

City of Baltimore
Department of Public Works

Modified Consent Decree
Collection System Operations and
Maintenance Annual Report

Reporting Period:
July 1, 2023 to June 30, 2024

Sanitary Sewer Overflow Consent Decree
Civil Action No. JFM-02-1524



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1. Introduction

This Annual Report is submitted pursuant to Paragraph 13 of the Modified Consent Decree (Civil Action No. JFM-02-1524). The report provides an update of the City of Baltimore Department of Public Works' (DPW's) wastewater operation and maintenance (O&M) activities and an analysis of the activities that were conducted during the reporting period. In accordance with the Modified Consent Decree (MCD), the report includes:

- i. A list of complaints related to the Collection System
- ii. A list of completed work orders for the calendar year
- iii. A list of outstanding work orders
- iv. Current preventive maintenance schedules (task description, location, frequency), description of changes made to the schedules during the calendar year
- v. A list of tests performed of new sewer installations and rehabilitations (location, date, description of new installation and/or rehabilitation)
- vi. An evaluation of the efficacy of the grease control program (summary of grease-related blockages identified, corrective action taken, preventive action taken, monthly rate of grease-related blockages and (if available) comparison of current and previous year performance, list of referrals to pretreatment staff, identification of remaining persistent and chronic blockage areas)
- vii. An evaluation of the efficacy of the root control program (summary of root-related blockages identified, corrective action taken, preventive action taken, monthly rate of root-related blockages and (if available) comparison of current and previous year performance, identification of remaining persistent and chronic blockage areas)
- viii. An updated list of known locations where Baltimore does not have ready physical and/or legal access to the Collection System and the strategies Baltimore is employing to improve and secure such access to the Collection System

DPW prioritizes the renewal of aging infrastructure and justifies infrastructure investments using a risk-based approach to optimize asset service life at an acceptable level of risk. DPW reviews key performance indicators to evaluate the effectiveness of new and existing preventive maintenance programs and provide transparent reporting to internal and external stakeholders, which is key for stakeholders to understand the relationships between risk, cost and expected level of service.

2. Customer Complaints

The City of Baltimore's 311 system allows customer to report sewer-related complaints. The service is available at any time of the day via phone, online and mobile application. Each complaint in the 311 system is assigned a Customer Service Request (CSR) number and a corresponding service request is created in DPW's computerized maintenance management system (CMMS).

After a DPW investigator inspects the area and determines corrective actions, a work order is generated, and the appropriate resources are mobilized to complete the work. In cases when multiple complaints in the 311 system are made by customers for the same problem, all complaints are forwarded to the CMMS and one service request is created for investigation. Repeat service requests are attached to one work order. The table below shows the number of sewer complaints since the beginning of the MCD.

Fiscal year	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Sewer complaints	7,595	9,227	9,867	9,142	9,421	9,250

A list of all sewer complaints recorded during the reporting period is attached in Appendix A.

2.1. Completed Work Orders

When a complaint has been resolved, the work order status is updated to close in the CMMS. A list of closed work orders that were recorded during the reporting period is provided in Appendix B.

The number of completed sewer-related work orders since the beginning of the MCD is shown in the table below.

Fiscal year	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Completed work orders	16,753	16,300	17,001	16,751	14,901	23,339

2.2. Outstanding Work Orders

The number of work orders since the beginning of the MCD is provided below.

Fiscal year	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Open work orders	198	481	631	661	970	3,496

3. Sewer Preventive Maintenance Program

DPW maintains various sewer preventive maintenance programs to maintain the current level of service.

