PHILADELPHIA'S WET WEATHER MANAGEMENT PROGRAMS

COMBINED SEWER MANAGEMENT PROGRAM ANNUAL REPORT

National Pollutant Discharge Elimination System (NPDES) Permits
Nos. PA0026689, PA0026662, PA0026671

STORMWATER MANAGEMENT PROGRAM ANNUAL REPORT

National Pollutant Discharge Elimination System (NPDES) Permit
No. PA 0054712

Reporting Period July 1st 2022 to June 30th 2023

Submitted to:

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Water Quality Management

And

ENVIRONMENTAL PROTECTION AGENCY – REGION III
Water Protection Division

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Combined Sewer Management Program Annual Report

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I. Management and Control of CSOs

This report is submitted pursuant to meeting the requirements of NPDES Permits #'s PA0026662, PA0026671, and PA0026689; PART C, I. Other Requirements, Combined Sewer Overflows (CSOs), III. Implementation of the Long Term CSO Control Plan, C. Watershed-Based Management, IV. Monitoring and Assessment. This section requires that the permittee submit an Annual CSO Status Report. The purpose of this report is to document the status and changes made to programs implemented by the City of Philadelphia (City), during Fiscal Year 2023 (FY23), which encompasses the period of July 1st, 2022 through June 30th, 2023, to manage and reduce the CSOs permitted to discharge to waters of the Commonwealth of Pennsylvania.

II. Implementation of the Nine Minimum Controls

The Philadelphia Water Department (PWD) submitted an Updated Nine Minimum Control Report to the Department on June 1, 2013 to supplement the 1995 report and describe current activities as a result of new technology or practices. The nine minimum controls (NMCs) are low-cost actions or measures that can reduce CSO discharges and their effect on receiving waters, do not require significant engineering studies or major construction, and can be implemented in a relatively short time frame.

II.A NMC 1 - Proper Operation and Regular Maintenance Programs for the Sewer System and the CSOs

II.A.1 Implement a Comprehensive Geographic Information System (GIS) of the City Sewer System

To ensure PWD's investment in GIS is as accurate and up to date as possible, edits and improvements are made to data on a daily basis. PWD utilizes the GIS coverages as the foundation for many of its operations including maintenance management, capital improvements, and hydraulic modeling. During FY23, GIS layers were updated and maintained to ensure the accurate tracking and reporting of PWD assets and infrastructure.

II.A.2 Implement a Comprehensive Sewer Assessment Program (SAP)

PWD continues to implement a comprehensive SAP to provide inspection of the collection system using closed circuit television (CCTV) and sonar. The SAP is a critical tool for operations and maintenance as it provides information on existing pipe conditions and helps to locate where repairs are needed. The program is also used to guide the capital improvement program to ensure that the existing sewer systems are adequately maintained, rehabilitated, and reconstructed.

CCTV inspections are conducted/managed by PWD's Flow Control group and performed by PWD personnel and contractors. During FY23, 74.49 miles of sewer inspections were completed via CCTV, averaging about 6.20 miles a month as shown in **Table II.A.2-1 Monthly TV Inspections.** In addition, the CCTV Unit completed a total of 1,379 inspections of green stormwater infrastructure systems during FY23.

Table II.A.2-1 Monthly TV Inspections

Date	Collector Systems (Miles Inspected)
Jul-22	5.67
Aug-22	7.01
Sep-22	6.78
Oct-22	8.02
Nov-22	4.50
Dec-22	6.27
Jan-23	6.78
Feb-23	3.97
Mar-23	5.97
Apr-23	7.14
May-32	7.91
Jun-23	4.48
Average	**6.20**
Total	**74.49**

II.B NMC 2 - Maximum Use of the Collection System for Storage

II.B.1 Continue to Institutionalize a Comprehensive Monitoring and Modeling Program

Monitoring

PWD maintains an extensive monitoring network throughout the combined sewer system including rain gages, pump stations, and connections from adjacent outlying communities. Information on the monitoring network with an updated listing of the monitors, rain gages, and pumping stations can be found in **Appendix B - Flow Monitoring**.

Modeling

The hydrologic and hydraulic (H&H) models will be updated as needed to support Nine Minimum Controls implementation and reporting.

II.B.2 Continue to Operate and Maintain a Network of Permanent and Temporary Flow Monitoring Equipment

PWD continues to maintain a CSO permanent monitoring network with temporary monitoring programs to support planning for CSO control projects and to minimize dry weather overflows and tidal inflows.

Permanent Flow Monitoring Program

PWD uses a network of permanent flow monitors that are connected to a newer data acquisition system (TELOG) which uses cellular-based telemetry and improved enterprise data management software. As of FY23, the Collector System Monitoring Network is connected to over 320 sites at various locations including CSO regulators, rain gages, pump stations, interceptors, chemical feed tanks, and hydraulic control points which collect over 720 individual measurements with over a ninety percent (90%) operational status. All monitoring devices deployed throughout the PWD collection system continually store data and periodically communicate monitoring information back to the Collector Systems Headquarters for review and use by staff. The listing of permanent flow monitors can be found in **Appendix B – Flow Monitoring.**

Temporary Flow Monitoring Program

PWD maintains its temporary flow monitoring program, initiated in July 1999, which consists of deploying portable flow meters throughout targeted Philadelphia sewershed areas to quantify sanitary and combined flow from the sewer system and characterize the tributary sewersheds. During FY23, PWD monitored 64 sites for the purposes of model calibration, inflow/infiltration (I/I) identification, design support, etc. The listing of all temporary flow monitors, their location, and the deployment projects can be found in **Appendix B – Flow Monitoring: Table 6 – Listing of all Temporary Flow Monitors Deployed by Projects.**

II.B.3 Continue to Evaluate the Collection System to Ensure Adequate Transport Capacity for Dry and Wet Weather Flow

Long Term Control Plan Update

System-wide H&H models have been developed in support of the CSO Program and the Long Term Control Plan Update (LTCPU). Model evaluations have been performed to evaluate the system performance benefits of various system improvement scenarios.

The evaluations of the system-wide models were completed in FY08 to support the LTCPU development. Since 2008, EPA's Stormwater Management Model (SWMM) has been updated to SWMM 5. PWD continues to update the H&H models as needed to support planning and regulatory reporting needs. A summary overview of the H&H model rebuild is provided with a full description included in Appendix C of the Year 10 Evaluation and Adaptation Plan (EAP).

PC-30 Extreme Wet Weather Overflow

PWD continues to monitor PC-30. For additional information on other efforts conducted for this site, please refer to **Section III.B.2: Table III.B.2-1** on page 33.

Flood Risk Management

PWD has a robust flood risk management program to analyze and reduce property damage from flooding and basement backups. Aspects of this program include property data collection, implementing individual property mitigation when appropriate, sewer system H&H analysis to understand flood prone areas, and developing policies to reduce flood risk in the city.

Flood Relief Project Summary

More recently, the focus of PWD's flood risk management efforts include: South Philadelphia, Northern Liberties, Germantown, and Eastwick. The goal of these efforts is to improve the conveyance of stormwater by targeting peak flow and volume reduction and reducing the potential for flooding. Hydrologic and hydraulic modeling indicates that sewer system improvements or source reduction can sometimes reduce the frequency and/or severity of flooding events. However, the potential benefits of structural improvements to the city's drainage infrastructure must always be counterbalanced by the financial, economic, and social impacts of implementation. PWD continues to refine and optimize mitigation alternatives to minimize negative impacts to communities.

South Philadelphia

In FY23, PWD decided to move forward with modifying the D67 regulating chamber for the Moore Street Storm Flood Relief (SFR) Project. The project originally involved the construction of 8' x 12' reinforced concrete box sewers that drain to the Delaware River. However, PWD's refined modeling methodology at the parcel level demonstrated fewer net benefits associated with constructing the box sewers compared to modifying the regulating chamber.

To better understand and define surface flooding and sewer backups from the collection system in South Philadelphia, PWD initiated the 2-dimensional modeling of the sewersheds D68, D69, and D70 using PCSWMM. The modeling effort is on-going, but the finished deliverable will be mapping flood depths for a variety of design storms which will be used to better inform capital planning.

Northern Liberties

SFR sewer projects were initiated in the Northern Liberties neighborhood to reduce flood risk in the combined sewer neighborhoods of Northern Liberties, Fishtown, Port Richmond, and Lower Kensington. **Table II.B.3-1** demonstrates the status of the Northern Liberties SFR program at the end of FY23:

Table II.B.3-1 Northern Liberties SFR Sewer Improvement Projects

Project Name	Location	Project Status
Northern Liberties Phase 1	Delaware Avenue and Laurel Street	Construction Complete (2011)
Northern Liberties Phase 2	Canal Street Chamber	Construction Complete (2016)
Northern Liberties Phase 3	Delaware Ave to River (Undertaken by Sugar House)	Construction Complete (2016)
Northern Liberties Phase 4	Canal & Laurel Sts. to Germantown Ave. &Wildey St.	Construction Complete (2016)
Northern Liberties Phase 5	Germantown Ave. from Wildey St. to Girard Ave.	Construction Completed (2022)
Northern Liberties Phase 6	Germantown Ave. & Thompson St. to Master & Randolph Sts.	In Projects Control[1]

[1] BRIC Grant submitted. Waiting on award decision

Germantown

The East Germantown section of Philadelphia has been impacted by flooding from intense rainstorms, such as Hurricane Irene (8/27/11) and Tropical Storm Lee (9/7/11). In FY23 PWD completed the design of the N. 21st Street Sewer Improvement Project which aims to reduce residual flooding in this area. The project is scheduled to be bid in FY24. PWD successfully advertised and awarded a professional services contract to advance the design of the Wingohocking Creek Storm Flood Relief/Combined Sewer Overflow tunnel through hydraulic optimization, community and stakeholder engagement, geotechnical studies, and the evaluation of regulatory impacts.

Eastwick

The Eastwick neighborhood is located in a naturally low-lying area in southwest Philadelphia. The neighborhood has experienced severe riverine flooding from multiple storms including Hurricane Floyd, Hurricane Irene, Tropical Storm Lee, and Hurricane Isaias. The City of Philadelphia, acting through PWD, executed the Federal Cost Share Agreement in May 2019 to move forward with the feasibility study through the Continuing Authorities Program. The United States Army Corps of Engineers (USACE) are actively working towards the completion of the feasibility study by January 2024. The USACE has experienced setbacks with soil contamination concerns at the adjacent landfill and additional hydrologic and hydraulic modeling requirements. USACE Leadership approved the levee alternative as the tentatively selected plan in January 2023.

II.B.4 Fully Integrate the Real-Time Control Facility into the Operations of PWD

Real Time Control Evaluation

Several projects were previously evaluated for Real Time Control; for additional information on these projects, please refer to Section 2.1 Evaluate Real Time Control in LTCP on page 10 of the 1996 Annual CSO Status Report and Section II.B.3.4 Real Time Control Evaluation on page 26 of the CSO-Stormwater FY10 Annual Report. For details regarding the current operational statuses of the City's real time control CSO regulator sites, see **Section II.B.5** below.

There are currently three projects in the Department's design process that are being evaluated for the use of real-time control technology:

D-05 CSO Regulator (State Road and Magee Avenue)

The D-05 regulator is being examined for additional CSO capture through the installation of a new, enlarged interceptor connection with a real-time controlled sluice gate. As of FY23, this project is in the Notice to Proceed (NTP) stage and is slated for completion in FY24. This project is expected to result in enhanced storage and conveyance of wet weather flows via modification to an existing computer controlled CSO.

Thomas Run Relief Sewer (R-01)

A capital project for the modification of the Thomas Run relief sewer has been initiated. The project is evaluating the potential for this system to be maximized for in-line storage during wet weather by creating a static dam, a new interceptor connection, and CSO regulator site. Alternatives considered include relocating the outfall to minimize disruption to trees and recreational areas in the Cobbs Creek Park.

Southwest Drainage District Regulator Modification (S-05, S-20, S-26)

The primary project goal is to increase the flow capacity through each regulator to decrease CSO volumes in the Southwest Drainage District. The project will include increasing the opening area of the existing DWOs, removal of existing Brown & Brown regulators, and will consider implementation of locally actuated, real-time, flow control at each site. This project was initiated in FY21 and currently has a target design complete of FY26.

II.B.5 Operate and Maintain In-Line Collection Storage System Projects Contained within the LTCP

Main Relief

The Main Relief project is operating as designed with a 7.5-foot static dam. The current configuration achieves an overflow reduction of approximately 30 MG annually.

Tacony Creek Park (T-14)

The T-14 storage sewer provides combined sewer overflow capture in the Northeast Drainage District (NEDD). The T-14 storage sewer system is operating under automated controls and reducing overflow volume during wet weather events. T-14 operated at the full design level during FY23.

Rock Run Relief (R-15)

The Rock Run Relief Sewer provides flood relief to combined sewer areas upstream of regulator T-8 in the Northeast Drainage District (NEDD). An inflatable dam was constructed in the Rock Run Relief Sewer to allow for utilization of in-system storage to retain combined flows during wet weather events. The Rock Run storage facility operated at the full design capacity during FY23.

Computer-Controlled CSO Regulators

PWD has eight computer-controlled CSO regulators that are configured to maximize storage during wet weather. All PWD computer-controlled regulators are in the Northeast drainage district (NEDD). As of FY23 seven of the eight computer-controlled regulator sites had control upgrades installed and were back into service with the completion of upgrades to the computer control system. F-25 is the final computer-controlled CSO regulator site to be upgraded so that all computer-controlled cabinets from D-2 through F-25 will be uniform with the newest PLC and Unity Software.

II.C NMC 3 - Review and Modification of Pretreatment Requirements to Assure CSO Impacts Are Minimized

II.C.1 Expand the Pretreatment Program to Include Significant Industrial Users (SIUs) Whose Facilities Contribute Runoff to the Combined Sewer System

The City of Philadelphia's Pretreatment Program regulates all Significant Industrial Users (SIUs) that discharge into PWD's service area, which includes SIUs in both the separate and combined sewer systems. The City continually reevaluates the Pretreatment Program to determine if improvements can be made. Through annual monitoring and inspection activities, PWD currently regulates 121 SIUs that discharge to the sanitary system. PWD conducts SIU program review and inspections on a calendar year cycle, having inspected all 119 permitted facilities during the 2022 calendar year.

PWD also maintains a website to inform the public and industries of permitting regulations, requirements and other information that may benefit or impact industrial users. Information on the City of Philadelphia's Pretreatment Program and industrial requirements is located at the following web address: water.phila.gov/industrial-waste.

II.C.2 Incorporate Guidance on BMPs for Industrial Stormwater Discharges into Stormwater Management Regulations Guidance

The Philadelphia Stormwater Management Guidance Manual was developed to assist developers in meeting the requirements of the Philadelphia Stormwater Regulations and is updated when necessary to incorporate new information. The current version of the manual is available at https://water.phila.gov/development/stormwater-plan-review/manual/.

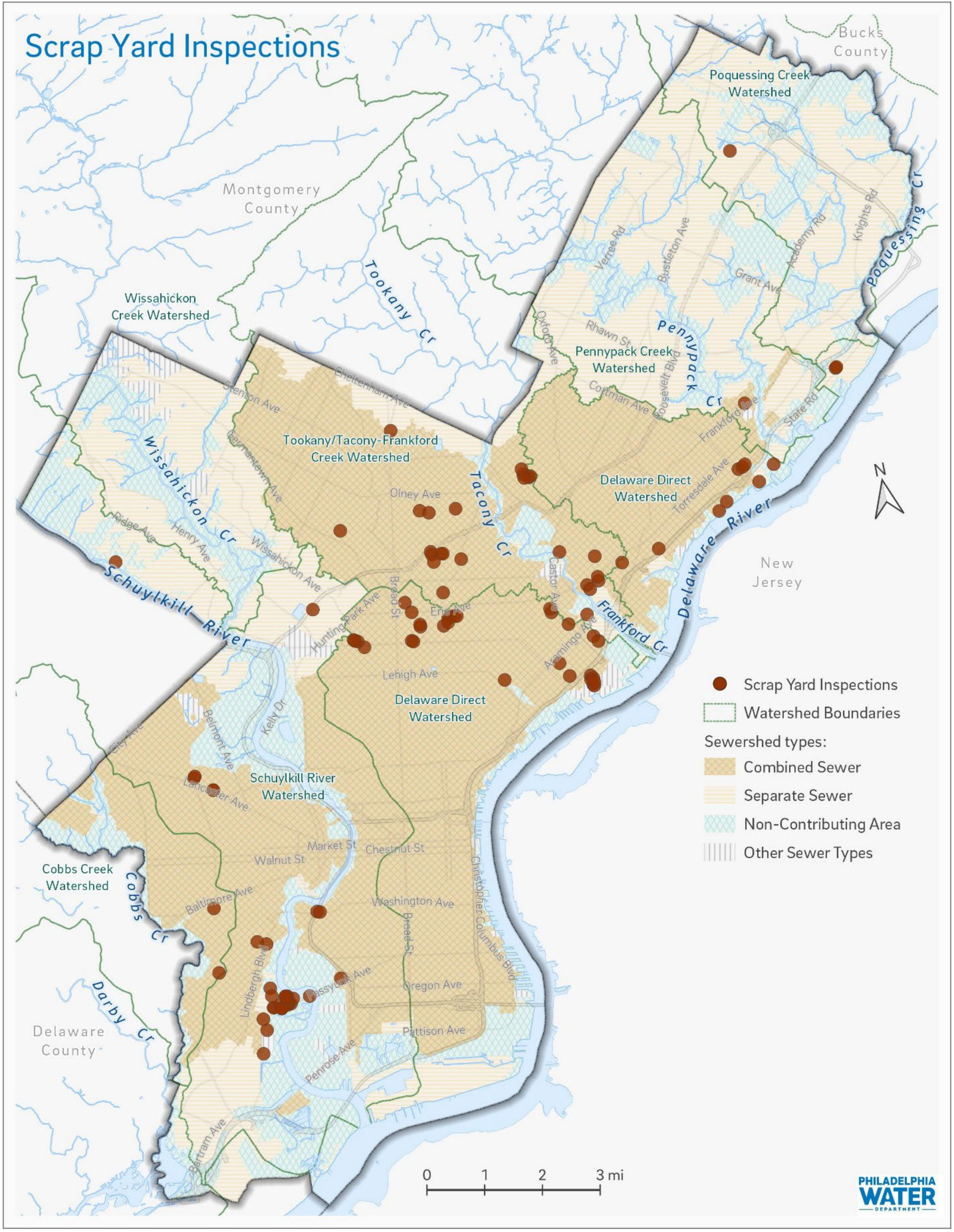
Please refer to the MS4 Annual Report **Section F.5.g - Stormwater BMP Handbook and Construction Site BMP Sediment & Erosion Control Checklist** on page 37 for additional information on the updated manual.

II.C.3 Continue to Serve as a Member of the Philadelphia Inter-Governmental Scrap and Tire Yard Task Force

The Scrap Yard Task Force (SYTF) was created to address numerous complaints about the operation of scrap metal and auto salvage businesses, which may cause polluted runoff to enter the city's sewers, blight in city neighborhoods, and contribute to short dumping and other environmental hazards to area waterways. SYTF conducts regular inspections and meetings, inspecting scrapyard facilities with the goal of bringing businesses conducting these activities into compliance. Agencies that have been involved with the SYTF are PWD, PADEP's Solid Waste division, Philadelphia Department of Licenses and Inspections (L&I), Philadelphia Police Auto Squad and the Philadelphia Fire Dept. Hazmat Administration Unit. Members of the SYTF will occasionally inspect facilities that do not fit the strict definitions of either a junkyard or metal recycler but present potential for negative impact on the environment and surrounding area. Some of these include sites with tire accumulations, overflow lots, other recycling facilities, and shipping operations. In addition, inspection sites can include facilities or properties that have received community environmental complaints or are considered a nuisance or problematic in the neighborhood.

Over recent years, staffing from attending agencies for this program have been reallocated to other priorities. The priority of this program began to evolve as additional concerns occurred from numerous junk yard fires and complaints about vehicle related nuisance businesses. In FY23, members of the SYTF conducted 101 inspections of scrapyard/junkyard facilities. Results of inspection were not available at the time of reporting, but locations are displayed in **Figure II.C.3: SYTF Sites Inspected in FY23** on page 8.

Figure II.C.3: SYTF Sites Inspected in FY23



II.D NMC 4 - Maximization of Flow to the Publicly Owned Treatment Works (POTW) for Treatment

II.D.1 Continue to Analyze and Implement Non-Capital Intensive Steps to Maximize the Wet Weather Flow to the POTW

Modified Regulator Plan

The Modified Regulator Plan (MRP) was designed to deliver more flow to the water pollution control plants (WPCPs) more frequently and enable greater pollutant removals. The projected flow increase associated with the MRP was implemented by the submission of the 1997 Annual Combined Sewer Overflow Status Report. Additional plan implementation efforts were included in the Updated Nine Minimum Controls Report which can be found online by accessing the following link: http://water.phila.gov/pool/files/NMC_Report_Final.pdf.

Maximization of Wet Weather Treatment in the LTCPU

PWD operates three Water Pollution Control Plants (WPCPs): the Northeast, Southwest, and Southeast WPCP. The Wet Weather Facility Plan (WWFP), which was submitted on June 1, 2016, provides details on scheduling, cost, and anticipated construction completion for each project. The WWFP is available at the following link: http://water.phila.gov/pool/Wet_Weather_Facility_Plan_website.pdf

II.D.2 Continue the Program Which Requires Flow Reduction Plans in Agreements to Treat Wastewater Flows from Satellite Collection Systems Where Violations of Contractual Limits are Observed

PWD provides wastewater service to some of its neighboring communities. Communities that exceed their contractual limits must develop flow reduction plans, under PWD review. In FY23, there were no significant updates to the Wholesale Wastewater Customer contracts. Summaries of wholesale customer activities are documented in PWD's annual Chapter 94 report. The list of outlying community contracts can be found below in **Table II.D.2-1: Listing of Wholesale Wastewater Customer Contracts and Capacities**.

Table II.D.2-1 Listing of Wholesale Wastewater Customer Contracts and Capacities

Customers	Average Annual Daily Flow Maximum (MGD)	Maximum Daily Flow (MGD)	Instantaneous Maximum Rate (Cubic ft./sec)
Northeast Plant			
Abington	2.97	4.45	9.54
Bensalem	6.13	-	11.74
Bucks	24	33.00	74.26
Cheltenham	-	-	26
Lower Moreland	1.90	2.85	5.88
Lower Southampton	7.14	9.28	15.79
Southwest Plant			
DELCORA	50.00	75.00	155.00
Lower Merion	14.50	-	31.57
Springfield (Erdenheim)	3.20	-	6.65
Upper Darby	17.00	-	35.00
Southeast Plant			
Springfield (Wyndmoor)	1.00	-	1.93

II.D.3 Use Comprehensive Monitoring and Modeling Program to Identify Suburban Communities where Excessive Rainfall-dependent I/I Appear to be Occurring

The US EPA's SWMM was used to develop the watershed-scale model for the combined and separate sanitary sewer systems. Suburban communities are modeled as separate sanitary sewersheds that load to the PWD sewer network. The rainfall response from these sheds is calibrated to flow monitoring data collected at each respective connection to PWD sewer network (if the sewershed is not monitored then a reference shed is used to obtain the rainfall response). Presently, permanent and temporary flow monitors are installed at 62 connections. **Appendix B – Flow Monitoring: Table 2** contains the list of all known connections, their location and whether the connection is permanently monitored.

II.D.4 Maintain and Modify Combined Sewer Collection System/Chambers to send more flow to the POTW

PWD monitors regulating chambers regularly. Issues are identified and addressed as soon as possible. Modifications include the following:

- C-04: Installed flap gate on C-04 outfall to prevent backflow into the interceptor and sewer gas from escaping. Repairs completed 7/13/2022.
- H-16: 8 6" stop logs were removed to allow flows diverted away from the SE WPCP to return to that facility. Modification completed on 12/2/2022
- H-35: The computer controlled dry weather outlet gate was locked at ~10% open while repairs were made to the hydraulic system. It was locked on 9/1/2022 and returned to computer control on 2/22/2023.
- S-44: The dry weather outlet orifice gate was chained in the fully open position. Modification made on 6/14/2023

Appendix D – FY23 NPDES Annual CSO Status Report: Table 2 shows the CSO volume, duration, and frequency of overflow events per permitted outfall for the rainfall that fell in FY23 utilizing SWMM 5 model version 2017.B.02.04. Table 3 shows the same statistics as table 2 but for the typical year rainfall utilizing the SWMM model that support the Year 10 EAP submitted in May 2022.

II.E NMC 5 - Prohibition of CSOs during Dry Weather

II.E.1 Optimize the Real-Time Control Facility to Identify and Respond to Blockages and (non-chronic) Dry Weather Discharges

Regular inspections, reactive inspections, and maintenance of combined sewer overflow (CSO) regulators are performed throughout the city to ensure that sediment accumulations and/or blockages are identified and corrected immediately to avoid dry weather overflows. PWD utilizes on a daily basis a remote monitoring network system to help identify locations showing abnormal flow patterns.

CSO Regulator Inspection & Maintenance Program

PWD maintains 175 CSO regulator chambers with regulator devices that control the diversion of wastewater flow to the interceptor system and 26 storm relief diversion chambers that allow excess flow during storm events to be diverted to storm relief sewers. These chambers discharge through 164 NPDES permitted point sources which make up the CSO outfalls. The maintenance of the chambers is critical to the performance of the system in that they control the frequency, duration, and quantity of CSO discharges.

PWD continues to implement its policy of conducting next day follow-up inspections at sites that experience a dry weather discharge. Ongoing assessment of all inspection scheduling continues to ensure that CSO regulators are inspected at the frequency required to ensure timely response to operational issues and minimize the likelihood of dry weather discharges. During FY23, Flow Control crews completed 4,264 inspections on 201 CSO regulator sites and storm relief diversion chambers. The crews cleared 165 CSO regulator blockages to prevent possible discharges from developing. There was 1 dry weather discharge during FY23. Details of the inspections during FY23 can be found in **Appendix C – FY23 CSO Maintenance Program Annual Report.**

Tide Gate Inspection and Maintenance Program

Tide gates are located at approximately half of the CSO regulator chambers in the city's system and prevent tidal inflow into the combined sewer system from the estuary receiving water body. Maintenance of the 89 gates is critical to system performance because inflow from the receiving water body can adversely affect the combined sewer system and treatment facilities by reducing system capacities, potentially causing dry weather discharges. In FY23, CSO tide gate preventative maintenance was completed 170 times at 12 of the tidally affected CSO regulator sites. Summaries of the tide gate inspection and maintenance completed during the past fiscal year are in **Appendix C – FY23 CSO Maintenance Program Annual Report**, which documents the locations of tide gate preventative maintenance performed in FY23.

PWD regularly inspects regulators, pump stations, junction chambers, and sewers which are known to accumulate grit. These sites are scheduled for flushing and vacuuming on an as-needed basis.

Somerset Grit Chamber Cleaning/D-25 Regulating Chamber

During FY14, the Somerset grit chamber was removed from service because the upstream regulator (D-25) was being relocated. This relocation project was completed during FY16. During FY23, PWD cleaned and removed a total of 28.93 tons of debris and grit from the D-25 regulating chamber.

D-37 Regulating Chamber

During FY23, PWD cleaned and removed a total of 10.07 tons of debris and grit from the D-37 regulating chamber.

D-45 Regulating Chamber

During FY23, PWD cleaned and removed a total of 69.90 tons of debris and grit from the D-45 regulating chamber.

Central Schuylkill Pumping Station (CSPS) Grit Pocket Cleaning

During FY23, the two grit pockets at the CSPS siphon were not cleaned due to the rehabilitation of the station and vendor availability. Additional information on the CSPS cleaning activities conducted in FY23 is available in **Appendix C – FY23 CSO Maintenance Program Annual Report.**

II.F NMC 6 - Control of Solid and Floatable Materials in CSOs

II.F.1 Control the Discharge of Solids and Floatables by Cleaning Inlets and Catch Basins

PWD's Inlet Cleaning Unit (ICU) is responsible for inspecting and cleaning stormwater inlets within the city. When fully staffed, there are forty-one inlet cleaning crews whose primary duties include cleaning, removing, and properly disposing of debris (solids and floatables) from inside city inlets as well as street level cleaning in the vicinity of inlets to prevent debris from entering the collection system and waterways. Other duties include inspection of inlet conditions and referral of structural defects to the Sewer Maintenance Unit for repair to ensure proper function. Crews are responsible for cleaning high volume traffic areas, retrieving and installing inlet covers, replacing missing inlet covers, installing locking covers, and unclogging choked inlet traps and outlet pipes so inlets can take water. A high level of focus is placed on responding to customer complaints of flooding, blockages, and foul odors.

During FY23, the ICU was responsible for maintenance of approximately 72,000 stormwater inlets connected to the city's combined and separate storm sewer systems (gray inlets). ICU is also responsible for cleaning of pretreatment on stormwater inlets connected to green stormwater infrastructure (green inlets). By the end of the year, ICU was responsible for monthly preventative maintenance of approximately 2,300 green inlets. Fiscal year totals for work on GSI-connected inlets included 13,015 inlet inspections and 12,641 pretreatment cleanings.

Statistics related to the ICU's work productivity during FY23 can be found in **Table II.F.1-1**, below. The quantities for inlets inspected, inlets cleaned, debris removed, and pounds per inlet during FY23 include work conducted at both gray and green inlets. The process of dewatering debris at a central location has increased cleaning efficiency (higher number of inlets cleaned per crew) and decreased the weight of materials taken for disposal.

Table II.F.1-1: Inlet Cleaning Statistics

	FY23
Total Inlets Inspected	111,013
Total Inlets Cleaned	80,909
Total Covers Replaced	71
Total Covers Retrieved	78
Total Covers Chained	1,276
Debris Removed (tons)	5,833
Avg. Lbs./ Inlet	144

II.F.2 Continue to Fund and Operate the Waterways Restoration Team (WRT)

PWD's Waterways Restoration Team (WRT) is a multi-crew force dedicated to performing stream examinations, infrastructure protection projects, and cleanup work throughout the city including large trash and debris removal and restoration of eroded streambanks and streambeds. WRT's stream examinations consist of assessing a variety of field conditions including waterway, infrastructure, site access and sewage discharge assessments. WRT waterway maintenance work involves debris removal, stream restoration work, and assisting with sewer maintenance work to help provide a safe work environment while protecting stream ecosystems. WRT works in partnership with Philadelphia Parks and Recreation (PPR) staff and various Friends of the Parks groups to maximize resources and build positive relationships with our communities.

During FY23, WRT conducted 279 stream examinations and performed maintenance 520 times. WRT removed a total of 360 tons of debris from the city's waterways (**Table II.F.2-1**). Of the total debris removed, most of the weight can be attributed to large organic material (e.g. trees) that have fallen into the waterways and restricted flow, thus increasing the potential for bank erosion and/or damage to infrastructure.

Table II.F.2-1: Waterways Restoration Team – Annual Activity Summary FY19-FY23

Activity	FY19	FY20	FY21	FY22	FY23
Total Tons Removed	1070	618	613	525	360
Cars Removed	0	2	0	3	0
Tires Removed	1713	1983	535	1559	81
Shopping Carts Removed	203	20	3	8	12
# of Stream Site Cleanups	997	764	545	543	520
# of Stream Site Exams	381	357	479	365	279

II.F.3 Continue to Operate and Maintain a Floatables Skimming Vessel

The skimming vessel is used as a control measure to remove floatable material from the Schuylkill and Delaware River. These vessels also increase public awareness and help to educate on the impact of floatables to Philadelphia's receiving waterways. In previous years, PWD utilized multiple PWD owned vessels to conduct skimming of the Delaware & Schuylkill Rivers. As of June 2023, a new skimming contract took over the primary skimming responsibilities for the City, and the PWD vessels are utilized for other watershed protection priorities.

Large Floatables Skimming Vessel – R.E. Roy

For the last 17 years, the R.E. Roy, a 39-foot skimmer vessel operated approximately five days per week, for about 7 or 8 months out of the year, or more as appropriate conditions allowed (i.e. weather). The vessel's main purpose is to perform general debris collection and removal on both the Delaware and Schuylkill rivers, while also serving as a mechanism for public relations events. After extensive evaluation of the maintenance costs and efficacy of the vessel's output, the R.E. Roy was decommissioned during the 2023 calendar year. During its last year, it operated 114 days (times) on the water, removing a total 105 cubic yards of debris and floatable material from the Delaware and Schuylkill Rivers (Table II.F.3-1). At the time of reporting, tonnage from debris and recyclables were not available for this vessel for FY23. Throughout FY23, PWD worked towards reevaluating and securing a new contract to conduct skimming and floatables control that would allow for innovation and testing of technological advancement for not only locations covered by large skimming vessel but also the small skimming vessels. Additional details about this skimming contract are provided in the following section.

Table II.F.3-1 Debris Collected and Days of Operation by R.E. Roy Skimming Vessel

Date	Total Tons Removed*	Cubic Yards Collected	Recyclable Collected (lbs.)	Days in Operation	Days on Schuylkill	Days on Delaware
July 2022	NA	15	NA	21	7	14
August 2022	NA	15	NA	26	16	10
September 2022	NA	20	NA	23	13	10
October 2022	NA	25	NA	23	13	10
November 2022	NA	30	NA	21	12	9
December 2022	Skimming Operation Out of Service for Winter Season/On-going Contract Procurement with New Skimming Operation Vendor					
January 2023						
February 2023						
March 2023						
April 2023						
May 2023						
June 2023**						
FY23 Total	**NA**	**105**	**NA**	**114**	**61**	**53**

* Tons removed and weights recycling of tires and wheels removed were not available.

** Skimming operation conducted by the R.E. Roy vessel was transferred over a new skimming operations contract that will utilize their own vessels. The new contract started operations in June 2023, additional details provided in the following section.

Future of Floatables Skimming Program

In place of the R.E. Roy Skimming Boat, PWD executed a new contract in June 2023 that offers the contractor the flexibility to utilize their equipment to choose the most appropriate means to conduct skimming operation, such that the skimming program would not be limited to the capacities of a single vessel (i.e. R.E. Roy). PWD previously operated smaller skimming vessels to retrieve floating trash and debris from the Schuylkill and Delaware Rivers within Philadelphia. The smaller skimming vessels were more effective in tight spaces found in marinas, among piers, and in near shore (shallow) areas. These smaller skimming vessels were also able to conduct skimming operations and other activities in the non-tidal portions of the Delaware and Schuylkill rivers, specifically in areas not accessible by the larger skimming vessels. PWD operations of these smaller vessels in 2022 for this purpose were stalled due to internal staffing limitations for an experienced qualified boat operator.

The new skimming contract would serve the role that both the large and smaller skimming vessels owned by PWD used to serve. The additional flexibility to the means and methods of conducting the skimming operation could allow for opportunities to capture more marine debris and allow for innovation and new technologies to be explored. The new contract would support skimming boundaries that were once covered by the large skimming vessel and the smaller skimming vessels. Although the contract was not yet at full performance, the new skimming program operated 12 days in June 2023, removing over 1.3 tons of debris including recyclables, tires, and other debris.

II.F.4 Other Floatables Control Activities

Other activities conducted within the City are performed with the intention of managing waste and therefore would capture floatables. These initiatives provide integral components to ensure additional floatable and solids do not enter the city's waterways and surrounding areas. Some of these activities are described below.

Volunteer Water Adjacent Cleanups

The City has embraced the value of supporting and conducting volunteer water adjacent land-based cleanups with local partners and communities in areas in Philadelphia and surrounding region. These volunteer cleanup events provide an opportunity to make a significant difference in a given area within a few hours with the help of people willing to volunteer their time. The cleanup events also serve as opportunities to provide important information and public outreach about PWD's and the City's programs and how the volunteers' efforts are beneficial not only on an environmental/ecological standpoint but also helps promote social behavior changes.

United By Blue Cleanups

In 2016, PWD began to partner with United By Blue (UBB), a Philadelphia-based sustainable outdoor apparel company who conducts annual stream cleanups programs. Part of the company's business model includes the amiable mission: "For every product sold, United By Blue removes one pound of trash from oceans and waterways through company organized and hosted cleanups." PWD partners with UBB by recommending litter-prone locations that are adjacent to Philadelphia waterways, promoting and supporting volunteer based cleanup events hosted by UBB, and helping coordinate pick up of event collections by PWD, Philadelphia Parks and Recreation (PPR) or the Philadelphia Streets Department staff. Much of the work conducted by UBB are often in locations under the purview of PWD's floatables control and pollution prevention programs. During FY23, UBB was acquired by sustainable clothing company, Naadam, who is evaluating UBB's future plans for community cleanups. Since 2016, UBB and PWD have collaborated on 38 cleanups, resulting in 899,662 lbs. being removed from Philly waterways and parks.

Schuylkill Scrub

The Schuylkill Scrub is a program that encourages and supports cleanup events throughout the entire Schuylkill watershed- from the headwaters in Schuylkill County down to its confluence with the Delaware River in Philadelphia every Spring since 2009. The Schuylkill Action Network coordinates the initiative, along with multiple partners, with a shared goal of cleaning as many miles of road, stream, and parkland in the Schuylkill watershed. Their efforts help prevent trash from making its way into Philadelphia's drinking water sources and keep the City's land and waters clean and litter-free. The Schuylkill Scrub is a part of the Pick Up Pennsylvania initiative coordinated by Keep PA Beautiful, which shares a common goal of working towards the larger goal of cleaning up and beautifying the entire state of Pennsylvania. Free cleanup supplies (trash bags, gloves, and vests) are provided through Keep PA Beautiful courtesy of PennDOT and PA DEP. In addition, in 2023, registered events can have trash and debris disposed of for no cost to event organizers (dumpster drop-off fees or transportation to waste facility is not included) during the month of April because of a donation from the members and landfill owners of the Pennsylvania Waste Industries Association. The last advertised Schuylkill Scrub was held in calendar year 2023, with clean up data pending.

Tookany/Tacony-Frankford Trash Task Force

PWD continues to support more targeted efforts to focus on litter have been initiated in the corridors surrounding the Tacony Creek watershed. PWD gathered members of different City agencies including Streets and PPR, as well as representatives from the TTF Watershed Partnership (TTF), SEPTA, United by Blue, and Keep Philadelphia Beautiful (KPB), to initiate discussions and coordinate efforts to alleviate the litter problem and its impact on Tacony Creek. The goal of the study is to establish trash resources and transport methods and then experiment with trash management practices which can then be applied to other drainage areas. The Task Force is continuing to research and explore methods for reducing the trash problem in the Tacony Watershed. During FY23, the TTF continued to deploy Trail Ambassadors on a regular basis to walk the trail, clean the gateways and trail, and report dumping and other issues needing attention to Philly311. The consistent presence and reporting have resulted in quicker resolution of trash issues and a cleaner, more welcoming park. TTF continued to implement their stewardship program to conduct regular maintenance of the areas around Tacony Creek. During FY23, over 20 stewardship events were conducted resulting in over 43 tons being removed from the park and surrounding area.

Love Your Park

Love Your Park is a collaboration between Fairmount Park Conservancy, PPR, and Philadelphia's Park Friends Network. The groups work together to support communities in active City neighborhood parks and watershed natural areas, with a focus on volunteering. Their flagship events are Love Your Park Week in May and the Love Your Park Fall Service Day in November, when over 5,000 volunteers support City parks. This year-round Neighborhood Park Stewardship program supports a network of 135 community-run park friends groups, and our regular volunteer opportunities invite groups and individuals to get involved. These programs continued in 2023, resulting in numerous volunteer events and engaged thousands of volunteers. During these weeks, volunteers helped plant trees, weed and mulch over a thousand existing trees, removed several tons of trash from Philadelphia’s parks and waterways, and collected thousands of bags of organic plant debris (like branches and leaves) for composting. Love Your Park continued implementing Love your Park Solo Cleanups, encouraging park users to safely clean up trash and litter individually or with their families as they enjoy Philadelphia parks this year. The 2022 Love Your Park service events resulted on 7,793 volunteer hours, 5,463 bag of trash removed (approximately 60 tons), 518 tires removed, 800 trees planted, and 1,404 trees and shrubs maintained.

Friends of the Wissahickon Cleanups

The Friends of the Wissahickon (FOW) has conducted park cleanups within the Wissahickon Valley Park for many years. The Wissahickon Creek is a treasure to many Philadelphians and visitors to the area, who are searching for an escape to nature, providing a stunning green space for hiking, biking, and fishing. Throughout FY23, FOW continued to conduct regular volunteer cleanup days and stewardship events at multiple locations around the park, removing nearly 20 tons in 2022 and so far in 2023, FOW cleanups have resulted in removal of 11.6 tons of trash and debris.

Philadelphia Canoe Club Partnership

In the Spring of 2019, PWD established a partnership with the Philadelphia Canoe Club (PCC), as they expressed an increased desire to help the city with some of the environmental issues they observe daily from their clubhouse located on the bank of the confluence of the Wissahickon Creek and Schuylkill River, within the Fairmount Park System of Philadelphia. The Philadelphia Canoe Club is a dedicated group of canoeists and kayakers promoting paddling, and paddle sports in the Philadelphia area, training new paddlers, and leading trips all over the US and has been in existence since 1905. Together with

PWD and other local partners, PCC helps recruit volunteers to cleanup areas around the Wissahickon Creek and Schuylkill River. During FY23, PCC recruited over 45 volunteers during Earth week (April 15th) to tackle debris in the area of land under Route 76 that separates the Philadelphia and Montgomery counties, the cleanup area was adjacent to the Schuylkill River and is often a forgotten area plagued by dumping. In total, nearly 7 tons were removed in one single day by PCC volunteers and PWD crews and the debris was disposed of with support from United by Blue and Keep PA Beautiful.

