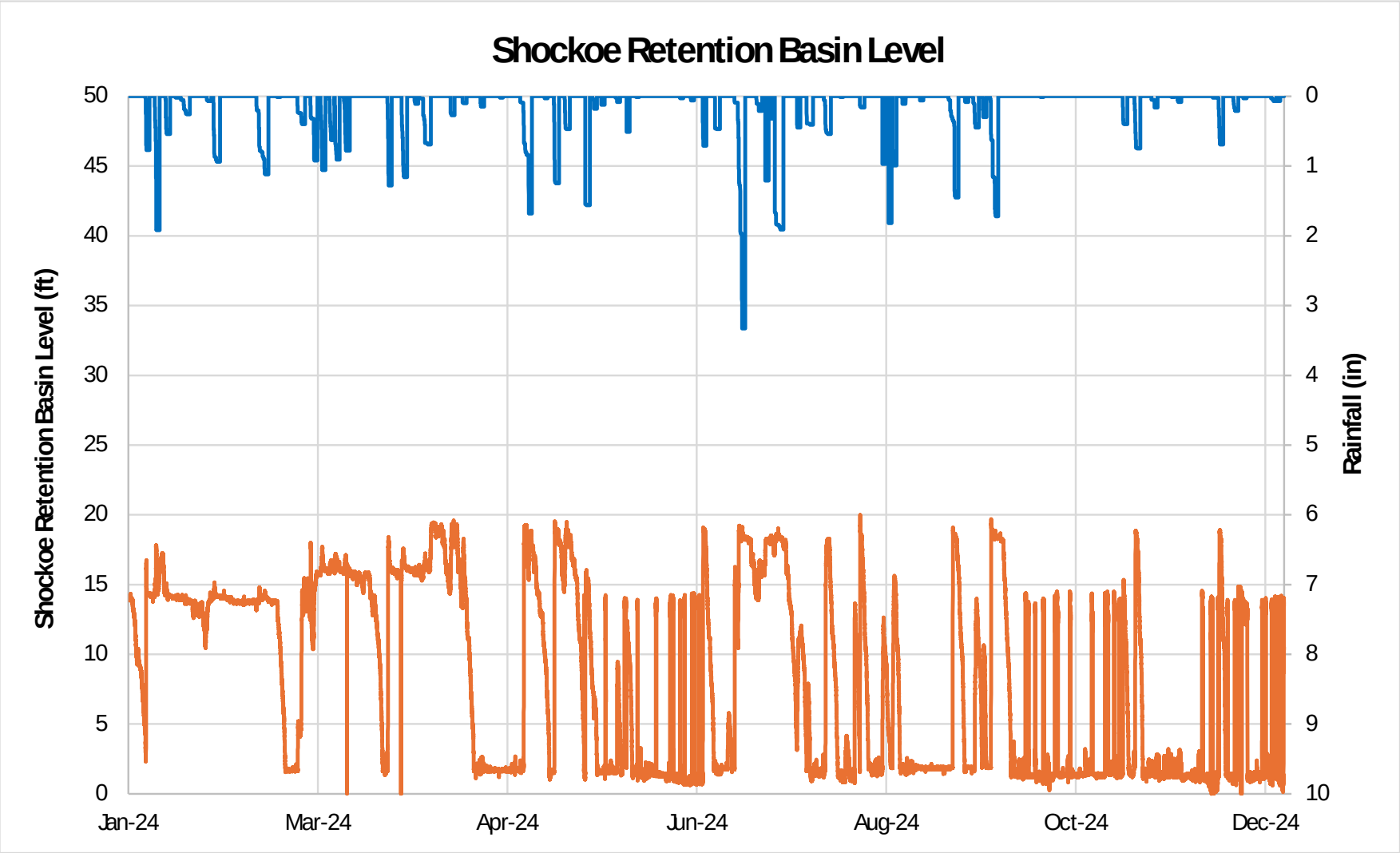



**Figure 3-5: Shockoe Retention Basin Levels**

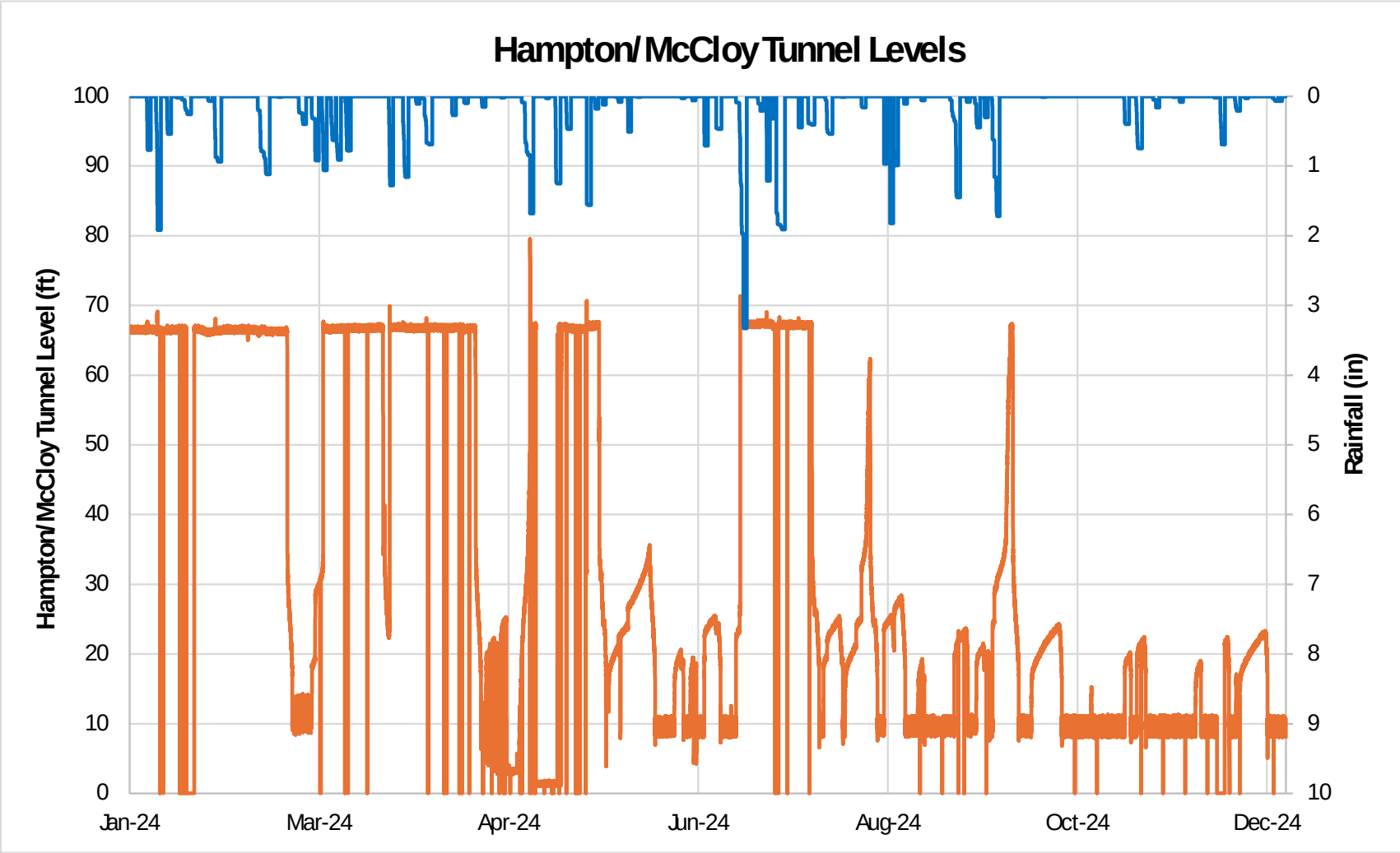



**Figure 3-6: Hampton/McCloy Tunnel Levels**

# 3.5 Eliminate Dry Weather Overflows (DWOs) (NMC 5)

## 3.5.1 Inspection and Maintenance of Diversion Facilities

The City regularly inspects and maintains CSS diversion facilities to prevent dry weather overflows, see Section 3.1.1. If a dry weather discharge occurs, the City maintains an "on call" team of maintenance personnel to respond to blockages or other occurrences that could result in dry weather discharges.