3.1. Targeted Sewer Cleaning/Inspection Program

DPW developed and maintains a targeted cleaning program to identify and regularly clean and/or inspect sewers that have experienced recurring blockages. Sewer inspections may be completed in lieu of cleaning to determine if cleaning work is needed. The program includes all sewers that are 8-inch diameter and smaller, which comprises 76 percent of the collection system. The targeted areas are identified and prioritized based on:

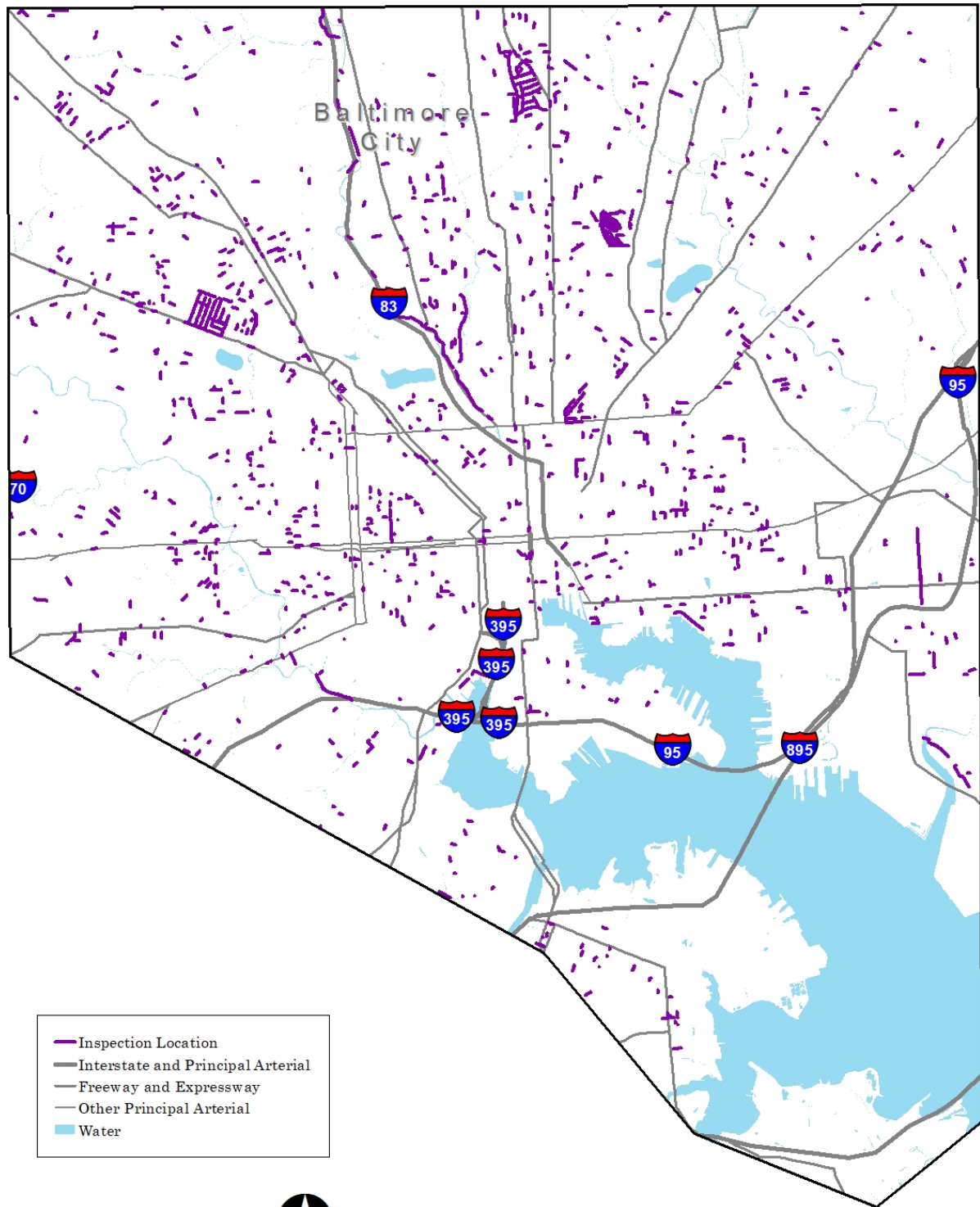
- Number of recurring blockages
- Risk analysis, which considers the likelihood and consequence of future blockages

The targeted areas are scheduled to be cleaned and/or inspected every 3 years.

