

Clean Water Nashville Overflow Abatement Program

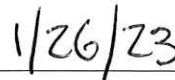
**Metropolitan Government of Nashville and Davidson County
Department of Water and Sewerage Services**

CONSENT DECREE 2022 ANNUAL REPORT

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 such 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.



Ron C. Taylor, P.E., Program Director



Date

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Consent Decree 2022 Annual Report

On March 12, 2009, the Metropolitan Government of Nashville and Davidson County, Tennessee (Metro), entered into a Consent Decree with the United States and the State of Tennessee. As required by Section XIX.B. of the Consent Decree, Metro has prepared this *Annual Report* covering the period from January 1 through December 31, 2022, which includes the following information:

1. Summary of the Capacity, Management, Operation, and Maintenance (CMOM) programs implemented
2. List of projects required by the Consent Decree
3. Trend analysis of Sanitary Sewer Overflows (SSOs) for 2021 and 2022
4. Trend analysis of dry-weather Combined Sewer Overflows (CSOs) for 2021 and 2022

Each of these items is discussed in the following sections.

1. CMOM Programs

As described in the Consent Decree, in addition to items identified through Metro's CMOM Self-Assessment, the following programs are elements of Metro's CMOM program:

- *Spill and Overflow Response Plan* (Section VII.C.2) – MWS continues to operate under the *Spill and Overflow Response Plan* (SORP). A review of the SORP is conducted annually with any proposed changes submitted to EPA prior to June 1 each year. MWS submitted an updated SORP in 2022.
- *Inter-jurisdictional Agreement Program* (Section VII.C.3) – All required inter-jurisdictional agreements are in place, and Metro will continue to operate under these agreements, including monitoring peak flows received.
- *Capacity Assurance Plan* (Section VII.C.4) – The *Capacity Assurance Plan* will continue to be applied as a tracking/approval tool for new development/flow in the sanitary sewer system (SSS).
- *Pump Station Operation Plan for Power Outages* (Section VII.C.5) – All projects identified in the *Pump Station Operation Plan for Power Outages* were completed prior to this reporting period.

In addition to these programs, Metro's *CMOM Self-Assessment Report* established multiple recommendations and performance measures that Metro continues to track. In 2019, Metro conducted a review of their CMOM requirements to determine what aspects of their CMOM should be updated or augmented to better meet the goal of reducing overflows. That effort established the reporting items listed in **Table 1** that illustrate Metro's on-going CMOM implementation.

Table 1 – CMOM Reporting Items, Benchmarks, and 2022 Summary

Reporting Item	Annual Benchmark	2022 Results
Monthly summary of overflows, including cause, volume, and duration	Tracking only	Completed
Review SORP and update as needed	1/year	Completed ¹
Conduct Quarterly Compliance Meetings	4/year	4
Pump station capacity evaluations / drawdown testing	100%/year	99% ²
Review pump station procedures and update as needed	1/year	Completed
Inspection of ARVs	100%/year	100%
Number of force mains cleaned	Tracking only	3
Length of gravity sewer inspected	10%/year	188.3 miles
Length of gravity sewer cleaned	Tracking only	103.6 miles
Number of manholes inspected	Tracking only	7,817 ³
Length of stream walks completed	Tracking only	24.36 miles
Review gravity sewer procedures and update as needed	1/year	Completed
Inspection of permitted food service establishments with grease control equipment	75%/year	78%
Number of new permits for food service establishments	Tracking only	332
Volume of FOG removed from the system	Tracking only	9.06 million gallons
Number of FOG-related notifications mailed, distributed, or called out to customers	Tracking only	1,103
Review FOG control procedures and update as needed	1/year	Completed
Number of sewer point repairs completed	Tracking only	201
Length of pipe replaced or new pipe installed (excluding extension of service)	Tracking only	1,146 feet
Length of sewer rehabilitated such as via CIPP lining	Tracking only	21.6 miles
Number of manholes rehabilitated	Tracking only	489
Number of service connections replaced or rehabilitated	Tracking only	1048
Review of <i>Capacity Assurance Plan</i> and update as needed	1/year	Completed

¹ Review was completed, and an updated SORP was submitted in May 2022.