## 3.5.2 Monitoring of Pumping Stations for DWOs

The City inspects and maintains the pump stations daily to prevent dry weather overflows, see Section 3.1.1. If a dry weather discharge occurs, the City maintains an "on call" team of maintenance personnel to respond to blockages or other occurrences that could result in dry weather discharges.

## 3.5.3 Operation of the Shockoe Retention Basin

The Shockoe retention basin is continuously staffed. The basin is utilized to store combined sewage during wet weather conditions and is drained as soon as possible after overflow conditions have concluded. The 2024 operating levels of the Shockoe Retention Basin are shown in Section 3.4.1.

## 3.5.4 Reports of DWOs

All dry weather overflows are reported in accordance with the VPDES permit. Table 3-7 below summarizes each dry weather overflow event that occurred during the reporting period.

**Table 3-7. Dry Weather Overflow Reports**

| Date of Incident | Location of Incident | Volume Discharged (gallons) | Event Description |
|---|---|---|---|
| 3/15/24 | 1400 Brander Street | 2,000 | Two gates at the secondary grit removal chamber failed to open after a cleaning cycle. An overflow occurred at an upstream junction chamber for approximately two minutes. |
| 5/22/24 | Chippenham and Stony Point Parkway | 2,500 | Sewer pipe was blocked with solids and debris |
| 6/17/24 | 4318 Short Street | 5,000 | Sewer pipe was blocked with solids and debris |
| 7/15/24 | Pipeline Trail | unknown | By-pass pump out of service due to incorrect fuel |
| 7/22/24 | Pipeline Trail | unknown | Commercial pipe connected to stormwater pipe |
| 11/10/24 | 6228 Forest Hill Avenue | 350 | Sewer pipe was blocked with solids and debris |

# 3.6 Control Solid and Floatable Materials in the CSS (NMC 6)

## 3.6.1 Cleaning and Maintenance related to Control of Solid and Floatable Materials

The City implements many programs and strategies to capture and remove solid and floatable material from CSS areas. Table 3-8 below summarizes the city-wide programs conducted during the reporting period.

| Table 3-8. Solid and Floatable Material Capture Programs | |
|---|---|
| Program | Quantity |
| Litter Basket Collection | 548 tons |
| # of Catch Basins Cleaned | 3,234 |
| Street Sweeping | 5,723 tons |

Additional strategies the City implements to control solid and floatable material in CSS areas include:

- The Shockoe retention facilities provide continuous mechanical screening for over two-thirds of the CSS. Screening operations at the facilities are increased during leaf season.
    - The Shockoe Diversion Structure Trash Rake Replacement project (in construction) will replace the screening system at the Shockoe West Diversion Structure to increase the volume of the screenings removed from the facility.
- The Hampton/McCloy tunnel provides continuous mechanical screening. All flow captured in the tunnel is screened prior to transfer to the WWTP, which consists of 1,012 acres of the CSS. The tunnel is equipped with solid and floatable capture chambers.
- The Northside, Southside James River Park, Gillies Creek, and Hilton Street CSO conveyance facilities have flotation or stilling chambers and/or static screens along with baffles to capture solid and floatable material. The material captured is transferred to the intercepting sewers for removal at the WWTP.

# 3.7 Public Education and Outreach (MCM 1, NMC 7 and NMC 8)

## 3.7.1 List of High-Priority Stormwater Issues and Strategies

The City identified three high-priority stormwater issues to be addressed in their public education and outreach program.

### 3.7.1.1 High Priority Issue #1: Pet Waste

- Rationale for Selection: Minimize the degree of pet waste runoff to reduce the bacteria loads entering local waterways
- Identification of Public Audience: Pet Owners
- Strategies
    - Traditional written materials: Fact Sheets; flyers; handouts
    - Alternative materials: Pet waste stations; pet waste bags and holders
    - Signage: Yard Signs
    - Media materials: Radio ads; social media posts
    - Speaking engagements: Presentations to varied community groups

The specific events/media utilized to address public education on Pet Waste are summarized below in Table 3-9.