Philadelphia Hazardous Waste & Special Waste Collection Events

The Philadelphia Streets Department (Streets) hosts household hazardous waste collection events for Philadelphia residents every year. The events provide an opportunity for the public to drop-off household hazardous waste that is not collected curbside or through other routine disposal options. Philadelphia residents can drop-off these items at the designated Streets' Sanitation Convenience Center between the hours of 9 a.m. to 3 p.m. Trained staff will be on hand to sort and properly package materials dropped off for disposal. Computers are not accepted at any of the Household Hazardous Waste events as they can be taken to any of the Sanitation Convenience Centers during normal business hours. Waste materials generated by a business will also not be accepted. Businesses must get rid of materials through a private service. Businesses must get rid of materials through a private service. In addition, the City of Philadelphia has developed a tool for the public to find options for donating or recycling items. During FY23, Streets held seven Household Hazardous Waste events resulting in contributions from at least 3,359 individuals, and removing 288,128 lbs. of hazardous materials (Table II.F.4-1). For more information on the hazardous waste program please visit: https://www.phila.gov/services/trash-recycling-city-upkeep/dispose-of-household-hazardous-waste/.

Table II.F.4-1: FY23 Household Hazardous Waste Collection Events

Date	Area	Address
Thursday, July 14, 2022	Northeast Philadelphia	8401 State Rd., 19136
Saturday, September 17, 2022	North Philadelphia	2121 W. York St., 19132
Saturday, October 22, 2022	Southwest Philadelphia	3033 S. 63rd St., 19153
Saturday, November 5, 2022	Port Richmond	3901 N. Delaware Ave., 19137
Saturday, April 1, 2023	Northeast Philadelphia	8401 State Rd., 19136
Saturday, May 13, 2023	West Philadelphia	4800 Parkside Ave., 19131
Saturday, June 10, 2023	Northwest Philadelphia	320 Domino Lane, 19128

Repair, Rehabilitation, and Expansion of Outfall Debris Grills and Grit Cleanings

Debris grills are maintained regularly at sites where the tide introduces large floating debris into the outfall conduit. This debris can become lodged in a tide gate, causing inflow from the receiving water. Additionally, debris grills provide entry restriction and some degree of floatables control.

Standard operating procedures require the inspection of debris during all regulator inspections unless the outfall is submerged at the time of inspection. During FY23, 181 debris grill maintenance events were completed. The list of the debris grill preventative maintenance activities is available in **Appendix C – FY23 CSO Maintenance Program Annual Report.**

II.G NMC 7 - Pollution Prevention

II.G.1 Continue to Develop and Share a Variety of Public Information Materials Concerning the CSO LTCP

The Public Outreach and Participation conducted in FY23 for the Green City, Clean Waters program has been provided in **Section 7.0 - Public Outreach and Participation** starting on page 28 **of Appendix A – Green City, Clean Waters FY23 Annual Report** and **Section II.G.3 Continue to Provide Annual Information to City Residents about Programs via Traditional PWD Publications** on page 24 of this report.

II.G.2 Continue to Maintain Watershed Management and Source Water Protection Partnership Websites

In May 2018, PWD incorporated watershed protection projects and program information onto the City of Philadelphia's official website at https://water.phila.gov/sustainability/watershed-protection/. This provides an alternate channel for PWD customers and the public to learn about watershed protection initiatives. The website contains key plans and reports as well as detailed information on watershed partnerships, planning, public communication, and technology-based planning and assessment tools.

Philly RiverCast

Philly RiverCast (http://www.phillyrivercast.org) is the first operable web-based recreational warning system in the United States. Using near real-time flow, precipitation, and turbidity data, the RiverCast algorithm translates predicted bacteria levels in the non-tidal Schuylkill River from Boathouse Row to Flatrock Dam in Manayunk into one of three ratings, each of which corresponds to suggested guidelines for safe recreation. RiverCast guidelines offer tools for the public to make informed decisions about recreation, and thus helps protect the public against illnesses caused by bacteria. Ultimately, RiverCast will help ensure continued safe recreational use of the non-tidal Schuylkill River, while promoting public awareness of water quality concerns and indirectly engaging support for source water protection measures. More than 1.6 million users have visited the Philly RiverCast website since it launched in June 2005.

Schuylkill Action Network

The Schuylkill Action Network (SAN) was established as a permanent watershed-wide organization charged with identifying problems, prioritizing projects, and securing funding sources to bring about water quality improvements in the Schuylkill River watershed. The SAN is organized into six focused workgroups. One of the workgroups, the SAN Stormwater workgroup, was formed to identify a cost-effective approach to stormwater management through project prioritization and planning. The workgroup is a partnership of representatives from PWD, PADEP, EPA, DRBC, conservation districts, watershed organizations, municipalities, and other water utilities and groups throughout the Schuylkill River watershed. The SAN website supports the SAN's Stormwater Workgroup by providing project and event information, SAN publications, and public messaging about restoring and protecting the Schuylkill River. The SAN Stormwater Workgroup's ultimate goal is to prevent or maximize reduction of stormwater runoff pollution. During its 20 years of existence, the workgroup has served as an advisory committee for state and local governments, an ordinance review board for municipalities, and a support group for large and small projects throughout the Schuylkill River watershed. During the last year, SAN projects have addressed important pollution sources including agriculture, abandoned mine drainage, and stormwater. Efforts from SAN partners in the last calendar year are included in the following table (**Table II.G.2-1**):

Table II.G.2-1: Schuylkill Action Network Partner Progress

	Cumulative Progress of Watershed Partners (2003-2022)	Highlights from CY 2022
Agriculture Workgroup	• Constructed over 180 manure storage facilities • Completed over 185 barnyard or heavy use area construction • Installed over 90 stream crossings • Planted over 600 acres of riparian buffers of agricultural lands • Over 10,000 acres of agricultural lands have best management practices	• Construction of 4 manure storage facilities • Installation of 2 stream crossings • Over 80 acres of riparian buffer planted • Approximately 600 additional acres placed under agricultural easement • SAN Agricultural workgroup partners collaborated on promotion of a 'Soil Your Shorts' soil health campaign with local producers
Abandoned Mine Drainage (AMD) Workgroup	• Received over $17M in AMD funding • Reduced annual watershed loadings of iron, aluminum, and manganese • Installed, monitored, and maintained five treatment systems	• Actively maintaining 5 AMD treatment systems • Completed Otto treatment system retrofit project • SAN hosted a workgroup tour of four (4) project sites with 12 attendees • Updated SAN AMD workgroup monitoring plan to continue water quality assessments at active sites
Stormwater Workgroup	• Engaged over 30 schools in green stormwater infrastructure • SAN has hosted presentations, workshops, and tours for businesses, municipalities, and other professionals	• SAN hosted a tour of Stormwater Best Management Practices along the Schuylkill River Trail and in Bartram's Garden for 19 attendees. • Charlestown Playhouse rain garden in Pickering Creek watershed was finalized. 36 SAN members toured this site during the 2022 SRRF Bus Tour.
Pathogens & Point Source Workgroup	• Delaware Valley Early Warning System has reported approximately 580 events • SAN has promoted drug takeback events throughout the watershed • SAN has hosted tech transfer presentations and water utility forums for water and wastewater professionals to connect with resources and funding	• SAN hosted a Water Utility Forum on March 4, 2022 for a total combined total of 45 attendees (in person and virtual) • SAN hosted Funding Integration Tool for Sourcewater (FITS) webinar in collaboration with USEPA, Brandywine Red Clay Alliance, and Octoraro Sourcewater Collaborative for 35 attendees • Delaware Valley Early Warning System grew to over 450 registered users from 55 organizations • Over 200 impressions and 4 shares on SAN social media promoting National Drug Takeback Day in April and October 2022
Engagement & Stewardship Workgroup	• Unites environmental education, outreach, recreation, stewardship, and volunteerism in the Schuylkill River Watershed • Coordinates yearly Schuylkill Scrub, a watershed-wide clean up initiative that takes place every spring	• PDE and SRG organized a trail cleanup/re-launch event for the Clean-Sweep App on March 26, 2022 with approximately 25 people in attendance. • Approximately 2,600 tires and over 27,000 bags of trash were collected at over 50 locations during the Schuylkill Scrub • Sponsorship of the Sojourn Steward for the entire and 3 Diversity Scholarships for 2 days of the Sojourn. • Sponsored 1 student for Schuylkill Acts and Impacts program
Schuylkill River Restoration Fund	Since its inception in 2006, the SRRF has awarded over $5M for over 136 projects that have helped restore the Schuylkill Watershed, as well as leveraged over $5M in other funding sources.	In 2022, the SRRF awarded $362,756 to 8 projects in the Schuylkill Watershed.

Since its inception, the SAN has grown to include nearly 350 organizational and individual partners working together to protect the Schuylkill River watershed. To communicate the accomplishments of the SAN Stormwater workgroup to stakeholders as well as other SAN workgroups, the SAN routinely updates their website, http://www.schuylkillwaters.org, with input from PWD, the SAN Planning Committee, and other SAN workgroups. The website was redesigned in February 2018 and includes an internal component that allows for improved communication among SAN workgroup members and facilitates on-the-ground work. The SAN website, together with https://water.phila.gov/, provide data and reports from the source water assessments for the Schuylkill River.

Delaware Valley Early Warning System

The Delaware Valley Early Warning System (EWS) is an integrated monitoring, notification, and communication system designed to provide advanced warning of surface water contamination events to subscribing water suppliers, industrial surface water users and partner government agencies in the Schuylkill and Lower Delaware River Watersheds. The Delaware Valley EWS covers the entire length of the Schuylkill River as well as the Delaware River from the Delaware Water Gap to just below Wilmington, Delaware.

The EWS incorporates a monitoring network of nearly 90 online water quality data stations throughout the watershed. Real-time and historic flow data are applied to a time of travel model that generates a range of estimated arrival times for each intake in the system. This time of travel model is also incorporated into a spill simulation tool that can be used for planning and training purposes.

When a responding agency reports a water quality event via the EWS website or telephone hotline, the entire user base is notified almost instantaneously via email. In the case of a high-risk event, supplemental phone notifications are placed using CodeRed technology, allowing all users to receive an automated telephone notification in less than three minutes. EWS users can log in to the secure website to view additional event details, spill routing, and predicted arrival times to their intakes. Additionally, a sophisticated tidal modeling component has been developed to better predict and communicate the arrival times of spills on the tidal Delaware River with a user-friendly spill trajectory animation. The EWS received the Governor’s Award for Environmental Excellence and is nationally recognized for its use of stakeholder partnerships to meet regional source water protection objectives. In 2016, the EWS was featured as a case study in EPA’s publication Online Source Water Quality Monitoring: For Water Quality Surveillance and Response Systems.

In the last couple of years, PWD implemented significant updates to the EWS user interface. Notable updates include full mobile device (smartphone) functionality for the EWS web site, improved mapping and notification features and a new website feature, the Flooding Forecast Viewer (FFV). These updates were presented to EWS users through a series of regional trainings and webinars.

Other PWD Related Websites and Social Media

PWD Main Web Site

water.phila.gov

The official website for the Philadelphia Water Department (PWD) contains comprehensive information about stormwater management for our customers. Resources span from the CSO LTCPU to plain language statements to help the average customer understand the importance of stormwater management.

The web pages at water.phila.gov/stormwater had 26,502 pageviews and 23,564 unique pageviews during FY23, with users spending an average of 2 minutes and 3 seconds on the pages. This includes the Stormwater Grants page which is geared to non-residential property owners interested in receiving grants to construct stormwater retrofit projects. The Stormwater Grants web page received 5,347 pageviews and 4,246 unique page views in FY23.

PWD Parcel Viewer and Stormwater Billing online:
https://stormwater.phila.gov/

The stormwater.phila.gov microsite launched in FY20, continues to play an important role in showing users how their stormwater bill is calculated, how to apply for credits, or how to make appeals. The "parcel viewer" map application is the core of the site. Here, customers can search for a specific parcel or freely explore the map. When a parcel is clicked, data such as gross area, impervious area, and the monthly stormwater charge breakdown, are displayed. Users are encouraged to take actionable steps to reduce the amount of stormwater entering the sewer system and lower their stormwater bills.
There were 63,188 pageviews and 52,033 unique pageviews in FY23, averaging just over three minutes and thirty-three seconds per session.

In June 2022, PWD launched Stormwater Connect, an online tool designed to link green stormwater vendors with non-residential property owners. Vendors and property owners sign up to share their specifications, specialties, and interests. Once vendors complete a profile, they can start searching potential projects that align with their expertise. When a property owner signs up, they will find a list of vendors that match their needs using filters, such as experience building particular GSI. When a property owner is interested in a vendor, the vendor will be notified. From there, vendors can request a direct follow-up. Once connected, they can confirm what is possible on the non-residential site and a Stormwater Grant team partnership can be formed. Then, the team applies for a grant, which can cover up to 100% of design and construction costs. No data was reported for FY22 because the application launched at the very end of the fiscal year. There were 1,310 pageviews and 1,212 unique pageviews in FY23.

Green City, Clean Waters

In spring of 2021, PWD launched Green City, Clean Waters' official new landing page: water.phila.gov/green-city, replacing the decommissioned phillywatersheds.org and the official destination for Green City, Clean Waters on the web. The page received 11,032 pageviews and 10,185 unique pageviews in FY23.

Phillywatersheds.org

Watershed information was also housed on Phillywatersheds.org; however, PWD began archiving this site on September 1st, 2019. This content continues to be migrated to www.phila.gov/water and https://water.phila.gov. Phillywatersheds.org will remain an archived site that redirects to new locations until all content is moved or decommissioned. More information about content available on the site is discussed below but notice that some content may no longer be housed on phillywatersheds.org, and no new content is being added.

Development Review Program Website

https://www.pwdplanreview.org/

Since its deployment in FY16, the use of this site has grown and continues to be one of the most used websites in the city, a testament to its effectiveness in helping developers to meet Philadelphia's stormwater regulations. Nearly 23,000 users accessed the site in FY23.

For more information on the activities conducted by the Development Review Program please refer to the MS4 Annual Report **Section F.5 – Monitor and Control Stormwater from Construction Activities** on page 29.

PWD Department on Social Media

Social media is an essential tool for engaging communities in the development of stormwater infrastructure projects and best-practices. These platforms are an important tool for disseminating departmental messaging about stormwater management, pollution prevention, and programs that improve the city's water resources. Social media is also an accessible tool for building and strengthening relationships with partner organizations and community groups.

The sections below describe the City's social media:

@PhillyH2O Blog

The @PhillyH2O Blog (water.phila.gov/blog/) launched in 2018 as a mobile-friendly "rolling collection of stories, tips, and news powered by the people of the Philadelphia Water Department."

The blog is part of a customer priority-focused digital strategy and provides quick access to information that can be used by residents served by the department. The site often acts as a streamlined showcase of messaging campaigns that are amplified by press releases, social media, direct mail, and email.

Posts promote a wide variety of topics, including how to use the Basement Protection Program, which provides free plumbing improvements for those impacted by combined sewer overflows; community input meetings for GSI construction sites and other projects; updates about the progress of Green City, Clean Waters, and highlights of current programs and events and relevant partner initiatives.

There was a total of 16 posts in FY23. In FY23, the blog received over 28,000 pageviews.

During FY23, the most viewed blog highlights career recruitment for Water Department engineers. The page received 1,095 pageviews.

PWD Customer Contact List

PWD digital newsletter subscribers are included in a distribution list of email addresses and phone numbers using GovDelivery software. Subscribers in the PWD lists sign up to receive email and SMS text updates under various GovDelivery topics, including Customer Assistance Programs, Events, Alerts & Notifications, Water Quality Updates, Employment Opportunities, Infrastructure & Environment News, PWD Partners, Philadelphia Press, and neighborhood or project-based topic lists.

Subscribers in these topics are added through online sign-up builders and collected at public events and meetings hosted by PWD.

Correspondence includes standard communication about various PWD programs and services, targeted communications about localized updates, such as planned infrastructure work in their neighborhood or ZIP code or other best practice information, and critical updates for PWD customers.

At the conclusion of FY23, 31,513 GovDelivery email and SMS subscribers were recorded.

KUBRA E-billing

- The Philadelphia Water Revenue Bureau maintains a list of e-billing subscribers. Subscribers can manage their account online and receive bill information via email.

There were more than 250,000 e-billing subscribers at the end of FY23. PWD often interacts with and/or sends GovDelivery email bulletins to subscribers throughout the year.

Facebook

The Philadelphia Water Department has a Facebook page located at http://www.facebook.com/PhillyH2O

The Fairmount Water Works (FWW) also maintains a Facebook page that extends the reach of departmental messaging. The page can be accessed at https://www.facebook.com/FairmountWW/

- PWD's page had 5,126 followers at the end of FY23.
- The Fairmount Water Works page had approximately 2,900 followers at the end of FY23.

X (formally known as Twitter)

Twitter is a valuable communications channel for resolving customer complaints, providing customer information, and delivering news concerning the department, education, and water in general. The Department also builds connections with national and international peer cities and other stakeholders in the stormwater management field through X.

The @PhillyH2O account increased followers by more than 4,500 in FY23. By the end of FY23, the X account had approximately 14,700 followers.

Instagram

The Philadelphia Water Department maintains an Instagram account, @PhillyH2O, to share visual information and resources around its services. At the end of FY23, the Instagram account had 6,705 followers.

Nextdoor

The Philadelphia Water Department maintains a NextDoor.com account with more than 232,200 members representing Department customers in city neighborhoods. The platform has proved a valuable tool for hyper-local outreach. Posts containing detailed information about construction projects supporting the LTCPU are made available to communities directly impacted.

A total of 333 posts received more than 360,300 impressions from Philadelphia users in FY23.

LinkedIn

The Philadelphia Water Department LinkedIn account had a total of more than 6,560 followers at the end of FY23. The Department continued to share both employment-based posts and general information pertaining to the utility and its services.

PWD Department Videos

PWD hosts videos on Vimeo, YouTube, and all social media platforms. Video content provides information about topics including:

- Why infrastructure investment is needed to reduce sewer overflows
- How green and traditional infrastructure protects waterways
- Career building and maintaining infrastructure, and more.

PWD video content includes animation. While some content is highly produced with support from contracted professionals, videos produced in-house by Public Affairs staff also play an important role in communicating with residents.

Videos not shared on social media can be accessed at the following links:

- http://www.vimeo.com/phillywatersheds
- http://www.youtube.com/pwdepartment

During FY23, there were approximately 3,900 video views on PWD's Vimeo page. In that same time period, PWD's YouTube account received approximately 2,800 video views.

Much of the Department's video views are experienced through Facebook, Instagram and Twitter, where we do not track views for the fiscal year.

II.G.3 Continue to Provide Annual Information to City Residents about Programs via Traditional PWD Publications

The PWD develops numerous publications for the public that are distributed throughout the city at advisory committee meetings, public meetings and other public events, in addition to being distributed through the water/sewer/stormwater bill to PWD customers. The following publications, meetings, and events have been shared with and/or involved the public during FY23:

Media Advisories and Press Releases

2022	
07/14	Media Alert: New Phila. Tap Water Quality Report Out Today
08/17	Media Alert: TODAY at City Hall Philly Water Bar Pours Free Tap
09/09	Media Alert: Families, Anglers at Schuylkill Banks for Philly Fun Fishing Fest
09/14	Media Alert: Delaware River Fest set for Saturday, Sept 24!
10/26	Media Alert: New App Can Help Property Owners Save, Increase Green Space

2023	
02/08	Media alert: Water Dept. Asks Customers 'How Are We Doing?'
03/14	Media Alert: World Water Day festivities at the Fairmount Water Works!
03/28	Media Advisory: Philadelphia's Drinking Water is Safe, Will Not Be Impacted by Spill in Bucks County
04/14	Media Advisory: Phila. Water Dept. Announces Search for Residents to Join Water Revitalization Plan Stakeholder Advisory Group
04/19	Media Invite: Faith-Based Sites Honored During Earth Week for Green Stormwater Projects
04/25	Media Alert: Utility Fair Saturday, April 29 in North Philadelphia
04/27	Traffic Alert: 12th Street Closed from Market to Chestnut Effective Immediately
05/30	Media Alert: TOMORROW at City Hall, Philly Water Bar Pours Free Tap.
06/11	Media Alert: Boil Water Advisory for parts of West Phila.
06/13	Media Update: Boil Water Advisory for parts of West Phila.
06/30	Media Alert: New Phila. Tap Water Quality Report Available Today

Publications

Annual Consumer Confidence Report of 2022 Water Quality Data, which can be found here: https://water.phila.gov/drops/2022-drinking-water-quality-report/

Billstuffers

- June 2023: Rain Check Program
- March 2023: PWD Rate Request
- February 2023: Annual Customer Satisfaction Survey
- January 2023: Deed Fraud Protection
- October 2022: Voting Deadlines
- September 2022: Rate increase notification

Events/Campaigns

Utility Fairs and Assistance Clinics

During the fall of 2022, PWD hosted Water Assistance Clinics. Hosted weekly, the one-on-one virtual appointments helped customers apply for affordability programs or payment agreements.

During the spring of 2023, PWD participated in weekly virtual (and one in-person) Utility Fairs with PGW and PECO. Customers met with utility representatives to receive one-on-one help with applying for affordability programs and payment agreements before shutoffs resumed.

Clean Water Act 50th Anniversary

In October of 2022, PWD celebrated the 50th anniversary of the Clean Water Act with a digital campaign comprised of materials, such as social media posts and email bulletins to subscribers. The project also included a drops page featuring the history of the Clean Water Act's impact on Philadelphia and 50 local activities for residents to keep waterways clean.

The new website received more than 500 pageviews in FY23.

Water Quality Report Campaign

From July 2022 through January 2023, PWD's Public Affairs unit conducted a targeted digital campaign highlighting the 2021 Water Quality Report. The project focused on reaching regions of the city with the least amount of awareness of the report and the least amount of trust in tap water – based on PWD customer survey findings conducted with the University of Pennsylvania.

Over the course of the six-month campaign, the content was broken down by various sections of the report and distributed to subscribers via GovDelivery bulletins by ZIP code and Nextdoor posts by neighborhoods.

Philly Water Bar + Drops Page Launch

After being suspended due to the COVID-19 pandemic, the Philly Water Bar returned to its weekly City Hall pop-ups in August 2022 and again in the spring and summer of 2023. These pop-ups combined with other events translated to over 1,000 people who were engaged at PWD's Water Bar in FY23.

Along with the City Hall courtyard pop-up, the Water Bar was also featured at GSI outreach events, public gatherings, and requested private functions. The new Water Bar website, which launched in the spring of 2023, has an embedded request form to track inquiries.

The site received close to 630 pageviews from April to June of 2023.

Stormwater Pioneers

In April 2023 PWD presented the annual Stormwater Pioneers award to three faith-based institutions that adopted stormwater management systems on their sites: Overbrook Presbyterian Church in West Philadelphia, Holmesburg Baptist Church in Northeast Philadelphia, and Congregation Rodeph Shalom Synagogue, located in the city's Spring Garden section.

Representing different religious affiliations and neighborhoods across the city, the 2022-2023 winners each adopted stormwater management systems at their houses of worship. These sites prioritize the responsible stewardship of natural resources, improving our region's environment by reducing combined sewer overflows entering our creeks and rivers.

The Stormwater Pioneers program recognizes the best stormwater management on property not owned by the City of Philadelphia. These private properties display exceptional commitment to maintaining stormwater infrastructure and use their green tools as inspiration for education and community engagement.

II.G.4 Continue to Support the Fairmount Water Works Interpretive Center

In FY23, the Fairmount Water Works Interpretive Center (FWWIC) and partners hosted over 25,000 individuals in environmental education and outreach events that featured *Green City, Clean Waters* and/or urban waters themed educational content. FWWIC and its educators offered programming on-site, in the field, in the classroom, and on the water, working with partners like the Alliance for Watershed Education, Tookany/Tacony-Frankford Watershed Partnership, the Partnership for the Delaware Estuary, the Schuylkill River Development Corporation, Philadelphia Parks & Recreation, and the Philadelphia School District. Engagement numbers have rebounded to pre-pandemic levels and are close to 40% higher when compared to FY22.

Visitor engagement consisted of organized exterior tours for adults, families and children, ongoing activities with school groups and summer camps, and the reopening of the POOL Exhibition and the Ed Grusheski Memorial Exhibition, ‘SUBMERGED’ (April – July 2023). Outreach efforts included encouraging teachers and students to participate in the *Understanding the Urban Watershed (UUW)* middle years curriculum project, with a special emphasis on Mussels in the Field and Mussels in the Classroom.

FWWIC continues to deploy *UUW* to both teachers and students across Philadelphia. *UUW* is a cross-disciplinary curriculum that consists of 6 Units, with multiple Learning Experiences in each Unit that are accessible online here (www.resourcewater.org/). The website provides links to instructional materials, resources, videos, and differentiated learning opportunities. Teachers are encouraged to provide engaging student field experiences and hands-on exploration to complement classroom instruction.

UUW is also aligned with the School District of Philadelphia’s (District) core content and Education for Sustainability standards for 6th, 7th, 8th and most recently 9th grades. Development and implementation of the curriculum has been a collaborative effort with the District Offices of Curriculum, Instruction and Assessment, and Environmental Management & Services. The curriculum is an exemplar for goals and targets as outlined in the District’s Sustainability Plan, Green Futures, and is easily embedded into core curriculum because the Units are aligned with Academic (Science, ELA Math, and SS) and Education for Sustainability Standards. All standards and performance indicators are assessed using performance criteria.

The UUW Curriculum offers students, teachers, schools, and the community active learning experiences about the value of water, water systems, and civic action and responsibility. It connects students to Philadelphia and the role they play on their block, in their school, and throughout their city, with a goal to achieve positive local and global impacts through experiential watershed education.

Table II.G.4-1 Fairmount Water Works Interpretive Center – FY23 Education Center Attendance

FWWIC Types of Visitors & Attendance	Visitors
General FWWIC Visitors	15,625
School Groups, Camps & Recreational Centers	5,588
Tours	1,310
Special Events	991
Outreach Efforts	1,860
FY23 Total Visitors	**25,374**

II.H NMC 8 - Public Notification to Ensure that the Public Receives Adequate Notification of CSO Occurrences and CSO Impacts

PWD has developed and will continue to enhance a series of informational brochures and other materials about its CSO discharges and the potential effects these discharges have on the receiving waters. In addition, PWD has enlisted watershed organizations and partnerships to assist in this endeavor to raise the level of citizen awareness about the function of CSO and stormwater outfalls through a variety of educational mediums.

II.H.1 Launch a Proactive Public Notification Program Using Numerous Media Sources

PWD is advancing a proactive public notification program that uses print, internet, outfall signage, and other media to distribute information on the locations of CSOs, information on hazards, and potential public actions.

CSO Outfall Signage

In summer 2007, PWD initiated a pilot project to install 13 informative signs at CSO outfalls throughout the city. During a follow-up survey in October 2007, it was found that 5 of the 13 signs had been either removed or vandalized. Currently each CSO outfall location, except for 8 inaccessible locations, has an identification sign installed which helps the public to accurately identify an outfall when reporting a problem. During FY23, PWD continued to assess the feasibility of installing updated informational signage at the City’s CSO outfalls.

Other Notification Measures

PWD continues to develop informational materials and maintain websites to educate the public about its CSO discharges and the potential effect on receiving waters. PWD has found that one of the best ways for public notification of CSOs is through the traditional public outreach programs described in NMC7: Pollution Prevention Program, please refer **Section II.G – NMC 7- Pollution Prevention** on page 18.

II.H.2 Expand the Internet-Based Notification System to the Tidal Section of the Lower Schuylkill River

In order to expand the web-based water quality forecasting system for the Schuylkill River, PWD developed another internet-based notification system called CSOcast in 2008, which reports on the overflow status of outfalls in every CSO shed.

The website is built using the Google Maps API which allows for the dynamic loading of geographically referenced data that can be viewed with a familiar and user-friendly interface. The map is available 24 hours a day and displays the most up-to-date data available. PWD is constantly updating and improving the notification system as well as the flow monitoring network to deliver the best information possible to the public.

During FY23, CSOcast had a total of 2,773 pageviews. The CSOcast notification system can be accessed through: https://water.phila.gov/maps/csocast/.

II.I NMC 9 - Monitoring to Effectively Characterize CSO Impacts and the Efficacy of CSO Controls

II.I.1 Report on the Status and Effectiveness of Each of the NMCs in the Annual CSO Status Report

The Combined Sewer Management Program Annual Report, combined with the Stormwater Management Program Annual Report, will be submitted in September of each year, documenting the previous fiscal year activities.

III. Implementation of the LTCP

Table III.B-1: Summary of 1997 CSO LTCP Capital Projects

Project	Status
Real Time Control (RTC) Program	
RTC - Main Relief Sewer Storage (R-7 through R-12)	Complete
RTC - Tacony Creek Park Storage (T-14)	Complete
RTC - Rock Run Relief Sewer Storage (R-15)	Complete
Establish RTC Center	Complete
RTC & Flow Optimization (Southwest Main Gravity Interceptor, Cobbs Creek Cut-Off, and Lower Schuylkill West Side)	Complete
Targeted Infiltration/Inflow Reduction Programs	On-Going
Solids & Floatables Control Program	On-Going
85% CSO Capture Pennypack Watershed (P1 through P5)	Complete
Eliminate Outfalls: Dobson's Run Phase I	Complete
Eliminate Outfalls: Dobson's Run Phase II & III	Complete
Eliminate Main & Shurs Overflow (R-20)	Complete
Eliminate 32nd & Thompson Outfall (R-19)	Complete
Collection System Improvements	
Upgrade Frankford Siphon	Complete
Somerset Interceptor Sewer Conveyance Improvements	Complete
Cobbs Creek Low Level Conveyance Improvements	Complete
Cobbs Creek Low Level Control Project	Complete
Water Pollution Control Plant (WPCP) Wet Weather Treatment Maximization Program	Complete

III.A CSO LTCP Update

The full Philadelphia Combined Sewer Overflow LTCPU report can be found at the following address: https://water.phila.gov/pool/files/LTCPU_Complete.pdf.

Please refer to **Appendix A – Green City, Clean Waters FY23 Annual Report** for an update on implementation progress.

III.B Capital Improvement Projects

III.B.1 On-going Capital Improvement Projects

Please see **Table III.B.1-1** – Status updates for On-going Capital Improvement Projects on page 30.

Table III.B.1-1 – Status updates for On-going Capital Improvement Projects

Project	Status	Update / Reference
Completion and Operation of the Real-time Control Center and Rehabilitate and Maintain the Monitoring Network	Completed in 2003	For details on maintenance of monitoring network please refer to Appendix C – FY23 Program Maintenance Annual Report.
WPCP Wet Weather Treatment Maximization (NE)	Evaluated and implemented options from the Jan. 2000 Stress Testing Report	Refer to Section III.B.1.2 WPCP Wet Weather Treatment Maximization (NE) on page 66 of the CSO-Stormwater FY12 Annual Report
Evaluate Stress Test Report Options in the LTCPU	Completed March 2009 (all three WPCPs)	Refer to Section III.B.1.2.1 Evaluate Stress Test Report Options in the LTCPU on page 69 of the CSO-Stormwater FY12 Annual Report
Implement Options 1, 2, and 4 from the Stress Test Report (NE)	Completed January 2006	Refer to Section III.B.1.3.2 Implement Options 1, 2, and 4 from the Stress Test Report on page 91 in the CSO-Stormwater FY10 Annual Report.
Plan, Design, and Construct Options 5 & 7 of the Stress Test Report to Increase the Secondary Plant Capacity to 435 MGD	Completed February and August 2012	Refer to Section III.B.1.2.3 Plan, Design, and Construct Options 2 & 6 from the Stress Test Report on page 70 in the CSO-Stormwater FY 2012 Annual Report.
Explore increasing the preliminary treatment, primary treatment, and final effluent disinfection treatment capacities in excess of the existing secondary treatment capacity at the NE WPCP	Plan was originally submitted to the PADEP on June 1, 2013. The NE Facility Concept Plan (FCP) was revised based on comments from PADEP and re-submitted on December 31, 2013.	PWD operates three Water Pollution Control Plants (WPCPs): the Northeast, Southwest, and Southeast WPCP. The Wet Weather Facility Plan (WWFP), which was submitted on June 1, 2016, provides details on scheduling, cost, and anticipated construction completion for each project. The WWFP is available at the following link: http://water.phila.gov/pool/Wet_Weather_Facility_Plan_website.pdf
Initiate the Facility Planning and Design for the By-pass Conduit	PADEP approved on April 1, 2009, the bypass of secondary treatment for 100 MGD of additional wet weather flow at NE WPCP	As described in the LTCPU, PWD committed to the expansion of the NE WPCP to include a 215 million gallon/day secondary treatment bypass. PWD proceeded with a design and the bypass of the plant secondary processes for total plant flows that exceed 435 MGD is currently under construction. Project renamed as NEWPCP High Flow Management System.
Report to the DEP the Status of these Projects in the Annual Status Reports when Major Work Elements Are Completed	As Necessary	The CSO Annual Report continues to include information in the WPCP wet weather treatment maximization at the NE WPCP
85% Capture (NE) - 85% Flow Capture Technical Report	August 2008	Refer to Section III.B.1.3 85% Capture (NE) on page 71 of the CSO-Stormwater FY 2012 Annual Report.
In-Line System Storage Projects (NE)	N/A	Reported on in Section II.B.5 Operate and Maintain In-line Collection Storage System Projects Contained Within the LTCP of this report, starting on page 5.

Project	Status	Update / Reference
Implementation of the Southwest Plant Stress Test Report Option 1	Option 1, to inspect and repair leaking weirs and concrete surfaces in the final sedimentation tanks at the Southwest Plant, was completed in April of 2002	Option 1 and other improvements were also discussed in further detail within the Facility Concept Plan for the Southwest Water Pollution Control Plant that was submitted to the PADEP on June 1, 2013. This plan is available on-line through the following website: https://water.phila.gov/pool/files/SW-Facility-Concept-Plan-Final_FINAL.pdf
Real Time Control (RTC) and Flow Optimization for the Southwest Drainage (SW) - Implementation of Projects for Real Time Control (RTC) and Flow Optimization for the Southwest Drainage District	Completed April 2010	Refer to Section III.B.1.8 Real Time Control and Flow Optimization for the Southwest Drainage on page 74 of the CSO-Stormwater FY12 Annual Report.
RTC/Main Relief Sewer Storage (SW) - Construction and Implementation of Main Relief Sewer Storage and Real-time Control	Please see **Section II.B.5 Main Relief** on page 5 of this report for status	Refer to **Section II.B.5 Main Relief** on page 5 of this report
Eliminate CSO/Dobson Run Project (SW) - Construction and Implementation of the Dobson's Run Project	Phases I completed in 1998; Phases II and III were completed by 2011.	Refer to Section III.B.1.10 Eliminate CSO/Dobson's Run Project on page 95 of the CSO-Stormwater FY11 Annual Report
Eliminate CSO/Main and Shurs Off-Line Storage (SW) - Construction and Implementation of the Main and Shurs Off-line Storage Project	Please see **Section III.B.1** below for status	Please see **Section III.B.1** below for update

III.B.1 On-going Capital Improvement Projects

Eliminate CSO/Main and Shurs Off-Line Storage (SW) - Construction and Implementation of the Main and Shurs Off-line Storage Project

The Upper Schuylkill East Side Interceptor Sewer (USES) is located along the Schuylkill River adjacent to the Manayunk Canal in the northwest section of Philadelphia. It conveys sewage from collection systems which serve the northwest section of the City. During extreme wet weather events, the USES exceeded its capacity and overflows occurred at relief point R-20 into a storm sewer upstream of storm water outfall S-052-5. To abate the hydraulic overload conditions in the USES, PWD finished construction of a 4 MG offline storage tank in May of 2013, which captures and stores excess flows. The tank serves to eliminate surcharges and prevent overflow conditions at the R-20 relief location.

The Venice Island Storage Facility is currently in service and operating as designed. In FY23, the facility captured stormwater from 16 major storms. The total captured volume was approximately 7.53 MG of sanitary wastewater. The weir elevation at the R-20 relief window remained at 65 inches during FY23.

Grit accumulation is a known USES issue that reduces interceptor capacity and the effectiveness of the Venice Island storage tank. PWD performs periodic grit surveys of the USES to better understand grit type and accumulation frequency. PWD performed a sonar inspection on the lower reach of the USES interceptor in FY19 which showed minimal grit deposition at that time. PWD is currently performing a new sonar inspection on the lower reach of the USES that started late into FY23 and will extend into FY24 to determine grit deposition and accumulation frequency. Routine level trending of the R-20 interceptor sensor indicated that grit deposition was not enough to warrant an interceptor cleaning during FY23. Results from the on-going sonar inspection will guide PWD’s interceptor cleaning in FY24. PWD will continue to track grit deposition in the USES. By taking a proactive approach, PWD can schedule flushing and sewer cleaning to maximize capacity of the interceptor and the Venice Island storage tank’s effectiveness.

III.B.2 New Capital Improvement Projects to be Included in LTCPU

Please see **Table III.B.2-1** – Status updates for New Capital Improvement Projects to be included in LTCPU on page 34.

PC-30 Parallel Relief Sewer

The project and stipulations of the COA regarding the parallel relief sewer were completed on 12/27/11. As of July 2013, the parallel relief sewer and all appurtenances have been operating as designed. In FY19, two float switches were installed at PC-0030 to monitor overflows at the location with greater accuracy. During FY23, there were no overflow events at manhole PC-0030. Information regarding PC-30 monitoring and modeling data for overflow observation are submitted monthly to PADEP.

Table III.B.2-1 – Status updates for New Capital Improvement Projects to be Included in LTCPU

Project	Status	Update / Reference
Asset and Capacity Management Program		
Geographic Information System	Ongoing	Refer to Section II.A.1 Implement a Comprehensive Geographic Information System (GIS) of the City sewer system on page 1
Sewer Assessment Program	Ongoing	Refer to Section II.A.2 Implement a Comprehensive Sewer Assessment Program (SAP) on page 1
Monitoring and Modeling Program	Ongoing	Refer to II.B.1 Continue to Institutionalize a Comprehensive Monitoring and Modeling Program on page 2
Inflow/Infiltration (I/I) Controls		
Tide Inflow	Completed in 1999	PWD continues to inspect and maintain all tide gates to ensure their correct performance. Refer to Section 2.1.2 Corrective Actions – Tide Inflow on page 28 of the 2001 CSO Annual Status Report
Sewer Assessment Program		Refer to Section II.A.2 Implement a Comprehensive Sewer Assessment Program (SAP) on page 1 of this report
Infrastructure Assessments	Completed in 2008; PWD continues to monitor and inspect for problem areas	Refer to Section III.B.2.2 Infrastructure Assessments on page 82 of the CSO-Stormwater FY08 Annual Report
Interceptor Relining	• Cobbs Creek Interceptor (CC) – Ongoing (~50% Complete) • Tacony Creek Interceptor (TC) – Ongoing (~50% Complete)	• CC – Phase 2 – In PC Contract Management ~ 5,100 ft. • CC – Phase 4 – Contract closed - Complete ~ 8,350 ft. • TC – Phase 3 – Design 30% ~ 6,550 ft. • TC – Phase 4 – Design 90% ~ 5,825 ft. • TC – Phase 5 – Design 90% ~ 6,400 ft.
PC-30 Parallel Relief Sewer	COA stipulations completed on 12/27/11. Operating as designed as of July 2013. Floats installed in FY19.	During FY23, there were no overflow events at manhole PC-0030.
Sewer Separation		
	Sewer separation was studied and modeled as one of the options in the LTCPU and deemed cost prohibitive. No large scale sewer separation projects have been identified or implemented during the reporting period.	
New Storage Facilities		
	PWD is continuing to investigate opportunities to construct off-line CSO storage facilities to maximize existing sewer treatment capacity and increase the volume of CSO captured and treated. No new storage facility projects have been implemented during the reporting period.	

III.C Watershed-Based Management - Continue to Apply the Watershed Management Planning Process and Produce and Update the Watershed Implementation Plans

Watershed Alliance of Southeastern Pennsylvania

In 2013, PWD and its designated watershed partnership facilitator, the Pennsylvania Environmental Council (PEC), initiated the Watershed Alliance of Southeastern PA to unite the watershed partnerships in the Philadelphia area. The Alliance members became an integral component of the Upstream Suburban Philadelphia Cluster, part of the Delaware River Watershed Initiative (DRWI), created in 2014. Since 2014, PEC has facilitated DRWI Upstream Suburban Philadelphia partners including watershed groups and academic institutions. This partnership has implemented over 62 stormwater management and watershed restoration capital projects at 41 project locations, and over 230 smaller homeowner stormwater management projects. PEC and partners also conduct education and outreach programs that promote homeowner and large landowner stormwater management best practices. The partnership also conducts extensive monitoring of project impacts and general water quality conditions, including citizen science volunteers who monitor stream health. A Story Map summary of the DRWI Upstream Suburban Philadelphia initiative is available here. The overall effort seeks to improve water quality and manage stormwater where it falls, to benefit Philadelphia area watershed residents both inside and upstream of the City. In FY23, PEC continued to facilitate the implementation of the Upstream Philadelphia Cluster working with eight environmental non-profit organizations and Temple and Villanova universities.