² Drawdown test could not be completed at one station due to inadequate flow rates.

³ The manhole inspection count does not include incidental observations of manhole condition such as during sewer cleaning.

2. Project Updates

Approval of the *Corrective Action Plan / Engineering Report* (CAP/ER) was granted by the U.S. Environmental Protection Agency (EPA) on August 10, 2017, with the Tennessee Department of Environment and Conservation (TDEC) copied on the approval. Since submittal of the CAP/ER in 2011, information from additional flow monitoring data collection, constructability reviews, and hydraulic analyses has resulted in adjustments to several CAP/ER projects, as well as the identification of additional projects to remediate SSOs. A summary of those changes was presented to EPA and TDEC in the *Addendum to the CAP/ER*, dated September 27, 2017. Through ongoing efforts to maintain the system, Metro identified several overflow locations, outside of those identified in the CAP/ER, that warrant additional field investigations and/or improvements. As requested by TDEC in a letter dated July 15, 2019, Metro prepared *Addendum #2 to the CAP/ER*, which was submitted on

August 30, 2019. That Addendum describes those overflow locations, summarizes actions taken, and presents Metro's plan for identifying and addressing conditions causing those overflows.

Metro submitted the *Long Term Control Plan (LTCP)* to EPA and TDEC on September 11, 2011. On June 18, 2018, Metro presented to EPA and TDEC the *Addendum to the LTCP*, which summarizes the updates and modifications to projects described in the LTCP since its submittal. In a February 11, 2019, letter, EPA provided review comments to Metro on the LTCP and *Addendum to the LTCP*. On March 6, 2019, Metro provided a letter in response to those comments.

On February 18, 2020, Metro met with representatives from EPA, TDEC, the U.S. Department of Justice, and the Tennessee Attorney General's office to discuss compliance with the Consent Decree. A follow-up conference call with all parties was held on April 4, 2020, with informal clarifications between parties continuing over the following months. On July 24, 2020, Metro submitted *Addendum #2 to the LTCP* clarifying and updating the proposed CSO abatement projects.

On December 7, 2020, Metro received a letter from EPA providing partial conditional approval to the LTCP and addenda. The letter approves the proposed control measures at the Benedict & Crutcher, Boscobel, Driftwood, and Schrader CSOs and approves the Central Wastewater Treatment Plant Capacity and CSO Reduction project. The letter requires that Metro, within four years, submit a revised LTCP that describes the control measures designed to bring the Kerrigan and Washington CSOs into compliance with Tennessee's water quality standards at the time of submittal. (TDEC is currently reviewing and revising the existing water quality standards.) The letter was agreed to and countersigned by Metro on December 8, 2020.

The December 2020 letter also expands the Consent Decree's list of sanitary sewer overflows to be addressed (Appendix A of the Consent Decree). Additionally, Metro was required to submit an update to the CAP/ER by June 8, 2021, identifying corrective actions that have been or will be taken to address those overflows. On June 2, 2021, Metro submitted the *Update to the Corrective Action Plan / Engineering Report (CAP/ER Update)*. On August 26, 2021, that document was approved by EPA in consultation with TDEC.

In a letter dated November 30, 2022, Metro requested several scheduled-related changes to projects in the CAP/ER and LTCP. Discussions with EPA and TDEC regarding the request is anticipated in early 2023.

Milestone dates for projects and activities associated with the CAP/ER and the LTCP achieved during 2022 and those anticipated to occur during 2023 are shown in **Table 2**.