| Table 3-9. Strategies to Communicate High Priority Issue #1 – Pet Waste | |
|---|---|
| **Programming** | **Strategy Type** |
| Distributed Pet Waste Handouts, Pet Waste Yard Signs, and Pet Waste Bags to Citizens at Richmond Animal Care and Control's First Muttminister on 2/25/2024 | Traditional Written Materials, Signage, and Alternative Materials |
| Distributed 32,000 Pet Waste Bags to the James River Park System on 5/16/2024 | Alternative Materials |
| Distributed Pet Waste Bags and Holders to Citizens, Community Organizations, and "Friends of" Park Groups Year-Round | Alternative Materials |
| Distributed Pet Waste Yard Signs to Citizens, Community Organizations, and "Friends of" Park Groups Year-Round | Signage |
| Utilized Social Media to Share Information Related to the Importance of Picking Up Pet Waste | Media Materials |
| Distributed Pet Waste Stations to Community Organizations | Alternative Materials |
| Radio Spots on VPM News Station 88.9 about the Importance of Picking Up Pet Waste for the health of the James River and its Tributaries which aired from 3/4/2024 through 4/28/2024 reaching an estimated 140,600 listeners | Media Materials |

**Figure 3-7: Pet Waste Posts on X on 5/16/2024**

#### 3.7.1.2 High Priority Issue #2: General Stormwater Awareness

- Rationale for Selection: Educate residents on stormwater and its impact on the environment to improve the quality and minimize the quantity of urban runoff from residential areas
- Identification of Public Audience: Richmond citizens and school-age students
- Strategies
    - Traditional written materials: Newsletters
    - Signage
    - Media materials: webpage, social media posts
    - Speaking engagements: Presentations to varied community groups

#### 3.7.1.3 High Priority Issue #3: Litter Awareness

- Rationale for Selection: Minimize the degree of litter entering the storm sewer system and local waterways to achieve higher water quality
- Identification of Public Audience: Richmond citizens and pedestrians
- Strategies
    - Alternative materials: Stickers
    - Media materials: Radio ads; social media posts
    - Speaking engagements: Presentations to varied community groups

The specific events/media utilized to address public education on Litter Awareness are summarized below in Table 3-11.

**Table 3-11. Strategies to Communicate High Priority Issue #3 – Litter Awareness**

| Programming | Strategy Type |
|---|---|
| Utilized Social Media to Share Information Related to the Impact of Littering and the Importance of Refraining from Doing So | Media Materials |
| Distributed Don't Trash Central Virginia Stickers Community Organizations and at Community Events and Presentations Year-Round as Part of the Regional Don't Trash Central Virginia Campaign | Alternative Materials |
| Radio Spots on VPM News Station 88.9 About the Impact Litter Has on the James River and its Tributaries Which Aired from 3/4/2024 through 4/28/2024 | Media Materials |

### 3.7.2 Proper Disposal of Substances - Public Education Programs and Facility Tours

The educational programs and tours conducted and/or hosted by the Department during the reporting period to educate on proper disposal of substances are summarized in Table 3-12 below.

| Table 3-12. Public Education Programs and Facility Tours | |
|---|---|
| Date | Program/Tour |
| 4/23/2024 | DPUI Citizens Academy – CSO Regulatory requirements, Pretreatment and WWTP Tour |
| 5/11/2024 | Household Hazardous Waste Take-Back Event |
| 9/21/2024 | Household Hazardous Waste Take-Back Event |
| 10/15/2024 | DPU Citizens Academy - Combined Sewer System Regulatory Requirements, Pretreatment Presentation and Wastewater Treatment Plant Tour |

### 3.7.3 Pretreatment Awareness Programs

The pretreatment awareness programs that were implemented to encourage industrial waste reduction through recycling and improved housekeeping are summarized in Table 3-13 below.

| Table 3-13. Awareness Programs to Encourage Waste Reduction | |
|---|---|
| Date | Event |
| 5/11/2024 | Household Hazardous Waste Take-Back Event |
| 9/21/2024 | Household Hazardous Waste Take-Back Event |

## 3.8 Public Involvement and Participation (MCM 2 and NMC 8)

### 3.8.1 Public Input on MS4 Program

Stormwater complaints received by the City, and complaints that were addressed and closed out through the duration of the reporting period are summarized in Table 3-14 below.