Implementation Planning - Development of Target Approach for Meeting Goals and Objectives

The culmination of the watershed management planning process often results in an Integrated Watershed Management Plan (IWMP), or a watershed-specific planning document. The process for developing watershed planning documents has evolved and depends on the interests of the partnerships. Table III.C.1-2 contains the status of the various plans in each of Philadelphia's watersheds. Information on the each of the watersheds and the completed plans can be found at www.phillywatersheds.org/your_watershed. Many of the recommended management options in the TTF and Cobbs Creek IWMPs have been institutionalized a city-wide basis and continue to be implemented.

The watersheds in the MS4 section of the city have undergone a slightly different process. In these watersheds (Pennypack, Poquessing, and Wissahickon), the stakeholder goals and objectives were established through the development of Rivers Conservation Plans and Act 167 Plans. PWD works with the watershed partners through these existing watershed-based planning efforts. Details on the Act 167 Plans can be found in **Section III.C.3.7 Basin-Specific Stormwater Management Plans (ACT 167)** on page 42. The Act 167 process has met PWD's goal to have watershed-wide commitment to the watershed planning process and allows the process to be partner-driven and focused on implementation.

Table III.C.1-2 – Planning by Watershed

Watershed	Preliminary Reconnaissance	Watershed Monitoring Program	River Conservation Plan	Watershed Management Plan	Implementation Commitment Status
Delaware River (tidal, non-tidal)	Monitoring Only		Completed in 2011	PWD continues to work with watershed partners on implementing specific projects.	Philadelphia commitment documented in the LTCPU and its supplements.
Cobbs-Darby Creeks	2003	2003	Darby RCP completed in 2005 by Darby Creek Valley Association	Completed 2004	Philadelphia commitment documented in the LTCPU and its supplements.
Tacony-Frankford Creek	2000/2001	2004	Completed in 2004	Completed 2005	Philadelphia commitment documented in the LTCPU and its supplements.
Pennypack Creek	2002	2007-2008	Completed in 2005	Act 167 Stormwater Management Plan approved in July 2013	Philadelphia is implementing the Act 167 Plan through the Philadelphia Stormwater Management Regulations.
Schuylkill River (tidal, non-tidal)	Monitoring Only		Completed in 2001 by the Academy of Natural Sciences, Natural Lands Trust, and the Conservation Fund	PWD continues to work with watershed partners on implementing specific projects.	Documented in the LTCPU and its supplements.
Poquessing Creek	2001	2008-2009	Completed in 2007	Act 167 Stormwater Management Plan approved August 28, 2013.	Philadelphia is implementing the Act 167 Plan through the Philadelphia Stormwater Management Regulations.
Wissahickon Creek	2001	2005-2006	Completed in 2000 by FPC	Act 167 Stormwater Management Plan approved on July 10, 2015	A Wissahickon TMDL Implementation Plan was submitted in 2012. Implementation plan depends on watershed partnership support for a watershed-wide initiative.

III.C.1 LAND: Wet-Weather Source Control

Watershed management fosters the coordinated implementation of programs to control sources of pollution, reduce polluted runoff, and promote managed growth in the city and surrounding areas, while protecting the region's drinking water supplies, fishing and other recreational activities, and preserving sensitive natural resources such as parks and streams.

PWD is committed to a balanced "land-water-infrastructure" approach to achieve its watershed management and CSO control goals. Where appropriate, this method includes infrastructure-based approaches, but focuses on implementation of a range of land-based stormwater management techniques and physical reconstruction of aquatic habitats where appropriate. The ultimate goal of PWD's approach is to regain the resources in and around streams that have been lost due to urbanization, both within the City of Philadelphia and in the surrounding counties, while achieving regulatory compliance objectives in a cost-effective manner. Central to all of these planning programs is a commitment to greening, sustainability, open space, waterfront revitalization, outdoor recreation, and quality of life.

The wet-weather source controls have been formalized in the LTCPU and its supplements, including the Consent Order and Agreement signed on June 1, 2011, which formally approved the Green City, Clean Waters program. Detailed information on the land-based wet-weather source controls can be found in **Appendix A – Green City, Clean Waters FY23 Annual Report**.

III.C.1.1 Ordinance and Regulations Modifications - Continue to review and revise stormwater management regulations for development and redevelopment

PWD's Stormwater Management Regulations became effective in Philadelphia on January 1, 2006, which provided PWD with an opportunity to ensure development/redevelopment protects our water resources, reduces neighborhood flooding, and improves the quality of life in our communities. The Stormwater Management Regulations are triggered when a project disturbs 15,000 or more square feet of earth. Effective July 1, 2015, the Stormwater Regulations were updated to improve and strengthen PWD's stormwater programs. For more information on PWD's Regulations, please see the MS4 Annual Report **Section F.5.b – Post-Construction Stormwater Management in New Development and Redevelopment** on page 34.

III.C.1.2 Guidance on Stormwater Management Regulations Implementation

PWD staff in charge of Stormwater Management Regulation implementation are available to the development community to discuss both general questions as well as technical details regarding specific projects. Guidance is provided by PWD staff as it relates to regulatory applicability as well as stormwater management implementation and approach. For improved accessibility, PWD staff have utilized virtual meetings that have allowed for the Department to be more available on short notice to applicants. PWD staff continue to be available for pre-application meetings and project discussions on demand as needed. To request a meeting with PWD staff, applicants are directed to use the online pre-application meeting request form: https://www.pwdplanreview.org/apply/application/pre_app_meeting.

III.C.1.3 Implementation of Stormwater BMPs and LID - Continue to implement best management and LID demonstration

PWD continues to implement stormwater BMPs and LID, now referred to as Green Stormwater Infrastructure (GSI) through the Green City, Clean Waters program. Please refer **to Appendix A – Green City, Clean Waters FY23 Annual Report** for a detailed description on the City's implementation of GSI during FY23.

III.C.1.4 Catch Basin Control Program - Continue to maintain the trapped inlets

PWD continues to maintain all PWD-owned inlets and catch basins to ensure they are clear and operating correctly. For a full description of the activities conducted by inlet cleaning programs during FY23, please refer to **Section II.F.1 Control the Discharge of Solids and Floatables by Cleaning Inlets and Catch Basins** on page 12.

III.C.1.5 Impervious Cover Disconnection - Evaluate the feasibility of separating the stormwater runoff from large impervious land tracts for management and direct discharge

PWD evaluates opportunities to separate stormwater runoff from large impervious tracts of land using incentives and regulatory-based approaches. Projects that apply for PWD's grant programs are evaluated for disconnection potential and encouraged to construct connections to available separate storm sewer or private stormwater outfalls where feasible. To date, PWD has awarded a number of projects where this potential exists, and in the last year, three projects successfully disconnected from the combined sewer system

III.C.1.6 Reforestation - Work to implement reforestation demonstration projects to provide additional tree canopy

Green Stormwater Infrastructure Projects

Community greening and tree planting is a key component of green stormwater infrastructure and the Green City, Clean Waters plan. PWD has been planting trees as part of the GSI projects. Please refer to **Appendix A – Green City, Clean Waters FY23 Annual Report** for information on trees planted as part of GSI projects implemented in the city.

Street Tree Planting

As part of supporting the City's GreenWorks goals, PWD has partnered with PPR to conduct street tree plantings. PPR contracted trees to be planted in the right-of-way in front of properties and on public lands. During FY23, 509 street trees were planted through this contract.

TreePhilly Community Forestry Program

The TreePhilly community forestry program directly engages Philadelphians in improving their communities by planting and maintaining trees. Work is focused on the 7 priority areas identified by the Philly Tree Plan (a 10-year strategic plan for the equitable growth and care of Philadelphia's urban forest, released in February 2023). In FY23, community organizers on the TreePhilly team distributed almost 2,000-yard trees for residents to plant on private property, facilitated the planting of 117 street trees along commercial corridors, and planted 30 for residents on Philadelphia Housing Authority property.

Pennsylvania Horticultural Society's Tree Plantings

PWD is an active partner and supporter of TreeVitalize and PHS's other tree planting programs. TreeVitalize was developed by the Pennsylvania Department of Conservation and Natural Resources to increase the tree canopy in the five-county Philadelphia area. TreeVitalize partners with numerous community Tree Tenders groups throughout this area in order to plant trees in neighborhoods lacking sufficient tree canopy. During FY23, PHS tree planting events resulted in 4,420 trees planted in Philadelphia.

Table III.C.1.6 -1 Pennsylvania Horticultural Society's FY23 Tree Plantings in Philadelphia

# of Trees	Pennsylvania Horticultural Society's Tree Plantings
1,343	PHS Philadelphia TreeVitalize/Tree Tenders street and yard trees (Street tree plantings in many low/mod income areas and over 40 neighborhoods, including Centennial Parkside, Fairhill, Germantown, Hunting Park, Kensington, Lower Moyamensing, Point Breeze, and Spring Garden).
2,809	TreeVitalize Watersheds riparian plantings (11 by John Bartram Association (Community Boathouse Watershed Revitalization), 125 by Audubon Mid-Atlantic (Whitby Meadow), 176 by TTF Watershed partnership (Friends Hospital), 248 by Fairmount Park Conservancy (Houston Ravine), 565 by Fairmount Park Conservancy (Tacony Creek Park and Olney Meadows), 150 by Schuylkill Center for Environmental Education (Meig's Run Riparian Afforestation), and 433 by Riverfront North Partnership (Pennypack on the Delaware)).
43	PHS Philadelphia Public Landscapes (Navy Yard, Philadelphia Convention Center).
203	Trees planted via the Deeply Rooted project
22	PHS Philadelphia LandCare (vacant lots).
4,420	**Total Trees**

III.C.2 Water Ecosystem Restoration and Aesthetics

III.C.2.1 Waterways Restoration Team - Continue the assignment of a dedicated clean-up team to remove cars, shopping carts, and other debris, from CSO receiving waters

During FY23, the Waterways Restoration Team has continued their program which includes removal of cars, shopping carts, and other debris from receiving waters. Please refer to **Section II.F.2 Continue to Fund and Operate the Waterways Restoration Team** on page 12 for information pertaining to the Waterways Restoration Team's activities during FY23.

III.C.2.2 Waterways Restoration Team - Evaluate the capabilities of this crew in performing minor stream bank and bed repair around outfall pipes and to remove debris at these outfalls

During FY23, the Waterways Restoration Team continued their program, which includes conducting minor stream bank and bed repairs around outfalls and removing debris around them. Please refer to **Section II.F.2 Continue to Fund and Operate the Waterways Restoration Team** on page 12 for information pertaining to the Waterways Restoration Team's activities during FY23.

III.C.2.3 Stream Habitat Restoration - Propose and implement demonstration projects to address habitat degradation by engineering the stream channels to modern day flows and directly reconstructing the aquatic habitat

PWD employs natural stream channel design (NSCD) and associated stormwater management BMPs as a means to improve the health of aquatic communities in receiving waters with degraded flow and habitat alterations due to stormwater runoff. For a description of these projects, please see the MS4 Annual Report **Section F.2.Step 3.a – Access the benefits of implementing a Natural Stream Channel Design (NSCD) and effectiveness of the NSCD restoration approach** on page 20.

III.C.2.4 Wetland Enhancement and Construction

Three stormwater treatment wetlands facilities were designed and implemented to remove pollutants and mitigate peak flows, while providing aesthetic and ecological benefits. For a description of these projects, please refer to the MS4 Annual Report **Section F.2.Step 3.a – Access the benefits of implementing a Natural Stream Channel Design (NSCD) and effectiveness of the NSCD restoration approach** on page 20.

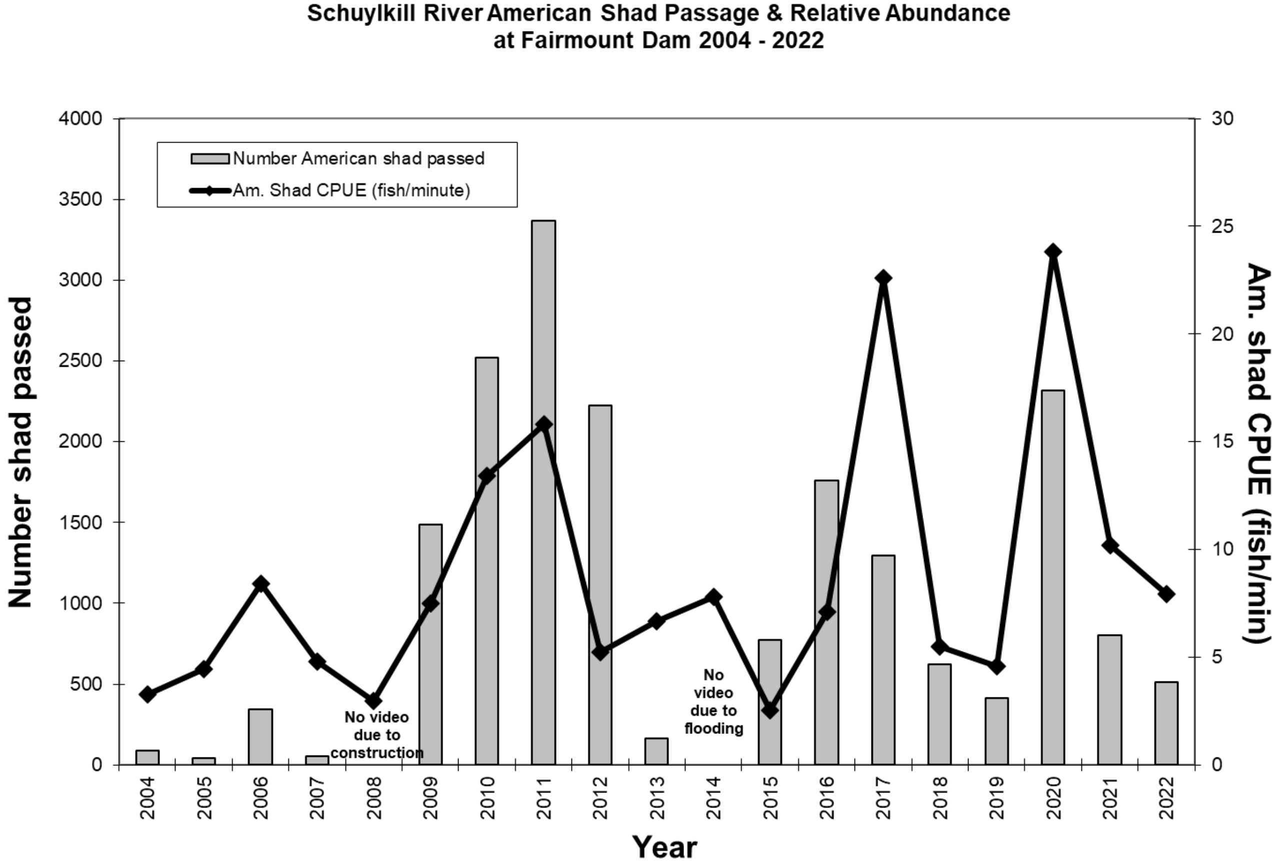
III.C.2.5 Fish Passage Projects

Schuylkill River: Fairmount Fishway

The Fairmount Dam Fishway located on the western side of the Fairmount Dam, was completed in 1979. In 2009, through a joint cooperative agreement with the USACE, the City of Philadelphia upgraded many features of the fishway to improve hydraulics and overall fish passage efficiency.

Adult American Shad relative abundance (number of shad per minute of electrofishing) in the tidal Schuylkill River in 2022 ranked 7th overall in the time-series (2002-2022). The 2022 CPUE at Fairmount Dam (7.95 shad/minute) fell slightly below the time series average (2002 – 2022), but above the both the geometric mean (7.10 shad/minute) and the median value (7.11 shad/minute). It should be noted that boat electrofishing survey effort in 2022 (4.29 hours) was slightly less than time series average (5.2 hours) due to staffing restrictions related COVID-19 pandemic. The 2022 American Shad passage at Fairmount Fishway was evaluated using a linear regression model ($y = 1.8104x + 1.0769; r^2 = 0.5826$) of electrofishing relative abundance (catch per unit effort CPUE) and shad passage of multi-decadal time-series data (2004 – 2022). Adult American Shad passage (n = 509) in 2022 ranked 11th overall in the time-series, falling well below the passage arithmetic mean (n = 1105) but close to the passage geometric mean of 594 Shad. The Fairmount Fishway remained fully open and operational during the 2022 season, and video monitoring recordings were captured and archived. Otolith analysis revealed that 72% of adult American Shad returning to the Schuylkill River in 2022 were hatchery-origin fishes, while 28% were wild-origin fishes naturally reproduced within the river system. The increased percentage of wild-origin Shad indicated that Shad are successfully passing and spawning above Fairmount Dam.

Figure III.C.2.5 -1 Catch-Per-Unit-Effort and Fish Passage of American Shad



Pennypack Creek: Rock Ramp Fishway at Sanitary Sewer Crossing

A rock ramp fishway was constructed in Pennypack Creek in 2007 in an attempt to alleviate the excessive drop in water surface elevation caused by the sanitary sewer crossing of the creek which prevented fish from moving upstream of this site. PWD electrofishing surveys of the tidal Pennypack Creek have documented a limited spawning population of anadromous Alewife and Blueback Herring several miles downstream of the rock ramp fishway. Both juvenile and adult Striped Bass have been collected in the tidal portion, but not above the rock ramp. No adult Hickory Shad have been collected above or below the rock ramp; no larvae were stocked 2016 to 2022 by PA Fish and Boat Commission, who had been stocking larvae for several years in an attempt to establish a self-sustaining wild population, which has yet to have been realized.

III.C.2.6 Riparian Buffer Creation and Enhancement

Environment, Stewardship & Education Division

PWD continues to support Philadelphia Parks and Recreation, which undertakes a broad range of environmental restoration activities throughout the park system. Restoration activities have been ongoing since 2008. These efforts have been discussed in previous years; for more details and a full list of these activities, please refer to Section III.C.2.6 Environment, Stewardship & Education Division on page 121 of the CSO-Stormwater FY12 Annual Report.

Riparian Buffer component of Stream Restoration Projects

Riparian buffer enhancement will be evaluated in all stream restorations that are completed. Typically, riparian buffer enhancement activity includes invasive species management, live-stake planting, native tree and shrub planting, and native seed mix application. Invasive species management usually begins one to two years prior to construction. Once the construction of the stream restoration project is complete, a landscaping plan is implemented which includes all the applications mentioned above. Please refer to the MS4 Annual Report **Section F.2.Step 3.a – Access the benefits of implementing a Natural Stream Channel Design (NSCD) and effectiveness of the NSCD restoration approach** on page 20 for more information on these topics.

PWD and PP&R Stream Projects Coordination

The PWD and PP&R Stream Projects Coordination Meeting Series (formerly the Natural Lands Team), was initiated in 2011, is a group comprised of members from PWD's Ecological Restoration Unit, Waterways Restoration Team, Public Affairs, PWD Design Branch and staff from Philadelphia's Department of Parks and Recreation. Bi-monthly meetings are held to coordinate a wide range of projects that affect the city's stream corridors and natural areas. Through centralizing the myriad of ongoing and upcoming projects, this group works to improve efficiency and communication. Projects include but are not limited to stream restoration, wetland creation, stormwater management, infrastructure protection and invasive species management. During FY23, PWD and PP&R Stream Projects group convened to discuss upcoming projects and potential issues that could be addressed by the team members.

III.C.3 Other Watershed Projects

III.C.3.1 River Conservation Plan - Continue to work in partnership with local partners to complete and implement River Conservation Plans (RCPs)

All River Conservation Plans (RCPs) are available for viewing at: https://water.phila.gov/reporting/watershed-plans-reports/ under each respective watershed's key documents.

Table III.C.3-1: River Conservation Plan References

River Conservation Plans	Complete Date	Previous Reference
Darby Creek	2005	Page 121 of the CSO-Stormwater FY 2008 Annual Report
Tacony-Frankford	2004	Page 74 of the FY 2005 Stormwater Annual Report
Pennypack	2005	Page 122 of the CSO-Stormwater FY 2008 Annual Report
Poquessing	2007	Page 155 of the CSO-Stormwater FY 2010 Report
Delaware Direct	2011	Page 151 of the CSO-Stormwater FY 2011 Annual Report

III.C.3.2 Watershed Information Center - Create a website to serve as a Watershed Information and Technology Center

The City maintains several websites that provide information on our watersheds and activities within them, please refer to **Section II.G.2 Continue to Maintain Watershed Management and Source Water Protection Partnership Websites** on page 18 and **Section II.H.2 Expand the Internet-Based Notification System (River cast) to the Tidal Section of the Lower Schuylkill River** on page 28 for additional information on the websites.

III.C.3.3 Integrated Water Use Status Networks - Pilot a communication and water quality monitoring network that supports the identification and analysis of water quality events

PWD has two communication and water quality monitoring networks. RiverCast supports the identification and analysis of water quality events to support recreational water use status decisions (swimming, triathlons, rowing, etc.) and makes this information available in real time to the public. EWS is used to monitor water quality and notify water utilities about such events as hazardous substance spills or sudden changes in water quality.

Please refer to **Section II.G.2 Continue to Maintain Watershed Management and Source Water Protection Partnership Websites** on page 18 for details about these communication and water quality monitoring systems.

III.C.3.4 Integrated Water Use Status Networks - Evaluate the technical and fiscal needs to expand the network into additional receiving waters where recreational uses are taking place.

Please refer to **Section II.H.2 Expand the Internet-based Notification System (RiverCast) to the Tidal Section of the Lower Schuylkill River** on page 28 for information pertaining to this topic.

III.C.3.5 Interpretive Signage - Continue to implement interpretive signage

Green Stormwater Infrastructure and Restoration Locations Signage

Information on the Green City, Clean Waters Signage Program can be found within **Appendix A- Green City, Clean Waters FY23 Annual Report**.

III.C.3.6 Interpretive Centers - Continue to support existing educational interpretive centers to educate citizens about their community and the water environment

PWD supports several existing educational centers including FWW and many public outreach efforts conducted by partners. Please refer to **Section II.G.3 Continue to Provide Annual Information to City Residents about Programs via Traditional PWD Publications** on page 24 and **Section II.G.4 Continue to Support the Fairmount Water Works** on page 27 for more information on activities done in FY23 by the FWW and partner sponsored events.

III.C.3.7 Basin-Specific Stormwater Management Plans (Act 167) - Continue to support the State Act 167 Storm water Management Planning process and integrate the results of these efforts into the watershed management plans and implementation plans

As of July 10, 2015, all Act 167 plans have been approved. Please refer to **Table III.C.1-2 Planning by Watershed** on page 35 for more information. The reports for each watershed are available to the public through the internet at the following address: http://water.phila.gov/reporting/watershed-plans-reports/.

III.C.3.8 Sewage Facility Planning - Continue to review sewage facility planning modules and downstream sewage conveyance and treatment facilities to ensure that adequate capacity exists within these systems to accommodate flow

During FY23, PWD reviewed 855 “Sewage Facilities Planning Module Application Mailers” for projects requiring building permits within Philadelphia County. During the same period, PWD issued 84 sanitary sewer capacity certifications for projects in tributary municipalities.

III.C.4 Monitoring and Assessment

III.C.4.1 NPDES – Quarterly Special Discharge Monitoring Report

PWD is committed to submitting the Quarterly Special Discharge Monitoring Report (DMR) documenting the Department's CSO discharges during the specified time periods. This report is due 45 days after the end of each quarter, and is submitted by February 15, May 15, August 15, and November 15 of each year. During FY23, four DMRs were submitted within the 45-day timeframe. These reports are also referred to as Quarterly Combined Sewer Overflow Status Reports.

III.C.4.2 NPDES - Annual CSO Status Report

Monitoring and characterization of CSO impacts from a combined wastewater collection and treatment system are necessary to document existing conditions and to identify water quality benefits achievable by CSO mitigation measures. The tables included in **Appendix D** and other information provided within this annual report represent the average annual CSO overflow statistics for period July 1, 2022 – June 30, 2023 as required in the NPDES Permit. Please refer to **Table 1 in Appendix D – NPDES Annual CSO Report Status FY23** for a listing of all CSO permitted outfalls. The tables have been organized to present overflows by the specific receiving water into which the CSOs from a given interceptor system discharge. In order to be consistent, the column headings are presented in the same format found in the System Hydraulic Characterization (SHC) and NMC Documentation.

III.C.4.3 Rotating Basin Approach to Watershed Monitoring - Continue to implement a rotating basin approach to watershed monitoring in CSO receiving waters in order to characterize the impact of CSO discharges and other pollutant/pollution sources and the efficacy of CSO controls and watershed restoration practices.

The Rotating Basin Approach has been replaced with a "Comprehensive Watershed Monitoring Program," a monitoring strategy developed by PWD to comply with both the City's stormwater and CSO permit requirements and to assist with the Source Water Protection Program's objectives. Please refer to **Appendix 4** of the COA report for more details.

Please refer MS4 Annual Report **Section F.2.Step 1.b – Preliminary physical, chemical, and biological quality assessment** on page 8 for information about Comprehensive Watershed Monitoring Program.

Stormwater Management Program
Annual Report

National Pollutant Discharge Elimination System (NPDES) Permit
No. PA 0054712
Reporting Period July 1, 2022 to June 30, 2023

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Part I Permit Conditions

Section A Applicability and Limitation on Coverage

The City will comply with the permit language on what are authorized and unauthorized stormwater discharges.

Section B Legal Authority

In accordance with the National Pollutant Discharge Elimination System (NPDES) regulations contained in 40 C.F.R. Sections 122.26(d)(1)(ii) and (d)(2)(i), the City maintains adequate legal authority to enforce the Stormwater Management Program through the Philadelphia Code (Code) and the Water Department (PWD) Regulations.

Code Section 13-603 regulates discharges into the storm sewer system and includes penalties for violations. Code Section 13-603(4)(a) grants PWD and the Department of Licenses and Inspections (L&I) the authority to require compliance, including issuing regulations, and investigating, inspecting, and monitoring all premises. Under the City's zoning provisions in Code Sections 14-301(10) and 14-704(3), PWD has the authority to regulate stormwater management on a City-wide basis. Code Section 14-306(1) grants PWD and L&I specific enforcement authority for zoning violations. The Code can be accessed at https://codelibrary.amlegal.com/codes/philadelphia/latest/overview.

PWD Regulations further provide PWD legal authority to enforce the Stormwater Management Program. Section 500 prohibits cross connected sewer laterals and Chapter 6 implements the authority to regulate stormwater management for new and redevelopment in the City. PWD Regulations can be accessed at https://www.phila.gov/water/wu/ratesregulationsresp/Pages/Regulations.aspx.

This Annual Report is submitted to the Pennsylvania Department of Environmental Protection (PADEP) and the US EPA, in accordance with requirements of the City of Philadelphia's NPDES Stormwater Management Permit No. PA 0054712. The report documents the Fiscal Year 2023 (FY23) progress completed in order to comply with the requirements during the reporting period from July 1, 2022 to June 30, 2023.

Section D Sediment Total Maximum Daily Load (TMDL) for Wissahickon Creek

Wissahickon Sediment TMDL Monitoring Plan Implementation

PWD submitted a Wissahickon Siltation TMDL Implementation Plan Update in March 2018. This document includes updates on the 2012 Siltation TMDL Implementation Plan's four components: stream restoration, stormwater wetlands, inlet catch basin cleaning, and City of Philadelphia Stormwater Regulations (enacted in January 2006) and the estimated sediment reduction associated with these activities. A more detailed Wissahickon Siltation TMDL Monitoring Report (with appendices) was also submitted in March 2018. The monitoring report includes results from cross-sectional survey analysis of stream restoration projects, photo monitoring, in-stream evaluations of stream restoration structures, and Hydraulic and Hydrologic modeling of stormwater wetlands.

Section E Pollutant Minimization Plan for Polychlorinated Biphenyls in the City's MS4

During the sixteenth year of the PCB PMP, the following tasks were accomplished:

- 113 of the 337 remaining sites listed by EPA or other agencies as housing PCB containing devices were inspected.
- Wet-weather PCB sampling and analysis of the three Water Pollution Control Plants' (WPCPs) effluent was performed as required by the WPCP NPDES permits.
- PWD continued monitoring outlying township connections using EPA Method 680.
- PWD continued monitoring of groundwater discharged from new construction and remediation sites to ensure compliance with PWD's published PCB limit of "non-detection by EPA Method 680."
- PWD received 27 groundwater permit applications and issued 26 groundwater discharge permits in calendar year 2022. Every permit was compliant with PWD's regulatory PCB limit of "non-detectable by EPA Method 680." One groundwater permit application was denied due to the detection of PCBs.
- PWD wet and dry weather WPCP effluent data have been entered into the DRBC PCB database. For more information, please see **Appendix E - PCB PMP 16th Annual Report**.

Additionally, the following initiatives were undertaken:

- PWD's PCB database, developed in 2017, is now being utilized to track and report the 2022 inspections.
- Each inspection location has been given a unique ID and geocoded in PWD's GIS database. Maps of PCB sites inspected in 2022 were created to display inspections by WPCP drainage area.

Section F Stormwater Management

F.1. Source Identification

A description of PWD's MS4 Infrastructure, including stormwater outfalls, lengths of sanitary sewer, and lengths of stormwater sewer within Philadelphia are shown in Table F.1-1. The 205 "Non-PWD Owned" outfalls listed in the table are owned by other City agencies, private entities, or individuals. The PWD-owned stormwater outfall locations and MS4 areas are shown in Figure F.1-1. PWD continues to improve GIS datasets.

Table F.1-1: Description of MS4 Infrastructure

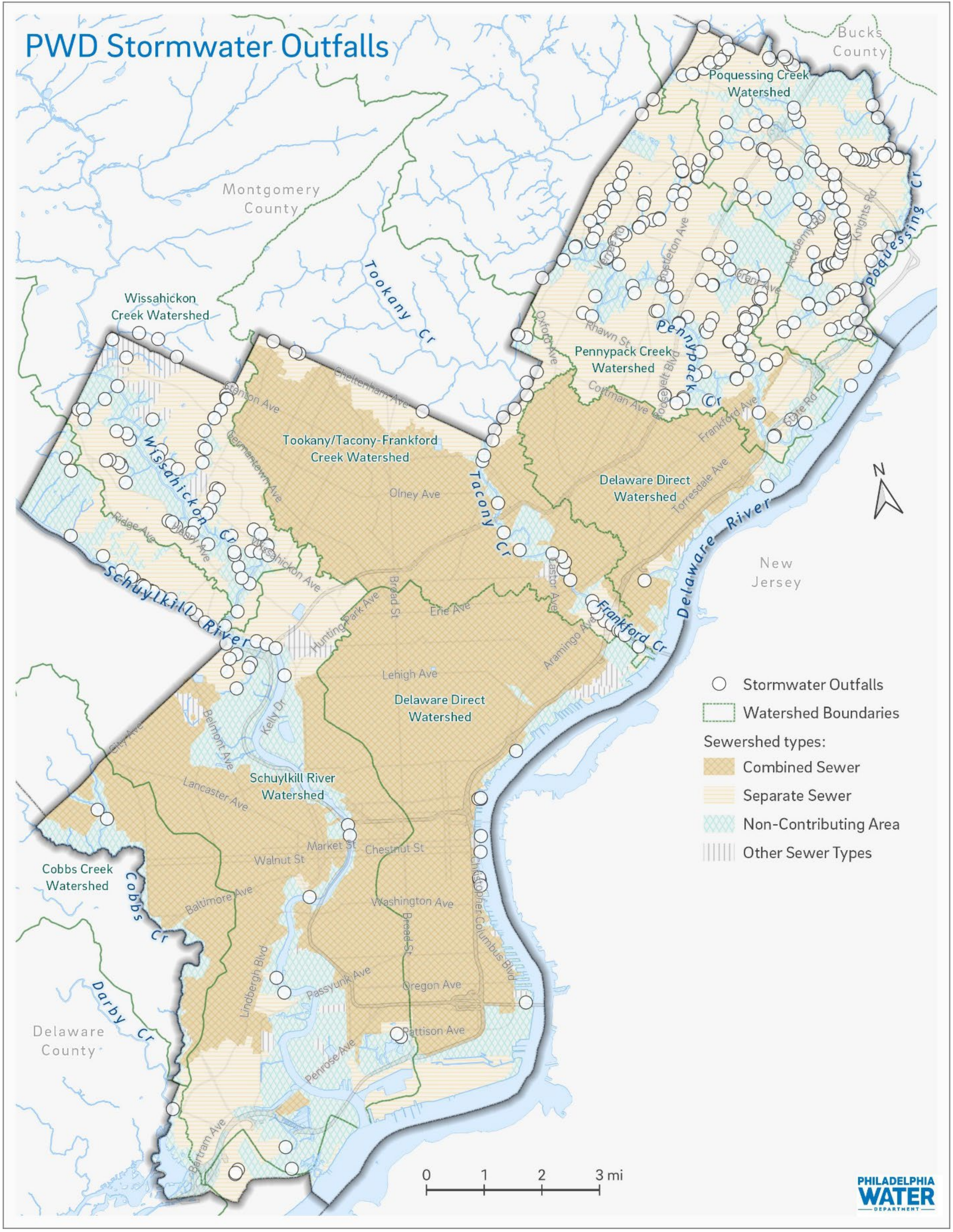
Watershed	Drainage Area (Square Miles)	Miles of Pipe			MS4 Outfalls Count	
		Stormwater	Sanitary	Total MS4	PWD Owned	Non-PWD Owned
Darby-Cobbs	-	1.02	0.81	1.82	3	-
Delaware Direct	3.15	79.81	52.68	132.49	18	122
Pennypack	11.67	234.93	234.03	468.96	130	14
Poquessing	8.00	154.71	156.52	311.23	141	19
Schuylkill	8.48	153.43	156.82	310.26	45	47
Tacony	2.47	54.46	59.02	113.48	34	1
Wissahickon	5.79	95.18	104.86	200.03	63	2
Total	**39.56**	**773.53**	**764.74**	**1538.27**	**434**	**205**

GIS Data Layers have been submitted within an ESRI file geodatabase, **PWD_Annual_Report_GIS_Data_2023.gdb** which can be found in the **digital download link**. The GIS Data Feature class filenames within the geodatabase are provided in **Table F.1-2**.

Table F.1-2: GIS Data Feature Classes within Geodatabase named - PWD_Annual_Report_GIS_Data_2023.mdb

- All_PWD_Monitoring_FY23
- GSI_Monitored_Locations_FY23
- Public_GSI_Projects_Completed_FY23
- Public_GSI_Projects_Planned_FY23
- Pollution_Migration_Events_FY23
- Active_Construction_Sites_FY23
- Verified_Regulations_FY23
- Verified_Retrofits_FY23
- New_Project_Submissions_FY23
- Technical_Approvals_FY23
- Hydrology_Centerline
- Hydrology_Polygon
- Land_Use_PCPC_2018Land_Use_PCPC_2023
- PCB_Locations_Known_Historical
- NPDES_Permitted_Dischargers_FY23
- Detention_Basins_Philadelphia
- Impervious_Surfaces_Planimetric_2004
- Major_Watersheds_Full_Extent
- Major_Watersheds_Philadelphia_Clip
- Sewersheds_FY23
- Census_Blocks_2020_Philadelphia
- Census_Tracts_Population_ACS2021
- Stormwater_Outfalls
- Stormwater_Outfalls_with_DrainageArea_Summary
- Stormwatersheds_Pennypack
- Stormwatersheds_Poquessing
- Stormwatersheds_Wissahickon
- Point_Sources_Wissahickon

Figure F.1-1 City of Philadelphia Water Department Stormwater Outfalls



Descriptions of the GIS layers referenced in **Table F.1-2** are provided below:

All_PWD_Monitoring_FY2
This layer presents the locations of PWD's chemical, fish, macroinvertebrate, and algae sampling sites. The contents of this feature class are discussed in **Section F.2.Step.1.b** on page 8.

GSI_Monitored_Locations_FY23
This layer presents the locations of existing green stormwater infrastructure projects actively monitored by PWD in Philadelphia County.

Public_GSI_Projects_Completed_FY23
This layer presents the locations of completed publicly implemented green stormwater infrastructure projects within Philadelphia County.

Public_GSI_Projects_Planned_FY23
This layer presents the locations of planned publicly implemented green stormwater infrastructure projects sorted by their status within Philadelphia County.

Pollution_Migration_Events_FY23
This layer presents the locations of spills documented by PWD Industrial Waste Unit within Philadelphia in FY23. The contents of this layer are discussed in **Section F.7.a – Pollutant Migration/Infiltration to the MS4 System** on page 38.

Active_Construction_Sites_FY23
This layer presents the locations of active construction private development projects tracked by PWD within Philadelphia in FY23. The contents of this layer are discussed in **Section F.5 – Monitor and Control Stormwater from Construction Activities** on page 29.

Verified_Regulations_FY23
This layer presents the locations of constructed and verified private development projects subjected to stormwater regulations within Philadelphia in FY23. The contents of this layer are discussed in **Section F.5 – Monitor and Control Stormwater from Construction Activities** on page 29.

Verified_Retrofits_FY23
This layer presents the locations of constructed and verified private retrofit development projects subjected to stormwater regulations within Philadelphia in FY23. The contents of this layer are discussed in **Section F.5 – Monitor and Control Stormwater from Construction Activities** on page 29.

New_Project_Submissions_FY23
This layer presents the locations of new project submissions for conceptual stormwater plan review in FY23. The contents of this layer are discussed in **Section F.5.b – Post-Construction Stormwater Management in New Development and Redevelopment** on page 34.

Technical_Approvals_FY23
This layer presents the locations of projects issued Post-Construction Stormwater Management Plan (PCSMP) by PWD in FY23. The contents of this layer are discussed in **Section F.5.b – Post-Construction Stormwater Management in New Development and Redevelopment** on page 34.

Hydrology_Centerline

This layer presents the surrounding watershed hydrology in a polyline-based feature class.

Hydrology_Polygon

This layer presents the surrounding watershed hydrology in a polygon-based feature class.

Land_Use_PCPC_2023

This layer presents Philadelphia land use as ascribed to individual parcel boundaries or units of land. Land use is the type of activity occurring on the land such as residential, commercial, or industrial. Each unit of land is assigned to one of nine major classifications of land use (2-digit codes) and where possible more narrowly defined into one of 70 sub-classifications (3-digit codes).

PCB_Locations_Known_Historical

This layer presents the location of all known and historical PCB locations within Philadelphia. The contents of this layer are discussed in **Section E – Pollutant Minimalization Plan for Polychlorinated Biphenyls in the City's MS4** on page 2.

NPDES_Permitted_Dischargers_FY23

This layer presents the location within Philadelphia of all NPDES Industrial Stormwater permitted dischargers. The contents of this layer are discussed in **Section F.2.Step 1.c** on page 14 and a list of permitted facilities can be found in **Appendix J – NPDES Industrial Stormwater Permitted Sites – Philadelphia County.**

Detention_Basins_Philadelphia

This layer presents the location of all known stormwater detention basins within Philadelphia County.

Impervious_Surfaces_Planimetric_2004

This layer presents percent imperviousness and the amount of impervious area in Philadelphia County.

Major_Watersheds_Full_Extent

This layer presents the delineation of the Philadelphia County and surrounding counties' watershed boundaries including Darby-Cobbs, Delaware-Direct, Pennypack, Poquessing, Schuylkill, Tacony-Frankford, and Wissahickon watersheds.

Major_Watersheds_Philadelphia_Clip

This layer presents the delineation of the Philadelphia County's watershed boundaries including Darby-Cobbs, Delaware-Direct, Pennypack, Poquessing, Schuylkill, Tacony-Frankford, and Wissahickon watersheds.

Sewersheds_FY23

This layer presents the boundaries of the separate, combined sewer, un-sewered, non-contributing, and stormwater only areas within Philadelphia County and the neighboring contributing areas.

Census_Blocks_2020_Philadelphia

This layer presents the results of the 2020 Census in Philadelphia County on a block level.

Census_Tracts_Population_ACS2021

This layer presents the most recent population estimates for census tracts in Philadelphia as determined by the most recently available US Census Bureau's American Community Survey five-year estimates.

Stormwater_Outfalls

This layer presents locations of all permitted stormwater outfalls within Philadelphia County and the neighboring contributing areas.

Stormwater_Outfalls_with_DrainageArea_Summary

This layer presents locations of all permitted stormwater outfalls within Philadelphia County and the neighboring contributing areas. Drainage area analysis values are appended in the attribute table to display outfall metrics including total drainage area, total impervious drainage area, percent impervious, and runoff coefficient.

Stormwatersheds_Pennypack

This layer presents the stormwater drainage areas to receiving waterways and stormwater outfalls within the Pennypack Watershed.

Stormwatersheds_Poquessing

This layer presents the stormwater drainage areas to receiving waterways and stormwater outfalls within the Poquessing Watershed.

Stormwatersheds_Wissahickon

This layer presents the stormwater drainage areas to receiving waterways and stormwater outfalls within the Wissahickon Watershed.