Table 2 – Design/Construction Project Updates

Project Number	Project Name	Design Start Date	Design End Date ¹	Construction Start Date	Construction Substantial Completion
93SC34T	Whites Creek Pump Station Improvements	Nov-2009	Mar-2011	Feb-2012	Nov-2013
11SG0078	2011 Collection System Structural Defect Repair	Jun-2011	Sep-2012	Feb-2013	Aug-2013
10SG0083	Lakewood Rehabilitation - Area 1 - Sewer	Jul-2011	Aug-2013	Jan-2014	Mar-2016
11SC0067	Driftwood Equalization Facility	Aug-2011	Apr-2012	Jul-2012	Jun-2013
99SC009L	Dodson Chapel Equalization Facility	Sep-2011	Jan-2012	May-2012	Nov-2013
11SC0101	West Park Equalization Facility Phase II	May-2012	Dec-2014	Apr-2015	Aug-2018
11SC0102	Mill Creek / Opryland Equalization Facility - Phase II	Aug-2012	May-2013	Jan-2014	May-2015
11SC0106	Neely's Bend Rehabilitation	Sep-2012	Jun-2013	Dec-2013	Dec-2014
11SC105A	Shelby Park Rehabilitation - Area 1 - Virginia Avenue	Oct-2012	Jun-2013	Jan-2014	Apr-2015
11SC0104	Dodson Chapel Pipe Improvements	Oct-2012	Oct-2014	Jan-2015	Nov-2015
11SC0148	Joelton Rehabilitation	Jan-2013	Jun-2013	Oct-2013	Jun-2014
11SC103A	Cowan Riverside Rehabilitation - Area 1 - Jones Avenue	Feb-2013	Sep-2013	Jan-2014	Apr-2015
11SC0121	Apex Sewer Corrections	Mar-2013	Oct-2013	Feb-2014	Jul-2014
13SC0001	Annual Rehabilitation FY2013	Jun-2013	Jun-2014	Oct-2014	Jan-2016
11SC105B	Shelby Park Rehabilitation - Area 2 - Norvel Avenue	Jul-2013	Jan-2014	May-2014	Oct-2015
11SC103B	Cowan Riverside Rehabilitation - Area 2 - Dickerson Pike	Jul-2013	Mar-2014	Jul-2014	Sep-2015
11SC144C	Westchester Drive Rehabilitation	Jul-2013	Mar-2015	Jul-2015	Nov-2015
11SC144A	Brick Church Pike Pipe Improvements	Jul-2013	Apr-2016	Aug-2016	Feb-2018
11SC147A	Highway 100 / Tyne Boulevard - Trimble Rehabilitation	Sep-2013	Apr-2014	Aug-2014	Sep-2015
11SC105C	Shelby Park Rehabilitation - Area 3 - Greenland Avenue	Dec-2013	Aug-2014	Feb-2015	Apr-2016
11SC0143	Davidson and Brook Hollow Sewer Improvements	Apr-2014	Jun-2015	Oct-2015	Aug-2016
14SC0041	Annual Rehabilitation FY2014 - Whites Creek Trunk	Oct-2014	Aug-2015	Jan-2016	Nov-2017
11SC105D	Shelby Park Rehabilitation - Area 4 - Brush Hill Road	Oct-2014	Apr-2015	Jul-2015	Jun-2016
11SC103C	Cowan Riverside Rehabilitation - Area 3 - West Trinity Lane	Nov-2014	May-2015	Oct-2015	Sep-2016
11SC103D	Cowan Riverside Rehabilitation - Area 4 - Pages Branch	Jan-2015	Feb-2016	Aug-2016	Dec-2017
11SC120A	Smith Springs Rehabilitation - Area 1 - Priest Lake Meadows	Feb-2015	Oct-2015	Feb-2016	Jan-2017
11SC135A	28th Avenue Rehabilitation - Area 1 - Clifton Avenue	Feb-2015	Dec-2015	Apr-2016	Mar-2017
11SC0111	Davidson Branch Pump Station and Equalization Facility	May-2015	Dec-2017	Oct-2020	Apr-2023
11SC0140	Gibson Creek Rehabilitation - Area 1 - Dupont Avenue	Jul-2015	Apr-2016	Sep-2016	Oct-2017