| Table 3-14. Stormwater Complaints Summary (Cityworks) | |
|---|---|
| No. of New Complaints Received | 1,591 |
| No. of Complaints Closed | 1,219 |

### 3.8.2 Published Information on City website about the CSO Control & MS4 Program

Published information on the CSO control and MS4 programs is located at the following City-controlled websites:
https://www.rva.gov/index.php/public-utilities/wastewater-utility

https://www.rva.gov/index.php/public-utilities/pretreatment

https://www.rva.gov/public-utilities/stormwater-management

https://www.rva.gov/public-utilities/stormwater-utility

https://www.rva.gov/public-utilities

### 3.8.3 Public Involvement Activities

The public involvement activities conducted and/or hosted by the Department during the reporting period are summarized in Table 3-15 below.

**Table 3-15. Public Involvement Activities**

| Date | Event |
|---|---|
| 2/1/2024 | WWTP Tour with VA AWWA Student Activities committee |
| 2/13/2024 | WWTP Tour with NBC12 Meteorologist Andrew Frieden |
| 3/12/2024 | WWTP with All Saints School |
| 4/23/2024 | Citizens Academy |
| 4/25/2024 | WWTP/Shockoe Retention Basin tour with Wet Weather Partnership conference attendees |
| 4/30/2024 | Citizens Academy - Shockoe Retention Basin Tour |
| 5/11/2024 | Household Hazardous Waste Take Back Event |
| 5/15/2024 | WWTP Tour with W&L University students |
| 8/13/2024 | Camp DPU – WWTP Tour |
| 9/21/2024 | Household Hazardous Waste Take back event |
| 10/15/2024 | Wastewater Treatment Plant Tour with DEQ |
| 10/19/2024 | Citizens Academy - Combined Sewer System Regulatory Requirements, Pretreatment, and Wastewater Treatment Plant Tour |
| 10/22/2024 | Citizens Academy - Shockoe Retention Basin Tour |
| 10/28/2024 | WWTP Tour – Collegiate School |
| 10/29/2024 | WWTP Tour – Trinity Episcopal School |
| 11/8/24 | WWTP tour – Society of Women Engineers Richmond Chapter |

*March 2024*

*All Saints School Tour of WWTP*

### 3.8.4 Public Involvement Metric Evaluation

The metrics used to evaluate the effectiveness of the implemented public involvement activities are summarized in Table 3-16 below.

**Table 3-16. Public Involvement Activities**

| Public Involvement Opportunity Outlined in Program Plan | Metric as Defined in Program Plan | Metric Measurements | Evaluation |
|---|---|---|---|
| Watershed Restoration Events | The number of participants per event | 4/12/2024 North Avenue Branch Greening Richmond Public Libraries Project Tree Planting – 38 volunteers<br><br>5/21/2024 – 5/23/2024 James A. Buzzard River Education Center Planting Events - 71 volunteers<br><br>10/25/2024 Westover Hills Branch Greening Richmond Public Libraries Project Planting and Maintenance - 21 volunteers | DPU continued to partner with the James River Association and Richmond Public Libraries in bringing green infrastructure, including native plantings, additional tree canopy, and bioretention basins, to intercept stormwater to Richmond's public libraries and their adjacent neighborhoods. At four events at three different Libraries 98 volunteers joined the project team to help install plantings as part of the Greening Richmond Public Libraries project.<br><br>DPU helped to promote, publicize, and plant native plantings at the site of the James A. Buzzard River Education Center in the 7th City Council District, including within the green infrastructure installations onsite.<br><br>On 4/12/2024, 38 volunteers, over the course of two shifts, planted 20 native trees near the North Avenue Branch Richmond Public Library in the 3rd City Council District<br><br>From 5/21/2024 to 5/23/2024, 71 volunteers planted, mulched, and watered 59 native trees, shrubs and 456 additional native plants and bulbs at the James A. Buzzard River Education Center in the 7th City Council District<br><br>On 10/25/2024, 21 volunteers planted and watered 51 native trees and shrubs and 193 additional native plants and maintained the green infrastructure installations at the Westover Hills Branch Richmond Public Library in Richmond's 4th City Council District |
| Disposal or Collection Event – Household Hazardous Waste Collection Events | The number of barrels of hazardous waste collected | 5/11/24<br>9/21/24 | 23 barrels of hazardous household material were collected over the three events.<br>Keeping hazardous material from being improperly disposed of and out of the environment, our stormwater, our combined stormwater and sewer infrastructure, and out of waterways is beneficial to improving and protecting water quality. |