Point_Sources_Wissahickon

This layer presents permitted Point source locations within the Wissahickon Watershed.

GIS Stormwater Data Conversion Geodatabase Layers

The City has previously submitted additional GIS data layers that will not be included in the FY23 report. These layers include outfalls, manholes, inlets, and various pipe as listed in **TABLE F.1-3**. The reason for their removal is the City's policy effective since the FY09 Annual Report to not release these data layers to the general public due to security concerns. PWD would make these layers available for viewing, should it be necessary.

Table F.1-3 GIS Data Feature Classes within Geodatabase named -StormwaterDataConversion.mdb

DataConv_GISAD_stBasin	DataConv_GISAD_stInletPipe
DataConv_GISAD_stBoring	DataConv_GISAD_stMeterChamber
DataConv_GISAD_stCasin	DataConv_GISAD_stOffsetAccess
DataConv_GISAD_stChamber	DataConv_GISAD_stOpenChannel
DataConv_GISAD_stCulvert	DataConv_GISAD_StormNetwork_Junctions
DataConv_GISAD_stDisconnectedInlet	DataConv_GISAD_stOutfall
DataConv_GISAD_stFitting	DataConv_GISAD_stPointFeature
DataConv_GISAD_stFlare	DataConv_GISAD_stPump
DataConv_GISAD_stForceMain	DataConv_GISAD_stRainGauges
DataConv_GISAD_stGravityMain	DataConv_GISAD_stStructure
DataConv_GISAD_stHostPipe	DataConv_GISAD_stTunnel
DataConv_GISAD_stManhole	DataConv_GISAD_stVentPipe
DataConv_GISAD_stManholeOther	DataConv_GISAD_stVirtualLink
DataConv_GISAD_stInlet	DataConv_GISAD_stVirtualNo

F.2. Discharge Management, Characterization, and Watershed-based Assessment and Management Program

Step 1. Preliminary Reconnaissance: Permit Issuance through end of Year 2

a. Land use and resource mapping

PWD has conducted extensive mapping of information relevant to stormwater management planning. Previously discussed in **Section F.1 – Source Identification** of this document on page 2, the GIS layers include MS4 outfalls and contributing drainage areas, land use, population, monitoring locations, and other relevant layers. The maps and supporting GIS layers are included in the **digital download link**.

b. Preliminary physical, chemical, and biological quality assessment

Comprehensive Watershed Monitoring Program

Comprehensive assessment of Philadelphia's waterways is integral to planning for the long-term health and sustainability of the City's water systems. By measuring all factors that contribute to supporting fishable, swimmable, and drinkable water uses, appropriate management strategies can be developed for each watershed land area that Philadelphia shares.

PWD has carried out extensive sampling and monitoring programs to characterize conditions in seven local watersheds**,** both within the county boundaries and outside counties/municipalities. From 1999 to 2023, PWD has implemented a comprehensive watershed assessment strategy, integrating biological, chemical, and physical assessments to provide both quantitative and qualitative information regarding the aquatic integrity of the Philadelphia regional watersheds. This information was published in Comprehensive Characterization Reports (CCRs) and used to plan improvements to watersheds in the Southeast Region of Pennsylvania.

Monitoring Timeline Strategy

Prior to the creation of PWD's Comprehensive Watershed Monitoring Program, baseline assessments were conducted in all Philadelphia regional watersheds to assess the degree, location and type of impairments occurring within each system. Baseline assessments, encompassing benthic, fish, habitat, and discrete water quality monitoring, were routinely completed on a watershed within one year. With the addition of continuous and wet-weather water quality monitoring, periphyton assessments, and specialized physical assessment programs (e.g., Fluvial Geomorphologic (FGM) assessments), CCRs were typically accomplished on a two-year timeline.

PWD conducted benthic macroinvertebrate and physical habitat monitoring activities at 25 stream monitoring sites in spring 2022 **(Table F.2.Step 1.B-1).**

As described in PWD's *Comprehensive Watershed Monitoring Program: Proposed Strategy 2010-2015*, the scale of watershed stressors is expansive and the BMP program is still in its early phase which means that full implementation is limited but will increase once the program is further established. Therefore, PWD is focusing its monitoring efforts at maintaining a "sentinel" monitoring presence in each of the City's watersheds rather than dedicating monitoring efforts to individual watersheds. This regional monitoring approach has been greatly enhanced through a partnership with the United States Geological Survey (USGS). Continuous water quality data are collected from 11 USGS gaging stations, and quarterly baseflow water samples are analyzed for microbial and nutrient parameters of concern. PWD also continues to assess performance of stormwater BMP projects as they are constructed.

Table F.2.Step 1.B-1 Overview of PWD Watershed Monitoring Activities 2010-2023

Watershed/Geographic Area	Activity	Period
PWD/USGS Gages	Continuous Water Quality Monitoring	2010-2022
PWD/USGS Gages	Quarterly Water Quality Grab Samples	2010-2022
Philadelphia Area Watersheds	Stormwater BMP Monitoring	2010-2022
Philadelphia Area Watersheds	Stream Restoration Project Monitoring	2010-2022
Cobbs Creek Watershed	Watershed-wide Comprehensive Assessment	2012-2013, 2021
Tookany-Tacony/Frankford Watershed	Watershed-wide Comprehensive Assessment	2013-2014, 2022
Wissahickon Creek Watershed	Tributary Assessment	2014-2015, 2023
Wissahickon Creek Watershed	Watershed-wide Comprehensive Assessment	2015-2016
Pennypack Creek Watershed	Tributary Assessment	2016-2017
Poquessing Creek Watershed	Watershed-wide Comprehensive Assessment	2018-2019
Schuylkill River Watershed	Tributary Assessment	2019

Monitoring Timeline

As described in the *Comprehensive Watershed Monitoring Program: Proposed Strategy 2010-2015*, PWD's current proposed strategy for watershed assessments includes a less intense, but ongoing monitoring effort within each watershed, primarily through a partnership with the USGS. It should be noted that although the monitoring plan nominally covers 2010-2015, the assessments of the Wissahickon, Pennypack and Poquessing watersheds are continuations of that plan and are thus included here. Currently, PWD is focused on monitoring efforts to evaluate the performance of stormwater BMPs and restoration projects. Allowing 10 years before watershed reassessment will potentially allow for a greater number of projects to be implemented.

The proposed strategy for watershed assessments 2010-2023 includes resuming watershed-scale bioassessment activities at several stations within targeted watersheds **(Table F.2.Step 1.B-2 Proposed**

Watershed Monitoring Timeline 2010-2023). These watershed scale reassessments should complement the “adaptive management” approach favored by the integrated watershed management plan implementation process and allow for the locations and methods of assessment to be changed, depending upon the number of projects implemented and their spatial distribution within the watershed. It is hoped that these data will be useful as a long-term record of water quality changes in the region, more appropriate for assessing the goals of a City-wide distributed green infrastructure program than an approach that focuses on individual watersheds.

Table F.2.Step 1.B-2 Proposed Watershed Monitoring Timeline 2010-2023

Watershed	BMP Monitoring	Quarterly WQ Grab sampling	Continuous WQ Monitoring	Annual WQ Summary	Bioassessment	Bioassessment Data Analysis
Cobbs	2010-2023	2010-2023	2010-2023	2010-2023	2012, 2021	2012-2013, 2022
Tacony-Frankford	2010-2023	2010-2023	2010-2023	2010-2023	2013, 2022	2013-2014
Wissahickon	2010-2023	2010-2023	2010-2023	2010-2023	2014-2016, 2023	2014-2016
Pennypack	2010-2023	2010-2023	2010-2023	2010-2023	2016-2018	2016-2018
Poquessing	2010-2023	2010-2023	2010-2023	2010-2023	2018	2018-2019

Water Quality Sampling and Monitoring

Guiding Principles of Urban Water Chemistry Assessment

PWD’s water quality assessment strategy has been designed to facilitate separate analyses of dry weather (i.e., baseflow) and wet weather water quality conditions. This program has evolved over time, as personnel and technological advancements have improved our abilities to collect more data from an increasing number of sampling locations in a more efficient manner. Automated sampling has greatly increased the temporal resolution of stormwater sampling at multiple sampling locations for a single storm event.

To comply with the State-regulated stormwater permit obligations, PWD worked with USGS to record continuous water quality data at 10 gage stations in the Philadelphia region from July 2022 through November 2022 and March 2023 through June 2023. Four types of sampling were performed as discussed below. Parameters were chosen based on state water quality criteria, or because they are known or suspected to be important in urban watersheds.

Discrete Water Chemistry Assessment

Each USGS/PWD cooperative monitoring gage site was sampled once during the course of a few hours, to allow for travel time and sample processing/preservation. Samples are collected during dry weather and parameters were chosen based on the conclusions from baseline sampling that indicated dry weather problems are primarily related to bacteria and nutrients. Results of samples collected to date are presented in **Appendix F – PWD Quarterly Dry Weather Water Quality Monitoring Program.** Previous annual reports describe PWD's extensive surface water grab sampling efforts dating back to 2002.

Boat run grab samples were not collected in FY23. PWD has collected 24 samples from the Schuylkill River and 49 samples from the Delaware River by boat since 2011. Results from quarterly dry weather grab sampling thus far are generally similar to data collected during the CCR data collection periods.

Continuous Water Quality Assessment

Each USGS/PWD cooperative monitoring gage site records water quality data for dissolved oxygen, temperature, flow, pH, and specific conductance. Selected locations are also instrumented for turbidity, precipitation, and photosynthetically active radiation (PAR). These data are made available to the public in near real-time on the internet at https://www.usgs.gov/centers/pa-water/science/philadelphia-water-resources-monitoring-program. The monitoring results from FY23 are presented in **Appendix G – PWD-USGS Cooperative Water Quality Monitoring Program Annual Summary**.

In addition to continuously monitoring water quality at USGS gaging stations, PWD continued deployment of an in situ self-contained data logging continuous water quality monitoring sonde (YSI Inc. Model EXO2) in the tidal Schuylkill River at SC048 (Schuylkill River at the Navy Yard) from March – November in 2022 that will continue to be monitored between March and November in 2023.

Long-term continuous monitoring for TMDL compliance and building a long-term water quality data record for the aforementioned watersheds will be accomplished in 2010-2023 through the partnership with the USGS. Results from City-wide continuous monitoring thus far are generally similar to data collected during the CCR data collection periods. For this reason, PWD will re-evaluate whether additional water quality sampling is needed to characterize water quality in targeted watersheds on a case-by-case basis. Continuous water quality instruments will also be utilized in evaluating the performance of certain stormwater BMPs and assessing conditions in tidal portions of the Schuylkill and Delaware Rivers as well as Frankford Creek.

Groundwater Monitoring

A city-wide groundwater level monitoring network will provide long-term monthly data documenting current water levels and trends in groundwater elevations throughout the City, helping to track the impacts of widespread implementation of stormwater management practices (SMPs) and global climate change. Data from the groundwater monitoring network will also be used to calibrate a Philadelphia groundwater model and update the USGS groundwater contour map of Philadelphia (Paulachok 1984).

PWD and USGS identified existing wells that would be suitable for the network and obtained permission for site access. Once wells were identified and accessible, well condition and suitability for inclusion in the monitoring network were investigated by continuous water level monitoring and remote video camera inspection when accessible. Wells that met acceptance criteria were added to the monitoring network. After examining readily available information about existing wells, PWD elected to drill additional wells in order to provide better spatial distribution of wells in the monitoring network. Current status of the groundwater monitoring network and a summary of data collected through June 30, 2023, are presented in **Appendix H – PWD/USGS Groundwater Monitoring Program**.

Biological Monitoring

The biological monitoring protocols employed by PWD are based on methods developed by the US EPA (Barbour et al. 1999) and the PADEP. These procedures are as follows:

- Rapid Bioassessment Protocol III (Benthic Macroinvertebrate Sampling)
- Periphyton Assessment (Algae Monitoring)

Macroinvertebrate Assessments

As described in the PWD *Comprehensive Watershed Monitoring Program: Proposed Monitoring Strategy 2010-2015*, PWD's approach is intended to be a compromise, recognizing not only the benefits of collecting data from randomly selected sites but also the importance of maintaining a monitoring effort at consistent locations over time. This plan is based on a similar monitoring program that USGS has implemented in Chester County (Reif 2002, Reif 2004). The plan reflects the manpower constraints of collecting and processing samples with the PADEP Instream Comprehensive Evaluation (ICE) protocol. It is hoped that this approach will achieve some of the benefits of a randomized approach, while providing periodic reevaluation of our watersheds required to inform the watershed planning process and comply with environmental mandates **(Table F.2-3 Proposed Benthic Invertebrate Monitoring Timeline 2011-2023).**

Table F.2-3: Proposed Benthic Invertebrate Monitoring Timeline 2011-2023

Period	Monitoring Activity (number of samples*)
2011	USGS gage samples (9); Randomly selected sites (16)
2012	Cobbs Creek (6**); USGS gage samples (9); Random (10)
2013	Tookany/Tacony Creek (10**) USGS gage samples (9); Random (6)
2014	Wissahickon Creek Tributaries (15); USGS gage samples (9); Random (1)
2015	Wissahickon Creek (10**); USGS gage samples (8); Random (4)
2016	Pennypack Creek Tributaries (11**); USGS gage samples (9); Random (5)
2017	Pennypack Creek (12**); USGS gage samples (9); Random (4)
2018	Poquessing Creek (12**); USGS gage samples (9); Random (4)
2019	Schuylkill River Tributaries (3); USGS gage samples (8); Random (3)
2020	USGS gage samples (6); Random (2)
2021	Cobbs Creek (6**); USGS gage samples (9); Random (7)
2022	Tookany/Tacony Creek (10**); USGS gage samples (9); Random (6)*
2023	Wissahickon Creek Tributaries (15); USGS gage samples (9); Random (1)

* Number of samples estimated, actual number of samples may vary

** Number of monitoring sites excludes 2 USGS gage sites in target watershed

During March, April, and May 2022, PWD conducted Rapid Bioassessment Protocols (RBP III) at 25 (n=25) locations within Philadelphia area watersheds. Sampling was conducted at 9 USGS gages in the PWD/USGS Cooperative Monitoring program, 10 sites in the targeted Tookany/Tacony Creek watershed, and 6 randomly selected sites. These data are presented in **Appendix I – PWD Wadeable Streams Benthic Macroinvertebrate and Physical Habitat Assessments**. In spring 2023, PWD sampled nine USGS gages, 15 sites in the Wissahickon Creek Watershed, and one randomly chosen site.

Algae Assessments

Chlorophyll-a measurements may be used to provide information for the parameterization of water quality models. In spring 2016, PWD began a pilot effort to collect continuous chlorophyll-a data at three USGS stations along the Delaware River: 01467200 (Ben Franklin Bridge), 014670261 (Delaware River near Pennypack Woods), and 01463500 (Trenton). In addition, PWD deployed two buoys in the Delaware River (at Pea Patch Island and upstream of the confluence with the Schuylkill River) from March-November. Sondes attached to these buoys monitor continuous chlorophyll-a levels. Bi-weekly grab samples are collected and analyzed at these locations to calibrate the sensors.

Physical Monitoring

Physical Habitat Assessments

Habitat assessments are conducted along with benthic macroinvertebrate monitoring and thus the habitat assessment strategy is described under the heading **Biological Monitoring – Macroinvertebrate Assessments**, above. PWD assesses stream physical habitat condition using PADEP ICE protocols. During calendar year 2022, PWD conducted physical habitat assessments at 25 locations within Philadelphia area watersheds. Sampling was conducted at 9 USGS gages in the PWD/USGS Cooperative Monitoring program, 10 sites in the targeted Tookany/Tacony Creek watershed, and 6 randomly selected sites. These data are presented in **Appendix I – PWD Wadeable Stream Benthic Macroinvertebrate and Physical Habitat Assessments**. In spring 2023, PWD sampled nine USGS gages, 15 sites in the targeted Wissahickon Creek Watershed, and one randomly chosen site.

Fluvial Geomorphologic (FGM) / Infrastructure Analysis

FGM studies establish the physical attributes of the stream, identify areas of concern, and provide recommendations for rehabilitation of the stream corridors and floodplains. To date, FGM analysis has been conducted on the Darby-Cobbs, Tookany/Tacony-Frankford, Wissahickon, Pennypack, and Poquessing Creeks. Analysis was conducted in order to characterize channel morphology, disturbance, stability, and habitat parameters as well as to provide a template for hydrologic and hydraulic modeling and serve as a baseline for assessing channel bank and bed changes. Data provided from the FGM analyses will also serve to develop reach rankings within each watershed in order to prioritize restoration strategies. In FY23, designs were advanced for several stream restoration and riparian infrastructure protection projects throughout Philadelphia’s watersheds. Of these, two projects were substantially complete with the construction phase. These projects will reduce streambank erosion, improve aquatic habitat, and protect critical infrastructure in the stream corridor. Planning studies are also being developed by a dedicated stream restoration planning group to identify and prioritize stream restoration and infrastructure protection project opportunities throughout the city's watersheds.

Summary of Monitoring Locations

Biological, physical, and chemical monitoring locations are based on three criteria: 1) appropriate habitat heterogeneity; 2) access availability; and 3) proximity to USGS stream gaging stations and PADEP 305b monitoring sites. In general, the number of monitoring sites is proportional to the size of the drainage and the watershed’s link magnitude (i.e., number of 1st order streams). Maps of assessment sites by watershed and program (biological, chemical, or physical) are available as GIS data.

Quality Assurance/Quality Control (QA/QC) and Data Evaluation

PWD has planned and carried out an extensive sampling and monitoring program to characterize conditions in Philadelphia’s watersheds. Sampling and monitoring follow the Standard Operating Protocols (SOPs) and Quality Manual as maintained by PWD’s Bureau of Laboratory Services (BLS). These documents cover the elements of quality assurance, including field and laboratory procedures, chain of custody, holding times, collection of blanks and duplicates, and health and safety.

They are intended to help the program achieve a level of quality assurance and control that is acceptable to regulatory agencies. More information regarding SOPs for chemical and biological assessments is available from BLS.

c. Inventory of Point and Non-Point sources

At the end of FY23, there are 110 NPDES permitted dischargers in Philadelphia County, as shown in **Appendix J – NPDES Industrial Stormwater Permitted Sites – Philadelphia County**. This listing was downloaded from the PADEP Environment Facility Compliance Tracking System (eFACTS). The eFACTS website can be accessed through the following link: http://www.ahs.dep.pa.gov/eFACTSWeb/default.aspx.

PWD is involved in developing estimates of non-point source pollutants. The results of this analysis are described in the hydrologic models in **Section G - Assessment of Controls** on page 48.

d. Preliminary problem assessment

CCRs were completed for the Wissahickon (2007), Pennypack (2009), and the Poquessing (2010) Creek Watersheds. These reports include analysis of data collected over the monitoring period and present a characterization of problems within the watershed. The reports for each watershed are available to the public through the internet at the following address: http://water.phila.gov/reporting/watershed-plans-reports/.

Step 2. Watershed Plan Development: Permit issuance through end of Year 5

For information on the status of the Act 167 plans, please refer to the CSO Annual Report **Table III.C.1-2 - Planning by Watershed** on page 35. Please refer to the City's Watershed Plans at the following address: https://water.phila.gov/reporting/watershed-plans-reports/. The Wissahickon Act 167 Plan can be found here: https://www.montgomerycountypa.gov/DocumentCenter/View/34408/Wissahickon-Act-167-Plan.

Step 3. Watershed Plan Implementation and Performance Monitoring: Permit issuance through expiration

a. Dry Weather Water Quality and Aesthetics

Operate the Defective Lateral Program

Over the last fiscal year, PWD has continued to successfully operate its Defective Lateral Program. A detailed discussion of this program is provided within this report in **Section F.3 - Detection, Investigation, and Abatement of Illicit Connections and Improper Disposal** on page 26.

Debris removal from waterways impacted by storm water discharges

PWD continues to employ the Waterways Restoration Team (WRT) to remove debris and conduct small scale stream restoration projects within the city's waterways. Please refer to the CSO Annual Report **Section II.F – NMC 6 - Control of Solid and Floatable Materials in CSOs** on page 12 for information about debris removal from waterways impacted by storm water discharges.

Lincoln Drive sewer relining

PWD completed the Lincoln Drive sewer relining in 2004. Additional information on this project was reported previously; please refer to Section F.2.3.a.iii on page 261 of the FY10 CSO-Stormwater Annual Report.

Stormwater Outfall Dry Weather Inspections

The City maintains a stormwater outfall inspection program in compliance with the MS4 permit. All 434 of the City's permitted stormwater outfalls are scheduled to be inspected by the Industrial Waste unit at least once each permit cycle. Those with dry weather flow are sampled for fecal coliform and fluoride analysis. The results of these samples are reported on a quarterly basis and summarized in this annual report. During FY23, 74 outfall inspections were conducted, and 33 samples were taken due to observed dry weather flow as part of the permit inspection program.

Those outfalls identified as priority outfalls under the MS4 permit are inspected quarterly. During FY23, 46 priority outfall inspections were conducted, and 36 samples were taken due to observed dry weather flow as part of the Priority Outfall inspection program.

The full details of program accomplishments for FY23 can be found in **Appendix N – Defective Lateral Quarterly Report FY23.**

Table F.2-4: Stormwater Outfall Inspection Program – 5 Year Summary

	Permit Inspection Program		Priority Outfall Program	
Fiscal Year	Inspections	Samples	Inspections	Samples
2019	123	70	40	36
2020	96	62	46	39
2021	262	126	42	39
2022	77	31	41	35
2023	74	33	46	36
Total	**632**	**322**	**215**	**185**

Defective Lateral Program - Priority Outfalls

7th & Cheltenham Avenue Outfall (T-088-01)

As of June 30, 2023, Defective Connection Group (DCG) program activities have performed 2,831 complete tests in this sewershed, identifying 134 cross-connections, all of which have been abated.

The locations of dry weather diversion devices, and the number of inspections, blockages, and discharges found by the Flow Control unit during FY23 are listed below.

Table F.2-5: 7th & Cheltenham Ave – Diversion Devices - FY23 Summary

Location	ID #	Inspections	Blockages	Discharges
Plymouth St. west of Pittsville St.	CFD-01	23	2	0
Pittsville St. south of Plymouth St.	CFD-02	23	0	0
Elston St. east of Bouvier St.	CFD-03	18	1	0
Ashley St. west of Bouvier St.	CFD-04	22	0	0
Cheltenham Ave. east of 19th St.	CFD-05	28	1	0
Verbena St. south of Cheltenham Ave.	CFD-06	27	0	0
Cheltenham Ave. east of 7th St.	CFD-07	60	4	0
7th St. south of Cheltenham Ave.	CFD-08	60	2	0

Inspections and fecal coliform sampling at this outfall continue quarterly. Results for the outfall samples during FY23 are listed below.

Table F.2-6: 7th & Cheltenham Ave - Fecal Coliform Results – FY23 Summary

Date	Fecal Count (MPN per 100 ml)
09/21/2022	3,873
11/08/2022	6,950
03/09/2023	2,064
05/04/2023	5,172

Monastery Avenue Outfall (W-060-01)

As of June 30, 2023, DCG program activities have performed 637 complete tests in this sewershed, identifying 17 cross-connections, all of which have been abated.

The locations of dry weather diversion devices and the number of inspections, blockages, and discharges found by the Flow Control unit during FY23 are listed below.

Table F.2-7: Monastery Ave - Diversion Devices - FY23 Summary

Location	ID#	Inspections	Blockages	Discharges
Jannette St. west of Monastery Ave.	MFD-01	21	1	0
Green La. North of Lawnton St.	MFD-02	21	1	0

Inspections and fecal coliform sampling at this outfall continue quarterly. Results for the outfall samples during FY23 are listed below.

Table F.2-8: Monastery Ave - Fecal Coliform Results – FY23 Summary

Date	Fecal Count (MPN per 100 ml)
09/22/2022	NF*
12/20/2022	75
03/22/2023	355
04/24/2023	204

Note: * NF indicates that no flow was observed

Monoshone Creek Outfalls (W-068-05)

Additional areas of focus: W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04

As of June 30, 2023, DCG program activities have performed 2,750 complete tests in these sewershed areas, identifying 95 cross-connections, all of which have been abated. Most of the efforts have been in the W-068-05 sewershed area which is the largest in terms of drainage area and properties served.

Inspections and fecal coliform sampling at the W-068-05 outfall continue quarterly. Results for the outfall samples during FY23 are listed below.

Table F.2-9: Monoshone Creek (W-068-05 Outfall) - Fecal Coliform Results – FY23 Summary

Date	Fecal Count (MPN per 100 ml)
09/22/2022	19,863
12/20/2022	24,196
02/06/2023	8,297
04/25/2023	>24,196

Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

As of June 30, 2023, DCG program activities have performed 2,475 complete tests in these sewershed areas, identifying 64 cross-connections, 63 of which have been abated. Most of the efforts have been in the S-059-04 sewershed area.

Inspections and fecal coliform sampling at the following outfalls continue quarterly. Results for the outfall samples during FY23 are listed below.

Table F.2-10: Manayunk Canal - Fecal Coliform Results – FY23 Summary

Outfall	Date	Fecal Count (MPN per 100 mL)
S-058-01	9/29/2022	4,430
	12/29/2022	1,000
S-059-01	9/29/2022	6,050
	12/27/2022	100
	3/20/2023	15,650
	5/25/2023	17,329
S-059-02	9/28/2022	81,640
	12/27/2022	26,130
	3/20/2023	10,810
	5/19/2023	51,720
S-059-03	9/28/2022	>241,960
	12/28/2022	209,800
	3/21/2023	173,290
	5/30/2023	111,990
S-059-04	9/28/2022	22,470
	12/28/2022	67,000
	3/21/2023	26,130
	5/30/2023	3,590
S-059-05	9/28/2022	NF*
	12/28/2022	NF*
	3/21/2023	NF*
	5/30/2023	NF*
S-059-07	-	-
S-059-09	9/28/2022	>241,960
	12/28/2022	151,500
	3/21/2023	16,240
	5/30/2023	198,630

Note: NF* indicates that no flow was observed

Defective Lateral Program - Other Important Outfalls

Sandyford Run Outfall (P-090-02)

As of June 30, 2023, DCG program activities have performed 5,834 complete tests in this sewershed, identifying 90 cross-connections, 88 of which have been abated. The location of the dry weather diversion device and the number of inspections, blockages, and discharges found by the Flow Control unit during FY23 are listed below.

Table F.2-11: Sandyford Run - Diversion Device - FY23 Summary

Location	ID#	Inspections	Blockages	Discharges
Brous and Lexington Aves.	PFD-01	62	4	0

Table F.2-12: Sandyford Run – Diversion Device - Fecal Coliform Results – FY23 Summary

Date	Fecal Count (MPN per 100 ml)
09/20/2022	298
12/19/2022	31.8
03/08/2023	10
04/04/2023	2

Franklin and Hasbrook Outfall (T-089-04)

As of June 30, 2023, DCG program activities have performed 1,025 complete tests in this sewershed, identifying 46 cross-connections, 43 of which have been abated. The location of the dry weather diversion device and the number of inspections, blockages, and discharges found by the Flow Control unit during FY23 are listed below.

Table F.2-13: Franklin and Hasbrook - Diversion Device - FY23 Summary

Location	ID#	Inspections	Blockages	Discharges
Franklin and Hasbrook	CFD-01	63	5	2

The outfall was inspected throughout the year but was found to be clean and dry during all quarterly visits.

Please refer to **Section F.3 - Detection, Investigation, and Abatement of Illicit Connections and Improper Disposal** on page 26 for additional information on activities conducted for the Defective Lateral Program.

Priority Outfall Closure Testing

Investigation will continue within each priority outfall area (sewershed) until the priority outfall status may be removed. During FY23, none of the priority outfalls were authorized to be removed from the list by PADEP.

Healthy Living Resources

Develop integrated storm water management plans

PWD developed integrated stormwater management plans for all of the City's watersheds. Please refer to the CSO Annual Report in **Section III.C.3.7 - Basin-Specific Stormwater Management Plans (ACT 167)** on page 42 for an explanation of the City's watershed stormwater management plans.

Assess the benefits of implementing a Natural Stream Channel Design (NSCD) and effectiveness of the NSCD restoration approach

PWD employs natural stream channel design (NSCD) and associated stormwater management BMPs as a means to improve the health of aquatic communities in receiving waters with degraded flow and habitat alterations due to stormwater runoff. PWD has conducted several projects that have been designed with NSCD that implement a targeted approach to stream restoration to optimize capital funds and ecological uplift. PWD’s stream habitat restoration program integrates environmental stressor reduction and streamside sewer asset protection and/or relocation.

As each of PWD’s NSCD projects are constructed, PWD realizes the importance of the extensive monitoring and O&M that accompanies such projects. Each project provides the opportunity to learn about what techniques do and do not work in their respective hydrologic and hydraulic regimes. In order to assess the effectiveness of these NSCD projects, PWD conducts post implementation monitoring at each site that includes the measurement of relevant biological, habitat, and physical parameters to be used in comparison to pre-construction conditions. Additional information on NCSD stream restoration projects is contained in **Table F.2-14** below.

PWD has also designed and implemented three stormwater treatment wetlands facilities to remove pollutants and mitigate peak flows, while providing aesthetic and ecological benefits. These projects are:

- Saylor's Grove (Construction Completed in 2006)
- Wise's Mill (Construction Completed in 2012)
- Cathedral Run (Construction Completed in 2012)

In total, these three facilities receive and treat stormwater from more than 300 acres of the MS4 service area. These projects were completed as part of PWD's compliance with the Wissahickon Sediment TMDL Implementation Plan. PWD submitted a Wissahickon Siltation TMDL Implementation Plan Update and a Wissahickon Siltation TMDL Monitoring Report (with appendices) in March 2018. PWD staff maintain these project sites as needed. Additional information on these wetlands is provided in **Table F.2-14** below.

Table F.2-14: Ecological Restoration Projects

Project Name	Stream Length (ft)| Drainage Area (acres)	Description
Status: **Complete**		
Saylor Grove	150 acres	• First stormwater wetland constructed by PWD in the fall of 2005. • The one-acre wetland treats ~70 million gallons of urban stormwater a year before it reaches the Monoshone Creek. • This project is now monitored regularly through a formal inspection protocol. Monitoring efforts at this site are now included in the Wissahickon TMDL monitoring efforts. • Maintenance dredging occurred in the Fall 2020.
Cathedral Run Stormwater Wetland	90 acres	• Cathedral Run Wetland is a stormwater management facility that is about an acre in area and treats ~90 acres of drainage area. • The wetland removes sediment and nutrients from storm runoff while helping reduce the peak volume reaching Cathedral Run and Wissahickon Creek. • Maintenance dredging and replanting was conducted in Fall 2021.
Marshall Road Stream Restoration	900 feet	• Goal was to stabilize an exposed section of the Cobbs Creek Interceptor. • Through funding from a Growing Greener Grant in 2003, PWD embarked on full scale stream restoration design to stabilize the 900 ft segment of the Creek. • Construction was completed in 2006. • PWD has maintained an active role in seasonal and annual monitoring of the restoration site and continually evaluates the long-term success of the project.
Whitaker Ave Stream Restoration	2200 feet	• 2,200-foot stretch of the Tacony Creek main stem that begins 500 feet downstream of the Whitaker Avenue bridge and ends about 800 feet upstream of the Fishers Lane bridge. • PWD, in partnership with the USACE – Philadelphia District, bid and constructed this project which was completed in November 2010. • PWD began its monitoring program at this site in spring 2011.
Indian Creek CSO Storage and Daylighting	2100 feet	• Located within the Cobbs Creek Watershed at the confluence of the East and West branches of Indian Creek in Morris Park, Philadelphia, Pennsylvania. • Included the construction of a new stream channel by removing approximately 700 ft. of the West Branch Indian Creek from a brick culvert. Also included bank stabilization of the existing creek and the associated forested riparian buffer around the new channel. The new stream channel reconnects the West Branch to the East Branch of Indian Creek. • The existing brick culvert was converted into temporary storage for Combined Sewer Overflow (CSO) during wet weather events reducing the total CSO discharges into the Cobbs Creek Watershed. Estimated removal of approximately 2 million gallons of combined sewage discharge to Indian Creek annually.

Project Name	Stream Length (ft)| Drainage Area (acres)	Description
Wises Mill Stream Restoration	1000 feet	• 1st/2nd order tributary to the Wissahickon Creek • Stream was fully assessed and determined to be a significant source of sediment to Wissahickon Creek through bank erosion and sediment transport processes. • The project is currently in the project monitoring phase.
Bells Mill Stream Restoration	5100 feet	• This 2nd order tributary to the Wissahickon Creek arises from an outfall near the intersection of Lykens Lane and Bells Mill Roads. It then travels through a wooded area parallel to Bells Mill Road for approximately 5,100 ft before reaching the confluence with the Wissahickon Creek. • Energy dissipating structures such as rock vanes and channel-spanning boulder step structures were installed. • Follow up maintenance activities were performed in 2014.
Gorgas Run Stream Restoration	2100 feet	• Gorgas Run is a steep headwater tributary to the Wissahickon Creek with a drainage area of 499 acres. • High peak stormwater flows have severely degraded Gorgas Run • PWD used NSCD principles to restore the 1,800 feet of stream channel that encompasses Gorgas Run and another 300 feet of tributary to Gorgas Run. • Rehabilitation of the stream corridor included in-stream stabilization structures, repairs and protection for PWD and Fairmount Park infrastructure, stabilization of stormwater gullies below Henry Avenue and park trail enhancements.
Wissahickon Creek Ridge Ave 2nd Dam	200 feet	• Bank restoration around exposed manhole at the dam on Wissahickon Creek upstream of the Ridge Ave culvert. • The project restored approximately 200 feet of stream bank.
Paul’s Run Stream Restoration	500 feet	• Approximately 350 feet of stream restoration along Paul’s Run, tributary to Pennypack Creek to protect an exposed sanitary sewer and stabilize the stream channel.
Wises Mill Wetland	92 acres	• System of 3 stormwater wetlands with total surface area of approximately 2 acres. • Manages stormwater from a 92-acre drainage area. • PWD monitoring sediment accumulation and vegetation within the wetlands. • PWD has conducted site maintenance recently including construction of an armored channel between the wetlands to fix gully erosion, repairs to a berm that separates the wetland from the Wises Mill Run stream channel, and installation of a larger outlet inflow pipe for proper drainage of the wetlands.
Carpenters Woods	600 feet	• Project addressed significant gully erosion downstream of 3 outfalls. • Included construction of channel bed armoring, bank revetments, and vegetation to stabilize the channels and enhance the forest off Mount Pleasant Rd in northwest Philadelphia.
Cathedral Run Stream Restoration	300 feet	• The culvert below Forbidden Drive trail had become clogged with debris and the banks upstream of the structure had eroded and bed downgraded. • The project constructed bank and bed stabilization structures in the area just upstream of the culvert.
Rex Ave	300 feet	• Project included stabilization of a portion of the stream channel parallel to Rex Avenue.

Project Name	Stream Length (ft)| Drainage Area (acres)	Description
Cresheim Creek St. Martins	450 feet	• Construction of 3 grade control structures (cross-vanes) and bank revetments on both sides of the stream channel below the pedestrian bridge off St. Martins Road. • Stream work was conducted in conjunction with a bridge and sewer replacement.
Hartwell Lane	300 feet	• Restoration of the stream channel upstream of a culvert structure that conveys PWD's Wissahickon High Level Interceptor. • Includes 3 cross vanes for grade control and bank revetments on both sides of Hartwell Run. • Bank revetments and scour protection downstream of the culvert. • Masonry repairs were made to the culvert structures.
Cresheim Creek Interceptor and Outfall	200 feet	• Project goals include reconfiguration of the intercepting sewer crossing between the two culverts near Woodbrook Lane, replacement of a deteriorated outfall, and installation of bank stabilization and grade control features in the stream channel. • Construction was substantially completed in FY23.
Millbourne Cobbs Creek Bank Stabilization	500 feet	• The project goals include protection of a 3'-6" brick sewer exposed near the channel downstream of Millbourne Dam and stabilization of two separate portions of the downstream left side of Cobbs Creek. • The design includes concrete encasement and boulder toe revetments to protect the existing brick sewer and the access roadway, replacement of an undersized and collapsed corrugated metal pipe with a larger RCP culvert, and removal of the compromised stormwater conduit to promote proper drainage beneath the sewer maintenance access road. • Construction was substantially completed in FY23.
Status: **In Construction**		
Flat Rock Dam Flow Diversion	TBD	• Project goals include improving flow to the Manayunk Canal by effectively diverting more flow through the canal and remove the dam designation from the City owned portion of the dam. • Work associated with the project is focused on the headworks of the Manayunk Canal but will improve conditions along length of the canal. • Construction started in FY22 and is ongoing in FY23
Status: **In Design**		
Cresheim Creek Outlet Tunnel	300 feet	• The end of the culvert tunnel has degraded and the stream banks and bed around the culvert have significantly eroded. The erosion has exposed a 36-inch water main that was previously in the bank next to the culvert. The water main passes through the culvert, creating blockage for water flow through the culvert. • The project will relocate the water main below the culvert, repair and/or rebuild storm and sanitary infrastructure, and stabilize stream banks downstream of the culvert exit.

Project Name	Stream Length (ft)| Drainage Area (acres)	Description
Cardone Outfall Bank Stabilization at Rock Run	350 feet	- A stormwater outfall owned by the adjacent Cardone Factory and draining its parking lot has been collapsing into the stream due in part to its location directly across from the Rock Run regulator. - The regulator's flows have also resulted in about 70 LF of active bank erosion downstream of the outfall. - This project aims to stabilize the outfall structure, protect the eroded bank with a new boulder wall tying in to an existing bank stabilization, and enhance the stream channel upstream of the outfall using an engineered riffle with riprap bank protection.
Park Line Dr Interceptor - Gorgas Chute and Outfall	250 feet	- Project work is to occur across three sites. - Site 1 includes stabilization and structural repairs to the interceptor crossing and installation of a plunge pool and stream bank stabilization structures at the sewer crossing down the trail from the intersection of Park Line Dr and Hortter St. - Site 2 includes repairs to the concrete chute that conveys storm runoff flows to Gorgas Run from the outfall near Fountain St. - Site 3 includes the installation of new pipe from the collapsed outfall off of Henry Ave that has created a large gully crossing the Yellow Trail and a new outfall structure discharging under the trail into Gorgas Run.
Neill Drive Stream Corridor Restoration	1600 feet	- The stream channel parallels sewer gravity and force mains and is deeply entrenched and eroding. There is a significant amount of exposed and vulnerable PWD infrastructure including sanitary sewers, a sanitary force main, a water main crossing, and damaged stormwater outfalls. - The project will protect the vital infrastructure and stabilize eroding streambanks and streambed.
Sandy Run Stream Restoration, Infrastructure Protection and Stormwater Wetland	1500 feet	- The objective of the design will relocate a sewer crossing downstream of the Ryan Avenue Bridge and include related stream restoration elements such as floodplain reconnection.
Pennypack Corridor Improvement Project at Holme Ave	1500 feet	- Two sanitary sewer crossings are exposed in the mainstem of the Pennypack Creek between Holme Ave and Axe Factory Run. Increased widening and downcutting of the channel over time has destabilized the banks and stranded a manhole. - Project design consists of installing grade control measures to protect the assets in-place, removing the manhole, stabilizing banks to prevent further erosion and widening, and increasing floodplain connectivity along this reach to the maximum extents possible.
Mount Moriah Streambank and Cobbs Creek Interceptor Stabilization	500 feet	- Located along Cobbs Creek in the area adjacent to Mt. Moriah Cemetery, about 350 ft of a 5'-0" brick interceptor and its manholes are exposed along the left bank in multiple areas of the reach. - Work will focus on protecting the sewer in-place using bank protection structures while also employing stream restoration principles to optimize the compromised flow pattern through the three bridges.
Benton Brook Stream Restoration	1200 feet	- The project will address streambank erosion and exposed infrastructure along Benton Brook in the Pennypack Creek Watershed.

Project Name	**Stream Length (ft)| Drainage Area (acres)**	**Description**
Green Tree Run Outfall Stabilization	300 feet	• Objective: stabilize the stream channel around the 54-inch outfall just off Shawmont Ave at Minerva Rd. The gabion baskets have collapsed into the stream channel and the banks continue to erode. • The private property owner signed an easement agreement with Streets when the outfall was originally installed and has complained about the discharge from the outfall causing the erosion of the stream channel.
Roosevelt Blvd Dam Removal	1000 feet	• This project will lower the existing dam by 4 feet and stabilize the walls protecting the trail by installing bank protection measures. • Periodic flooding and erosion of the adjacent Pennypack Trail surface will be reduced through the lowering of the dam crest elevation. • A culvert conveying a tributary will be repaired as it has collapsed and is causing further damage on the trail. • A rock ramp will be constructed to promote fish passage.
Tacony Creek - Reach 6 (Juniata Dam Removal)	1000 feet	• Project will improve water quality and aquatic habitat and provide fish passage. • The Juniata dam is on the Tacony Creek, approximately 700-feet upstream from the Castor Ave. bridge. The dam is in good condition however, much of the upstream impoundment was filled by sediment. • The combination of the reduced flow velocity and nutrient-rich sediment supply are suspected of reducing the available dissolved oxygen in the water column. • The height of the dam also presents a complete barrier to fish passage during the majority of flow conditions.
Tacony Creek – Reaches 4-5	1700 feet	• This project entails the restoration of Tacony Creek Reaches 4 and 5 as identified by the Tacony Creek Restoration and Ecosystem Enhancement Program, 4/28/2010. • Objective: restore ~1700 feet of stream channel, enhancement of floodplain wetlands, improvement of the riparian buffer, the completion of a paved Fairmount Park trail connection from Tabor Road to I and Ramona Sts, and implementation of green infrastructure at five trail entrances. • This project will connect with the existing Whitaker Avenue stream rehabilitation project.
East Branch Indian Creek Stream Restoration and Infrastructure Protection	TBD	• Project will address areas of significant bank erosion and protect critical riparian sewer infrastructure • Aquatic habitat will be improved through reduced sedimentation of the creek bed
Status: **On Hold**		
Woodland Dam Removal	TBD	• Will investigate, select, design and construct the best alternative to reestablish fish passage along Cobbs Creek. • After selection of a recommend type of fish passage design, concurred by both the Corps and PWD, the project will progress to plans and specifications, and construction contingent on the availability of funds. • During FY23, project stakeholders convened to discuss resuming the project.