The table and figure below show the completed sewer cleaning footage since the beginning of the MCD and the location of the sewers that were cleaned and/or inspected during the reporting period.

Fiscal year	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Sewer cleaning (linear feet)	165,567	331,190	88,181	500,305	102,533	124,194

Sewer Cleaning/Inspection Work Locations



0 0.5 1 2 Miles



NORTH

3.2. Routine Sewer Cleaning Program

DPW maintains a routine sewer cleaning program to:

- Clean sewers with known maintenance issues that cannot be easily resolved. Sewers are cleaned on a 3- to 12-month cycle. DPW regularly reviews the sewers with known maintenance issues to confirm the cleaning interval and modify, accordingly
- Clean sewers that are scheduled for future capital improvement

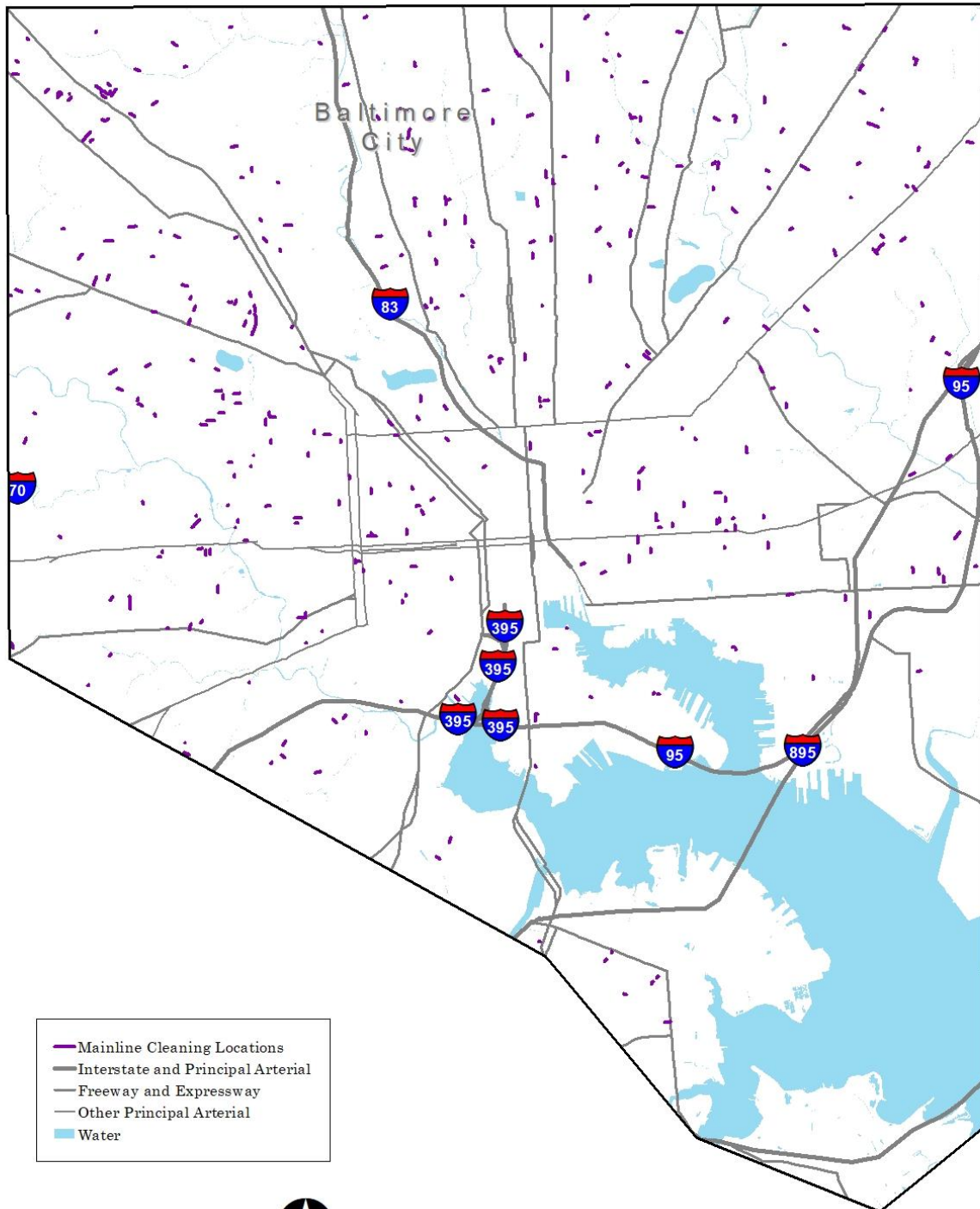
Routine cleaning supplements the targeted sewer cleaning/inspection program.