### 3.8.5 Public Meetings Organized/Attended

During the reporting period, the City organized and participated in meetings with the community, regulatory agencies, stakeholders, and other MS4 permittees. These meetings are summarized in Table 3-17 below.

| Table 3-17. Public Involvement Meetings | |
|---|---|
| Date | Meeting |
| 1/4/2024 | 7th Council District Meeting |
| 4/24/2024 | Hosted Wet Weather Partnership Conference |
| 6/1/2024 | Public Meeting - Combined Sewer Overflow Interim Plan Project |
| 9/11/2024 | James River Association Board Meeting |
| 12/9/2024 | State Water Commission |
| 11/15/2024 | NGO Combined Sewer Overflow Program Discussion |
| 12/16/2024 | 7th District Neighborhood Meeting |

### 3.8.6 CSO Warning Signs

Eighteen (18) of the twenty-five (25) CSO outfalls were predicted to discharge, more than once per summer on average. Each of these outfalls are required to have a CSO warning sign per the VPDES permit. These signs have been installed and have been maintained by DPU throughout the reporting year.

### 3.8.7 Local Press Coverage of CSO Program

Local press coverage of the CSS is ongoing. The articles/sessions released during the reporting period are listed in Appendix F.

## 3.9 Illicit Discharge Detection and Elimination (MCM 3)

### 3.9.1 MS4 Map and Information Confirmation Statement

The MS4 map and information table are up to date as of December 31st of the reporting period, and is presented in Appendix B.

### 3.9.2 Outfall Screening Summary

The total number of outfalls screened during the reporting period as part of the dry weather screening program is summarized in Table 3-19 below. The 2024 reporting period outfall inventory records are provided in Appendix C.

| Table 3-19. Outfall Screening Summary | | |
|---|---|---|
| Creek | No. of Outfalls | IDDE Potential |
| Kanawha Canal | 56 | 49 Unlikely<br>7 Potential |

### 3.9.3 MS4 Illicit Discharges

The City investigated 25 illicit discharges during the reporting period. A summary of the illicit discharges to the MS4 is included in Appendix D.

# 3.10 Construction Site Stormwater Runoff Control (MCM 4)

## 3.10.1 Summary of Inspections

The inspections conducted at construction sites during the reporting period are summarized in Table 3-20 below.

**Table 3-20. Summary of Construction Site Stormwater Inspections**

| Total Conducted | Enforcement Actions | |
|---|---|---|
| | Type | Total |
| 1,069 | Notice to Comply | 15 |
| | Stop Work Order | 6 |
| | Notice of Violation | 4 |

# 3.11 Post-Construction Stormwater Management for New Development and Development on Prior Developed Lands (MCM 5)

## 3.11.1 Summary of Inspections of Stormwater Management Facilities

The inspections conducted on privately owned and permittee owned stormwater facilities during the reporting period are summarized in Table 3-21 below.

**Table 3-21. Summary of Stormwater Management Facility Inspections**

| Stormwater Management Facility | Total Inspections Conducted | Enforcement Actions |
|---|---|---|
| Privately-Owned | 10 | No enforcement actions taken |
| Public/Permittee-Owned | 7 | No enforcement actions taken |

## 3.11.2 Summary of Maintenance Activities

The Stormwater Utility did twenty-five significant maintenance activities on stormwater management facilities throughout 2024. The City performs regular inspections and maintenance activities on City owned and operated stormwater management facilities that includes grass cutting, trash collection, and debris removal.

## 3.11.3 Submission Confirmation Statements

The Water Resources Division staff of DPU has submitted stormwater management facility information through the Virginia Construction Stormwater General Permit database and have reported BMPs through the DEQ Warehouse.

# 3.12 Pollution Prevention and Good Housekeeping for Facilities Owned and Operated by the Permittee within the MS4 Service Area (MCM 6 and NCM 7)

## 3.12.1 Summary of New or Modified Operational Procedures

No updates were made to any of the City's operational procedures.