Wet Weather Water Quality and Quantity

Implement several BMP projects

PWD and its partners have implemented many BMP projects throughout the city including GSI, stream restoration, and wetland creation projects. In FY23, 32 projects were approved in the separate sewer area through Philadelphia Stormwater Management Regulations for construction that will manage post-construction impervious area for water quality. For more information refer to **Section F.5.c Applications/Permits** on page 28 of this report. For a complete listing of both completed and current GSI projects in the combined sewer system (CSS), please refer to the **Appendix A - Green City, Clean Waters FY23 Annual Report**.

Monitor three demonstration BMPs

PWD is committed to ensuring stormwater BMPs owned and operated by the City are maintained. This commitment is often evaluated through monitoring of these sites. PWD is currently monitoring multiple stormwater BMP project types – for example, stormwater tree trenches, stormwater planters, and porous pavement – and continues to develop and improve monitoring protocols. Monitoring activities for PWD's green stormwater infrastructure projects during FY23 are documented within **Appendix A: Green City, Clean Waters FY23 Annual Report Section-Appendix 4: GSI Monitoring Status Report**. PWD has detailed activities conducted during FY23 for PWD's stream restoration, and wetland creation; please refer to the **Natural Stream Channel Design (NSCD)** section above.

F.3 Detection, Investigation, and Abatement of Illicit Connection and Improper Disposal

a. Prevention of Illicit Discharges

Sewer and Lateral Inspections

The City requires plumbing permits for connections to the municipal sewer system. The permit affords the property owner an inspection of the plumbing work performed. Corrections of defective connections are confirmed to ensure that the ultimate discharge to the receiving waters does not contain sanitary waste. PWD reviewed 1,727 new sewer and storm connections during FY23. This number includes all connections (storm, sanitary, and /or combined sewers). A single project or permit may also have one connection or multiple connections.

b. Investigation of Illicit Discharge Sources

Rank the MS4 outfalls according to their priority for corrective actions

PWD maintains a stormwater outfall monitoring system in compliance with the MS4 permit issued by the PADEP. Samples are collected for outfalls that have dry weather flow and analyzed for fecal coliform and fluoride. Priority outfalls have been established through the 1998 Stormwater Consent Order and Agreement and internally, additional areas of focus have been added to maintain progress in the screening, testing and abating program and for efficient crew deployment. Priority Outfalls are sampled on a quarterly basis. Refer to **page 15** of this report for FY23 priority outfall summaries.

Investigate dry weather flow to identify sewer lateral defects

During FY23, the DCG performed 401 complete dye tests with 16 defective connections found and 66 abatements completed. Details of FY23 activities are listed below.

Table F.3-1: Defective Connections Program – FY23 Summary

	Jul1-Sep30	Oct1-Dec31	Jan1-Mar31	Apr1-Jun30	FY23 Total
Completed Tests	112	63	76	150	**401**
No Cross Connections	111	57	73	144	**385**
Cross Connection Identified	1	6	3	6	**16**
Abatements *	17	25	8	14	**64**

Note: *Some cross connections abated may have been identified in prior fiscal years

Reports of potential dry weather discharge from the stormwater system are also investigated, primarily through the Industrial Waste and/or Sewer Maintenance units. During FY23, 33 incidents were investigated. For details, refer to **Appendix L – Sanitary Infiltration Events** during FY23.

The DCG Field Investigation SOP was updated in March 2017. A copy is available upon request.

d. Abatements

Written notice about sewer lateral defects

The Plumbing Repair Unit handles customer communications (through letters, telephone, or site visits) and is responsible for the abatement of the defects identified.

Abatements of Cross Connections

Details of 66 abatements and costs are listed below.

Table F.3-2 Defective Connection Abatement – 5 Year Summary

Fiscal Year	# Cross Connections Abated		Total Cost of Abatements
	Residential	Commercial	
2019	57	4	$555,933.30
2020	69	1	$701,210.00
2021[1]	11	1	$103,211.00
2022[1]	12	1	$83,852.00
2023	63	3	$716,169.39
Total	212	10	$2,160,375.69

[1]Cost information was not available for all abatements at time of FY report

Residential Properties Cross Connections Abatement

During FY23, 63 residential abatements were completed at a cost of $700,807.89.

Commercial and Industrial Properties Cross Connections Abatement

During FY23, three commercial abatements were completed at a cost of $15,361.50.

Defective Connections Abatement Schedule

All defective connections are required to be abated within 120 days of discovery, in compliance with the MS4 permit. Please view **Appendix N – Defective Lateral Quarterly Report FY23** for more details.

Defective Connections Abatement Confirmation Tests

All abatements completed during FY23 were tested to confirm that the abatement was properly completed.

e. Defective Connection Program Reporting

Illicit connection program quarterly report

Defective Lateral Quarterly Reports are submitted four times a year to PADEP as part of the reporting requirements of the City of Philadelphia NPDES MS4 Permit No. PA 0054712. The report covers three-month periods starting in January, April, July, and October which are submitted no later than 45 days from the end of the reporting period. The quarterly reports were submitted as required during FY23, and **Appendix N – Defective Lateral Quarterly Report FY23** contains these reports.

Illicit connection program quarterly report contents

The report content within the illicit connection program quarterly reports has not changed in FY23. All required information is included in **Appendix N – Defective Lateral Quarterly Report FY23**.

F.4 Monitor and Control Pollutants from Industrial Sources

a. Applications/Permits

The City has the ability to obtain information about NPDES permits/discharge from industries if they contribute stormwater into the City's sewer system. Industries that contribute stormwater directly into a waterway or discharge non-industrial waste into the system usually coordinate directly with the PADEP. A list of NPDES permits that involve stormwater associated with industrial activities in the city were obtained from the PADEP's website and are listed in **Appendix J – NPDES Industrial Stormwater Permitted Sites**.

b. Inspections

Industrial inspections

The Philadelphia Local Emergency Planning Committee (PLEPC) is the entity tasked with meeting the responsibilities of SARA Title III.

As part of the MS4 permit requirement, the City is required to perform a stormwater inspection at all SARA Title III facilities located in the MS4 each fiscal year. In FY23, PWD conducted a stormwater inspection at all 166 SARA Title III facilities located in the MS4.

Industrial waste inspection forms

The Industrial Waste Inspection Form was updated in 2006 to include a stormwater inspection section. A copy of the form can be found in previous reports; please refer to Appendix O of the CSO-Stormwater FY09 Annual Report.

c. Monitoring/Enforcement

Industrial DMR submission
When necessary, the City shall request Discharge Monitoring Reports (DMR) or additional sampling from the PADEP for surrounding industries to ensure compliance with NPDES effluent limitations.

NPDES permits enforcement
Should PWD personnel observe a violation of NPDES permit terms and conditions, PWD will report the violation immediately and notify PADEP, on a case-by-case basis.

F.5 Monitor and Control Stormwater from Construction Activities

Stormwater runoff is a concern both during construction and post-construction. Within the City's development review process, PWD is provided the authority to regulate the runoff from earth disturbance activities of 15,000 square feet or more to improve water quality. Additionally, post-construction stormwater management plan review extends beyond peak rate control and encompasses water quality and water quantity technical requirements for more frequent storm events. Efforts continue to be focused on improving plan review for both Erosion & Sedimentation (E&S) as well as post-construction stormwater management. The following sections document the progress made so far in terms of stormwater runoff from construction activities including the collaboration between the Philadelphia development community, multiple City Departments, and State agencies.

During FY23, PWD performed numerous tasks in direct compliance with the NPDES MS4 Permit as well as tasks that support the ongoing growth of the stormwater management program for development construction activities. Some of the FY23 activities include the following:

- Continued coordination efforts with Philadelphia Licenses and Inspections (L&I) regarding permit review and issuance for development projects applicable to the Stormwater Regulations. At a minimum, the L&I issuance of Zoning, Demolition, Site, and Building permits was coordinated appropriately between the two agencies. L&I supports PWD in enforcement measures through the issuance of Stop Work Orders and withholding Certificate of Occupancy permits for sites that are non-compliant. PWD continues to serve as a reviewing entity in L&I's online permit program, eCLIPSE, by providing pre-requisite signoff on applicable permits. Applicants no longer have to visit PWD offices in order to obtain sign-off, thus streamlining the permitting process.
- Continued coordination with the PADEP Southeast Regional Office Waterways and Wetlands Program through regular project communication and periodic meetings with PADEP and Southeast Region Conservation District staff. The periodic meetings provide a platform to discuss regional and district updates, permitting services and projects, and other topics. PWD also regularly participated in pre-application and project meetings with PADEP staff and applicants to discuss upcoming projects and active projects. In FY23 PWD and PADEP also actively coordinated on several enforcement cases and performed joint site inspections.
- Scheduled and held coordination meetings with local universities and other large landowners to discuss upcoming or current development projects as well as identify ways to strengthen communication and streamline the review and post-construction inspections process.

Additionally, projects in enforcement are discussed, deadlines are communicated, and guidance is provided to bring projects back into compliance.

- Continued to implement erosion and sediment (E&S) compliance as an element of all active construction inspections by ensuring appropriate controls are in place throughout construction activity. Potential E&S issues or violations are documented as part of an inspection report provided to the on-site representative. The reports identify the required corrective actions, and active construction inspectors will return to the site to verify compliance. E&S violations may trigger active construction enforcement actions such as a Stop Work Order and fine for illicit discharge, requiring continued coordination through L&I.
- Continued to update website content to provide clear and accessible resources to the applicant to support quality submittals and efficient reviews. In FY23 PWD began the process of migrating web content from a separate plan review website to the main PWD website https://water.phila.gov/.
- Continued to review projects applying for stormwater-based zoning incentives including Philadelphia's Green Roof Density Bonus, which was incorporated into the Zoning Code in 2015. This bonus offers exceptions to certain residential density rules for development projects that include a green roof. In 2018, the bonus was expanded to allow eligibility for existing buildings undergoing renovation or expansion. The green roof must meet PWD's requirements and be approved by PWD before the bonus can be awarded. In FY23, PWD approved 20 projects citywide as eligible to apply for this bonus.
- Continued to attend bi-monthly Business Industry Association (BIA) meetings for the Government Affairs/Fix It Philly subcommittee. In these meetings, representatives from the development community including developers, architects, and engineers come together with City agency representatives from PWD, L&I, Planning, and Streets to discuss policy and legislation impacting development in Philadelphia to ensure a transparent and efficient development process.
- In FY23, PWD engaged directly with developer stakeholder groups such as the BIA and Sustainable Business Network on topics such as L&I eCLIPSE permitting and guidance manual updates. PWD continued to conduct reviews of stormwater management plans and maintain the website to allow online submittal of plans and requests for pre-application meetings.

A summary of plan review activities city-wide in FY23 is presented in **Table F.5-1** on page 32.

a. Construction Site Runoff Control

PWD reviews and approves E&S Plans, along with PCSMPs, for all development sites disturbing more than 15,000 square feet of earth citywide. For E&S plans, PWD follows policies and practices as provided within the PADEP E&S Control Manual. PWD conducts coordinated reviews with the PADEP for projects disturbing more than one acre of earth.

Site inspections of E&S controls are conducted on a reoccurring basis and in response to any received complaints during active construction. The purpose of reoccurring inspections is to monitor E&S controls on projects where construction and earth moving activities are active, and to require site operators to maintain E&S controls as needed. PWD inspects controls such as, but not limited to, rock construction entrances, silt fencing, inlet protection, stockpile location and protection, and concrete washouts. During an inspection, the inspector communicates with the site representative and requests to see a copy of the on-site E&S Plan. Photographs are taken documenting site conditions. An inspection report detailing any non-compliance items is generated and distributed to the site representative, and then maintained as part of PWD’s electronic project file. Failure to adhere to the requirements in the inspection reports can result in a NOV or a Stop Work Order. For more information regarding enforcement actions, see **Section F.5.e** on page 36.

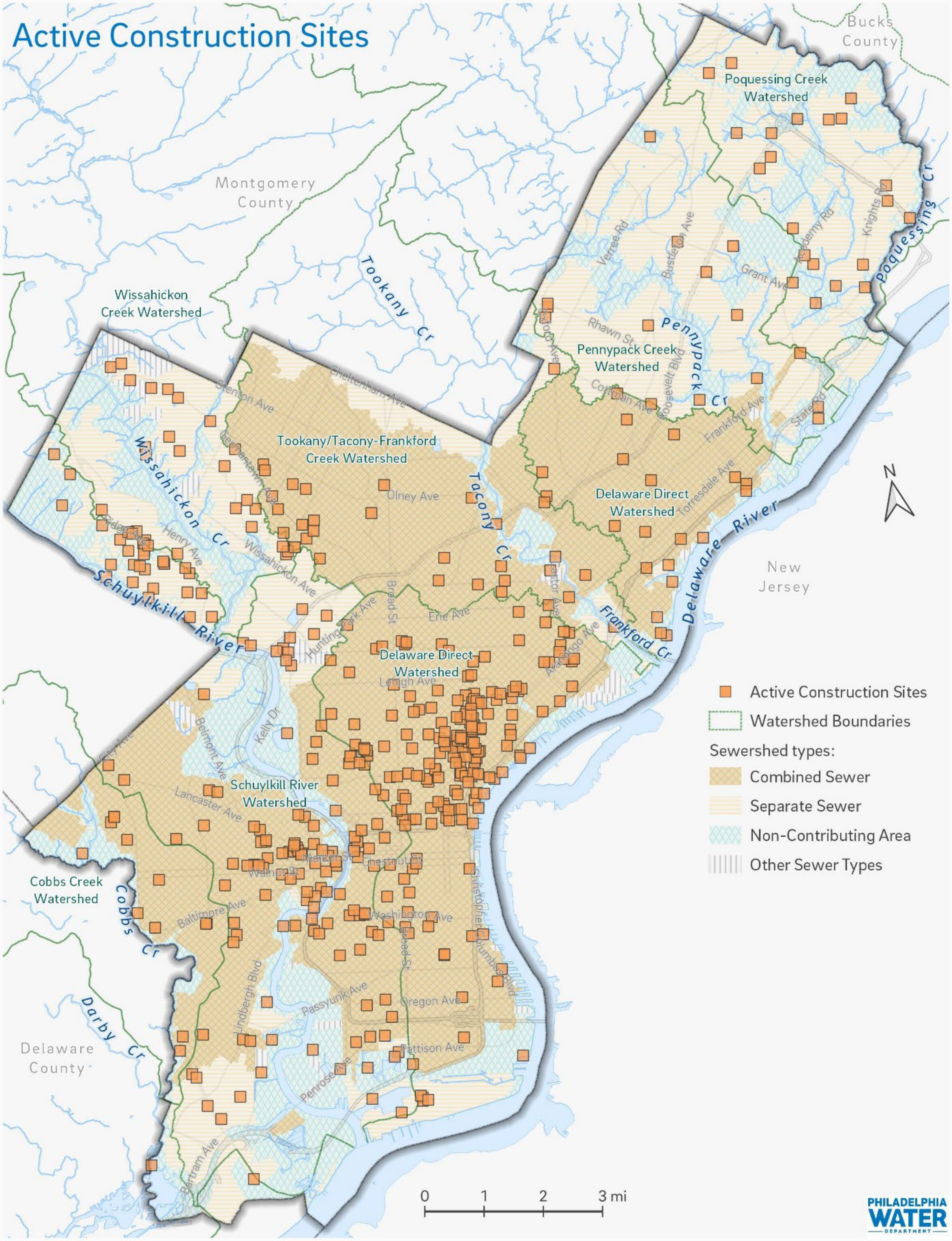
The sites visited cover all of Philadelphia including both separate storm sewer areas and combined sewer areas as depicted in **Figure F.5-1** on page 33.

Table F.5-1: FY23 Summary of Plan Review Activities

	Jul. '22	*Aug. '22*	*Sep. '22*	*Oct. '22*	*Nov. '22*	*Dec. '22*	*Jan. '23*	*Feb. '23*	*Mar. '23*	*Apr. '23*	*May '23*	*Jun. '23*	*FY23 Total*
Conceptual Review Stage													
Approvals	15	9	7	6	10	11	13	9	6	7	15	5	113
Rejections	38	36	27	40	28	34	31	22	45	27	39	37	404
Reviews	59	47	36	51	39	53	50	34	57	37	54	47	564
New Project Submittals	31	31	21	32	30	35	18	23	38	26	31	34	350
Average Review Time (days)	6.7	6	5.7	8.7	9.6	9.1	8.5	5.2	7.5	8.3	8.1	5.8	7.4
Post Construction Stormwater Management Plan Review Stage													
Technical Approvals Issued	9	11	6	4	12	11	6	6	9	5	3	11	93
Rejections	33	52	38	34	30	39	32	26	33	30	31	26	404
Full Technical Reviews	62	79	65	58	54	69	51	46	55	47	53	56	695
New Project Submittals Received	25	20	25	27	21	21	25	18	25	22	29	23	281
Average Number of Reviews per Approval	4.7	4.7	4.3	5.3	5.3	4.8	5	5.2	4.8	5	4.3	4.9	4.9
Average Approval Time (days)	136	206	158	188	277	375	197	240	265	176	155	314	224
Acres of Earth Disturbance Approved	32.3	100.7	14.7	3.8	13	133.4	14.9	9	9.8	36.1	9.2	21.7	398.5
Acres of Green Roofs Approved	0	3.7	1.1	1	0.6	1.6	0.1	0.9	0.9	0.4	0.2	0.2	10.9
Acres of Porous Pavement Approved	0.7	0.7	0.3	0.2	0.2	0.4	0.2	0.2	0.1	0.3	0.2	0	3.5
PADEP Reviews													
New Coordinated Reviews	3	6	4	4	2	3	5	9	11	6	5	11	69
Erosion and Sedimentation Plan Review													
Defer to PADEP	0	0	0	0	0	0	0	0	0	0	0	2	2
Approved	6	6	11	3	9	8	3	7	10	3	5	6	77
Rejected	14	22	16	12	15	21	14	13	10	17	9	9	172
Not Applicable	18	12	13	18	12	17	18	8	17	18	20	11	182
Total Inspections													
New Sites Inspected	14	42	25	19	27	22	22	26	43	58	112	197	607
Total Inspections	335	453	386	428	398	436	419	439	473	418	372	264	4821
Active Construction Inspections at Project Sites with MS4 Sewers	81	105	83	116	85	122	101	111	110	93	86	65	1158
Post Construction Inspections at Project Sites with MS4 Sewers	0	7	4	3	10	4	6	2	0	4	3	5	48
Total Inspections at Project Sites with MS4 Sewers	81	112	87	119	95	126	107	113	110	97	89	70	1206
Active Construction Inspections at Project Sites with Combined Sewers	235	289	258	274	257	269	267	281	312	272	235	167	3116
Post Construction Inspections at Project Sites with Combined Sewers	3	13	12	1	12	7	8	13	11	11	14	7	112
Total Inspections at Project Sites with Combined Sewers	238	302	270	275	269	276	275	294	323	283	249	174	3228

Total Inspections includes projects in "Non-Contributing" sewered areas

Figure F.5-1: FY23 Active Construction Sites



b. Post-Construction Stormwater Management in New Development and Redevelopment

Adopted in January 2006, the Philadelphia Stormwater Regulations enabled PWD to review plans for both new and redevelopment sites throughout the City to ensure water quality and quantity were part of the proposed management plan. Since 2006, PWD has collected and synthesized feedback from the development community regarding improvements to the stormwater plan review program. Updates are made to the Stormwater Regulations to improve and strengthen PWD's stormwater programs and stay current in policy procedures. The Philadelphia Stormwater Management Regulations are available online at http://www.phila.gov/water/PDF/PWDregCH6.pdf.

c. Applications/Permits

Across the entire city during FY23, 350 unique projects were submitted to PWD for conceptual review through the program's website. PWD approved PCSMP for 93 projects citywide during FY23. It should be noted that this number does not include plans re-submitted for review, some of them multiple times. The distribution of development projects that submitted post-construction stormwater management plans for review is presented in **Table F.5-2 & 3**.

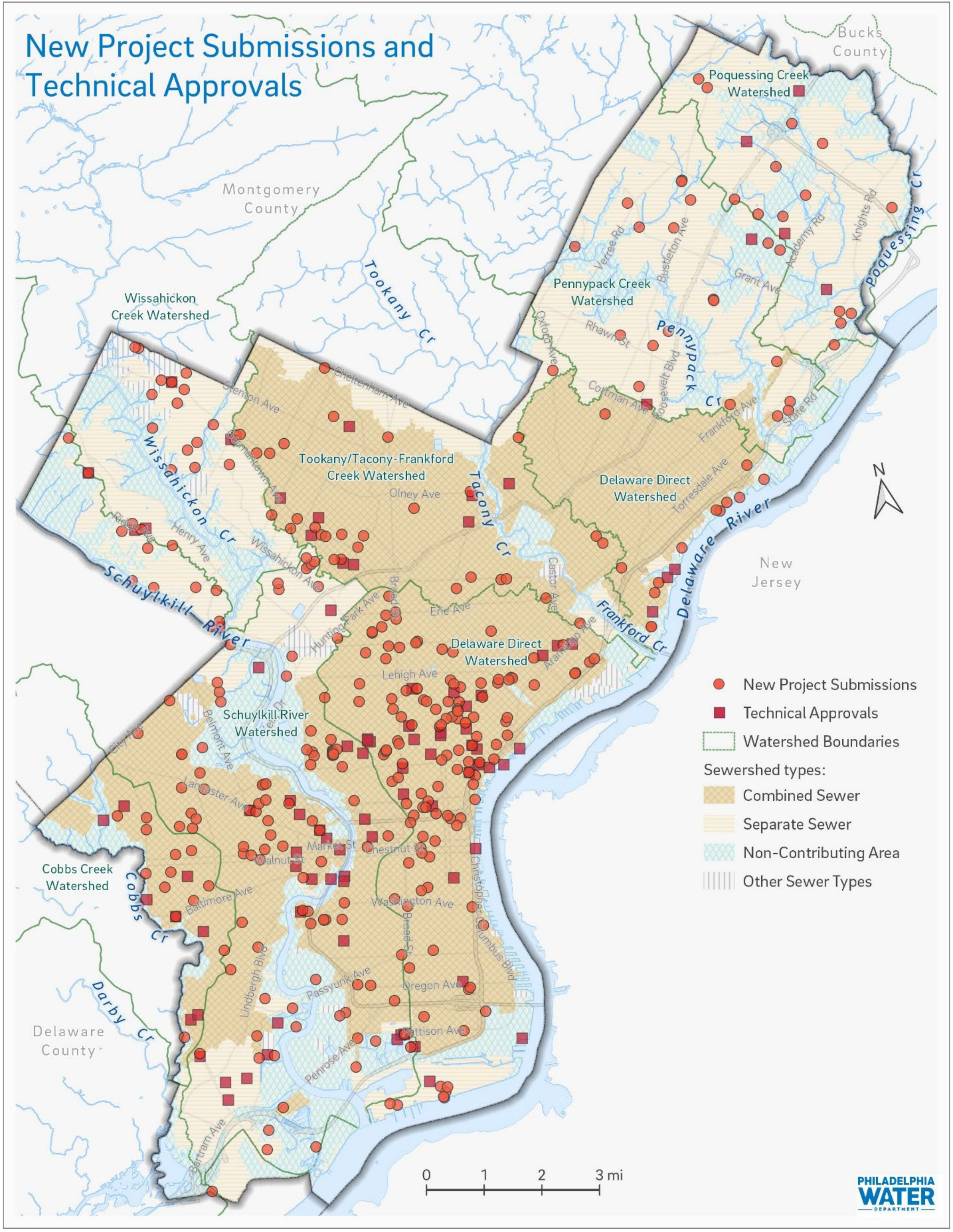
Table F.5-2: Approved PCSMP Location Summary by Contributing Area

Drainage Type	Number of Locations
Combined Sewer Area	61
Non-Contributing Area	19
Separate Sewer Area	13
Total	**93**

Table F.5-3: Approved PCSMP Location Summary by Watershed

Drainage Watershed	Number of Locations
Delaware River	35
Poquessing Creek	3
Pennypack Creek	2
Schuylkill River	32
Tacony/Frankford Creek	10
Wissahickon Creek	3
Darby-Cobbs Creek	8
Total	**93**

Figure F.5-2: Locations of New Project Submissions and Technical Approvals



d. Inspections

PWD requires a pre-construction meeting prior to commencement of earth moving activities for projects applicable to post-construction stormwater management requirements. In FY23, PWD conducted 130 pre-construction meetings citywide for development projects. During the pre-construction meeting, both the approved E&S Control Plan and the approved PCSMP are discussed with the construction manager and property owner representative. Post-Construction Stormwater Management inspections are discussed in **Section F.8** on page 40.

The active construction inspection program continued in FY23 by conducting inspections of stormwater structural controls on applicable land development sites. PWD stormwater inspectors conducted site visits for 481 active sites citywide during FY23. Technical plan review staff members were also on-site, as needed, to verify construction of the SMPs was completed in accordance with the approved plan. In the case that concerns are identified regarding SMP installation during construction, the technical plan reviewer will discuss the necessary corrective actions for the project with the PWD inspector, as well as the project's engineer and construction manager.

PWD stormwater inspectors observe the installation of SMPs and erosion and sedimentation controls during active construction for development sites. During FY23, PWD was able to maintain its presence in the field by conducting 1,158 active construction inspections on 105 sites in the separate sewered areas of the city. Many sites were visited multiple times to ensure compliance with appropriate requirements **(Table F.5-4)**.

Table F.5-4: Active Construction Inspection Site Location Summary

Drainage Watershed	Number of Locations
Combined Sewer Area	337
Non-Contributing Area	39
Separate Sewer Area	105
Total	**481**

e. Monitoring/Enforcement

As part of the 2017 EPA AOCC CWA-03-2017-0146DN, PWD was required to develop an SOP to detail enforcement procedures for responding to E&S control issues when established enforcement methods do not result in compliance. In FY23, PWD continued to use the Repeat Offenders SOP as a guide when implementing enforcement action.

The SOP outlines Notice of Violations (NOVs) which includes a deadline for compliance and reinspection. If a project remains out of compliance, PWD may coordinate with the L&I to issue a Stop Work Order. PWD also coordinates with L&I to hold the building Certificate of Occupancy for any projects where major issues are identified during the construction process. In some cases, projects may fall out of compliance after enforcement actions were previously taken during the construction period.

PWD issues a NOV to sites when significant or persistent issues with E&S controls or the installation of required SMPs are not addressed in a timely manner. In FY23, PWD issued a NOV to 36 projects under construction citywide. In addition, PWD issued follow-up NOV notices to the projects in order to ensure full compliance. Of the 36 active NOVs issued in FY23, 25 have been partially or fully resolved bringing the site back into compliance. The major compliance issues for active construction projects include improper installation or absence of E&S controls, the contractor not following the approved plans, and non-permitted construction activity.

In FY23, PWD hired a dedicated staff member for active construction enforcement. As a result, PWD was able to increase its capacity for issuing violation notifications. In addition, the enforcement referral process was streamlined allowing PWD to respond to construction complaints more quickly and further escalate non-compliant sites. Enforcement escalation was also expanded to include fines for sediment discharges. This fine was issued to one site in FY23.

f. NPDES Permit Requests

PWD continues to provide Conservation District functions for the City of Philadelphia for NPDES Construction Permitting Requirements and Chapter 102 Regulations relating to Erosion and Sedimentation Pollution Control. PWD continues to receive notifications and coordinate reviews for permitting. For more information and full details on this process described in previous reports, please refer to Section F.5.f NPDES Permit Requests on page 204 of the CSO-Stormwater FY12 Annual Report.

g. Stormwater BMP Handbook and Construction Site BMP Sediment & Erosion Control Checklist

The Philadelphia Stormwater Management Guidance Manual Version 3.0 represents a comprehensive revision released in conjunction with the updated Stormwater Regulations on July 1, 2015. Since 2015, the Manual has received three subsequent updates; Version 3.1 released on July 2, 2018 and Version 3.2 released on October 1, 2020, and version 3.3 released on July 1, 2023. Primarily a web-based resource, this version of the manual is organized to reflect the life cycle of a development project from initial submission through operation and maintenance. In addition to providing context on the regulatory framework for stormwater management in the city, the manual builds upon over a decade of program growth and technological advancements to streamline the technical design requirements and clearly document the plan review process for applicants. The PWD leveraged feedback from design engineers to clarify existing content, provide new resources, and develop a fully searchable and accessible online manual. The manual is located on the web at https://water.phila.gov/development/stormwater-plan-review/manual/.

F.6 Watershed, Combined Sewer Overflow (CSO), and Source Water Protection Programs

PWD, through the Planning and Environmental Services Division (PESD), strives to reduce the amount of point and non-point discharges entering regional waterways and improve the environmental health of the region so that all waters are fishable and swimmable. The main programs within PESD, in addition to the Stormwater Management Program, that work together to improve regional ecological health, water quality, and sustainability are: Watershed Planning, Source Water Protection Program, CSO Management Program, and Wetlands Mitigation Registry. The Watershed Planning Program is presently explained in detail throughout **Section III.C of the CSO Annual Report** on page 34.

Source Water Protection Program

PWD's Source Water Protection Program embodies PWD's multi-barrier approach to ensuring the safety and quality of Philadelphia's drinking water. Drinking water sources consist of the Schuylkill and

Delaware Rivers. The Source Water Protection Program conducts planning, research, and on-the-ground projects to better understand and address priority sources of water quality impairment in the 10,000 square mile upstream area encompassing Philadelphia's source watersheds. The staff works closely with PWD water treatment plant operators to anticipate and respond to emergencies and challenges to conventional treatment technology. PWD continues to implement the Source Water Protection Program. For more information on this program, please refer to the following sections:

- Schuylkill Action Network
  Please refer the CSO Annual Report **Section II.G.2 – Schuylkill Action Network** on page 18 for information about this topic.
- Delaware Valley Early Warning System
  Please refer the CSO Annual Report **Section II.G.2 – Delaware Valley Early Warning System** on page 20 for information about this topic.
- RiverCast
  Please refer the CSO Annual Report **Section II.G.2 – Philly RiverCast** on page 18 information about RiverCast.

Combined Sewer Overflow Management Program

The Combined Sewer Overflow management program works to implement technically viable, cost-effective improvements and operational changes that mitigate the impacts of combined sewer overflows. Please refer to the **FY23 CSO Annual Report** and **Appendix A – Green City, Clean Waters FY23 Annual Report** for additional information.

Watershed Mitigation Registry

Please refer to **Section F.2.Step 3.a – Access the benefits of implementing a Natural Stream Channel Design (NSCD) and effectiveness of the NSCD restoration approach** on page 20 for information about the Watershed.

F.7 Miscellaneous Programs and Activities

a. Pollutant Migration/Infiltration to the MS4 System

PWD responds to all notifications and reported complaints of liquid, solid, or gaseous pollutants within Philadelphia. A list of all pollutant migration events in the MS4 section of the city that occurred in FY23 is presented in **Appendix M – FY23 Pollutant Migration/Infiltration**.

b. Public Education and Awareness

Public Education Literature

The City takes an active role in providing information and education to the public and our community. Several events and programs are conducted each year in which the City provides literature to the public. Please refer to the CSO Annual Report **Section II.G – Pollution Prevention** on page 18 for information about this topic.

c. Pesticides, Herbicides, and Fertilizer Controls

Integrated Pest Management protocol

The majority of the City does not use pesticides or conduct any practices that require the use of the Integrated Pest Management (IPM) protocol. The City is currently focusing on invasive plant management through the use of herbicide to remove invasive plants.

The Philadelphia Health Department uses larvicides, Bacillus Sphaericus (brand name Vectolex), Methoprene (Altosid), and Spinosad (Natular), to prevent mosquito breeding. These larvicides are approved for use in stormwater catch basins and are applied as such. The IPM protocol is followed when using the larvicides by inspecting the catch basins before treatments, using the least toxic or non-toxic product, and submitting a request for repairs when necessary. PWD and the Department of Public Health work closely together. This collaboration has resulted in the Health Department receiving maps with locations of the City's storm water inlets and surface basins. This allows PWD improved access to refer concerns of pests in the water collections systems for treatment by Health Department staff.

All associated Philadelphia Health Department staff are certified pest control applicators in accordance with the Pennsylvania Department of Agriculture. To maintain this certification, on-going training is required. The Philadelphia Health Department holds several on-site trainings per year for staff.

Education materials to private pesticide users

The Philadelphia Health Department provides educational materials to organizations, companies, and/or individuals upon request. Often private exterminators, especially companies that handle pest control work for City facilities, request this information since most buildings in the City contract out for pest control work through the individual Departments. Health Department Sanitarians (Inspectors) have this information available to provide to the public.

d. Snow Management Plan

The City faces winter storms that bring potentially dangerous accumulations of ice, sleet, freezing rain, and snow. To mitigate the impact of these storms, the Streets Department has prepared a Snow and Ice Operations Plan which provides a detailed outline of the City's response to adverse winter weather conditions. The plan includes the salt storage locations at the six Highway Districts. The Snow and Ice Removal Operations Plan content did not change for FY23. The winter 2021-2022 is provided in **Appendix O – City of Philadelphia Snow and Ice Operations Plan Winter 2021-2022**. Please refer to Appendix O on page 40 for information about salting practices in the city.

e. Municipal/Hazardous Waste, Storage, Treatment, and Processing Facilities

The City's one active waste transfer station, Northwest Transfer Station, is located at Domino Lane and Umbria Street in the Roxborough section of the City. Due to the existing facility's progressive deterioration a new waste transfer facility has been designed on a different portion of the same property and the construction project is scheduled to begin in August of 2023. The final design includes stormwater management best practices such as an oil/water separator connected to all trench drains in the facility and three lined rain gardens to manage stormwater runoff on site.

F.8 Best Management Practices (BMPs)

a. Submit Storm Sewer Discharge Ordinance

The authority for PWD to adopt stormwater regulations is found within Title 14 Zoning and Planning Code under §14-704(3) Stormwater Management. PWD maintains Stormwater Regulations as Chapter 6 of PWD's regulations. These regulations were originally adopted in 2006, with a significant update made in July of 2015. Most recently, the regulations were updated in July 2022, to clarify the Flood Control and Channel Protection requirements, as well as updates to the O&M Agreement section. These regulations require stormwater management on development projects that exceed an earth disturbance threshold of 15,000 square feet. For more information regarding PWD's regulation updates within the last year, see **Section F.5.b. – Post-Construction Stormwater Management in New Development and Redevelopment** on page 34.

PWD has added documentation to a website (https://water.phila.gov/development/stormwater-plan-review/) to provide the development community a means of accessing the most recent stormwater management information.

b. Commercial and Residential Source Controls

b.i. Mingo Creek Surge Basin

A capital construction project for the rehabilitation of Mingo Creek was given notice to proceed on 1/26/2023, and is anticipated to be construction complete in 2026. The rehabilitation project is in response to flooding in the Eastwick area of Philadelphia because of the Cobbs Creek overtopping. For more information on this project, please refer to Section F.8.b.i on page 214 of the CSO-Stormwater FY12 Annual Report.

b.ii. Existing privately owned structural controls

To ensure ongoing SMP maintenance of private facilities, PWD continues to utilize four means: executing Operation & Maintenance Agreements, maintaining comprehensive operations and maintenance information, conducting post-construction maintenance inspections, and enforcing on non-compliant projects.

An Operation and Maintenance agreement between the property owner and PWD is executed and recorded against the property as part of the PWD post-construction stormwater management plan process. These agreements outline the SMP(s) on the private site and stipulate maintenance requirements. The agreements also include language granting PWD the authority to inspect on-site SMPs and even perform maintenance on behalf of the property owner if necessary.

PWD maintains comprehensive operations and maintenance information geared toward the private development community in Chapter 4 of the Philadelphia Stormwater Management Guidance Manual. Each SMP section provides guidance on SMP maintenance activities, including a recommended SMP maintenance schedule and maintenance factsheets, which are available as a resource for the property owner. In addition, as part of the post-construction stormwater management plan review process, projects must create an SMP Maintenance Guide. The SMP Maintenance Guide is unique to each project and includes a site map and Maintenance Schedule Form for each SMP to allow the owner to track maintenance activities for the site. Please see the links below for more information:

- Philadelphia Stormwater Management Guidance Manual, Chapter 4
- Maintenance Schedule and Fact Sheets
- SMP Maintenance Guide

Post-construction maintenance inspections of private facilities were conducted throughout the reporting period. PWD utilizes visual inspections and specialized inspection techniques to assess the condition of private SMPs. PWD conducts post-construction maintenance inspections on all applicable private facilities. As projects are identified for maintenance inspection, the PWD post-construction inspection staff contacts the property owner to schedule the inspection. PWD prefers to conduct the inspection with the property owner or their maintenance representative present so any concerns or questions can be verbally discussed. After inspection, a post-construction inspection report is generated and issued to the property owner. Any required corrective actions are identified in the report along with a deadline for resolution. After actions are taken, PWD re-inspects the property and compliant sites are closed until their next routine inspection date. Inspectors will provide guidance to the property owner to ensure corrective actions are resolved. In addition to visual inspections, PWD has identified other effective methods and technologies, including closed-circuit television, surveys of critical system elevation points, confined space, pole-mounted camera photography, and wet weather inspections. PWD will continue to evaluate and refine post-construction inspection protocols. In FY23, PWD performed 48 post-construction inspections in the MS4 and 178 post-construction inspections citywide.

Referral for enforcement is pursued if compliance is not achieved within the timeframe specified during the post-construction inspection process. PWD initiates an enforcement case with the issuance of a post-construction enforcement letter to the property owner if a PCSMP is found to be insufficiently maintained. This notification includes a description of any issues identified and a timeline to achieve compliance. The City is authorized to compel maintenance of SMPs on private property under the Philadelphia Code and PWD Regulations. Development sites that are subject to the regulations, as well as properties that have grant-funded SMPs, are required to maintain the SMP(s) to function as designed. If initial notification is unsuccessful at bringing action from the property owner, PWD can compel compliance through several enforcement tools, including NOVs, fines, court action, and/or a nuisance abatement and lien by the City. For non-compliant projects, PWD will also suspend any applicable stormwater billing credits if corrective actions are not completed. In FY23, PWD successfully resolved 11 enforcement cases consisting of 57 SMPs in the combined sewer area of the city. Of the enforcement cases closed, escalated enforcement tools were utilized consisting of seven NOVs. PWD will continue to work with property owners to ensure that SMPs are inspected and maintained in accordance with Regulations and recorded O&M agreements.

c. Development Plans Review

PWD and the City Planning Commission provide review of drainage plans for new and redevelopment. The drainage plans address both flood control and potential stormwater pollutants under the authority of the Philadelphia Code. Please refer to **Section F.5 – Monitor and Control Stormwater from Construction Activities** on page 29 for additional information.

d. Street Cleaning Program

During FY22, the Streets Department developed the Mechanical Street Cleaning Pilot Program as part of the City of Philadelphia's commitment to reduce trash and litter conditions in the City's most vulnerable communities. Mechanical street cleaning is an effective tool in reducing litter from city streets and preventing trash and debris from entering the water systems. In FY23, when it was implemented, 24,796 miles were swept and 2,531 tons of material were removed from the streets.

The Streets Department launched Phase II in 14 neighborhoods identified through the Litter Index as having the highest concentration of litter. These areas have been identified as requiring additional City services to supplement cleaning efforts in the area. The program runs from early May through November 30th to coincide with the warmer-weathered months and decrease the potential for snow and ice. Some streets in each pilot area receive sidewalk cleaning maintenance along with mechanical broom cleaning weekly. Since FY14 the Streets Department has initiated monthly street sweeping operations on routes along the Tookany/Tacony Frankford, Wissahickon, Cobbs Creek, and Pennypack watersheds within the city.

In addition, the Center City District (CCD) and University City District (UCD) conduct sidewalk cleaning. Heavily trafficked commercial streets and areas receive daily sweeping with pans and brooms and mechanical cleaning. Other areas with a high density are cleaned at least twice weekly with machines (some areas are cleaned daily). Sidewalks also get a monthly power washing, except in winter, to remove accumulated stains, gum, and grime. In FY23, 49,053 miles of streets were mechanically cleaned. Through a variety of fee-for-service arrangements, CCD crews clean several adjacent commercial and residential areas and provide a 24-hour deployment to clean the three and a half mile long underground subway concourse and Center City's two regional rail stations.