A list of all routine cleaning locations is included in Appendix C.

3.3. Comprehensive Sewer Inspection Program

DPW developed and maintains a comprehensive sewer inspection program to determine current structural/operational conditions and assess remaining service life. The program includes all sewers that are 10-inch diameter and larger. Sewers are re-inspected every 7 years. The figure below shows the location of the sewers that were inspected during the reporting period.

Collection System Mainline Cleaning Locations



4. New Sewer Installation and Rehabilitation

DPW evaluates the collection system's hydraulic capacity and maintenance work orders to identify potential improvements to eliminate sanitary sewer overflows. A list of active sewer projects is provided in the table below.

Sanitary contract	Location	Pipe cleaning footage (linear feet)	Pipe cleaning weight (tons)	New pipe (linear feet)	Pipe rehabilitation (linear feet)
966	Multiple	2,404	774.5	0	0
Total		2,404	774.5		

Once construction is complete, new and rehabilitated sewers are tested in accordance with the City's specification standards. Typical testing includes:

- Low-pressure air testing is typically performed on all gravity sewers, including house connections. Testing will commence when no more than 1,000 linear feet of sewer has been installed. Sewers that do not pass the test may be repaired, replaced or the pipe installation may be modified, accordingly
- Hydraulic testing is typically performed on sewers that are 27-inch diameter and larger. Manholes are also hydraulically tested if an air test is not possible
- Closed circuit television (CCTV) inspections are typically required for post-sewer rehabilitation projects and for post-sewer cleaning work. CCTV work is performed in accordance with the National Association of Sewer Service Companies Pipeline Assessment Certification Program standards

5. Fats, Oils and Grease Control Program

DPW maintains a fats, oils and grease (FOG) control program that consists of:

- Grease abatement
- Food Service Establishment (FSE) inspection

The grease abatement program was implemented in 2008 to address areas of FOG accumulation in the collection system. In FY2012, DPW developed the FSE inspection program and commenced inspections in FY2014. In FY 2014, the FSE inspections were incorporated into Baltimore City's Industrial Pretreatment Program under the authority of Article 25 of the Baltimore City Code. FOG management under the program includes promoting kitchen best management practices (BMPs) to residential and commercial customers and minimizing the discharge of FOG-bearing waste streams to the sewer system. The program requires FSEs to have a properly installed and sufficiently maintained grease control device (GCD) when discharging or have the potential to discharge wastewater to the collection system.

5.1. Evaluation of Maintenance (Reactive) Work Orders

DPW reviews the CMMS data to identify sewers with FOG-related issues. The DPW Pollution Control Section is notified of grease-related blockages so that FSEs that are located upstream of the blockage can be inspected for proper FOG best management practices.