## 3.12.2 Summary of New or Modified SWPPPs

No updates were made to the existing SWPPP's during the 2024 reporting year. Training is performed based on the operations outlined in the SWPPP's.

## 3.12.3 Summary of New Turf and Landscape Nutrient Management Plans

No new Turf and Landscape Plans have been implemented within the City.

## 3.12.4 Summary of Training Events

The City conducted an online training course for stormwater awareness for City employees. The course provides education on spill prevention, vehicle maintenance, bulk material storage, road and parking lot maintenance and facility maintenance. The course was completed online throughout the 2024 reporting period by 335 employees.

## 3.12.5 Operation and Maintenance of Septage Receiving Station

In 2024 the City received 1,718 hauled waste discharges for a total of 2.3 million gallons. The Septage Receiving Station is inspected daily and is maintained at regular intervals.

## 3.12.6 Enforcement of Ordinances that prohibit substances from entering the Collection System

In the 2024 reporting year, the City performed the following activities:

- Collected samples at 27 facilities through the Strong Waste Surcharge Program
    - Issued zero (0) Notices of Violations to Significant Industrial Users
- Performed 51 illicit discharge detection inspections at Significant Industrial Users Facilities
- Performed 42 storm water inspections at Significant Industrial Users Facilities

# Section 4

# Chesapeake Bay TMDL Action Plan Status Report

### 4.1.1 Implemented BMPs

The BMPs that have been implemented by the City to achieve compliance with Chesapeake Bay TMDL Action Plan are summarized in Table 4-1. The City has not acquired any credits during the 2024 reporting year.

**Table 4-1. Summary of Implemented BMPs**

| BMPs | Completion Date | Pollutant Removal (lbs/year) | | |
|---|---|---|---|---|
| | | Total Nitrogen | Total Phosphorus | Total Suspended Solids |
| Maury Stream Restoration | 2016 | 894.0 | 176.0 | 58,720.0 |
| Green Alleys | 2016 | 5.7 | 1.5 | 702.0 |
| BMPs | 2017 | 80.2 | 17.4 | 5,088.1 |
| Cherokee Lake and Croatan Road | 2018 | 872.4 | 198.2 | 16,679.8 |
| Forest Hill | 2018 | 1,354 | 298.8 | 25,154.9 |
| Little Westham Creek | 2019 | 3,180.0 | 1,224.0 | 422,000.0 |
| Pocosham Creek | 2019 | 4,696.0 | 1,061.0 | 354,013.0 |
| Pinecamp Stream Restoration | 2025 | 8,091.0 | 3,778.0 | 4,620,047.0 |

### 4.1.2 Chesapeake Bay TMDL Action Plan Compliance Progress

The City's progress towards meeting the required pollutant load reductions are summarized in Table 4-2.

| Table 4-2. City's Chesapeake Bay TMDL Action Plan Compliance Progress | | | | | | |
|---|---|---|---|---|---|---|
| Goal | Pollutant (lbs/year) | | | | | |
| | Total Nitrogen | | Total Phosphorus | | Total Suspended Solids | |
| Removal to Date (End of 2024 Reporting Year) | 19,819.1 | | 6,883.89 | | 5,391,976.8 | |
| 2028 Goal | 12,352.2 | 160% | 2,726.3 | 252% | 1,184,073.12 | 455% |

## Section 5

# Local TMDL Action Plan Status

The City has an approved James River Bacteria TMDL Action Plan dated 11/04/2010. The City has continued to implement the CSO program nine minimum control standards and the MS4 six minimum control standards to reduce the pollutants of concern.

In 2020, the Virginia General Assembly passed, and the Governor signed into law, the 2020 CSO Law, that requires the owner or operator of any CSS east of Charlottesville that discharges into the James River watershed to submit to DEQ an Interim and Final Plan to address the requirements of any consent special order issued by the Board.