Project Number	Project Name	Design Start Date	Design End Date ¹	Construction Start Date	Construction Substantial Completion
11SC0110	Ewing Creek – Brick Church Pike Equalization Facility	Aug-2015	Dec-2016	May-2017	Dec-2018
14SC153A	Central WWTP – Headworks ²	Sep-2015	Jun-2019	Jul-2020	Oct-2023
14SC153B	Central WWTP – Balance of Plant ²	Sep-2015	May-2020	Sep-2020	Nov-2023
11SC0117	Langford Farms - Madison Heights Rehabilitation	Feb-2016	Sep-2016	Feb-2017	Dec-2017
11SC120B	Smith Springs Rehabilitation - Area 2 - Castlegate	Feb-2016	Aug-2016	Jan-2017	Jun-2018
16SC0009	Annual Rehabilitation FY2016 - South Hurricane Creek	Mar-2016	Dec-2016	May-2017	Dec-2017
11SC105E	Shelby Park Rehabilitation - Area 5 - Cooper Lane	Jun-2016	Mar-2017	Aug-2017	Nov-2018
11SC0116	Hurricane Creek Pipe Improvements	Jul-2016	Sep-2021	Jun-2022	Jan-2024
11SC0139	Gibson Creek Equalization Facility	Sep-2016	Dec-2020	Aug-2021	Jul-2023
11SC108A	Loves Branch Rehabilitation	Oct-2016	Jun-2017	Dec-2017	Feb-2019
11SC141A	Hidden Acres Rehabilitation	Oct-2016	Aug-2017	Apr-2018	Nov-2018
11SC109A	Vandiver Rehabilitation	Dec-2016	Aug-2017	Mar-2018	Nov-2019
11SC105F	Shelby Park Rehabilitation - Area 6 - Shelby Trunk	Feb-2017	Oct-2017	Jul-2021	Nov-2022
17SC017A	Annual Rehabilitation FY2017 - Dry Creek	Mar-2017	Sep-2017	Sep-2021	Jan-2023
11SC120C	Smith Springs Rehabilitation - Area 3 - Harbour Town	Jun-2017	Nov-2017	Jan-2022	Jan-2023
17SC017B	Annual Rehabilitation FY2017 - Shepherd Hills	Aug-2017	Oct-2017	Oct-2021	Nov-2022
11SC118A	Sevenmile Creek Rehabilitation - Area 1	Jul-2018	Mar-2019	Apr-2022	Jun-2023
11SC135B	28th Avenue Rehabilitation - Area 2 - Batavia Street	May-2020	Feb-2021	Jul-2022	Jul-2023
11SC145A	Cleeces Ferry Rehabilitation - Area 1 - Summerly Drive	Aug-2020	Mar-2021	Aug-2022	Aug-2023
21SC0026	Annual Rehabilitation FY2020 - West Nashville	Jan-2021	Aug-2021	Jan-2023	Mar-2024
21SG0174	Joelton Pump Station Upgrades ³	Jan-2021	Jul-2023	Nov-2021	Dec-2023
11SC0153	Lakewood Rehabilitation - Area 2 - Pitts Avenue	Mar-2021	Nov-2021	Feb-2022	Jan-2023
11SC0150	Bandywood - Green Hills Rehabilitation	Jun-2021	Jan-2022	May-2022	Sep-2023
21SC0002	Howse Avenue Force Main Replacement	Jul-2021	Mar-2022	Feb-2023	Aug-2023
11SC118B	Mill Creek - Collins Creek Rehabilitation - Area 1	Nov-2021	May-2022	Nov-2023	Jan-2025
11SC118C	Mill Creek - Collins Creek Rehabilitation - Area 2	Nov-2021	Jun-2022	Jan-2024	Mar-2025
Not Established	Kerrigan Trash Trap Replacement	Not applicable	Not applicable	Jun-2022	Nov-2022
22SC0032	Long Boulevard Sewer Corrections	Apr-2022	Jul-2022	Oct-2022	Apr-2023
22SC0005	Rowan Cravath Rehabilitation	Apr-2022	Dec-2022	Aug-2023	Oct-2024
22SC005A	Rowan Cravath Gravity Sewer Upsizing	Apr-2022	Feb-2023	Sep-2023	May-2024