Public awareness of litter

The City promotes, develops, and implements litter reduction programs in an effort to increase public awareness of litter as a source of stormwater pollution. There are about 500 solar-powered, compaction litter receptacles in Center City, and another 460 in other commercial districts throughout the city. Over 600 standard wire baskets are also in place through the Philadelphia More Beautiful Committee (PMBC) Adopt-A-Basket program, which provides block captains with wire waste baskets to distribute and manage across city neighborhoods. PMBC also organizes neighborhood cleaning events citywide. Such cleaning efforts are bolstered every April by the Philly Spring Cleaning Day, a citywide, annual anti-litter event partnering various city agencies and neighborhood community groups. Although last year the event was cancelled due to the COVID 19 pandemic, this year it was held in the spring with a second citywide cleanup scheduled for the fall. These efforts are bolstered by Philadelphia's Streets & Walkways Education and Enforcement Program (SWEEP). SWEEP officers, employees of the Streets Department, work with residential communities to address locations with problematic amounts of litter and short dumping. In cases of non-compliance, SWEEP officers will issue warnings and citations to the appropriate individuals.

e. Animal Waste and Code Enforcement

Educational material regarding control of animal waste

The Philadelphia Code and Charter Chapter 10.100 – Animals and Chapter 10.700 – Refuse and Littering address the proper clean-up of pet waste and applicable fines and penalties. In addition, signs advertising said penalties are displayed city-wide in an effort to prevent residents from violating this statute. The City of Philadelphia also provides the text of this code online at https://codelibrary.amlegal.com/codes/philadelphia/latest/philadelphia_pa/0-0-0-281581.

PWD provides additional information on pet waste to the public including how it affects stormwater and why to pick it up through its website located at the following site: http://water.phila.gov/drops/dog-waste/

Dog Waste Control Program

proach to address dog waste in Philadelphia focuses on partnerships with key dog-related organizations, including dog shelters, vet clinics, and animal nonprofits. In FY23, the program partnered with six6 sch organizations; five5 distributed educational flyers and free dog waste bags to dog owners, and 4 fur paticipated in the monthly social media campaign, in dditiso included PWD, the Fairmount Water Works Interpretive Center, and the Partnership for the Delaware Estuary. During May 2023, PWD launched an updated Spokesdog Contest on social media, which received three3 etries from the public and had a reach over 25,000 on social media. Throughout the year, 1,200 rolls of dog waste bags and 800 dog waste publications were distributed to Philadelphians. More information can be found at the following website: http://www.delawareestuary.org/manage-dog-waste/.

f. Flood Management and Flood Control Devices

Structures built within the floodplain

All development within the Special Flood Hazard Area (SFHA), which is identified on FEMA's Flood Information Rate Maps (FIRM's), is reviewed and approved per the City's codes and regulations found in both Zoning and Building codes. L&I will identify all City parcels within the SFHA, and upon an application submission, will determine whether the floodplain codes apply. If the development site itself is determined to be within the SFHA, structures built will be designed to an elevation of Base Flood Elevation (BFE) plus a safety factor of at least 18 inches. L&I will maintain records of compliance for all development located with the SFHA. Licenses and Inspections issued 395 permits in total, which includes separate building, mechanical/electrical/plumbing (MEP) permits, and alteration permits.

Evaluate new and existing structural drainage controls

Our evaluation of structural drainage controls was discussed in further detail in **Section F.8.b.ii - Existing privately owned structural controls** on page 40 of this report.

Work is being completed in sections of the city that have chronic flooding to eliminate or reduce these occurrences; please refer to CSO Annual Report **Section II.B.3 – Flood Relief Project Summary** on page 3 for more information about the SFR projects and details on evaluating structural drainage controls.

Streambank Restoration and Wetland Enhancement

Please refer to **Section F.2.Step 3.a – Access the benefits of implementing a Natural Stream Channel Design (NSCD) and effectiveness of the NSCD restoration approach** on page 20.

g. Sanitary Infiltration Controls

Limit sanitary infiltration

As part of the Cross-Connection Repair Program, PWD has conducted 1,723 abatements to correct cross -connection in sewer laterals since 1994; 66 abatements were completed in FY23. PWD also has in place twelve dry weather diversion devices which divert sanitary flow back into the sanitary sewer but still allow stormwater to pass through during wet weather events. PWD estimates that these abatements and dry weather diversion devices have prevented over 239.30 million gallons of contaminated flow from entering our waterways since the inception of the program and about 9.27 million gallons during FY23. Please refer to **Section F.3 – Detection, Investigation, and Abatement of Illicit Connection and Improper Disposal** on page 26 for more information on the Cross-Connection Repair Program.

In addition, as part of PWD's Sewer Maintenance Program, sewer lining is routinely conducted on both sanitary and storm sewers. Lining sewers helps to reinforce, seal, and rehabilitate the existing sewers, specifically preventing infiltration to allow the pipe capacity to be reserved for sanitary and storm flow. Apart from those being done under consent orders, there are several sewer lining projects in the City that originate from sewer maintenance issues like street cave-ins, depressions, backups, as well as outputs from sewer assessment meetings.

As a part of PWD's commitment to improvement of water quality and aesthetics in dry weather, large sewer lining projects were initiated on the intercepting sewers along the Tookany/Tacony-Frankford and Cobbs Creeks. Please refer to **Appendix A Green City, Clean Waters FY23 Annual Report Section 1.1 Interceptor Rehabilitation Program** on page 1 for more information on the interceptor relining project.

Construction of a storage tank upstream of relief sewer manhole R-20, located at Main Street and Shurs Lane, to capture and store excess flows was completed during November of 2013. The consent order requirement for sewer linings around regulator R-20 in an effort to reduce inflow and infiltration has been completed. Please refer to CSO Annual Report **Section III.B.1– Construction and Implementation of the Main and Shurs Off-line Storage Project** on page 32 for more information on the Main and Shurs Off-line Storage Project and efforts to reduce inflow and infiltration at R-20.

PWD constructed a parallel relief sewer in December of 2011 to eliminate overflows at manhole PC-30 as per a consent order issued by the PADEP. The overflows at PC-30 were caused by a combination of various factors which influence the hydraulic carrying capacity of the Poquessing Creek Interceptor during wet weather events. In FY23, PWD continued to monitor the effectiveness of this relief sewer.

Investigate, remediate, and report sanitary infiltration

PWD responds to all citizen complaints of liquid, solid, or gaseous pollutants within Philadelphia. A database called the Sewage Pollution Incident & Location Log (SPILL), which stores information about unintentional sanitary discharges including the date reported, problem location, spill type, description, and abatement date, is maintained. Detailed information on the events found on the SPILL database of reported sewage pollution incidents in FY23 are found within **Appendix L – FY23 Sanitary Infiltration Events**.

The following locations have been identified by the Department as locations suffering from chronic discharges of sanitary sewage to the storm sewer system and/or waterways. A description of the specific site issues and the current status of remediation efforts is provided for each location.

Neill Drive Pumping Station

In FY23, a sanitary sewer overflow (SSO) occurred as the result of a failure in the force main on 4/10/2023. Emergency crews responded and the station and force main were put back into service on 4/13/2023. The force main failure occurred at a section with an existing fitting and plastic coupling. The section was removed and replaced with new fitting and ductile iron pipe. PWD plans to proactively replace other sections of the force main with similar fittings in FY24.

Navy Yard Force Mains

Issues with the force mains associated with Pump Station 603 in the Philadelphia Navy Yard have been ongoing for several years, and the Department saw significant progress in the necessary upgrade and rehabilitation of a portion of these mains in FY23. The force main and associated pumping station are integral in conveying sanitary flows out of the western area of the Navy Yard to the Southeast Water Pollution Control Plant.

Pump Station 603

In 2021, PNBC-603 experienced multiple force main breaks due to the corrosive effluent from PNCB-648 eroding the inner wall of the main. After years of recurring breaks, a two-phase project was initiated in 2021 to replace the force main with a corrosive resistant material. The first half of the project entailed replacing the main starting at the station and ending around 1000 ft west of Broad St. The construction of this project is complete, and the work was accepted by PWD construction on October 12, 2022. The second phase of the project is currently being expedited and includes replacing the rest of the main from the first phase to the discharge manhole near PNBC-796. The second phase of the project is currently at the 70% design stage, with a target design complete date in 2024. In FY23, there were no SSOs due to the corrosion of the 8" force main.

Pump Station 648

Force main deterioration issues have been ongoing for several years at this location and the Department completed a major overhaul of Pump Station 648 (which discharges to Pump Station 603) and the cast iron force main in 2020. The project consisted of replacing the force main with high density polyethylene and all internal station piping, pumps, and fittings with stainless steel to help resist corrosion.

Hortter Street Sewer

On December 13th, 2020, PWD responded to the fourth SSO along the 300 and 400 blocks of W Hortter Street in the last four years. The Department has completed several CCTV inspections of sanitary and storm sewers in this street, with the most recent occurring in February 2019. The primary causes of the SSOs have been heavy debris accumulation and failures in the terracotta pipe sanitary sewer installed in the late 1800s, resulting in the restriction of flows and discharge through manholes or privately owned fresh-air-inlets. The Department has been able to respond to the SSO incidents by completing sewer flushing and cleaning activities and point repairs when necessary. PWD continues to monitor this location so that it can mitigate the occurrence of any future SSOs until the sewer reconstruction project is complete.

During FY23, two SSOs occurred due to excessive discharge from a water main disinfection project. The discharge was stopped, and cleanup was conducted by Sewer Maintenance. The Department issued Notice to Proceed on 2/23/2022 for the sewer reconstruction project. The project is under construction with an anticipated construction completion by winter 2023.

Cresheim Valley Drive (CV-0145)

PWD previously identified a hydraulic overload along a 1,000-foot section of separate sanitary sewer in the Cresheim Valley. A hydraulic model analysis revealed a portion of this system was hydraulically limited during wet weather events with a 1-year return interval. Pursuant to Chapter 94 reporting requirements, the PWD notified the PADEP of this restriction and submitted a Corrective Action Plan (CAP) as a component of its Chapter 94 Report for the 2020 calendar year. Construction of the new intercepting sewer began in November 2021, and the sewer has been in service since March 2022. The project replaced approximately 1,500’ of the former egg-shaped Creshiem Valley intercepting sewer and replaced it with 42” centrifugally cast fiberglass pipe that is watertight at all joints, connections, and manholes. This project successfully eliminated the hydraulic restriction that existed between manholes CV-138 and CV-137. PWD is currently engaged in post-construction monitoring of the former intercepting sewer to see if it can be abandoned and filled per the original project specifications. A partial bulkhead was constructed at CV-0128 to monitor any potential flows in the former intercepting sewer. If flows are non-existent or negligible, PWD will move forward with the abandonment plans.

On-lot septic/disposal system

During FY23, one complaint of a malfunctioning on-lot sewage disposal system was investigated and serviced. Also, during FY23, four applications were submitted for the installation or repair of on-lot sewage disposal systems, and four permits were approved. In addition, 749 portable toilet permits were issued. PWD continues to support the inspection and remediation of these systems.

h. Spill Prevention and Response

The City’s response plan to respond to and contain harmful spills that may discharge to the municipal separate storm sewer system is managed by the Office of Emergency Management.

In order to protect PWD’s structures and treatment processes, PWD staff respond to oil and chemical spills and other incidents that have the potential to threaten the water supply or impact the sewer system, twenty-four hours per day, seven days per week. PWD responds to all incidents that can impact the sewer system or endanger PWD employees. This includes both the sanitary sewer system and the storm sewer system. PWD supervises cleanup activities and assesses environmental impact. PWD inspectors also investigate various other types of complaints. In FY23, 35 pollution migration events occurred. A list of all pollutant migration events in the MS4 section of the City that occurred in FY23 is presented in **Appendix M – Pollutant Migration/Infiltration**.

i. Public Reporting of Illicit Discharges, Improper Disposal

The City encourages residents to report the occurrence of illicit discharges that may impact the sewer system and water bodies. To facilitate the timely reporting of such events, PWD operates a Municipal Dispatcher 24 Hours/Day, 7 Days/Week to handle reports from the public. In addition, a customer service hotline (215 685-6300) is also operated that provides the ability to connect to the dispatcher. This information is distributed in mailings, as well as online at https://water.phila.gov/contact/http://www.phila.gov/water/contact_us.html.

Upon the reporting of such an incident, a PWD inspector is immediately dispatched to the site to investigate and determine the source of the discharge, as well as the extent of impact on the receiving water body. Each incident is logged into an electronic database that enables tracking of the details of each occurrence.

PWD received 1,241,332 phone calls in FY23. Currently PWD does not track phone calls specifically related to illicit discharges and improper disposals in the MS4 area, but instead tracks much broader topics including sewage backup, flooding, street cave-ins, and water service disruptions.

Philly 311

Philly311 was created by the City to help eliminate the need to sort through the numerous phone numbers and hotlines available to contact the City government. A customer service specialist will connect the user to the information and services they may need either by calling 3-1-1, asking a question on the website or through Twitter @philly311. A Philly 311 mobile app is available for iPhone, Android, or Blackberry devices to report issues such as graffiti, potholes, litter and more. For more information on uses of Philly311, please visit: http://www.phila.gov/311/. During FY23, Philly 311 transferred 2,691 non-emergency inlet and hydrant requests to Customer Service Call Center.

j. Used Oil and Toxic Material Disposal

The City continues to facilitate the proper disposal of used oil and other toxic materials. This program includes collections events, distribution of educational materials, the operation of a website, and a hotline accessible to the public. During FY23, Streets held seven (7) Household Hazardous Waste events resulting in contributions from at least 3,359 individuals, and removing 288,128 lbs. of hazardous materials (Table F.8.j). For more information on the hazardous waste program please visit: https://www.phila.gov/services/trash-recycling-city-upkeep/dispose-of-household-hazardous-waste/.

Table F.8-1: FY23 Household Hazardous Waste Collection Events

Date	Area	Address
Thursday, July 14, 2022	Northeast Philadelphia	8401 State Rd., 19136
Saturday, September 17, 2022	North Philadelphia	2121 W. York St., 19132
Saturday, October 22, 2022	Southwest Philadelphia	3033 S. 63rd St., 19153
Saturday, November 5, 2022	Port Richmond	3901 N. Delaware Ave., 19137
Saturday, April 1, 2023	Northeast Philadelphia	8401 State Rd., 19136
Saturday, May 13, 2023	West Philadelphia	4800 Parkside Ave., 19131
Saturday, June 10, 2023	Northwest Philadelphia	320 Domino Lane, 19128

k. Stormwater Inlet Labeling/Stenciling

Since 2015, PWD's stormwater inlet labeling program has included watershed specific markers representing the seven watersheds in Philadelphia. Each marker features a unique color scheme and an animal native to its respective watershed. Storm drain marking kits are assembled and distributed to volunteers, both individually and through partnerships with community and environmental organizations; kits include enough supplies to mark 15 storm drains as well as educational tip cards to inform the public about how their actions can reduce stormwater runoff pollution. PWD continues to utilize its web-based marking app to track which storm drains are marked by volunteers.

During FY23, a total of 69 storm drain marking kits were distributed to volunteers leading to 640 storm drains being marked throughout Philadelphia. Seven watershed and civic organizations and five schools were engaged with the program, both in the distribution of kits and the installation of markers. Additionally, four presentations were given about the program and its connection to stormwater runoff. This year, garbage bags were added to the storm drain marking kits to encourage volunteers to clean up their neighborhoods during their marking activity. Follow ups with volunteers occur regularly to encourage the installation of distributed markers.

Section G Assessment of Controls

PWD has selected a set of effective post-construction stormwater management controls to address problems identified in the waterways and documented these controls in the Philadelphia Stormwater Management Guidance Manual. Philadelphia's stormwater regulations obligate all development projects subject to these regulations to implement the identified controls. The requirements of the stormwater regulations were developed through the Act 167 planning process in coordination with neighboring counties. The requirements are explained in detail in Section 1.2.1 of the Stormwater Management Guidance Manual and summarized below.

Water Quality

The Water Quality requirement focuses on the removal of both runoff volume and pollutants and is similar to requirements in surrounding states and other major cities across the country. Because flow rates and velocities were identified as significant causes of aquatic ecosystem impairment, infiltration is emphasized as the preferred water quality management practice unless evidence is provided that it is infeasible on a particular site. Additional water quality benefits are provided, in part, by slowing water flow rate and allowing suspended solids and associated pollutants to settle.

The Water Quality requirement stipulates infiltration of the first 1.5 inches of runoff from all directly connected impervious area (DCIA) within the limits of earth disturbance. The initial 2006 regulations required 1.0 inch of runoff to be managed, based on water budget analyses and precedents for control of the 90th percentile event set by Maryland and other nearby states with similar climates. In 2015, this requirement was increased to 1.5 inches based on evidence provided by simulations showing that this level of control will further reduce the volume and flow rate of runoff to waterways.

Channel Protection

Erosion of stream beds and banks caused by high volumes and velocities of urban runoff was identified as a significant contributing factor to aquatic ecosystem impairment in Philadelphia's stream systems. For this reason, a channel protection requirement was incorporated in the stormwater regulations. This requirement is based on the concept of effective channel forming discharge and is similar to precedents set by Maryland and other nearby states with similar climates and geology.

The Channel Protection requirement stipulates the detention and release of runoff from the one-year, 24-hour Natural Resources Conservation Service Type II design storm event for all DCIA within the limits of earth disturbance at a maximum rate of 0.24 cfs per acre of directly connected impervious drainage area in no more than 72 hours.

Flood Control

Act 167 Plans identified peak rates of runoff as a contributing factor to out-of-bank flooding events in Philadelphia and surrounding counties. To address peak rate control, geographically specific requirements were incorporated in Philadelphia's stormwater regulations and manual.

The Flood Control requirement stipulates that a development project meet or reduce peak rates of runoff, as determined by its Flood Management District, from predevelopment to post-development conditions during certain storm events.

Directly Connected Impervious Area (DCIA)

There are approximately 20.7 square miles of impervious area in the portion of the City that falls under the MS4 permit. Since July 2010, approximately 1.66 square miles (1,064 acres) of directly connected impervious area are tributary to completed or approved green stormwater infrastructure. This is approximately 8.0% of the impervious area.

Section H Fiscal Resources

Maintain adequate program funding

During FY23, the City provided fiscal resources needed to support operation and maintenance of the Stormwater Management Program. The budget for the upcoming FY24 budget is available upon request.

Annually submit fiscal analysis

The conditions of the NPDES permit can be achieved through appropriate budget planning supporting the projects and assessments critical to a successful program. Any funding changes will be included as part of subsequent annual reports.

APPENDIX A

Green City, Clean Waters

FY 2023 Annual Report

Twelfth Annual Report for the City of Philadelphia's Consent Order and Agreement on Green City, Clean Waters

Reporting period July 1, 2022 – June 30, 2023

Submitted to
The Commonwealth of Pennsylvania
Department of Environmental Protection
And
The United States Environmental Protection Agency

By the City of Philadelphia Water Department
September 30, 2023

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Glossary of Acronyms

AOCC	Administrative Order for Compliance on Consent
BOD	Biological Oxygen Demand
City	City of Philadelphia
CDO	Central Delaware Overlay
CMP	Comprehensive Monitoring Plan
COA	Consent Order and Agreement
CSO	Combined Sewer Overflow
CSS	Combined Sewer System
EAP	Evaluation and Adaptation Plan
ECO	East Callowhill Overlay
FHL	Frankford High Level
FWWIC	Fairmount Water Works Interpretive Center
GA	Greened Acre
GIS	Geographic Information Systems
GSI	Green Stormwater Infrastructure
LTCPU	Long Term Control Plan Update
NASSCO	National Association of Sewer Service Companies
NTP	Notice to Proceed
O&M	Operation and Maintenance
PACP	Pipeline Assessment Certification Program
PADEP	Pennsylvania Department of Environmental Protection
PE	Public Engagement
PCSMP	Post-Construction Stormwater Management Plan
PennDOT	Pennsylvania Department of Transportation
PHS	Pennsylvania Horticultural Society
PSWMR	Philadelphia Stormwater Management Regulations
PWD	Philadelphia Water Department
RCSI	Resilient Stormwater Communities Initiative
RCO	Registered Community Organizations
ROW	Right-of-Way
SIUA	Soak It Up Adoption
SMP	Stormwater Management Practice
SOP	Standard Operating Procedure
SPRITE	Stormwater Plan Review Inspection Tracking and Enforcement
UUW	Understanding the Urban Watershed
US EPA	United States Environmental Protection Agency
WPCP	Water Pollution Control Plant
WQBEL	Water Quality-Based Effluent Limit

1.0 Introduction

In 2011, the Consent Order and Agreement (COA) between the City of Philadelphia (City) and the Pennsylvania Department of Environmental Protection (PADEP), and in 2012 the Administrative Order for Compliance on Consent (AOCC) between the City and the United States Environmental Protection Agency (US EPA), formalized the regulatory approval of the *Green City, Clean Waters* program and amended the 2009 CSO Long Term Control Plan Update (LTCPU). This is the twelfth Annual Report submitted under the requirements of the COA. Fiscal Year 2023 (FY23) covers the City's *Green City, Clean Waters* implementation progress activities that occurred between July 1, 2022, and June 30, 2023.

The Year 10 Evaluation and Adaptation Plan (EAP) submitted on May 30, 2022 to PADEP can be found at https://water.phila.gov/pool/files/gccw-year-10-eap.pdf. The Year 10 EAP provides a comprehensive assessment of program progress at the Year 10 milestone, including an assessment of compliance with Water Quality Based Effluent Limits (WQBEL) Performance Standards and an updated assessment of receiving water conditions. The FY23 COA Annual Report will focus on the progress accomplished in FY23.

1.1 Water Quality Based Effluent Limit Performance Standards

The Water Quality-Based Effluent Limits (WQBEL) performance standards are broken into incremental targets that must be achieved by the City every five years of the 25-year program. With the recent achievement of the Year 10 milestone, this report includes water pollution control plant and collection system improvements, interceptor lining, and greened acre (GA) interim progress towards the Year 15 WQBEL targets. Volume reduction and mass capture are only reported every 5 years with updated values recently included in the Year 10 EAP. **Table 1-1: Water Quality-Based Effluent Limits** displays the cumulative progress achieved at Year 10 and includes the upcoming Year 15 (2026) WQBEL targets.

Table 1-1: Water Quality-Based Effluent Limits

Metric	Units	Base Line Value	Cumulative Amount as of Year 5 (2016)	Cumulative Amount as of Year 10 (2021)	Year 15 WQBEL Target
NE WPCP Improvements	*Percent Complete*	0	Reported progress in Year 5 EAP	**Reported progress in Year 10 EAP**	To report progress in Year 15 EAP
SE WPCP Improvements	*Percent Complete*	0			
SW WPCP Improvements	*Percent Complete*	0			
Miles of Interceptor Lined	*Miles*	0	7.5	**9.2**	14.5
Overflow Reduction Volume	*Million Gallons Per Year*	0	1,710	**3,080**	3,619
Total GAs	*GAs*	0	837.7	**2,196**	3,812
Equivalent Mass Capture *(TSS)*	*Percent*	62%	70.5%	**77.5%**	Report value
Equivalent Mass Capture *(BOD)*	*Percent*	62%	88.9%	**~100.0%***	Report value
Equivalent Mass Capture *(Fecal Coliform)*	*Percent*	62%	72.0%	**77.1%**	Report value

*BOD5 capture has met or exceeded the 85% equivalent mass capture. The amount of BOD5 captured has met or exceeded the load reduction that is associated with 85 percent capture volume treated using primary clarification and disinfection using the end-of-pipe treatment technology.

1.2 Green City, Clean Waters Green Infrastructure

Greened Acres (GA) are achieved through three implementation approaches: Public Retrofits, Private Development, and Incentivized Retrofits. **Table 1-2: Cumulative Greened Acres** displays the cumulative program progress towards meeting the Year 25 GA target at the end of Year 12.

Table 1-2: Cumulative Greened Acres

Implementation Approach	Cumulative Number of Projects (FY11-FY23)	Cumulative GAs (FY11-FY23)
Public Retrofits	306	882
Private Development	499	982
Incentivized Retrofits	118	999
Total	**923**	**2,863**

It is important to note that project specific GA values are subject to change and do not remain constant over time. A project's GA value is calculated using the best available information based on phase and site conditions which can result in adjustments. The designed GA is established from final design drawings and is then informed and updated upon the completion of construction to produce an as-built GA value. The as-built value can be updated post construction as maintenance and monitoring data is gathered to create an as-maintained GA value when appropriate. The GA calculation method revision introduced in the Year 10 EAP and solidified in the FY22 COA Annual Report is another example of the dynamic nature of the GA metric. The Greened Acre calculation method revision was based upon applying a data-driven understanding of performance gained through 10 years of program implementation, data collection, and analyses to date. For more details, please see https://water.phila.gov/pool/files/gccw-year-10-eap.pdf.

The current greened acre calculation method now accounts for storage, infiltration, and slow-release processes where applicable, with the following formula:

$$Wd(in) = \frac{\left(V_{storage}(ft^3) + V_{infiltration}(ft^3) + V_{slow\ release}(ft^3)\right)}{DCIA(ft^2)} * 12\left(\frac{in}{ft}\right)$$

2.0 Implementation Tracking and Reporting

2.1 Green City, Clean Waters Program Tracking System

Currently the existing databases and systems track program implementation and support data requests for internal and external reporting. The development of the *Green City, Clean Waters* program tracking system has integrated the data from the various Water Department systems to streamline and present program wide implementation progress in one location.

During FY23, enhancements made to the *Green City, Clean Waters* program tracking system included user interface and mapping upgrades, improvements to the visual display of graphs and charts, and updates to calculated metrics based on feed system changes or rebuilds. One major initiative this year has included work to re-establish connectivity with the private GSI data through the new Stormwater Plan Review Inspection Tracking and Enforcement (SPRITE) application (formerly known as the Stormwater Plan Review Database). This effort is still in progress and is slated to complete in FY24. The data-governance team at Philadelphia Water Department (PWD) continues to ensure proper programmatic alignment across the various source databases for metrics calculations and reporting.

Table 2-1: FY23 Status Updates for Existing Databases and Systems

Existing Databases and Systems	Status
PlanIT	PWD's tracking system that stores information from site evaluations conducted on locations throughout Philadelphia. All sites must undergo an initial evaluation to determine the feasibility of green infrastructure before they can be transferred to CIPIT to begin design phase. In FY23, a nightly sync process (dubbed GIS First) between PlanIT and Drainage Area and stormwater management practice (SMP) GIS datasets on the OWS_GISDATA database was implemented, which greatly reduces the amount of data entry and improves data quality by eliminating redundant / duplicative data entry. Additionally, the GSI Sewer and GSI Inlet Connection project Work Types were cleaned up in order to distinguish these project locations accurately in GIS. Lastly, the Ecological Restoration Group (ERG) Planning team-initiated efforts to begin tracking ERG projects at the planning stages in PlanIT; this project tracking in PlanIT is anticipated to formally begin sometime in FY24.
GreenIT	PWD's metrics tracking system for all public green stormwater infrastructure (GSI) projects. GreenIT tracks estimated, designed, built, and maintained compliance metrics. The GreenIT Data Entry Application is used to create metrics reports by consultants and staff that are directly uploaded to the GreenIT database. In FY23, data fields were updated to incorporate the GA calculation method revision.
CIPIT	CIPIT is PWD's Capital Program Information Tracking System. In FY23, no major changes occurred.
SPRITE Application	PWD's tracking system that stores metrics and detailed SMP data of private development projects that are subject to the Philadelphia Stormwater Regulations, as well as voluntary stormwater management retrofit projects. The application is designed to track workflows related to reviews and inspections, including the status of conceptual and technical reviews, record drawing reviews, active and post-construction inspections, and post-construction enforcement. A redevelopment effort was recently completed on the existing tracking system and the new application offers expanded functionality and accessibility for internal stakeholders as well as the Philadelphia development community. This new app provides a system that will stay current with functionality and technology.

Existing Databases and Systems	Status
Geographic Information System (GIS) Asset Tracking	GIS is used to track the location of all PWD assets. This includes public retrofit, private development and incentivized retrofit SMPs. In FY23, PWD established improved data standards and a monitoring process for invalid data in the Planning-level GIS data (Drainage Area and SMP footprints) for GSI projects in the planning queue, and reviewed planning-level GIS data for any discrepancies in GSI projects that had been initiated in design. An SMP Status field was also added to the conceptual design SMP footprints GIS dataset to more easily filter and distinguish systems based on their planning status. Additionally, a system for handling GIS data for Drainage Areas and SMP footprints of retired GSI systems was considered and began to be implemented.
Maintenance Management Systems	Inspection and maintenance activities for public green stormwater infrastructure are tracked in PWD's Cityworks work order management system. This system is linked to the City's GIS data and provides tools to track and manage work performed on other PWD assets such as fire hydrants, inlets, water mains, and sewers.

2.2 Reporting Metrics

Green Stormwater Infrastructure through Public Implementation

The information in GreenIT is used to produce compliance reporting outputs for the completed and planned public project tables in Appendices 1 and 2 of this report. The Public Completed Projects reporting format and metric definitions are described in Table 1 in **Appendix 1**. The Public Planned Projects reporting format is described in Table 1 in **Appendix 2**.

Green Stormwater Infrastructure through Private Development

Information from the SPRITE app is used to produce reporting outputs for completed Private Development and Incentivized Retrofits project tables in **Appendix 3**. The reporting format is described in Table 1 in **Appendix 3**.

Stormwater Management Practice (SMP) Types

SMP types used for public implementation are described in Table 2 of **Appendix 1** and SMP types used for private implementation are defined in Table 2 of **Appendix 3**.

3.0 Water Pollution Control Plant and Collection System Project Progress

3.1 Water Pollution Control Plant and Collection System Project Progress

Upgrades to increase the peak flow capacity at each of the City's Water Pollution Control Plants (WPCPs) were described in the Wet Weather Facility Plan, submitted on June 1, 2016. During FY23, PWD has continued working towards completing the projects committed to in the Wet Weather Facility Plan. Within the following sections, progress in FY23 on these projects is presented. The *Green City, Clean Waters* Wet Weather Facility Plan can be referenced here: http://water.phila.gov/pool/Wet_Weather_Facility_Plan_website.pdf.

3.1.1 Northeast Water Pollution Control Plant

Within Table 3-1, the seven Northeast WPCP improvements committed to in the Wet Weather Facility Plan are listed with their required operation years, as approved by the PADEP. To date, five improvements have been completed and the remaining two improvements are on track for completion by the required operation date.

Table 3-1: Status of Northeast WPCP Improvements

Northeast WPCP Improvements	Anticipated Completion	Project Status (FY23)
Facility Improvements		
Remove Double Deck Effluent Channel in Final Sedimentation Tanks Set 2	6/1/2016	Complete (FY16)
New (4 x 48") conduits from Preliminary Treatment Building to Primary Sedimentation Tanks Set 1	6/1/2016	Complete (FY16)
High Flow Management System	6/1/2021	Complete (FY19)
Gravity Sludge Thickeners	6/1/2021	Complete (FY19)
Preliminary Treatment Building #2	6/1/2031	In Construction
New Influent Baffles in Primary Sedimentation Tanks Set	6/1/2031	In Planning
Operational Improvements		
Operate with minimal sludge blanket when Gravity Sludge Thickeners in service	6/1/2021	Complete (FY19)

3.1.2 Southeast Water Pollution Control Plant

All Southeast WPCP improvement commitments in the Wet Weather Facility Plan were completed in FY16, meeting the required operation date of June 1, 2016. For more detailed information, please see the *Green City, Clean Waters* Wet Weather Facility Plan or the Year 5 EAP.

3.1.3 Southwest Water Pollution Control Plant

Within **Table 3-2**, the Southwest WPCP improvement committed to in the Wet Weather Facility Plan is listed with its associated required operation year. The project has been completed prior to the required operation date.

Table 3-2: Status of Southwest WPCP Improvements

Southwest WPCP Improvements	Anticipated Completion	Project Status (FY23)
Facility Improvements		
Additional Effluent Pump	6/1/2026	Complete (FY19)

3.2 Philadelphia Collection System Improvements

Within **Table 3-3**, the three Collection System improvements committed to in the Wet Weather Facility Plan are listed with their required operation dates. Two of the improvements were completed, meeting the required deadlines. The other improvement identified is a study to evaluate CSO regulator capacities and identify improvements, if necessary. This study is ongoing and is anticipated to continue throughout the implementation of the LTCPU, as PWD is committed to maintaining and improving the efficiency of the collection system. Additional Collection System improvements are described below.

Table 3-3: Status of Collection System Improvements

Collection System Improvements	Anticipated Completion	Project Status (FY23)
Improvements		
NE Second 66” Frankford Grit Chamber Bypass In Service	6/1/2016	Complete (FY16)
NE Frankford High Level Second Barrel Rehabilitation	6/1/2016	Complete (FY16)
All Districts: Balancing CSO Regulator Wet Weather Capacities	Study - Ongoing	On Track

3.2.1 Additional Collection System Improvements

PWD continues to conduct research and evaluate tools and technologies used within the Collection System and at the WPCPs to enhance performance when possible. PWD studies and evaluates potential collection system and WWFP projects to determine feasibility and cost effectiveness for inclusion in a Combined Sewer Overflow (CSO) mitigation program to expand upon or in addition to the projects committed to in the Wet Weather Facility Plan submitted in June 2016.

42nd Street Pump Station Expansion

Based on evaluation of the collection system, as well as considering the necessary operation upgrades, it was determined that there are advantages to replacing the combined sewer pump station located at 42nd Street with a station of larger pumping capacity. To support this expansion, modifications to regulating chamber S-50 would also be considered part of the pump station expansion project. A preliminary feasibility study has been completed to determine the constructability and sizing of the pump station. The study determined that the current 8 MGD (peak flow) pump station could be expanded to 60-100 MGD. This upgrade would accommodate increased flow to the SW WPCP and help reduce CSO volume. The project is currently in the design phase and CSO volume reduction will be dependent on final sizing of the pump station.

Frankford Creek Crossing

The project will replace the four separate pipes of the Frankford Creek Siphon with single box sewer in order to remove a flow constriction in the Upper Delaware Low Level Interceptor. The new box sewer will result in approximately 100 million gallons of CSO volume reduction in a typical year precipitation (based on the Year 5-EAP submissions) and provide the capacity required for operation of the new D-05 chamber and other future improvements in the NEDD. In FY23, construction of temporary bypass system continued and is estimated to be completed in FY24.

There are currently three projects in the Department's design process that are being evaluated for the use of real-time control technology:

D-05 CSO Regulator (State Road and Magee Avenue)

The D05 regulator is being examined for additional CSO capture through the installation of a new, enlarged interceptor connection with a real-time controlled sluice gate. As of FY23, this project is in the Notice to Proceed (NTP) stage and is slated for completion in FY24. This project is expected to result in enhanced storage and conveyance of wet weather flows via modification to an existing computer controlled CSO.

Thomas Run Relief Sewer (R-01)

A capital construction project for the modification of the Thomas Run relief sewer has been initiated. The project is evaluating the potential for this system to be maximized for in-line storage during wet weather by creating a static dam, a new interceptor connection, and CSO regulator site. Alternatives considered include relocating the outfall to minimize disruption to trees and recreational areas in the Cobbs Creek Park.

Southwest Drainage District Regulator Modification (S-05, S-20, S-26)

The primary project goal is to increase the flow capacity through each regulator to decrease CSO volumes in the Southwest Drainage District. The project will include increasing the opening area of the existing DWOs, removal of existing Brown & Brown regulators, and will consider implementation of locally actuated, real-time, flow control at each site. This project was initiated in FY21 and currently has a target design complete of FY26.

3.3 Interceptor Relining and Rehabilitation

FY23 Progress on Miles of Interceptor Lined

The WQBEL Performance Standards requires 6 miles of interceptor lining to be completed by the end of Year 10 (2021) which was achieved.

Looking at progress towards the Year 15 target, there is 1.0 mile in construction, and 3.3 miles in design (**Table 3-4**). Prior to scoping rehabilitation efforts, each interceptor segment is inspected to determine condition and need for rehabilitation. An evaluation of Tacony Creek Intercepting Sewer Lining Phase 3 (**Table 3-4**, In Design) confirms that this segment of the Frankford High Level (FHL) interceptor is in serviceable condition and any observed defects, such as root intrusion or surface spalling, can be corrected with spot repairs and debris removal. This section of the FHL is approximately 6,000 linear feet in length originating just downstream of Regulator T-14 and terminating near the intersection of O Street and Erie Avenue. The inspection concluded that application of a continuous liner to the FHL, as has been pursued with the other segments listed in the WQBEL Performance Standards, is not recommended to correct infiltration or exfiltration in this case; the rehabilitation work can be completed at a much lower cost by pursuing the recommended spot repairs and debris removal rather than relining the full section of the interceptor.

Table 3-4: Interceptor Relining FY23 Status

Project Name	Street Extents	Length (Miles)
Construction Complete		**10.8**
60th and Cobbs Creek Parkway to 75th and Wheeler Sewer Lining	60th and Cobbs Creek Parkway to 75th and Wheeler	2.2
Cobbs Creek Park to 63rd and Market Sewer Lining	Cobbs Creek Park to 63rd and Market	0.5
Cobbs Creek Interceptor Phase 1 CIPP Lining	63rd and Market to 62nd and Baltimore	1.6
Tacony Creek Intercepting Sewer Lining Phase 1	Chew & Rising Sun to I & Ramona	1.9
Tacony Creek Intercepting Sewer Lining Phase 2	2nd St & 64th Ave to Chew & Rising Sun; DRW Mascher to Tacony Interceptor; Cheltenham Ave to Crescentville & Godfrey	1.3
Cobbs Creek Interceptor Lining Phase 3	City Avenue to D R/W in former 67th Street	1.7
Cobbs Creek Intercepting Sewer Lining Phase 4 (Indian Creek Branch)	City Avenue to D R/W in former 67th Street	1.6
In Contract Management		**1.0**
Cobbs Creek Intercepting Sewer Lining Phase 2	61st and Baltimore to 60th and Warrington	1.0
In Design		**3.3**
Tacony Creek Intercepting Sewer Lining Phase 3	I & Ramona to O & Erie	1.0
Upper Frankford LL Collector/Tacony Intercepting Sewer Lining Phase 4	Castor & Wyoming to Frankford/Hunting Park	1.1
Upper Frankford Creek LL Collector/Tacony Intercepting Sewer Lining Phase 5	Frankford/Hunting Park to Luzerne & Richmond	1.2
Total Anticipated Miles of Interceptor Lined		**15.1**

4.0 Green Stormwater Infrastructure through Public Implementation

The programmatic strategies for achieving public GAs are benchmarked in four phases: planning, design, construction, and post-construction maintenance. The following four subsections describe the progress made during FY23 for each of these phases. **Table 4-1** summarizes Public GSI projects and GAs for FY23. Later in this section, **Figure 4.2** displays the Planned and Completed Public GSI projects. A full list of completed public projects can be found in Appendix 1 and a full list of planned public projects can be found in Appendix 2.

Table 4-1: FY23 Summary of Public Green Stormwater Infrastructure

	End of FY23			Cumulative
Project Phase	In Design	In Contract Development	In Construction	Completed
Number of Projects	170	71	62	**306**
Current Number of GAs	TBD*	221	325	**882**

*An accurate GA value cannot be provided until the design phase is completed.

4.1 Planning Approaches for Green Stormwater Infrastructure Implementation

PWD has continued to evaluate entire neighborhoods and specific sites to identify appropriate locations to site GSI footprints. During FY23, PWD continued to streamline a planning district-based approach to develop a diverse set of project types. These projects range from smaller green street SMPs to larger systems on parcels that also consider specific community needs. PWD planning staff prioritized analysis and project siting in sewersheds where GSI would have the highest impact on volume reduction. This past year, progress was made on integrating GSI planning efforts with water and sewer projects. Planning staff also strengthened the direct feedback loop with maintenance to improve system siting and SMP type selection. PWD's planning team continued to identify and initiate GSI projects to meet future compliance needs primarily through siting street projects.

Planning Outreach and Coordination

PWD works closely with a variety of partners to implement the *Green City, Clean Waters* program throughout all stages of a project. During the planning phase, PWD continues to coordinate the siting of GSI footprints with City agency partners, community groups, and other stakeholders via regular communication and meetings. Planning and design level coordination for GSI continued through regular meetings PWD has established with our City agency partners such as Streets and Philadelphia Parks and Recreation. These relationships have helped to streamline review times and project implementation. PWD has been working closely with these partners to identify opportunities to collaborate on larger projects like corridors, both on design elements and to coordinate grant funding.

This past year, GSI Planning continued to coordinate with PWD's Public Affairs team to refine outreach workflows to ensure communities had consistent notification and engagement throughout the planning and design phases. The team also began to further standardize how input is processed and incorporated into decision making in a transparent way. In addition to moving forward on planning for PWD implemented GSI, coordination with non-City partners has supported projects applying for stormwater grants. Planning outreach and coordination will continue to take a holistic approach to maximizing stormwater management by utilizing a combination of implementation tools available.

4.2 Design Approaches

In FY23, PWD continued work on streamlining the design process through coordination and improvement of design guidance.