The 2020 CSO Law identifies the following dates and tasks for the owner or operator:

| | Purpose | Due Date | Initiate Construction and Related Activities | Complete Construction and Related Activities |
|---|---|---|---|---|
| Interim Plan | Identify improvements that can be initiated in the short-term | July 1, 2021 | July 1, 2022 | July 1, 2027 |
| Final Plan | Re-evaluates the remaining Special Order projects and identifies system-wide improvements | July 1, 2024 | July 1, 2025 | July 1, 2035 |
| TMDL Report | Identify improvements to meet the requirements of the "James River – Richmond Tributaries Bacteria TMDL" | July 1, 2030 | NA | NA |

The City has accomplished several significant activities/milestones to meet the schedule requirements of the Consent Order, while continuing to maintain and improve the CSS:

### Interim Plan

- Construction of four of the ten Interim Plan projects is in progress. All ten projects will be complete by July 1, 2027 to meet the Consent Order deadline

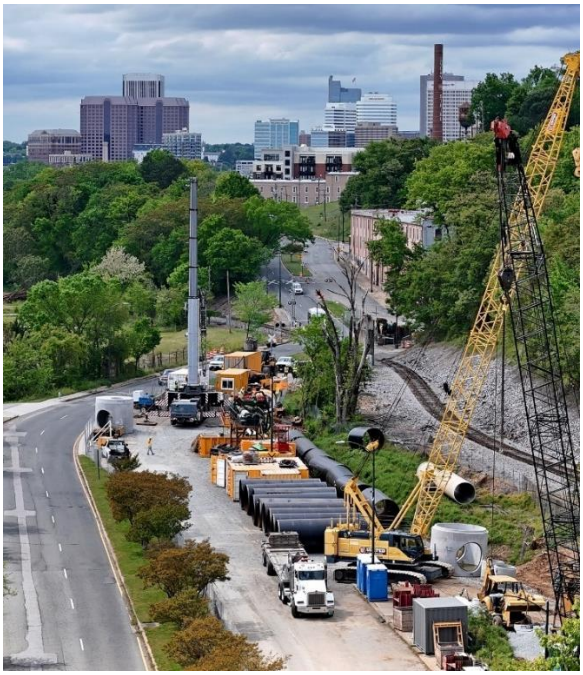
### Final Plan

- Submitted the Final Plan to the VADEQ on June 13, 2024, with VADEQ approval received

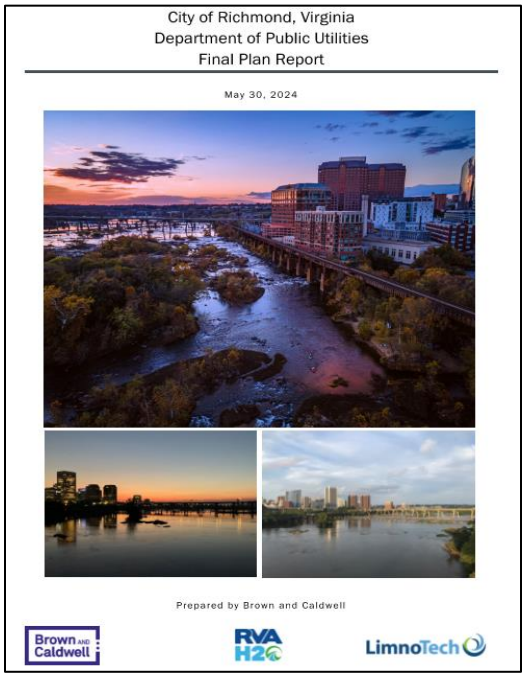
on August 7, 2024
- Design of two of the four Final Plan projects is underway

**The City's next steps for 2025 include:**

- Finalize the design of the remaining six Interim Plan projects
- Complete the detailed design of two of the four Final Plan projects and advance them to construction
- Procure design services for the two larger Final Plan projects (Shockoe high-rate disinfection and CSO 040 Storage Tank)
- Advance public engagement and communication



**Construction of Outfall 004 Interim Plan Project**




**The Final Plan was submitted to VADEQ on June 13, 2024, and approved on August 7, 2024**

## Section 6

# James River and Tributary Monitoring Report

Virginia Commonwealth University (VCU) conducts water quality monitoring in the James River and its tributaries on behalf of the Department. The data collected by VCU is provided in Appendix E.

# Appendix A: Richmond CSS Map

# Appendix B: Richmond MS4 Map

# Appendix C: Outfall Inventory Records

# Appendix D: Illicit Discharge Records

# Appendix E: James River and Tributary Monitoring Data