5.2. Grease Abatement Program

The grease abatement program consists of:

- Reviewing work orders and CCTV to identify chemical FOG treatment locations
- Applying grease abatement chemicals in sewers that are located in areas experiencing FOG accumulation

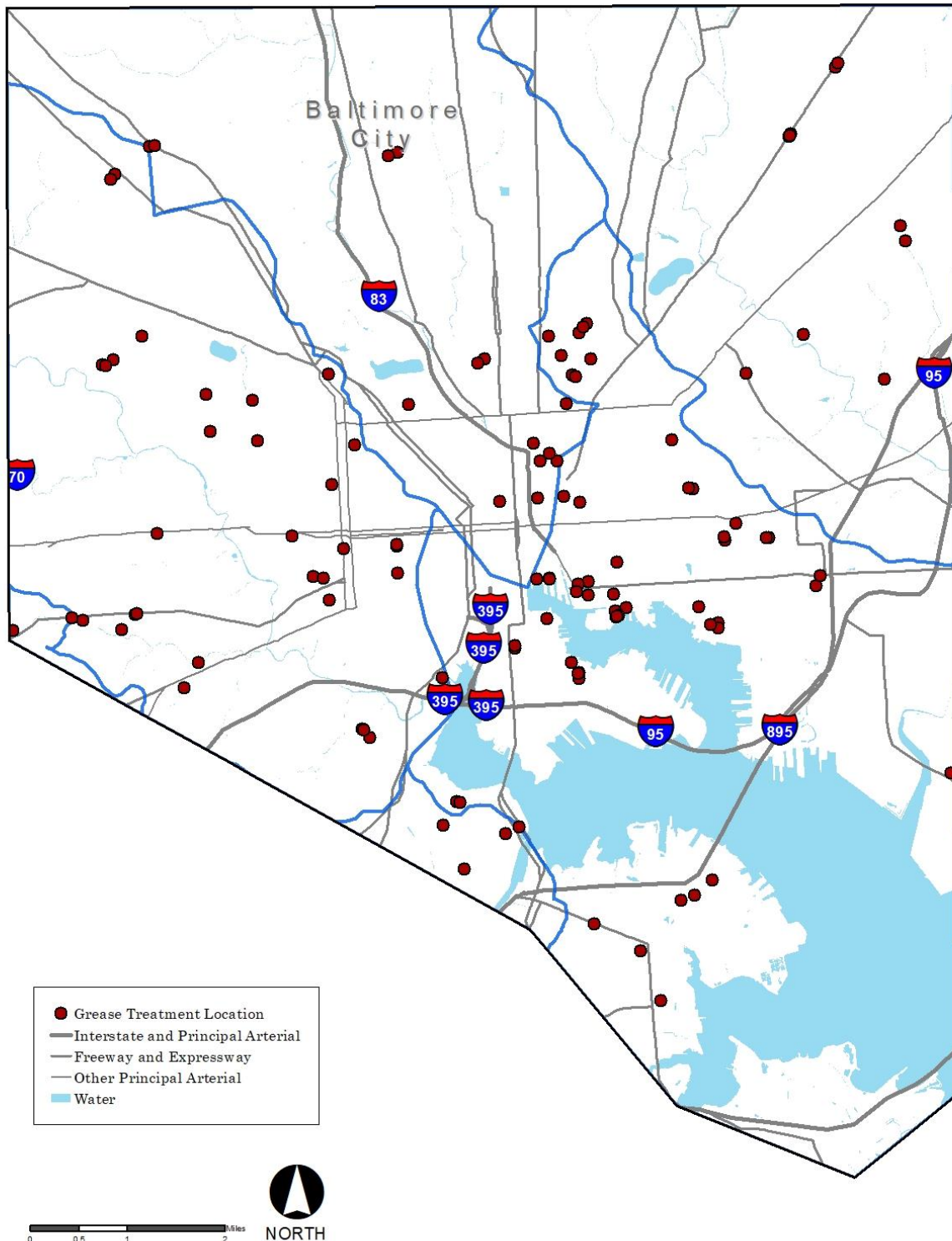
The table below shows the completed footage of chemically treated sewers since the beginning of the MCD.

Fiscal year	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Treated sewer (linear feet)	58,878	62,391	29,342	11,039	115,517	29,947

Note: FY 2024 WOs are not yet closed in the CMMS

The location of the sewers that were treated during the reporting period is shown in the graphic below.