Project Number	Project Name	Design Start Date	Design End Date ¹	Construction Start Date	Construction Substantial Completion
22SC0061	Annual Rehabilitation - Manhole Repairs	Apr-2022	Jul-2022	Oct-2022	Apr-2023
11SC0115	Foster Avenue Rehabilitation	May-2022	Nov-2022	Apr-2023	Jun-2024
22SC0241	Annual Rehabilitation - Pump Station Basins	Aug-2022	Feb-2023	Oct-2023	Dec-2024
22SC0102	Wallace Lane Rehabilitation	Aug-2022	Feb-2023	Jun-2023	Aug-2024
11SC0134	Schrader Sewer Separation	Nov-2022	Nov-2024	Mar-2026	Jul-2028
11SC0122	Benedict & Crutcher Sewer Separation	Nov-2022	Mar-2025	Jun-2026	Oct-2028
11SC0123	Boscobel Sewer Separation	Nov-2022	Jul-2025	Sep-2026	Jan-2029
Varies	Dry Creek Area Improvements ⁴	Jan-2023	Jun-2027	Sep-2024	Jan-2029
11SC0146	Henry Ford Drive Rehabilitation	Feb-2023	Aug-2023	May-2024	Jul-2025
11SC144B	Tuckahoe & Nesbitt Rehabilitation	Aug-2023	Jan-2024	May-2024	Jul-2025
Not Established	Castleman Drive Rehabilitation	Nov-2023	May-2024	Sep-2024	Sep-2025

Notes:

1. Design phase shown may include activities associated with permitting and easement acquisition and may differ from the 100% design milestone.
2. Metro is completing the Central WWTP Capacity Improvements and CSO Reduction project via a Construction Manager at Risk. Headworks and Balance of Plant are the two largest construction packages.
3. Pump station upgrades were completed in September 2022; easement acquisition for the force main improvements is on-going.
4. The Dry Creek Area Improvements project includes the following: Berwick Trail Pump Station Upgrades, Dry Creek Pipe Improvements, Hidden Acres Pump Station Upgrades, Loves Branch Pump Station Upgrades, Neely's Bend Pump Station Upgrades, and Vandiver Pump Station Upgrades. Preliminary engineering will occur concurrently for those projects in 2023. Project-specific milestones will be provided as they are available.

3. Sanitary Sewer Overflow Trends

The trend analysis for SSOs includes three graphs, each with the average rainfall from all the Metro rain gauges included. **Figure 1** shows monthly SSO events in the system as a result of the following causes:

- Excessive flow
- Blockage
- Repairs/Mechanical Problems
- Power Outage
- Rainfall Induced
- Other

The following months each experienced more than 40 SSO events: March 2021, February 2022, and April 2022. In each of the months experiencing more than 40 events, the majority of SSOs were the result of significant rainfall events. The majority of non-rainfall induced SSOs were caused by blockages from roots, grease, and debris.

Figure 2 shows monthly SSO volumes within the system from 2021 through 2022 reported in million gallons (MG), while **Figure 3** shows monthly SSO durations within the system from 2021 through 2022. The durations shown are a summation of the total amount of time overflows were occurring within the system at all overflow locations. This data is provided in the units of overflow equivalent hours, meaning that, for any month, the total number of hours for the duration of overflows could exceed the actual number of hours in a given month. For instance, if a rainfall event results in three overflows that occur concurrently for two hours each, the overflow duration for that day is six overflow equivalent hours.

The data in **Figures 2** and **3** indicates large overflow volumes and durations during months with significant rainfall events. The average rainfall, as measured within the Metro system, is included on each graph to show the relationship between rainfall and overflow events.