- Implemented dynamic sizing for all systems in the design development stage. Guidance documents, tools, and trainings were created to ensure seamless integration of this approach into our design processes.
- Developed a dashboard to assist supervisory staff and design engineers in tracking and understanding reviews, projections, and performance.
- Ongoing coordination meetings within PWD to facilitate project reviews and improve feedback, including:
    - Updated GSI Design meeting formats to promote more involvement, ownership, and participation at the supervisory levels.
    - Updated meeting format for integrated capital alignment projects to improve the quality across various asset types (green/water/sewer).
    - Developed Public Affairs Contact List for better communication prior to on-site activities for GSI during the design development phase (i.e., survey, geotech).
- Improved file sharing platform between internal and external entities.
    - Provided a centralized location for storing and accessing design resources and training tools.
    - Maintained a clear history of tracking updates made to shared documents.
    - Added a “weekly” construction photos folder showing all active construction photos to promote progress tracking, quality control, training, and better collaboration and communication.
- Ongoing updates to existing procedures, standards, and guidance building on feedback from operations, monitoring, partner agencies, and other PWD units.

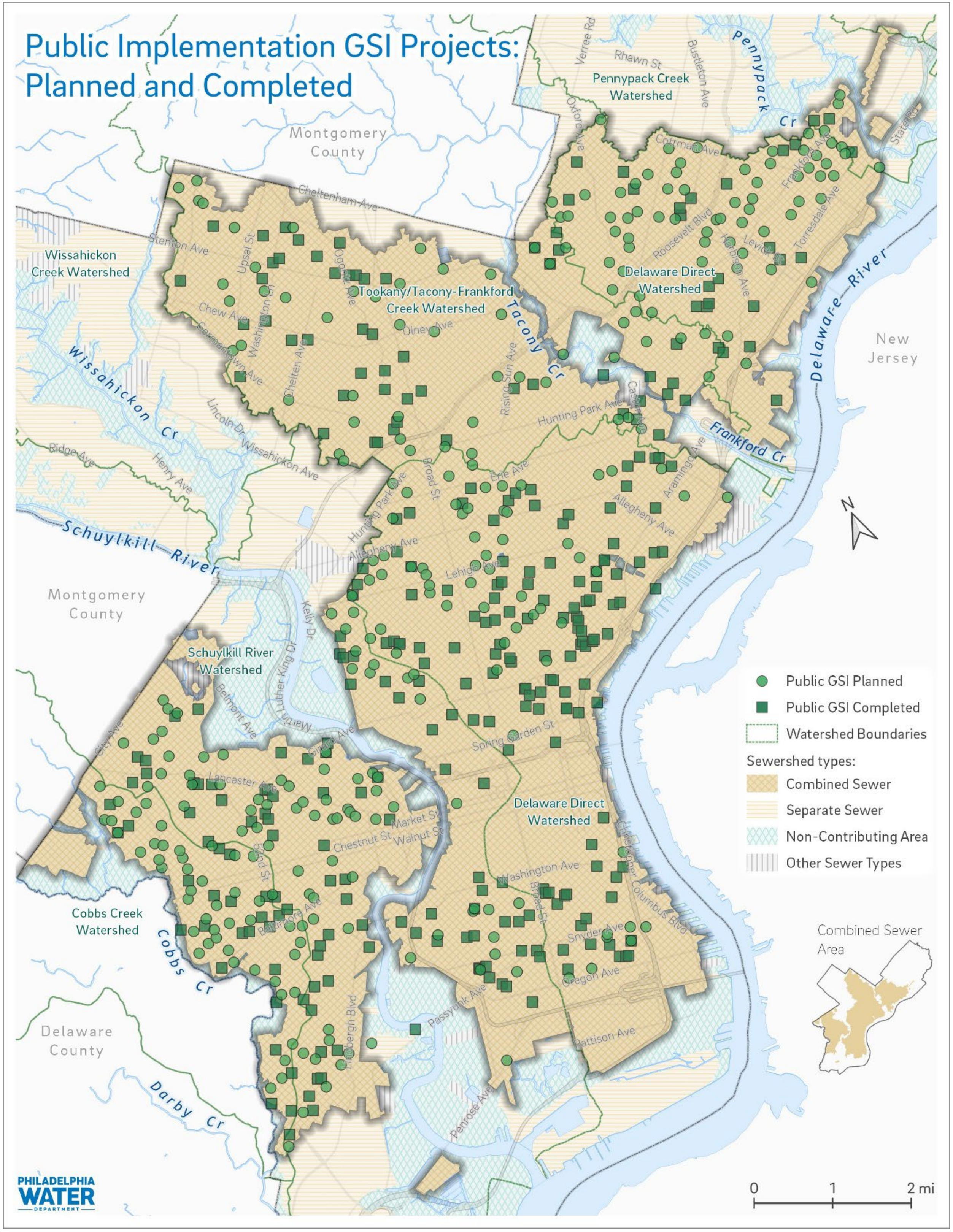
4.3 Construction

In FY23, PWD continued work on streamlining and improving the construction process through staff training, guidance updates, additional construction support tasks from the design team, and coordination:

- Started engaging design consultants on post-design bidding and construction support tasks. In FY23, 39 task orders were initiated.
- Authored first draft of GSI section in Construction’s Field Inspector Guidebook to serve as a resource for field inspectors to help with challenges of consistency and enforcement of specifications.
- Began piloting a new procedure for streamlining as-built development by creating pre-as-built documents in an approved format. In FY23, this procedure was piloted on nine projects in construction.
- Refined annual updates to the GSI Master Specifications, Construction Details, and Bid Item List/Engineering Estimate template. Continued work of reconciling specification differences for green-only and green on water/sewer projects.

- Continued implementation of a pilot program for performance testing of systems that are fully lined with geomembranes. Lessons learned from testing and field modifications are directly informing design and construction improvements.
- Continued research and modifications to design and construction guidance to improve performance of fully lined and partially lined systems.

Figure 4-1: Public Green Stormwater Infrastructure Projects



4.4 Public Green Stormwater Infrastructure Maintenance Program

To ensure the function and sustainability of stormwater management infrastructure investments, PWD continues to implement a GSI maintenance program. Table 4-2 provides a count of SMPs by type currently in PWD's maintenance program. PWD implements post construction maintenance in accordance with the Green Infrastructure Maintenance Manual.

Table 4-2: FY23 PWD SMP Types in Maintenance

SMP Types	Total Number of SMPs in the Combined Sewer System (CSS)	Total Number of SMPs Citywide
Tree Trench	491	503
Rain Garden	158	164
Stormwater Planter	132	153
Stormwater Bump out	129	141
Infiltration/Storage Trench	389	408
Pervious Paving	9	10
Green Roof	1	3
Swale	45	45
Basin	2	3
Stormwater Tree	120	120
Drainage Well	4	4
ROW Connection (Inlets)	54	88
ROW Connection (Trench Drains)	5	5
Green Gutter	1	1
Wetland	4	4
Total Number of SMPs		**1626**

4.4.1 Inspections

While PWD has prescribed maintenance frequencies for GSI, practice and experience have determined that pre-maintenance inspections are the best method to determine the level of maintenance required. At each SMP that has surface features, PWD completed pre-maintenance surface inspections.

Inspection of Surface Elements

In FY23, PWD conducted 4,159 pre-maintenance surface inspections. The condition of the site at the time of the pre-maintenance inspection determined whether maintenance is required. PWD also performs dry weather and wet weather inspections for a more comprehensive assessment. By the conclusion of FY23, PWD completed 4,050 dry weather inspections and 144 wet weather inspections. In FY23, PWD conducted a total of 8,209 surface inspections.

Inspection of Subsurface Elements

The objective of the subsurface inspection program is to observe and assess all structural components of SMPs that exist below street level. Inspections are performed in dry weather conditions as capturing discernable video during wet weather conditions is difficult. Inspection staff are certified through the National Association of Sewer Service Companies' (NASSCO) Pipeline Assessment Certification Program (PACP).

PWD completed a total of 560 post-construction inspections and 1,535 post-maintenance inspections. The post-construction inspections were associated with 175 SMPs and a total of 36.5 miles of pipe. The post-maintenance inspections were associated with a total of 634 SMPs and 67.6 miles of pipe. The conditions of each pipe run at the time of the inspection determined whether maintenance was completed and if any structural defects were present.

4.4.2 Maintenance

PWD's GSI maintenance program operates through three types of maintenance activities to adequately address the maintenance needs of PWD's GSI. Work orders associated with inspection and maintenance events for surface maintenance, subsurface maintenance, and porous maintenance are summarized in **Table 4-3**. **Table 4-4** provides the distribution of FY23 work orders by PWD Green Stormwater Infrastructure Maintenance District.

Table 4-3: FY23 Summary of Maintenance Events by Type

Work Order Type	Number of FY23 Events
Surface	
Surface Inspection	4159
Surface Maintenance -Routine	6551
Surface - Mulching	631
Surface - Pruning	378
Surface Maintenance -Watering	2519
Tree Maintenance	319
Trench Drain Maintenance	587
Work Zone Protection	22
Aesthetic	626
Signage Repair	77
Surface Vegetation Cutback	345
Snow Removal	0
Rough Mowing	19
Surface Maintenance - Reactive	
Surface Vegetation Repair	233
Earthwork	1
Surface Structural Repair	105
Drainage Modification	22
Subsurface	
Subsurface – Post Construction Inspection	560
Sub-surface Maintenance	1535
Sub-surface Inlet Cleaning	1,596
Sub-surface Inlet Protection Maintenance	703
Surface Inlet Protection Maintenance	13022
Non-Standard Subsurface Inspection	35
Non-Standard Subsurface Maintenance	4
Subsurface Structural Repair	1
Porous	**5**
Routine Porous Maintenance	5
Restorative Porous Maintenance	0
Total	**34,593**

PowerCorpsPHL

Over the past decade, the City and PWD have implemented new strategies to promote the economic and social growth of the city and meet environmental, ecological, and business missions. In support of these initiatives, and to augment PWD's GSI aesthetic maintenance responsibilities, PWD entered into partnership with PowerCorps_PHL. PowerCorps is a City of Philadelphia AmeriCorps initiative designed to engage youth, ages 18-26, which transforms lives through service and workforce development. Table 4-5 summarizes the amount of material collected by PowerCorps in FY23.

Table 4-4: PowerCorps_PHL Trash and Debris Removal in FY23

Amount collected (in pounds)	Amount collected (in tons)
3247.7	**1.62**

4.4.3. SMP Abandonments

A total of 8 SMPs were retired and abandoned in FY23. When a SMP is retired due to performance issues or nearby development impacts, it is permanently taken offline, no longer maintained, and is removed from compliance credit tracking.

5.0 Green Stormwater Infrastructure through Private Development

5.1 Philadelphia Stormwater Management Regulations

The Philadelphia Stormwater Management Regulations (PSWMR) were established in January of 2006 and revised in July of 2015, providing the foundation of the private sector's role in stormwater management. Effective July 2, 2018, PWD made changes to how streets are regulated to better align with the Chapter 102 requirements in the Pennsylvania Code. The City of Philadelphia requires stormwater management for land development projects in the City of Philadelphia with 15,000 or more square feet of earth disturbance. Plans for proposed projects must be submitted for conceptual review to pursue a zoning permit, while the submission of detailed stormwater management plans must receive a technical review and approval prior to obtaining a building permit.

A summary of constructed GAs through private development projects by watershed are listed below in **Table 5-1**. A full list of completed private development projects can be found in Table 1 **Appendix 3**. At the end of this section, **Figure 5.2** displays the completed green infrastructure installed through private development and incentivized retrofits.

Table 5-1: FY23 Cumulative Completed Greened Acres by Watershed through Private Development

Watershed	Darby-Cobbs	Delaware	Pennypack	Tookany-Tacony/ Frankford	Schuylkill	Cumulative Completed
Number of Projects	18	224	4	64	189	499
Greened Acres	22	445	8	129	378	**982**

Expedited Review

PWD offers a service level goal of no more than a fifteen-day review for all projects submitted for post-construction stormwater management plan review. However, projects that propose preferred green stormwater management approaches are eligible for an expedited, five-day review. PWD offers two types of expedited review: 1) disconnection green review and 2) surface green review. The disconnection green review ensures redevelopment projects that disconnect 95% or more of the post-construction impervious area using features such as green roofs, porous pavement and new tree canopy will receive a review response within five days. The surface green review expands the number of eligible projects by including both new development and redevelopment projects that manage 100% of the post-construction impervious area through bioinfiltration and bioretention basins as well as the practices that qualify for the disconnection green review. In FY23, a total of twenty-three projects qualified for an expedited review in the combined sewer, with eighteen projects selecting the disconnection green review and five projects selecting the surface green review.

Active Construction Inspections

For the projects that proceed to construction, the installations of SMPs are inspected by PWD during construction. Active construction inspections are completed for both private development and incentivized retrofit projects in accordance with standard inspection procedures. During FY23, PWD conducted 3,116 inspections during active construction in the combined sewer area.

Construction Verification Initiative

PWD continued to refine a construction verification process with the goal of assessing individual projects prior to counting GAs toward compliance totals. This process emphasizes communication efforts from the start of the development project so property owners can adequately plan for record drawing creation. Throughout construction and at the time of construction completion, PWD conducts inspections of the site to observe and document installation of the approved SMPs. PWD also continued to perform outreach at the close of construction to solicit record drawings from project engineers and owners. These record drawings allow PWD to verify SMP installation and function.

In addition to this process, PWD continued to pursue a verification initiative to gather documentation of approvals that have not otherwise been verified and create record drawings to document the constructed conditions. To date, 208 projects totaling 306 GAs have been inspected and verified through this supplemental approach.

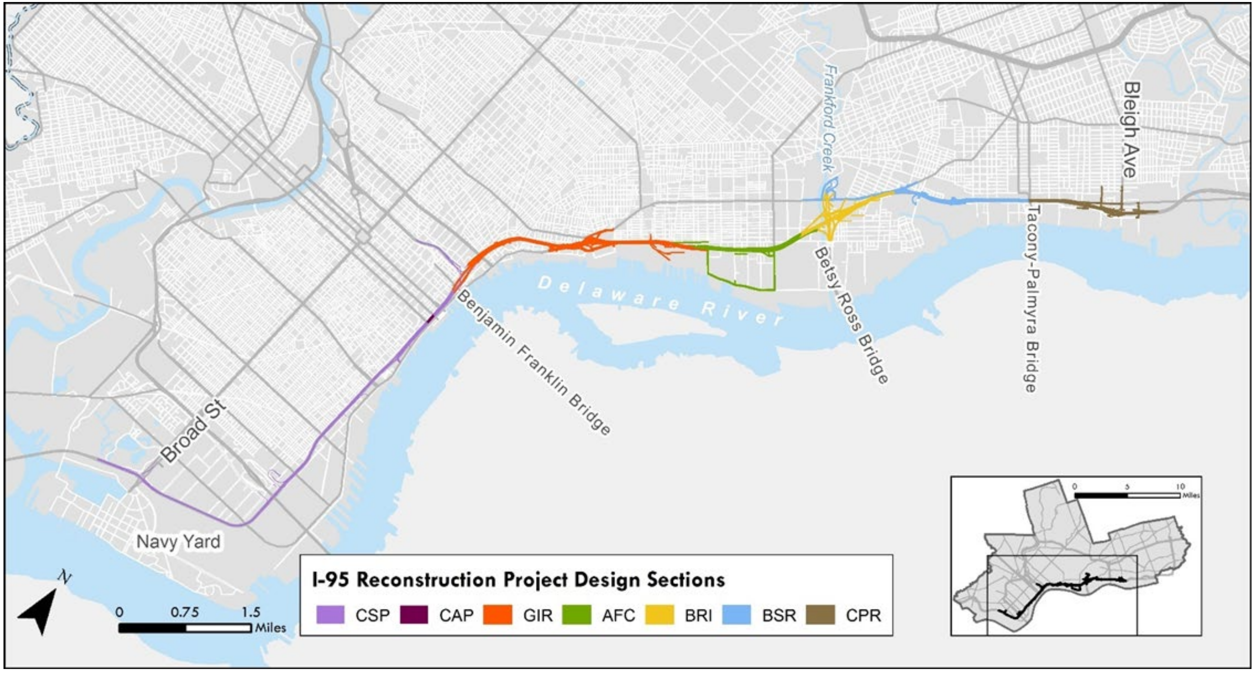
I-95 Reconstruction Project

Pennsylvania Department of Transportation (PennDOT) is reconstructing Interstate 95 (I-95) in Philadelphia. Three components of the I-95 reconstruction project support stormwater management: 1) disconnection of stormwater from the combined sewer system; 2) ensuring that redevelopment occurs in a manner consistent with the PSWMR; and 3) installation of GSI in the public right-of-way.

The work on I-95 in Philadelphia is broken into two sectors: Sector A and Sector B. The multi-phased work between Bleigh Avenue and Race Street is known collectively as Sector A. Sector A of the I-95 Reconstruction Project is divided into five major design sections, moving from north to south: CPR, BSR, BRI, AFC, and GIR. Each of these sections is further subdivided into a total of twenty-four construction subsections. Sector B encompasses the area from Race Street to Girard Point Bridge (airport side). At present, Sector B has two design sections delineated, Section CAP from Chestnut to Walnut, and Section CSP from Vine Street to Girard Point Bridge (airport side). Some of the design and construction work for Sector B may be concurrent with the work in Sector A.

A graphic illustrating the I-95 Reconstruction Project sections is featured below in **Figure 5-1**.

Figure 5-1: I-95 Reconstruction Project Sections



Project updates for the construction subsections with significant design or construction progress in FY23 are summarized in **Table 5-2.**

Table 5.2: I-95 Construction Section FY23 Updates and Anticipated Bid Dates

Section	Project Description/ Update	FY23 Project Phase	Completion Date
Sector A – Between Bleigh Avenue and Race Street			
Section CPR (Cottman-Princeton Ramp Area)			
CP2	Six new separate stormwater outfalls have been completed in Cottman Avenue, Princeton Avenue, Magee Avenue, Disston Street, Unruh Avenue, and Bleigh Avenue. The stormwater pipes are designed to accept the drainage from the highway as well as the area in between the highway and the Delaware River as development occurs.	Completed	2017
CP3	Relocation of approximately 1500 feet of sanitary sewer. Anticipated completion date calendar year 2024.	In Construction	(2024)
Section BSR (Bridge Street Ramp Area)			
BS1	Construction underway. Work includes the construction of one bioretention system, one media filter, two vortech separators, and one new outfall in Levick Street will be constructed to treat stormwater from the mainline highway. Anticipated completion date calendar year 2023.	Completed	2023
BS4	New PWD storm sewers, inlets, and new outfalls were installed to covey the new Adams Street runoff. Three basins with amended soils and impervious liners were constructed to treat stormwater from the new interchange ramps.	Completed	2020

Section	Project Description/ Update	FY23 Project Phase	Completion Date
BS2	Work will include two bioinfiltration basins and five bioretention basins to manage stormwater from the mainline highway. Also proposing 9 tree trenches which will be owned and maintained by PWD. A portion of the drainage area to the tree trenches is existing impervious ROW which will be banked for trade in future phases of the I-95 expansion project. Anticipated bid date calendar year 2022.	In Construction	(2026)
BS3	Reconstruction of Aramingo Avenue from Church Street to Tacony Street; continuing north on Harbison Avenue to Amtrak overpass. Project is anticipated to be bid in 2026.	In Design	(2030)
BS5	Extension of Delaware Avenue from its current terminus at Orthodox Street to Tacony Street. Anticipated bid date end of calendar year 2025.	In Design	(2027)
Section BRI (Betsy Ross Interchange Area)			
BR0	PWD sanitary and storm sewer culverts were relocated. Stormwater runoff from the reconstructed portions of the highway and ramps was treated by under-drained bioretention and water quality units then directly discharged to the Frankford Creek, removing the drainage area from the CSO system.	Completed	2017
BR2	Under construction. Basins built in BR0 will be reused in BR2 and new basins will be installed. The new basins will be sized for future phases as well. All basins will have forebays, be non-infiltrating, and have amended soils and underdrains with a rock layer and liner. The PennDOT-owned outfall locations in BR2 will be reconstructed in the same locations as existing outfalls. Anticipated completion date calendar year 2023.	In Construction	(2023)
BR3	Reconstruction of northbound lanes of I-95 from Wheatsheaf Lane to just north of Margaret Street. Anticipated bid date calendar year 2024.	In Design	(2027)
BR4	Reconstruction of the southbound lanes of I-95 from Wheatsheaf Lane to just north of Margaret Street. Anticipated bid date calendar year 2026.	In Design	(2030)
BR5	Includes work related to the Conrail/NJ Transit railroad line. Bridge over northbound ramps to the Betsy Ross Bridge and Aramingo Avenue will be rehabilitated. Anticipated bid date calendar year 2027.	In Design	(2028)
Section AFC (Ann to Frankford Creek Area)			
AF1	Streetscape work within the Richmond Street right-of-way between Allegheny and Westmoreland is not subject to the stormwater regulations. Improvements to Melvale Street will be managed by two infiltration trenches that will be owned and maintained by PWD.	Completed	2020
AF2	Construction underway. Work includes rebuilding of side streets prior to mainline construction. Proposing a net decrease in impervious area and a GSI tree trench along Castor Avenue. The managed area will be banked for future phases. Anticipated completion date calendar year 2023.	In Construction	(2023)
AF3	Reconstruction of northbound I-95 and its structures between Ann Street and the Frankford Creek. Anticipated bid date calendar year 2025.	In Design	(2027)
AF4	Reconstruction of southbound I-95 and its structures between the Frankford Creek and Ann Street. Anticipated bid date calendar year 2028.	In Design	(2031)

Section	Project Description/ Update	FY23 Project Phase	Completion Date
Section GIR (Girard Avenue Interchange Area)			
GR1	The reconstruction of Richmond Street was managed by street trees and a bioretention basin. A new separate sewer system was constructed and connected below the regulators in Dyott Street and Cumberland Street.	Completed	2017
GR2	The mainline highway areas are managed by multiple bioretention basins along the side of the highway.	Completed	2016
GR3	GR3 is the north bound mainline highway segment. One separate sewer outfall was constructed in Cumberland Street. In Dyott Street, a pipe was constructed that ties in below the regulating chamber. A sewer was found in the old Lehigh Avenue right of way and rehabilitated to separate a portion of the highway drainage. Stormwater is managed in GR3 using bioretention basins, infiltration basins, and detention basins. The basins are designed to manage the water quality volume.	Completed	2018
GR4	GR4 is the southbound mainline highway segment and is currently under construction. Stormwater is managed in GR4 using bioretention basins, infiltration basins, and detention basins. The basins are designed to manage the water quality volume.	Complete	2022
GR5/ GR6	Reconstruction of I-676/Vine Street ramp connections with northbound/southbound I-95. Anticipated bid date for GR6 is calendar year 2024. Anticipated bid date for GR5 calendar year 2026.	In Design	(2029)
Sector B – Race Street to Girard Point Bridge (Airport Side)			
Section CSP (Central and South Philadelphia Area)			
CAP	CAP project is a 600' wide structure spanning over I-95 and Christopher Columbus Blvd between Walnut and Chestnut Streets. An area of fill will gently slope from the structure to the Delaware River waterfront. A vegetated park, recreational areas, walkways and several building structures are proposed on the CAP structure and fill area. The majority of the CAP structure is proposed to function as a green roof and remaining impervious area proposed to be managed by a cistern with runoff re-used as gray-water for the restroom facilities and a subsurface detention basin. Earth disturbance in 95 and Columbus will be minimal under the CAP. Areas outside of LOD, managed by the CAP are eligible for management banking. All SWM components must be designed and built in accordance with the Green Stormwater Infrastructure design standards.	In Construction	(2029)
CSP - I-95 NB/SB between Race Street and Girard Point Bridge		**Planning Study Underway**	

5.2 Incentives for Private Property Owners to Implement Green Stormwater Infrastructure

PWD offers incentives to private property owners to implement stormwater management practices on existing properties that reduce stormwater pollution to the City's sewers and surrounding waterways and enhance water quality in the region's watersheds. A summary of completed GAs from incentivized retrofit projects by watershed are listed below in **Table 5-3**. A full list of completed incentivized retrofit projects is in Table 2 of **Appendix 3**.

Table 5-3: FY23 Cumulative Completed Greened Acres by Watershed through Incentivized Retrofits

Watershed	Darby-Cobbs	Delaware	Pennypack	Tookany-Tacony/ Frankford	Schuylkill	Cumulative Completed
Number of Projects	0	38	6	34	40	**118**
Incentivized GAs	0	387	45	264	303	**999**

Zoning Bonuses

The Philadelphia Zoning Code incentivizes stormwater management through height and density bonuses. PWD helps determine the criteria for earning a bonus, but the code is written by the Philadelphia City Planning Commission and enacted by City Council, which limits PWD's control over the process.

Green Roof Density Bonus

The Philadelphia Zoning Code offers incentives to projects citywide that install green roofs by providing exceptions to certain residential density rules. To be eligible for these exceptions, the project must be located in the designated zoning districts and propose to cover at least sixty percent (60%) of the roof with a green roof. In July 2018, the Zoning Code was amended to allow eligibility for existing buildings. New building construction must involve at least 5,000 square feet of disturbance and existing buildings must have a minimum footprint of 5,000 square feet. The green roofs are designed to PWD standards and inspected by PWD during construction. PWD also executes operation & maintenance agreements with the project owners, ensuring long-term maintenance and functionality of the green roof system. Projects submitted for this bonus sized between 5,000 square feet and 15,000 square feet of disturbance were not required to install stormwater management practices to comply with the PSWMR. These bonus projects make up at least half of the bonus submissions. In FY23, a total of 20 projects took advantage of the green roof density bonus, 17 of which were located in the combined sewer area.

Height Bonus

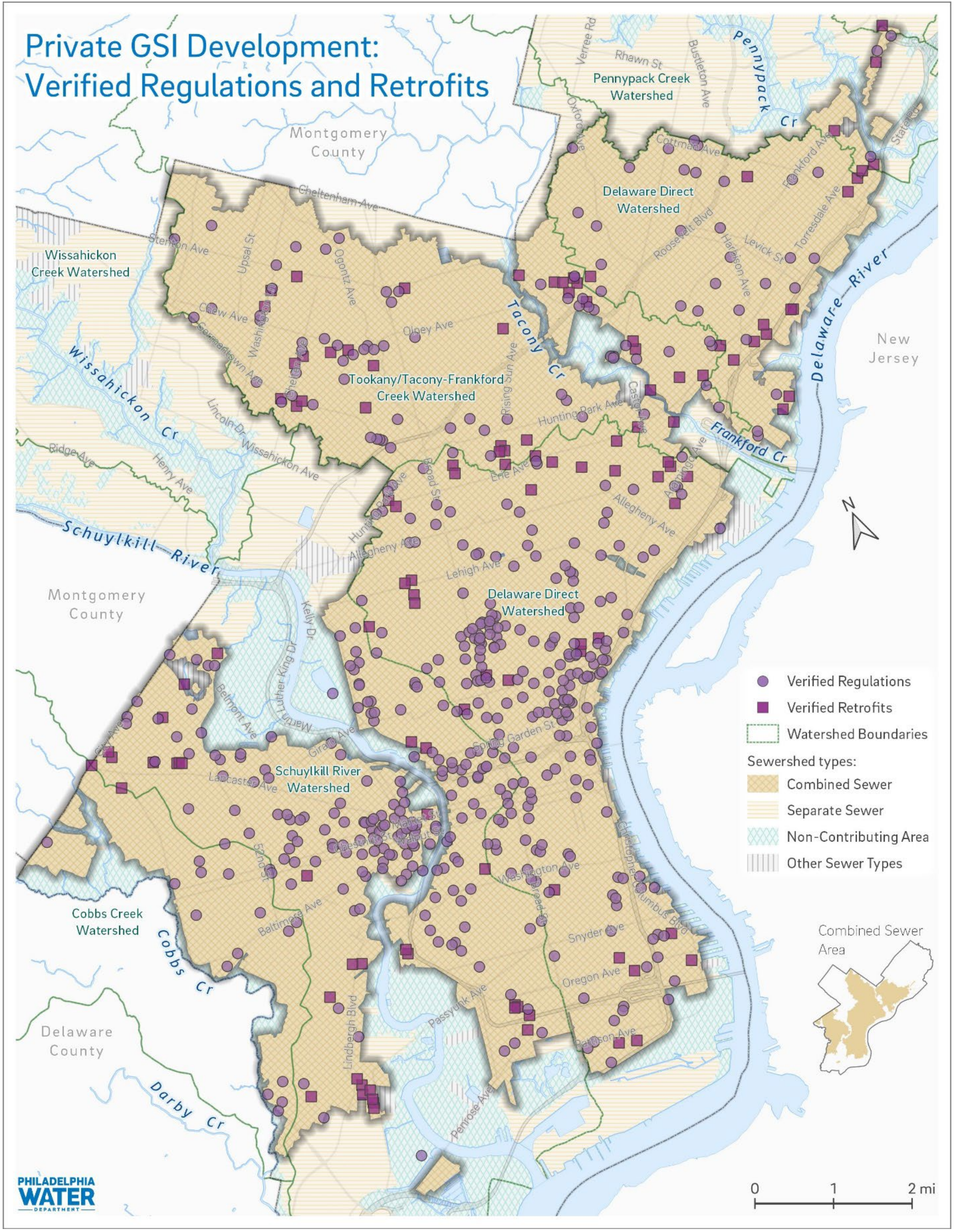
The Philadelphia Zoning Code offers incentives to projects in the East Callowhill Overlay (ECO) and Central Delaware Overlay (CDO) that provide stormwater open space and/or manage stormwater runoff from the public right-of-way (ROW) that front their property. PWD also executes operation and maintenance agreements with the project owners who take advantage of these bonuses, ensuring long-term maintenance and functionality of the SMPs. To date, four projects have received post-construction stormwater management plan (PCSMP) approval using a height bonus and one of those projects has started construction.

Stormwater Pioneers

In 2014, PWD launched Stormwater Pioneers, a recognition program for excellence in design and construction of stormwater management practices on private property. Since that time, PWD has honored a total of 22 projects across multiple properties. Most recently, in 2023, PWD selected its newest Stormwater Pioneers: Overbrook Presbyterian Church, Holmesburg Baptist Church, and Congregation Rodeph Shalom Synagogue. Representing different religious affiliations and neighborhoods across the city, the 2022-2023 winners each adopted stormwater management systems at their houses of worship. These sites prioritize the responsible stewardship of natural resources, improving our region’s environment while saving on operating costs and reducing combined sewer overflows.

Over the years, the Stormwater Pioneers program has brought together elected officials, community members, private landowners, and department officials to recognize the importance of stormwater management on private property. Awardees were celebrated at an earth week award ceremony that included local press. Most critically, PWD prepares a case study about each project to help other developers and business owners learn from these successful examples. More information about the Stormwater Pioneers program including past awardees and the 2023 Stormwater Pioneers is available at https://www.phila.gov/water/wu/stormwater/Pages/Pioneers.aspx.

Figure 5-2: Completed Regulations and Retrofit GSI projects



5.3 Post Construction Maintenance of Private Facilities

To ensure ongoing SMP maintenance of private facilities constructed through the stormwater management regulations or incentivized retrofit projects, PWD continues to use the following combination of tools: executing Operation and Maintenance (O&M) agreements, conducting post-construction maintenance inspections, utilizing enforcement, and administering stormwater credits.

An Operation and Maintenance agreement between the property owner and PWD is executed and recorded against the property as part of the PWD post-construction stormwater management plan process. These agreements outline the SMP(s) on the private site and stipulate maintenance requirements. The agreements also include language granting PWD the authority to inspect on-site SMPs and even perform maintenance on behalf of the property owner if necessary.

PWD maintains comprehensive operations and maintenance information geared toward the private development community in Chapter 4 of the Philadelphia Stormwater Management Guidance Manual. Each SMP section provides guidance on SMP maintenance activities, including a recommended SMP maintenance schedule and maintenance factsheets that are available as a quick resource for the property owner. In addition, as part of the post-construction stormwater management plan review process, projects must create an SMP Maintenance Guide. The SMP Maintenance Guide is unique to each project and includes a site map and Maintenance Schedule Form for each SMP to allow the owner to track maintenance activities for the site. Please see links below for more information:

- Philadelphia Stormwater Management Guidance Manual, Chapter 4
- Maintenance Schedule and Fact Sheets
- SMP Maintenance Guide

Post-construction maintenance inspections of private facilities were conducted throughout the reporting period. PWD utilizes visual inspections and specialized inspection techniques to assess the performance of private SMPs. PWD conducts post-construction maintenance inspections on all applicable private facilities. As projects are identified for maintenance inspection, the PWD post-construction inspection staff contacts the property owner to schedule the inspection. PWD attempts to conduct the inspection with the property owner or their maintenance representative present so any concerns or questions can be verbally discussed. After inspection, a post-construction inspection report is generated and issued to the property owner. Any required corrective actions are identified in the report along with a deadline for resolution. After actions are taken, PWD re-inspects the property and compliant sites are closed until their next routine inspection date. Inspectors will provide guidance to the property owner to ensure corrective actions are resolved. In addition to visual inspections, PWD has identified other effective methods and technologies, including closed-circuit television, surveys of critical system elevation points, confined space, pole-mounted camera photography, and wet weather inspections. PWD will continue to evaluate and refine post-construction inspection protocols. In FY23, PWD performed 112 post-construction inspections in the combined sewer areas of the city.

Referral for enforcement is pursued if compliance is not achieved within the timeframe specified during the post-construction inspection process. PWD initiates an enforcement case with the issuance of a post-construction enforcement letter to the property owner if a PCSMP is found to be insufficiently maintained. This notification includes a description of any issues identified and a timeline to achieve compliance. The City is authorized to compel maintenance of SMPs on private property under the Philadelphia Code and PWD Regulations. Development sites that are subject to the PSWMR, as well as properties that have grant-funded SMPs, are required to maintain the SMP(s) to function as designed. If initial notification is unsuccessful at bringing action from the property owner, PWD can compel compliance through several enforcement tools, including notices of violation, fines, court action, and/or a nuisance abatement and lien by the City. For non-compliant projects, PWD will also suspend any applicable stormwater billing credits if corrective actions are not completed. In FY23, PWD successfully resolved 11 enforcement cases consisting of 57 SMPs in the combined sewer area of the city. Of the enforcement cases closed, escalated enforcement tools were utilized consisting of seven notices of violation (NOV)s. PWD will continue to work with property owners to ensure that SMPs are inspected and maintained in accordance with the Regulations and recorded O&M agreements.

Stormwater Credits

Non-residential property owners are eligible for stormwater credits, a direct reduction to the monthly stormwater charge, if they own and maintain stormwater management practices that reduce stormwater flows and volume to the City's sewer systems and surrounding waterways. Retrofit and development projects are eligible for credits against their stormwater charge upon completion of construction, and owners must renew their credits every four years. With the credits renewal application, owners may provide maintenance logs and/or PWD may perform an inspection to demonstrate that the SMPs continue to be functional. PWD approved or renewed 122 combined sewer area (326 citywide) stormwater billing credit applications during the reporting period. Failure to adhere to the credit requirement will result in the suspension or termination of the billing reduction.

6.0 Data Collection and Analysis

6.1 Green Stormwater Infrastructure Post-Construction Monitoring

Proposed methodologies for the *Green City, Clean Waters* monitoring program were outlined in a revised Comprehensive Monitoring Plan (CMP) that was submitted on January 10, 2014 and approved on May 28, 2014 by PADEP. PWD has updated methods through new standard operating procedures (SOPs) that better reflect current techniques.

Monitoring and testing green stormwater infrastructure are essential to evaluate its effectiveness in managing stormwater and reducing CSOs. PWD uses post-construction monitoring and post-construction testing at the SMP and system levels to ensure functionality, evaluate the performance of stormwater management practices, and to provide information for improvements to design and maintenance.

A five-year green stormwater infrastructure pilot program was completed in 2016 and results were reported in the Year 5 Evaluation and Adaptation Plan. Information on the selected sites, associated variables and results are available here:
https://water.phila.gov/pool/files/Year5_EAPBody_website.pdf

PWD continued extensive data collection and analyses performed during the second 5 years of the program implementation. This assessment of the program performance is provided in Section 3.0 of the Year 10 Evaluation and Adaptation Plan available here:
https://water.phila.gov/pool/files/gccw-year-10-eap.pdf

FY23 monitoring activities are described in detail in **Appendix 4 GSI Monitoring Status Report.** FY23 updates on non-green infrastructure components of the CMP can be referenced in Section **F.2 Step 1.b. of the Stormwater Management Program Annual Report.**

7.0 Public Outreach and Participation

7.1 Public Engagement & Participation Overview

PWD's Public Engagement (PE) Team, nested within the Public Affairs unit, continues to enhance existing tools and successfully experiment with new strategies to engage a broad range of residents, ratepayers, and stakeholders. In FY23, the PE Team and other Public Affairs personnel or units interacted with over 67,900 individuals through a variety of outreach, engagement, public education, and blue/green program initiatives.

Table 7-1: FY23 Public Engagement Metrics at a Glance

Public Outreach & Participation Programming	Approximate Number of Direct Connection(s) to Residents
Traditional (In-Person) GSI Outreach	732
Digital GSI Outreach	24,068
Water Bar	1,002
Rain Check	1,025
Soak It Up Adoption	15,708
Fairmount Water Works Interpretive Center	25,374
Total:	67,909

7.2 Green Stormwater Infrastructure (GSI) Notification

Public outreach, notification, education, and engagement around GSI projects in Philadelphia's neighborhoods continued as outlined in the *Green City, Clean Waters* program. Along with traditional GCCW outreach (such as community presentations at public meetings), digital media strategies and targeted outreach was used to continue to recover from, and learn from, the COVID-19 pandemic.

Traditional GSI Community Meetings (In-Person)

During FY23, over 700 community members attended meetings and/or received promotional notifications and/or outreach in the combined sewer system (CSS) area. As each GSI project is highly technical, the PE Team consistently strives to improve the efficiency of outreach, most often pairing technical milestones achieved with appropriate public friendly messaging to communicate project updates. Each community meeting is preceded by public notification and outreach and attendee metrics are recorded.

Table 7-2: FY23 GSI/GCCW Traditional Community Meeting Metrics

GSI Community Meetings by PWD GSI District	Public GSI Meetings	Community Attendees
GSI District 1 - West Philly	19	402
GSI District 2 - South Philly & Riverwards	3	50
GSI District 3 - Lower North Philly	5	69
GSI District 4 - Northeast & Northwest	7	211
Totals:	34	732

The PE Team has conducted virtual meetings that follow the same presentation format as a traditional, in-person (community) meeting. These meetings, although digital, are included in Table 7-1.

As a digital complement to traditional outreach, PWD continued to increase production of its "Project Pages" as an online resource for public-facing GSI project information. An example of a scaled-up neighborhood PWD GSI Project Page can be seen here and an example of a singular PWD GSI Project Page can be seen here (PWD GSI #50246).

Targeted GSI Digital Communications

In response to the pandemic, and as a continued 'post-pandemic evolution', holistic digital engagement strategies were consistently applied and focused on customer awareness of GSI projects. Examples include sending targeted digital communications to inform residents about GSI project status updates and/or GSI meetings in their neighborhood.

Digital communications were sent to specific ZIP codes via GovDelivery (a Granicus-owned city-focused platform of digital communications) digital newsletter bulletins and posted to specific neighborhoods via Nextdoor at the following GSI project phases:

- Survey/Geotechnical Work for GSI Systems
- Early GSI Design
- GSI Community Meeting
- Bid-Awarded GSI

Subscribers of the PWD newsletter, which is sent digitally to the public, sign up to receive email bulletins about various topics related to Water Department services and programming. Looking more closely, specific subscribers in the following topics receive GSI targeted digital bulletins filtered by ZIP code: Alerts and Notification, Cottman Avenue Streetscape Open House, Customer Assistance Programs, Events, Infrastructure and Environment News, PWD Partners, and Registered Community Organizations (RCO).

During FY23, a total of 73 Nextdoor posts were published informing the public about these project phases/events, which translates to **more than 24,000 total PWD newsletters received.** The table showcases select targeted digital communications metrics, with more available upon request.

Table 7-3: FY23 GSI/GCCW Targeted Digital Communications Metrics

Bulletin Content Messaging, Sent via Email & SMS Text	Total Recipients (Email + SMS Text)	Email Recipients	Email Open Rate	Email Click Rate	SMS Text Recipients	SMS Text Click Rate
Survey & Geotechnical Work for GSI Systems	6,731	6,137	48.2%	2.5%	594	24.2%
Early GSI Design	4,461	4,074	53.0%	8.3%	387	23.0%
GSI Community Meeting	4,665	4,192	46.5%	6.5%	473	8.0%
Bid-Awarded GSI	8,211	7,392	52.6%	9.7%	819	31.8%
Total and/or Average:	24,068	21,795	50.1%	6.75%	2,273	21.75%

7.3 Other Public Education, Outreach & Engagement Programs

Green City, Clean Waters Interpretive Signage

In FY23, PWD continued to develop the interpretive *Green City, Clean Waters* permanent signage, which included new designs and additional fabrication and installation. This process also included site visits, coordination with property owners/partners, and promotion of the signage. As of this report, PWD has installed a total of 183 *Green City, Clean Waters* interpretive signs at 118 sites, with an additional 26 signs to be installed at 10 new sites in FY24.