Chemical Grease Treatment Locations



5.3. Food Service Establishment Inspections

All FSEs that discharge or have the potential to discharge FOG to the sanitary sewer must comply with the City of Baltimore Plumbing Code and their individual Wastewater Discharge permit, which is issued and enforced by the DPW Pollution Control Section. The Pollution Control Section also inspects FSEs to confirm compliance with City code and discharge permit.

A list of FSE inspection violation types and the corresponding number of violations is provide in the table below.

Violation	Total
Baffles installed incorrectly	4
Baffles missing	17
Bypass of treatment system (GCD)	1
Enzymes used	0
Enzymes used directly in GCD	0
Expired WWDP	194
Failed 25% rule	175
GCD inaccessible	1
GCD installed backwards	2
GCD leaking	0
GCD operating improperly	4
Grease disposal inadequate	21
Inlet and/or outlet T missing	2
Maintenance log not up to date	20
No GCD	13
No maintenance log	155
No WWDP	40
Pre-rinse & pre-rinse trough not connected to GCD	1
Pre-rinse sink and pot sink not connected to GCD	0
Pre-rinse sink and tilt kettle trough not connected to GCD	0
Pre-rinse sink not connected to GCD	5
Pre-rinse wash station drain not connected to GCD	0
Refused admittance	19
Solids interceptor trough not connected to GCD	0
Three-compartment sink, and pre-rinse sink/wash station not connected to GCD	1
Three-compartment sink not connected to GCD	4
Tilt skillet and kettle trough not connected to GCD	1
Tilt skillet not connected to GCD	0
Wok station not connected to GCD	0
Total	680

A list of completed FSE inspections and associated enforcement actions is provided in Appendix D.

5.4. Performance of Fats, Oils and Grease Control Program

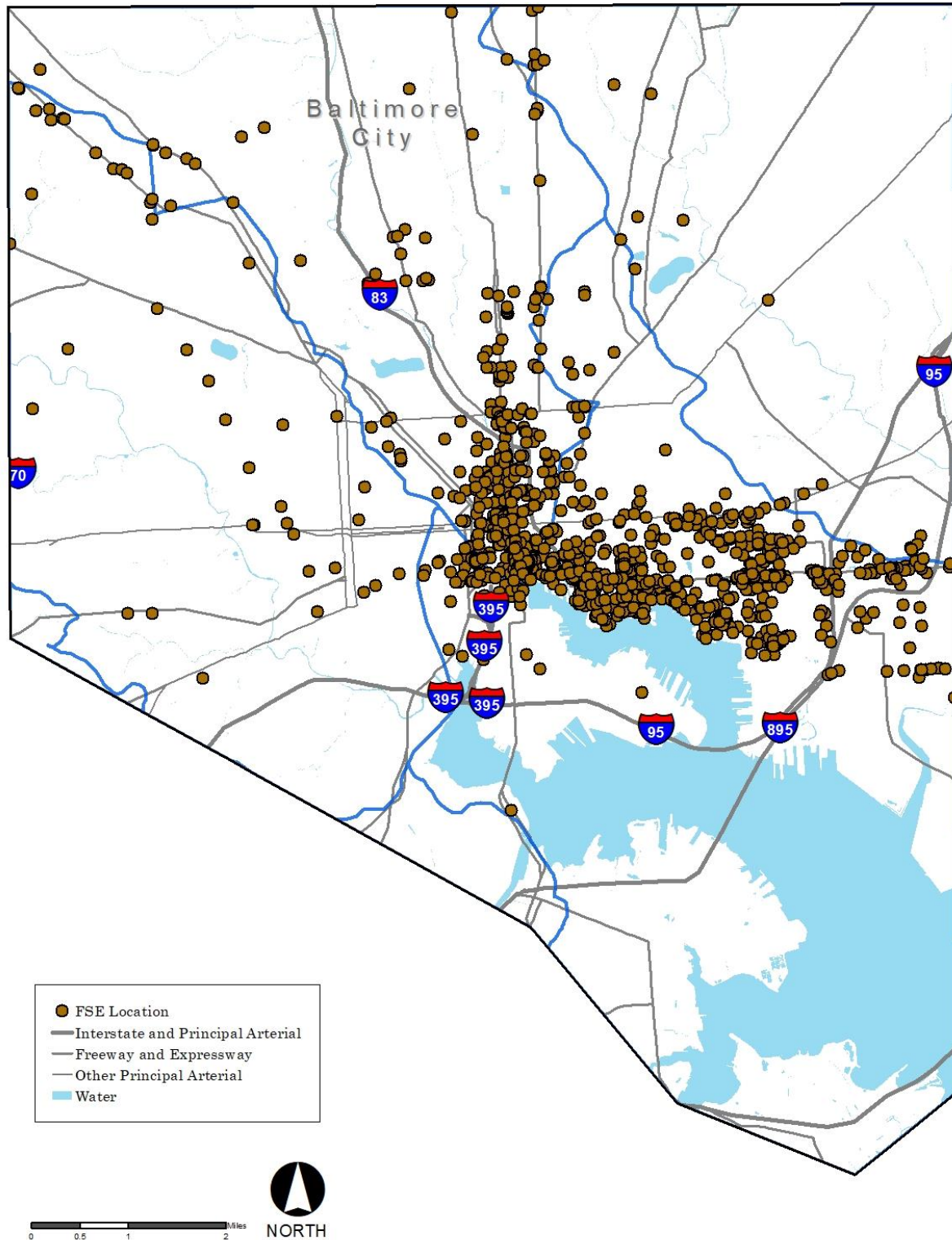
DPW maintains an FSE database, which is used to track FSE general information, addresses, GCD details, inspection results and enforcement actions. The database is updated based on DPW's field investigation and inspection work. The table below shows that the number of FOG-related work orders has decreased