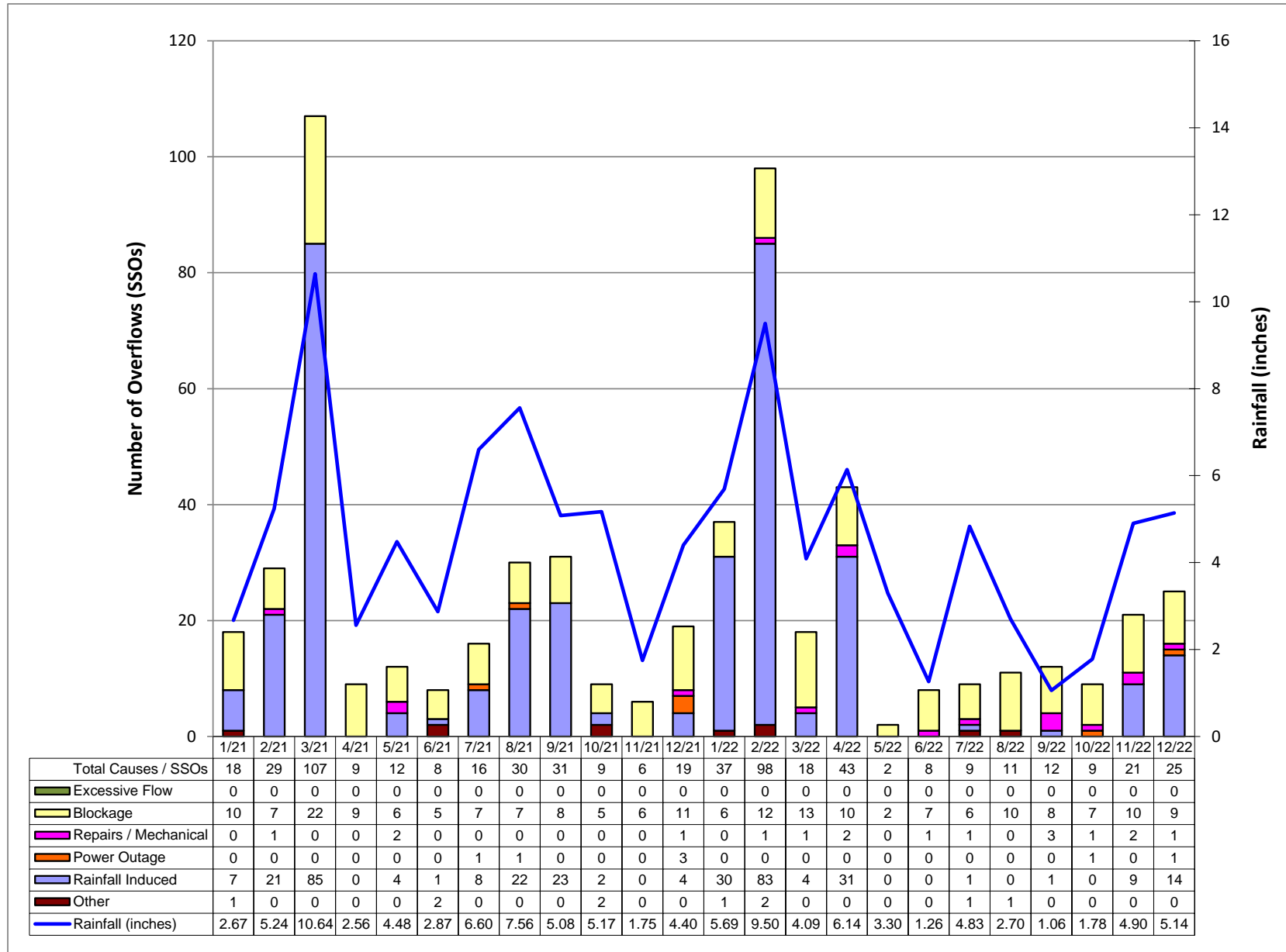


Figure 1 – SSO Events by Cause

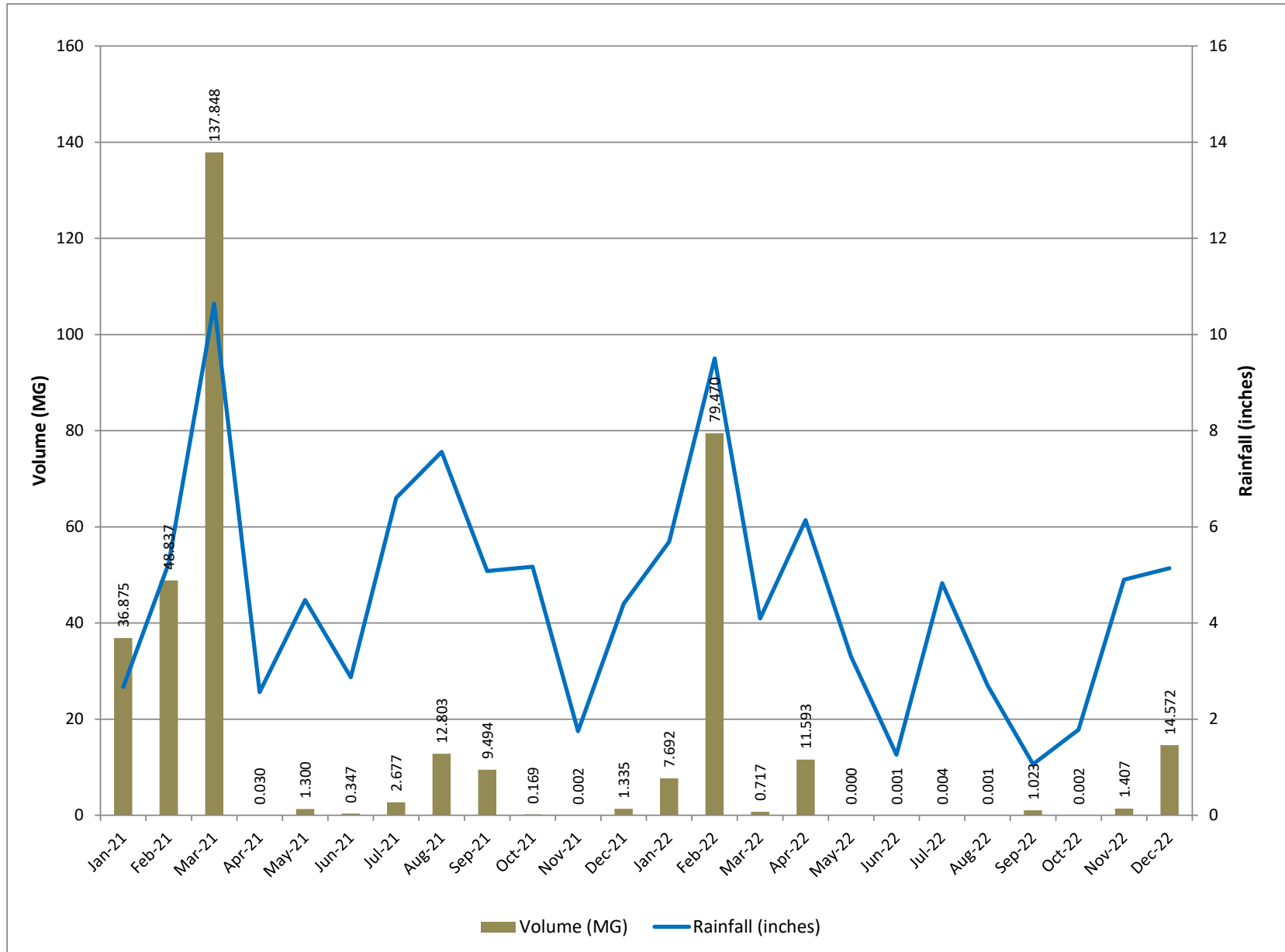


Figure 2 – Monthly SSO Volumes

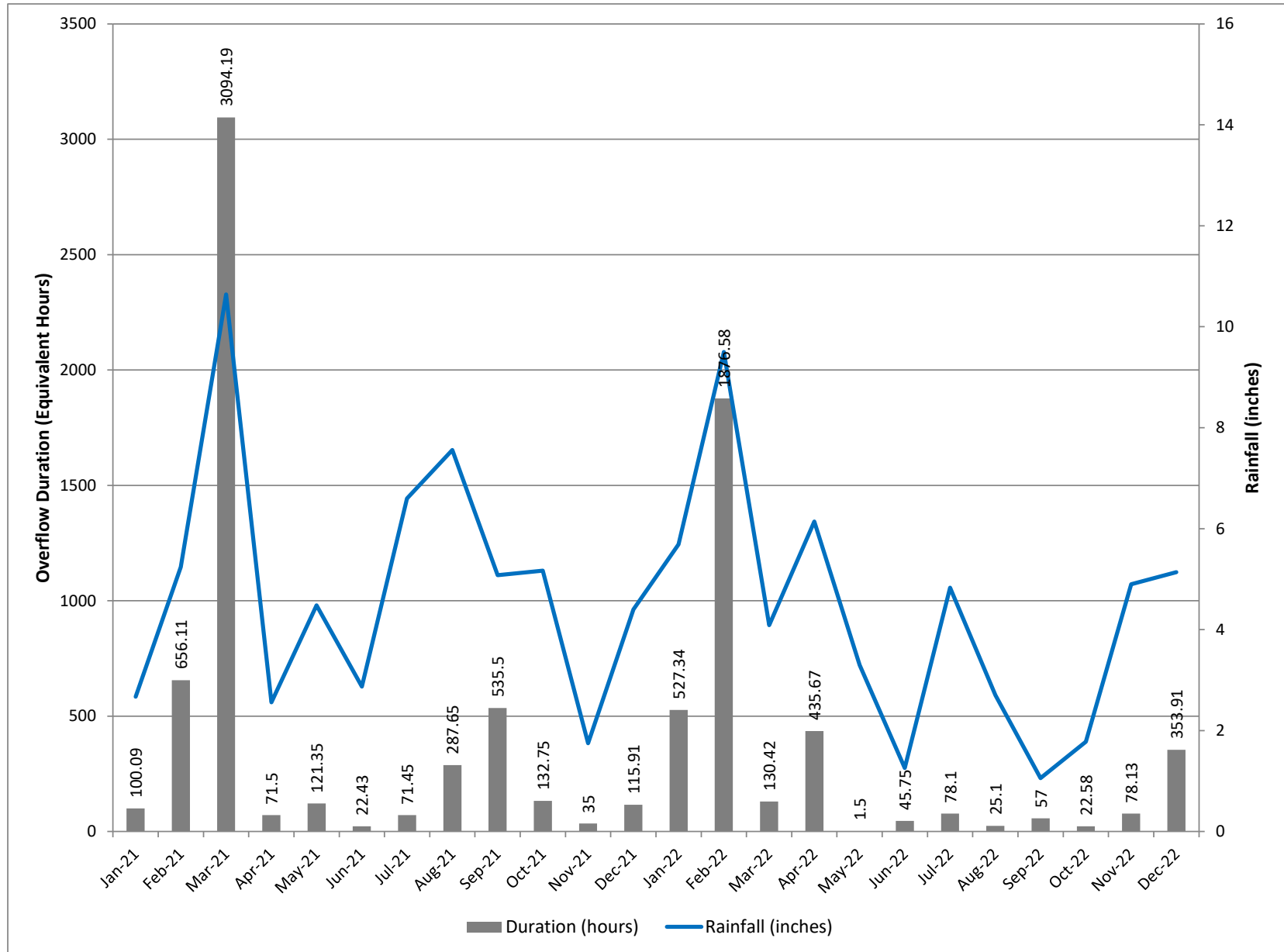


Figure 3 – Monthly SSO Durations

4. Combined Sewer Overflow Trends

There is no trend analysis in this report for the dry-weather combined sewer overflows (CSOs). No dry-weather CSOs occurred in 2021 or 2022.