since the beginning of the MCD. The decreasing trend indicates that DPW's FOG control program continues to be effective in preventing FOG-related operational issues in the collection system.

Fiscal year	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
FOG-related work orders	954	444	531	328	319	214

The location of the FSEs that were inspected during the reporting period is shown in the graphic below.

Food Service Establishment (FSE) Locations Inspected



6. Root Control Program

DPW maintains a root control program, which consists of:

- Evaluating customer complaint records and maintenance work orders related to roots
- Identifying sewers with significant root growth by reviewing CCTV inspections
- Maintaining a chemical root treatment control program

6.1. Evaluation of Customer Complaint Records and Maintenance Work Orders

DPW evaluates customer complaints and maintenance work orders to identify sewers with root issues. DPW addresses the immediate root issue; however, DPW also determines if recurring maintenance work is needed.

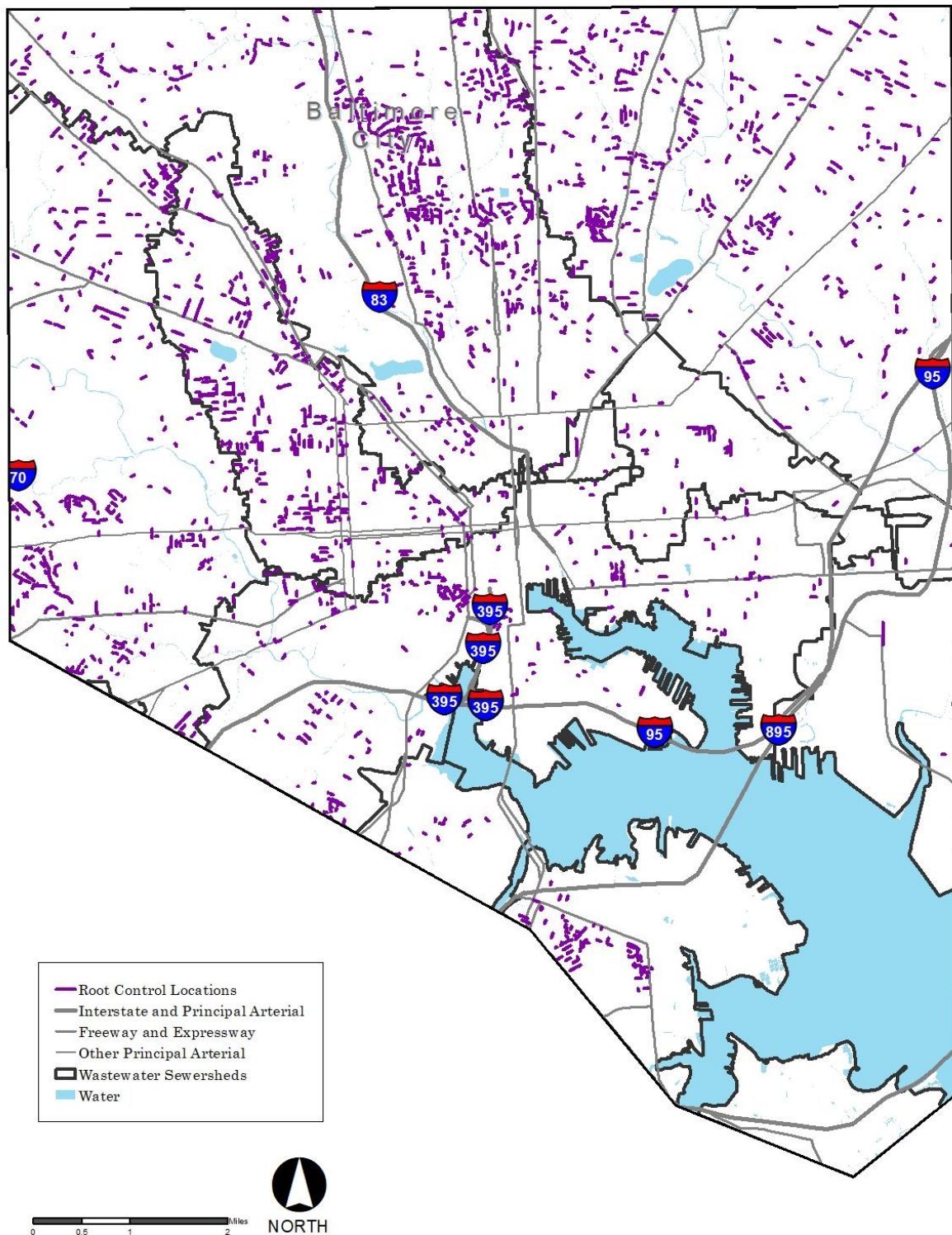
6.2. Chemical Root Control Program

The table below show the footage of chemically treated sewers since the beginning of the MCD.

Fiscal year	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Treated sewers (linear feet)	408,324	227,223	458,786	226,724	109,928	496,073

The location of the sewers that were treated for root instruction during the reporting period is shown in the graphic below.

Chemical Root Treatment Locations



6.3. Performance of Root Control Program

The tables below show that the number of root-related work orders has decreased since the beginning of the MCD.

Fiscal year	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Root-related work orders	2,918	2,741	2,388	2,166	2,156	1,857

The decreasing trend indicates that DPW's root control program continues to be effective in preventing root-related operational issues in the collection system.

7. Limited Access Areas

Limited access areas were previously identified during previous sewershed evaluations and were submitted in previous O&M Annual Reports. The list of limited access areas is revised as additional limited-access sewers are discovered through maintenance and capital work. A list of manholes with limited access is provided in Appendix E. DPW will address the access issues and amend the list, as needed.

8. Collection System Lateral Prioritization Program

The Modified Consent Decree requires the City to address new or reoccurring Building Backups (aka Water in Cellar or WIC). DPW tracks the number of WICs based on the address of structures and the frequency of backups. The prioritization program has three components:

- identification
- inspection and condition assessment
- prioritized repair/replacement and/or maintenance

The table below reflects the total number of laterals that require additional corrective actions to prevent or reduce the number of building backups. Appendix F lists all work performed on laterals during the reporting period.

Repair type	Complete	In progress	Scheduled	Total
House Lateral Lining	4	22	37	63
House Lateral Repair	37	87	41	165
Total	41	109	78	228