Additionally, custom signage for signature sites such as American Street and Cruz Recreation Center was developed, detailing unique public engagement processes and special features.

Rain Check – A Green Homes Program

Rain Check, a program managed by the Pennsylvania Horticultural Society (PHS) through a contract with PWD, seeks to install stormwater management tools on residential properties within Philadelphia.

The Rain Check program hosted 27 workshops in FY23, which reached over 1,000 PWD customers and resulted in 619 stormwater management tools installed on residential properties throughout the city. Participation in the Rain Check program is highlighted in Table 7-4, below.

Table 7-4: FY23 Rain Check Metrics

FY23 Rain Check Metrics	Totals
Rain Barrels Installed*	422
Metal Downspout Planters Installed*	164
Permeable Paving Installed*	25
Rain Gardens Installed*	8
Total Number of Residential Tools Installed*	619
Workshops Hosted	27
Workshop Attendees	1,025

**Installations Completed: The installation of some tools is still in progress for participants who signed up during FY23.*

Soak It Up Adoption – A Green Communities Program

The FY23 Soak It Up Adoption (SIUA) program provided small annual grants to eligible organizations and served a dual purpose: to clean and help PWD maintain these public GSI sites and to engage local residents about what GSI is and how it is connected to protecting local waterways.

In FY23, twelve organizations participated in the Soak It Up Adoption (SIUA) program. Throughout the year, Adoption partners and their employees removed over 1,650 bags of trash and engaged over 15,500 local residents. Through these grants, more than 60 community representatives were paid to help clean and maintain over 80 PWD-owned public GSI sites.

Links to relevant programmatic information can be found at the following links: SIUA Home Page, SIUA 'In the News', and SIUA 'My Favorite Thing'.

Figure 7-1: Social Media Promotion of SIUA

apmforeveryone Meet Leon, our Soak It Up! Adoption (SIUA) Manager at APM 👏🏾

SIUA is a community based program through the Philadelphia Water Department used to beautify and engage community members around green stormwater infrastructure.

Leon is passionate about maintaining green storm water infrastructure like this tree trench on Norris Street to keep his community healthy, clean and sustainable.

**Example of a social media (Instagram) engagement strategy by SIUA partner (APM), March 2022.*

Traditionally SIUA partners engage residents and their community in-person to highlight their adopted infrastructure. However, due to the pandemic, most of the engagement was digital and conducted through social media, e-newsletters, etc. The pre-pandemic (in-person) events included guided tours, tabling sessions at local public events, and presentations at civic association meetings.

Table 7-5, below, showcases metrics used by PWD to track the SIUA program throughout FY23. These figures reflect the variety of adopted SMPs, the amount of trash collected, and the number of people engaged.

Table 7-5: FY23 Soak It Up Adoption (SIUA) Metrics

Soak It Up Adoption (SIUA) Partner List	Number of GSIs Sites Adopted	Number of Bags Collected*	Number of Residents Engaged
Asociación Puertorriqueños en Marcha (APM)	15	140.75	42
Centennial Parkside Community Development Corporation (CPCDC)	6	521.75	52
Cloud 9 Community Farms (C9CF)	4	32**	<25**
Frankford Community Development Corporation (FCDC)	2	452	4,682
Friends Rehabilitation Center (FRP)	6	12.25**	59**
Make the World Better (MTWB)	10	91.25	420
North10 & Hunting Park Community Gardens (North10 & HPCG)	6	10.75**	50**
Roxborough Manayunk Conservancy (RMC)	2	21.75	98
South Kensington Community Partners (SKCP)	7	59.25	162
Southwest Community Development Corporation (SWCDC)	21	271	10,000
Tookany-Tacony Frankford Watershed Partnership (TTF)	4	81.25	
Totals:	84 GSI Sites	~1,694 bags	~15,708 engaged residents
Conversion from 30-Gallon Bag Total to Pounds (lbs.)***	N/A	~65,878+ lbs.	N/A

**All SIUA partners collected trash in 30-gallon paper bags.*

***Incomplete data at time of report; best-faith estimates are made for these totals.*

****Conversion from 30-gallon bags to pounds (lbs.) of trash is done using best-faith math from EPA-originated factors/equations.*

PWD engaged in a digital recruitment strategy for SIUA from December 2022 to January 2023. These digital communications were distributed through GovDelivery email bulletins and social media platforms to recruit new Adoption partners. Along with general messaging, targeted communications were sent to specific neighborhoods of Philadelphia where SIUA support is needed.

Eight email bulletins and eight Nextdoor posts were sent were sent to the following regions:

- Cobbs Creek
- Fairhill
- Frankford
- Girard Estate
- Lower Moyamensing/Whitman
- Morris Park
- Strawberry Mansion
- Wissinoming

These recruitment bulletins were sent to over 2,200 recipients (including both email and SMS contact) with an average open email rate of just over 49% and an average email click rate of just over 6%. These bulletins succeeded in identifying multiple potential partners for next year. Please see Table 7-3, above, for detailed information about PWD email open and click rates.

Miscellaneous *Green City, Clean Waters* Events, Tour, and/or Blogs

PWD utilizes various forms of public engagement to encourage the public participation in the City. Some examples of events in FY23 are listed in Table 7-6.

Table 7-6: FY23 A Few Examples of Various Public Engagement Events and/or Strategies

Date	Effort	Description	Relevant Links
July 2022	Blog - Wissinoming Tour Recap	PWD blog describing the Greater & Greener conference, Wissinoming GSI tour, etc.	Wissinoming Park Takes Center Stage
Sept 2022	Delaware River Festival (DRF) Tabling	General PWD Tabling, Water Bar & Water Quality Report, GCCW Info, FWWIC Tabling	Delaware River Festival PWD 2022 DRF Flickr Album
Nov & Dec 2022 and June & July 2023	Resilient Stormwater Communities Initiative (RCSI) Meeting(s), Presentation(s) & Tour Support	Supported the RCSI, their facilitators (Hinge Collective & Clean Water Action) around how GSI/GCCW fits into neighborhood greening plans and funneling private sites into PWD Billing & Incentives programs	Leaders from Kingsessing Meet to Discuss Green Initiatives in the Neighborhood
April 2023	PWD Stormwater Pioneers Award Ceremony	Coordinated, planned, and executed the 2023 Stormwater Pioneers Award ceremony including location, partner coordination, event logistics, promotion, talking points, food, and photography	PWD 2023 SW Pioneers Award Flickr Album
May 2023	Green Infrastructure Leadership Exchange (GILE) Conference Tour(s) & Presentation(s)	Supported GILE in developing and implementing various GSI tours as well as gave a presentation on GSI/GCCW planning & engagement	Green Infrastructure Leadership Exchange (GILE)
June 2023	Blog - GSI & Ecological Restoration in the TTF	PWD blog describing both GSI & ecological restoration efforts in/around the TTF	Stream Restoration, Green Infrastructure, and More Revamps Planned for Tacony Creek

7.4 Public Education & Urban Watersheds Curriculum

In FY23, the Fairmount Water Works Interpretive Center (FWWIC) and partners hosted over 25,000 individuals in environmental education and outreach events that featured *Green City, Clean Waters* and/or urban waters themed educational content. FWWIC and its educators offered programming on-site, in the field, in the classroom, and on the water all while working with partners like the Alliance for Watershed Education, Tookany/Tacony-Frankford Watershed Partnership, the Partnership for the Delaware Estuary, the Schuylkill River Development Corporation, Philadelphia Parks & Recreation, and the Philadelphia School District. Engagement numbers have rebounded to pre-pandemic levels and are close to 40% higher when compared to FY22.

Table 7-7: FY23 Fairmount Water Works Interpretive Center (FWWIC) Metrics

FWWIC Types of Visitors & Attendance	Total participants
General FWWIC Visitors	15,625
School Groups, Camps & Recreational Centers	5,588
Tours	1,310
Special Events	991
Outreach Efforts	1,860
FY23 Total Visitors	25,374

Visitor engagement consisted of organized exterior tours for adults, families and children, ongoing activities with school groups and summer camps, and the reopening of the POOL Exhibition [partially funded by the Pew Center for Arts & Heritage (March 2023)] and the Ed Grusheski Memorial Exhibition, 'SUBMERGED' (April – July 2023). Outreach efforts included encouraging teachers and students to participate in the *Understanding the Urban Watershed (UUW)* middle years curriculum project, with a special emphasis on *Mussels in the Field* and *Mussels in the Classroom*.

FWWIC continues to deploy *Understanding the Urban Watershed (UUW)* to both teachers and students across Philadelphia. *Understanding the Urban Watershed* is a cross-disciplinary curriculum that consists of six Units, with multiple Learning Experiences in each Unit that are accessible online (link here). The website provides links to instructional materials, resources, videos, and differentiated learning opportunities. Teachers are encouraged to provide engaging student field experiences and hands-on exploration to complement classroom instruction.

Understanding the Urban Watershed is also aligned with the School District of Philadelphia's (District) core content and Education for Sustainability standards for 6th, 7th, 8th and most recently 9th grades. Development and implementation of the curriculum has been a collaborative effort with the District Offices of Curriculum, Instruction and Assessment, and Environmental Management & Services. The curriculum is an exemplar for goals and targets as outlined in the District's Sustainability Plan, Green Futures, and is easily embedded into core curriculum because the Units are aligned with Academic (Science, ELA Math, and SS) and Education for Sustainability Standards. All standards and performance indicators are assessed using performance criteria.

The UUW Curriculum offers students, teachers, schools, and the community active learning experiences about the value of water, water systems, and civic action and responsibility. It connects students to Philadelphia and the role they play on their block, in their school, and throughout their city, with a goal to achieve positive local and global impacts through experiential watershed education.

Appendix 1

Completed Public Green Stormwater Infrastructure Projects

Completed Public Green Infrastructure Reporting Metrics

The Public Completed Projects reporting format and metric definitions are described in Table 1 below.

Table 1: Public Reporting Metric Definitions

Metric	Definition
Work Number	Work Number is a unique assigned identifier from the CIPIT program. A CIPIT work number is attached to construction proposals, bids, work orders, contracts and invoices.
Project ID	This is a unique number, which is assigned automatically by the system when the project is created.
System Number	Unique identifier for system. Composed of the project ID and the System ID.
Construction Completion Date	Date PWD inspector confirmed completion of GSI system.
Storage Volume	The volume of runoff managed by the system. For all systems, the entire depth of the system is counted, except for detention/slow-release systems that are completely lined with an impermeable liner. For those systems, only the depth above the orifice is counted.
New Trees	Total number of new trees planted in association with a system. This number also includes non-SMP trees, which are trees planted as part of a project but are not part of a stormwater management system.
Drainage Area (acres)	Area, in square footage, of impervious and/or pervious surface(s) flowing into a system(s) and SMP(s).
Greened Acres (acre-inch)	Greened Acres is a metric that accounts for the conversion of a highly impervious urban landscape through the implementation of projects that reduce storm water runoff. A Greened Acre is described as an acre of impervious cover connected (tributary) to a combined sewer that subsequently is reconfigured to utilize green stormwater infrastructure to manage at least one inch of stormwater runoff. If storage is provided, systems can credit up to two inches of the stormwater runoff from that acre. The best available Greened Acre value is pulled from the database for regulatory reporting.
SMP Type(s)	A Stormwater Management Practice (SMP) is a technique that controls the rate and volume of stormwater runoff and/or improves runoff water quality. Multiple SMP types can be grouped together in a larger GSI system. The SMP types were originally defined in Table 2-1 of the IAMP.
Program	Current public programs which a greened acre can be assigned to include: • Alleys/Driveways • Campuses • Facilities • Industry and Business • Open Space • Parking • Schools • Streets • Vacant Land

Metric	Definition
Green Construction Cost	Projects with a status of Construction Complete will have a finalized cost of construction provided.
Partner(s)	External entities involved in a project.
Watershed	The City of Philadelphia watershed where the project is located. Four of the City's seven watersheds fall at least partially within the combined sewer area. These watersheds are: • Cobbs-Darby Creek Watershed • Delaware Direct Watershed • Tookany/Tacony-Frankford Creek Watershed • Schuylkill River Watersheds

Table 2: Public SMP Definitions

Public SMP Type Definitions	
Field/Metric	**Definition/Purpose**
Basin*	A stormwater basin is a basin or depression that is vegetated with mowed grass. It is designed to detain and release stormwater runoff and/or infiltrate where feasible.
Blue Roof	A blue roof is a storage system designed into a roof surface such that the roof retains stormwater. Blue roofs are designed to reduce the rate of stormwater runoff.
Bump-out*	A stormwater bump-out is a vegetated curb extension that intercepts gutter flow. It is designed to detain and release stormwater runoff and/or infiltrate where feasible.
Cistern/Rain Barrel	A cistern/rain barrel is a tank or storage receptacle that captures and stores runoff and can thereby reduce runoff volume. The stored water may be used to serve a variety of non-potable water needs (e.g., irrigation).
Depaving	Depaving projects remove existing impervious pavement and restore the surface with grass, other types of vegetation, or loose materials (stone, mulch, etc.) such that the area can thereafter be considered pervious area. Depaving projects remove contributing impervious area from the sewer system.
Drainage Well	A stormwater drainage well is manhole structure designed to manage stormwater runoff by receiving stormwater from upstream collection and pretreatment systems and then discharging the stormwater into the surrounding soils through perforations in the manhole. It is designed to infiltrate stormwater.
Green Gutter	A green gutter is a narrow and shallow landscaped strip along a street’s curb line. It is designed to manage stormwater runoff by placing the top of the planting media in the green gutter lower than the street’s gutter elevation allowing stormwater runoff from both the street and sidewalk to flow directly into the green gutter. It is designed to slowly infiltrate stormwater.
Green Roof	A green roof is a vegetated surface installed over a roof surface.
Infiltration/Storage Trench	An infiltration/storage trench is a subsurface structure designed to detain and release stormwater runoff and/or infiltrate where feasible.
Non-SMP Tree	A non-SMP tree is a planted tree that does not have stormwater directed to it.
Pervious Paving	Pervious paving is a hard permeable surface commonly composed of concrete, asphalt or pavers. It is designed to detain and release stormwater runoff and/or infiltrate where feasible.
Planter*	A stormwater planter is a structure filled with soil media and planted with vegetation or trees. It is designed to detain and release stormwater runoff and/or infiltrate where feasible. Planters often contain curb edging or fencing as barrier protection around the planter.

Public SMP Type Definitions	
Rain Garden	A rain garden is a shallow vegetated area designed to detain and release stormwater runoff and/or infiltrate where feasible. Rain gardens may also be referred to as bioinfiltration basins and bio-retention basins. They are typically integrated into landscape features (e.g. median strips) and are non-mowed areas.
Stormwater Tree	A stormwater tree is planted in a specialized tree pit that has stormwater runoff directed to its pit. It is designed to manage stormwater by placing the top of the planting media in a tree pit lower than the street's gutter elevation and connecting the tree pit to an inlet which directs runoff from the street into the tree pit. It is designed to detain and release stormwater runoff and/or infiltrate where feasible.
Swale	A swale is a channel designed to convey stormwater. It can be designed to attenuate and/or infiltrate where feasible.
Tree Trench*	A stormwater tree trench is a subsurface infiltration/storage trench that is planted with trees. They are typically linear features that are constructed between the curb and the sidewalk. It is designed to detain and release stormwater runoff and/or infiltrate where feasible.
Wetland*	A stormwater wetland is a vegetated basin designed principally for pollutant removal. It typically holds runoff for periods longer than 72 hours and may include a permanent pool. Wetlands can also detain and release stormwater runoff.

*The word 'stormwater' was previously included in these types but was removed because it was redundant.

Table 3: Completed Public Green Stormwater Infrastructure Projects

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
20391	1056	1056-1	Ashville/Ditman/Rhawn etal	4-May-20	Combined	2462	11	0.3	0.7	Tree Trench	Streets	$552,000.00		Delaware,Pennypack
		1056-2		4-May-20	Combined	4438	11	0.8	1.6	Tree Trench	Streets			Delaware,Pennypack
		1056-3		4-May-20	Combined	2774	11	0.4	0.8	Infiltration/Storage Trench	Streets			Delaware,Pennypack
20400	306	306-1	Ontario, "A" - Glenwood / Glenwood	24-Mar-17	Combined	820	9	0.1	0.3	Tree Trench	Streets	$411,000.00		Delaware
		306-2		24-Mar-17	Combined	574	9	0.1	0.2	Tree Trench	Streets			Delaware
		306-3		24-Mar-17	Combined	1287	9	0.2	0.4	Tree Trench	Streets			Delaware
		306-4		24-Mar-17	Combined	1763	9	0.3	0.6	Tree Trench	Streets			Delaware
		306-5		24-Mar-17	Combined	1000	9	0.2	0.3	Tree Trench	Streets			Delaware
20422	517	517-1	Woodland / 56th	6-May-16	Combined	1684	5	0.2	0.3	Tree Trench	Streets	$175,000.00		Schuylkill
		517-2		6-May-16	Combined	2394	5	0.3	0.7	Tree Trench	Streets			Schuylkill
20439	584	584-1	Ellsworth / 20th etal	7-Nov-18	Combined	1683	10	0.3	0.5	Tree Trench	Streets	$577,000.00		Delaware,Schuylkill
		584-2		7-Nov-18	Combined	1748	10	0.2	0.5	Tree Trench	Streets			Delaware,Schuylkill
		584-3		7-Nov-18	Combined	1150	10	0.2	0.3	Tree Trench	Streets			Delaware,Schuylkill
		584-5		7-Nov-18	Combined	1527	10	0.3	0.5	Tree Trench	Streets			Delaware,Schuylkill
20443	411	411-1	Juniata : Cayuga/Claridge/Lawndale etal Ferko Playground	8-Dec-17	Combined	41804	0	7.2	13.3	Bumpout, Infiltration/Storage Trench	Open Space	$2,717,000.00	Philadelphia Department of Parks & Recreation	TTF
20444	563	563-1	Corinthian / Fairmount	26-Mar-19	Combined	3779	5	0.9	1.3	Tree Trench	Streets	$763,000.00		Delaware,Schuylkill
		563-2		26-Mar-19	Combined	3935	5	0.6	1.2	Tree Trench	Streets			Delaware,Schuylkill
		563-3		26-Mar-19	Combined	2442	5	0.4	0.7	Infiltration/Storage Trench	Streets			Delaware,Schuylkill
		563-4		26-Mar-19	Combined	1382	5	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware,Schuylkill
20456	994	994-1	Tulpehocken / Mansfield / Lowber / Duval / Johnson	14-Dec-17	Combined	3103	0	0.5	0.9	Infiltration/Storage Trench	Streets	$562,000.00		TTF
		994-2		14-Dec-17	Combined	1131	0	0.3	0.4	Infiltration/Storage Trench	Streets			TTF
		994-3		14-Dec-17	Combined	1302	0	0.4	0.5	Infiltration/Storage Trench	Streets			TTF
		994-4		14-Dec-17	Combined	814	0	0.1	0.3	Infiltration/Storage Trench	Streets			TTF
20458	1006	1006-1	Bridge/Creston/Darrah/Penn	23-Apr-18	Combined	1886	7	0.3	0.6	Tree Trench	Streets	$1,257,000.00		Delaware
		1006-2		23-Apr-18	Combined	4702	7	0.6	1.3	Infiltration/Storage Trench	Streets			Delaware
		1006-3		23-Apr-18	Combined	2459	7	0.3	0.6	Tree Trench	Streets			Delaware
		1006-4		23-Apr-18	Combined	2122	7	0.3	0.6	Tree Trench	Streets			Delaware
		1006-5		23-Apr-18	Combined	2299	7	0.4	0.8	Infiltration/Storage Trench	Streets			Delaware
		1006-6		23-Apr-18	Combined	2855	7	0.7	1.0	Infiltration/Storage Trench	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
20461	1066	1066-1	Frankford / Pacific / Wheatsheaf	22-Aug-16	Combined	588	0	0.1	0.2	Infiltration/Storage Trench	Streets	$570,000.00		Delaware,TTF
		1066-2		22-Aug-16	Combined	1112	0	0.2	0.3	Infiltration/Storage Trench	Streets			Delaware,TTF
		1066-3		22-Aug-16	Combined	1480	0	0.3	0.5	Infiltration/Storage Trench	Streets			Delaware,TTF
		1066-4		22-Aug-16	Combined	1093	0	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware,TTF
		1066-5		22-Aug-16	Combined	2400	0	0.5	0.8	Infiltration/Storage Trench	Streets			Delaware,TTF
		1066-6		22-Aug-16	Combined	1084	0	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware,TTF
20475	1042	1042-1	31st / 34th / 35th / Wharton	6-Aug-21	Combined	1683	9	0.3	0.5	Tree Trench	Streets	$318,000.00		Schuylkill
		1042-2		9-Jul-21	Combined	844	9	0.2	0.3	Tree Trench	Streets			Schuylkill
20480	1266	1266-1	Somerset / 7th	5-Jun-20	Combined	3343	4	0.5	1.0	Tree Trench	Streets	$186,000.00		Delaware
20483	1294	1294-1	Fanshawe/Longshore/Unruh/Bingham/Kerper	30-Mar-22	Combined	1192	0	0.1	0.3	Infiltration/Storage Trench	Streets	$143,000.00		Delaware
		1294-2		30-Mar-22	Combined	1258	0	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
20489	1136	1136-1	Angora / Cedar / Yewdall / 57th	26-Feb-19	Combined	2464	0	0.4	0.8	Infiltration/Storage Trench	Streets	$388,000.00		Cobbs-Darby
		1136-2		26-Feb-19	Combined	1048	0	0.2	0.4	Infiltration/Storage Trench	Streets			Cobbs-Darby
		1136-3		26-Feb-19	Combined	924	0	0.2	0.3	Infiltration/Storage Trench	Streets			Cobbs-Darby
20490	1206	1206-1	Wishart/Clementine/Elkhart/Helen/Jasper	18-Jan-19	Combined	850	0	0.2	0.3	Infiltration/Storage Trench	Streets	$315,000.00		Delaware
		1206-2		18-Jan-19	Combined	1194	0	0.1	0.3	Infiltration/Storage Trench	Streets			Delaware
		1206-3		18-Jan-19	Combined	1172	0	0.3	0.4	Infiltration/Storage Trench	Streets			Delaware
20497	1215	1215-1	44th / Larchwood / Osage / Pine	22-Nov-19	Combined	1437	4	0.2	0.4	Tree Trench	Streets	$116,000.00		Schuylkill
20499	1248	1248-1	Crease / Frankford / Mascher / Thompson / Girard	26-May-21	Combined	1175	0	0.3	0.4	Infiltration/Storage Trench	Streets	$248,000.00		Delaware
20513	1338	1338-1	Mayfair I / Tyson / Brighton / Princeton / Et al	14-Oct-22	Combined	4014	0	0.8	1.2	Infiltration/Storage Trench	Streets	$285,000.00		Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
40330	289 *	289-1	Coral, Sergeant-Huntingdon / Sepviva, Susquehanna - Dauphin	27-Jan-10	Combined	962	17	0.6	0.3	Infiltration/Storage Trench	Streets	$209,000.00		Delaware
		289-10		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-11		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-12		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-13		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-14		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-15		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-16		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-17		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-18		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-2		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-3		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-4		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-5		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-6		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-7		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-8		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
		289-9		27-Jan-10	Combined	38	17	0.0	0.0	Stormwater Tree	Streets			Delaware
40368	234	234-1	Franklin, Berks - Norris / Norris - Diamond /16th Street / Dauphin Street	24-Oct-13	Combined	601	32	0.2	0.2	Tree Trench	Streets	$184,925.00		Delaware
		234-2		24-Oct-13	Combined	1128	32	0.3	0.4	Tree Trench	Streets			Delaware
		234-3		24-Oct-13	Combined	525	32	0.2	0.2	Tree Trench	Streets			Delaware
		234-4		24-Oct-13	Combined	2343	32	0.4	0.8	Tree Trench	Streets			Delaware
		234-5		24-Oct-13	Combined	2618	32	0.4	0.8	Tree Trench	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
40577	441 *	441-1	Wagner St.,12th - Broad; Rockland St., 11th - Broad	8-Apr-11	Combined	480	21	0.4	0.2	Infiltration/Storage Trench	Streets	$924,000.00		TTF
		441-11		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-12		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-13		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-14		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-15		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-16		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-2		8-Apr-11	Combined	3160	21	2.0	1.0	Infiltration/Storage Trench	Streets			TTF
		441-21		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-22		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-25		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-27		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-28		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-3		8-Apr-11	Combined	1902	21	1.7	0.6	Infiltration/Storage Trench	Streets			TTF
		441-31		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-32		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-38		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-39		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-42		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-43		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-45		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-5		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-7		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
		441-8		8-Apr-11	Combined	38	21	0.0	0.0	Stormwater Tree	Streets			TTF
40599	233	233-1	Belgrade / Crease / Marlborough	20-Dec-12	Combined	847	1	0.2	0.3	Infiltration/Storage Trench	Streets	$26,835.00		Delaware
		233-2		20-Dec-12	Combined	416	1	0.1	0.1	Infiltration/Storage Trench	Streets			Delaware
40607	235	235-2	Northern Liberties Flood Relief	15-Jul-16	Combined	530	13	0.2	0.2	Tree Trench	Streets	$147,000.00		Delaware
		235-4		15-Jul-16	Combined	791	13	0.1	0.3	Tree Trench	Streets			Delaware
40659	207	207-1	Waterview Rec Center Stormwater Management Improvements	1-Jul-08	Combined	786	4	0.3	0.5	Pervious Paving, Tree Trench	Streets	$50,000.00	Pennsylvania Horticulture Society,Philadelphia Department of Recreation	TTF
		207-2		1-Jul-08	Combined	42	4	0.0	0.0	Planter	Streets			TTF
		207-3		1-Jul-08	Combined	42	4	0.0	0.0	Planter	Streets			TTF
40662	218	218-3	Green Streets Pilot Project - Passyunk Avenue Locations	5-Mar-13	Combined	5137	0	0.7	1.3	Bumpout	Streets	$0.00	Philadelphia Streets Department	Schuylkill
40750	304	304-1	Adams / Church / Penn	9-Mar-20	Combined	710	1	0.2	0.3	Tree Trench	Streets	$317,000.00		TTF
		304-2		9-Mar-20	Combined	1184	1	0.2	0.4	Infiltration/Storage Trench	Streets			TTF
40755	305	305-1	Ellsworth / Federal / Wharton	25-Sep-19	Combined	1594	2	0.3	0.5	Tree Trench	Streets	$233,000.00	Philadelphia Department of Parks & Recreation	Delaware
		305-2		25-Sep-19	Combined	1251	2	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
40771	301	301-2	Dauphin / Sepviva etal	26-Aug-15	Combined	1444	10	0.2	0.4	Tree Trench	Streets	$133,000.00		Delaware
40773	469	469-1	Galloway/Roseberry etal	13-Jun-18	Combined	1312	5	0.2	0.4	Tree Trench	Streets	$105,000.00		Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
40784	406	406-1	Conestoga / Thompson	25-Nov-19	Combined	902	0	0.2	0.3	Infiltration/Storage Trench	Streets	$169,000.00		Schuylkill
		406-2		25-Nov-19	Combined	1067	0	0.2	0.4	Infiltration/Storage Trench	Streets			Schuylkill
40795	443	443-1	Cobbs Creek GSI	11-Jun-20	Combined	2233	58	0.5	1.1	Rain Garden	Open Space	$3,644,000.00	Philadelphia Department of Parks & Recreation	Cobbs-Darby
		443-10		10-Jul-19	Combined	4738	58	0.7	1.3	Tree Trench	Streets			Cobbs-Darby
		443-11		10-Jul-19	Combined	2017	58	0.3	0.6	Infiltration/Storage Trench	Streets			Cobbs-Darby
		443-12		10-Jul-19	Combined	3177	58	0.4	0.8	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby
		443-13		10-Jul-19	Combined	3428	58	0.6	1.1	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby
		443-14		11-Jun-20	Combined	8390	58	1.4	2.7	Basin, Infiltration/Storage Trench, Rain Garden	Open Space			Cobbs-Darby
		443-15		11-Jun-20	Combined	1902	58	0.3	0.6	Infiltration/Storage Trench, Rain Garden	Open Space			Cobbs-Darby
		443-16		11-Jun-20	Combined	2135	58	0.4	0.7	Rain Garden	Open Space			Cobbs-Darby
		443-17		11-Jun-20	Combined	573	58	0.1	0.2	Infiltration/Storage Trench	Streets			Cobbs-Darby
		443-18		11-Jun-20	Combined	1467	58	0.3	0.5	Infiltration/Storage Trench	Streets			Cobbs-Darby
		443-3		11-Jun-20	Combined	1897	58	0.3	0.5	Infiltration/Storage Trench	Streets			Cobbs-Darby
		443-4		11-Jun-20	Combined	1862	58	0.3	0.5	Infiltration/Storage Trench	Streets			Cobbs-Darby
		443-5		11-Jun-20	Combined	4533	58	0.7	1.3	Infiltration/Storage Trench, Rain Garden	Open Space			Cobbs-Darby
		443-6		11-Jun-20	Combined	3917	58	0.4	0.9	Infiltration/Storage Trench, Rain Garden	Open Space			Cobbs-Darby
		443-7		10-Jul-19	Combined	1008	58	0.2	0.3	Rain Garden	Open Space			Cobbs-Darby
		443-8		10-Jul-19	Combined	2390	58	0.3	0.7	Tree Trench	Streets			Cobbs-Darby
		443-9		10-Jul-19	Combined	4196	58	0.6	1.2	Tree Trench	Streets			Cobbs-Darby

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
40796	1086	1086-1	Sepviva Street	27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets	$150,000.00		Delaware
		1086-10		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-11		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-12		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-13		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-14		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-15		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-16		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-17		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-18		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-19		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-2		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-20		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-21		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-22		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-23		27-Dec-12	Combined	28	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-24		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-25		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-26		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-27		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-3		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-6		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-7		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
		1086-9		27-Dec-12	Combined	38	32	0.0	0.0	Stormwater Tree	Streets			Delaware
40798	518	518-1	Ludlow / Hirst / Robinson	16-Jul-20	Combined	835	28	0.2	0.3	Infiltration/Storage Trench	Streets	$465,000.00		Cobbs-Darby
		518-2		16-Jul-20	Combined	932	28	0.2	0.3	Infiltration/Storage Trench	Streets			Cobbs-Darby
		518-3		16-Jul-20	Combined	661	28	0.2	0.2	Infiltration/Storage Trench	Streets			Cobbs-Darby
		518-4		16-Jul-20	Combined	923	28	0.3	0.3	Infiltration/Storage Trench	Streets			Cobbs-Darby
40799	556	556-1	Cleveland/Gratz/Greene/Roberts	1-Nov-18	Combined	2884	0	0.4	0.8	Infiltration/Storage Trench	Streets	$144,000.00		TTF
		556-2		1-Nov-18	Combined	1433	0	0.4	0.5	Infiltration/Storage Trench	Streets			TTF

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
40816	554	554-1	Weikel / Witte / Gaul	7-Jan-19	Combined	3795	5	0.4	0.7	Tree Trench	Streets	$710,000.00		Delaware
		554-2		7-Jan-19	Combined	2350	5	0.3	0.7	Stormwater Tree, Tree Trench	Streets			Delaware
		554-3		7-Jan-19	Combined	1714	5	0.3	0.6	Infiltration/Storage Trench	Streets			Delaware
		554-4		7-Jan-19	Combined	653	5	0.1	0.2	Tree Trench	Streets			Delaware
		554-5		7-Jan-19	Combined	638	5	0.1	0.2	Infiltration/Storage Trench	Streets			Delaware
		554-6		7-Jan-19	Combined	1058	5	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
		554-7		7-Jan-19	Combined	787	5	0.2	0.3	Infiltration/Storage Trench	Streets			Delaware
40817	1293	1293-1	C/F/Mayfield/Rosehill/Hartville	29-Jan-18	Combined	565	0	0.1	0.2	Infiltration/Storage Trench	Streets	$270,000.00		Delaware
		1293-2		29-Jan-18	Combined	1260	0	0.3	0.4	Infiltration/Storage Trench	Streets			Delaware
		1293-3		29-Jan-18	Combined	2271	0	0.6	0.7	Infiltration/Storage Trench	Streets			Delaware
40821	504	504-2	9th / Mifflin / Pierce	19-Dec-18	Combined	1194	2	0.2	0.3	Tree Trench	Streets	$567,000.00		Delaware
40824	525	525-1	52nd / 53rd / Gainor	20-Mar-20	Combined	1473	11	0.3	0.5	Tree Trench	Streets	$335,000.00		Schuylkill
		525-2		20-Mar-20	Combined	1005	11	0.3	0.3	Tree Trench	Streets			Schuylkill
		525-3		20-Mar-20	Combined	2463	11	0.5	0.9	Tree Trench	Streets			Schuylkill
40828	657	657-1	Brandywine / Green / Melon / North	7-Jun-17	Combined	1217	2	0.3	0.4	Tree Trench	Streets	$113,000.00		Delaware
40829	990	990-1	Galloway / Orianna / Leithgow	27-Sep-19	Combined	1255	0	0.2	0.4	Infiltration/Storage Trench	Streets	$249,000.00		Delaware
		990-2		27-Sep-19	Combined	635	0	0.2	0.2	Infiltration/Storage Trench	Streets			Delaware
40839	995	995-1	50th / Rodman / Walton	25-Jan-23	Combined	1498	0	0.3	0.5	Infiltration/Storage Trench	Streets	$411,000.00		Cobbs-Darby,Schuylkill
		995-2		25-Jan-23	Combined	1494	0	0.3	0.5	Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		995-3		25-Jan-23	Combined	1714	0	0.5	0.5	Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
40844	989	989-1	Master / Wanamaker / Hobart	3-Jul-19	Combined	2670	0	0.6	1.2	Infiltration/Storage Trench	Streets	$182,000.00		Schuylkill
		989-2		15-Oct-20	Combined	1919	0	0.5	0.7	Infiltration/Storage Trench	Streets			Schuylkill
40856	1060	1060-1	Nicholas / 28th / Myrtlewood	9-Dec-22	Combined	1197	6	0.3	0.4	Tree Trench	Streets	$118,000.00		Schuylkill
40862	1064	1064-1	8th / 12th / Lemon / North	27-May-20	Combined	2068	6	0.3	0.6	Tree Trench	Streets	$263,000.00		Delaware
		1064-2		27-May-20	Combined	1583	6	0.2	0.5	Infiltration/Storage Trench	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
40863	1010	1010-1	Bouvier / Monument / Willington / 17th	3-Jun-19	Combined	1788	3	0.3	0.6	Infiltration/Storage Trench	Streets	$489,000.00		Delaware
		1010-2		3-Jun-19	Combined	1109	3	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
		1010-3		3-Jun-19	Combined	1334	3	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
		1010-4		3-Jun-19	Combined	530	3	0.1	0.2	Infiltration/Storage Trench	Streets			Delaware
		1010-5		3-Jun-19	Combined	2034	3	0.2	0.5	Tree Trench	Streets			Delaware
40865	1057	1057-2	Crowson / Stokes / Woodlawn	30-Aug-18	Combined	675	0	0.2	0.2	Infiltration/Storage Trench	Streets	$534,000.00		TTF
		1057-4		30-Aug-18	Combined	970	0	0.3	0.3	Infiltration/Storage Trench	Streets			TTF
		1057-5		30-Aug-18	Combined	1572	0	0.4	0.5	Infiltration/Storage Trench	Streets			TTF
		1057-6		30-Aug-18	Combined	504	0	0.1	0.2	Infiltration/Storage Trench	Streets			TTF
40866	1065	1065-1	Creighton / Spring / Vogdes / Race	17-Sep-21	Combined	1462	4	0.3	0.5	Tree Trench	Streets	$134,000.00		Cobbs-Darby
40891	1062	1062-2	Wynnefield, Monument - 170' W. of 50th	25-May-17	Combined	1859	13	0.3	0.6	Tree Trench	Streets	$595,000.00		Schuylkill
		1062-3		25-May-17	Combined	2184	13	0.6	0.8	Infiltration/Storage Trench	Streets			Schuylkill
		1062-4		25-May-17	Combined	2926	13	0.6	0.9	Tree Trench	Streets			Schuylkill
		1062-5		25-May-17	Combined	3276	13	0.4	0.9	Tree Trench	Streets			Schuylkill
		1062-6		25-May-17	Combined	809	13	0.2	0.2	Tree Trench	Streets			Schuylkill
		1062-7		25-May-17	Combined	5458	13	0.8	1.6	Tree Trench	Streets			Schuylkill
40900	1058	1058-1	Medary Avenue from 13th Street to Broad Street	31-May-16	Combined	1605	0	0.3	0.6	Infiltration/Storage Trench	Streets	$161,000.00		TTF
		1058-2		31-May-16	Combined	868	0	0.2	0.3	Infiltration/Storage Trench	Streets			TTF
40903	656	656-1	Market / 43rd / Ludlow / 45th	7-Sep-16	Combined	541	3	0.1	0.2	Tree Trench	Streets	$71,000.00		Schuylkill
40906	1246	1246-1	Church / Orchard / Ruan / Salem	12-Mar-20	Combined	867	0	0.1	0.3	Infiltration/Storage Trench	Streets	$122,000.00		TTF
40918	1149	1149-1	Loudon / Carlisle	28-Sep-17	Combined	1379	0	0.4	0.5	Infiltration/Storage Trench	Streets	$134,000.00		TTF
		1149-2		28-Sep-17	Combined	572	0	0.1	0.2	Infiltration/Storage Trench	Streets			TTF
40928	1275	1275-1	SR1026 Section H04	6-Sep-19	Combined	3521	28	0.5	0.9	Tree Trench	Streets	Unknown		TTF
		1275-2		6-Sep-19	Combined	5371	28	0.7	1.4	Tree Trench	Streets			TTF
		1275-3		6-Sep-19	Combined	1731	28	0.2	0.4	Tree Trench	Streets			TTF
		1275-4		6-Sep-19	Combined	2520	28	0.5	0.8	Tree Trench	Streets			TTF
		1275-5		6-Sep-19	Combined	1083	28	0.1	0.3	Tree Trench	Streets			TTF
		1275-6		6-Sep-19	Combined	2578	28	0.3	0.6	Tree Trench	Streets			TTF

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
40938	1423	1423-1	I-95 Section AF1	4-Aug-20	Combined	2133	24	0.6	1.3	Infiltration/Storage Trench	Streets	Unknown	-	Delaware
		1423-10		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-11		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-12		4-Aug-20	Combined	27	24	0.0	0.0	Stormwater Tree	Streets			Delaware
		1423-13		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-14		4-Aug-20	Combined	27	24	0.2	0.0	Stormwater Tree	Streets			Delaware
		1423-15		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-16		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-17		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-18		4-Aug-20	Combined	27	24	0.0	0.0	Stormwater Tree	Streets			Delaware
		1423-19		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-2		4-Aug-20	Combined	1897	24	0.4	0.7	Infiltration/Storage Trench	Streets			Delaware
		1423-20		4-Aug-20	Combined	27	24	0.0	0.0	Stormwater Tree	Streets			Delaware
		1423-21		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-22		4-Aug-20	Combined	27	24	0.0	0.0	Stormwater Tree	Streets			Delaware
		1423-23		4-Aug-20	Combined	27	24	0.0	0.0	Stormwater Tree	Streets			Delaware
		1423-24		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-25		4-Aug-20	Combined	27	24	0.0	0.0	Stormwater Tree	Streets			Delaware
		1423-26		4-Aug-20	Combined	27	24	0.0	0.0	Stormwater Tree	Streets			Delaware
		1423-27		4-Aug-20	Combined	27	24	0.0	0.0	Stormwater Tree	Streets			Delaware
		1423-28		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-29		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-6		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-7		4-Aug-20	Combined	27	24	0.0	0.0	Stormwater Tree	Streets			Delaware
		1423-8		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
		1423-9		4-Aug-20	Combined	27	24	0.1	0.0	Stormwater Tree	Streets			Delaware
40996	1366	1366-1	Thompson / Belgrade / Freedly / Hazzard	17-Apr-23	Combined	1196	4	0.2	0.3	Tree Trench	Streets	$119,000.00		Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50001	14 *	14-1	Passyunk Square Model Neighborhood	17-Sep-13	Combined	1452	0	0.5	0.5	Infiltration/Storage Trench, Rain Garden	Streets	$873,261.00	Department of Recreation,Passyunk Square Civic Association	Delaware
	15 *	15-2		17-Sep-13	Combined	1536	4	0.3	0.5	Tree Trench	Streets		Passyunk Square Civic Association	Delaware
	16 *	16-1		17-Sep-13	Combined	1112	5	0.2	0.3	Tree Trench	Streets		Department of Recreation,Passyunk Square Civic Association,South Philadelphia Older Adult Center	Delaware
	162 *	162-1		17-Sep-13	Combined	604	13	0.1	0.2	Bumpout, Tree Trench	Streets		Department of Recreation	Delaware,Schuylkill
		162-2		17-Sep-13	Combined	1236	13	0.3	0.4	Bumpout, Tree Trench	Streets			Delaware,Schuylkill
		162-3		17-Sep-13	Combined	2041	13	0.4	0.7	Tree Trench	Streets			Delaware,Schuylkill
		162-4		17-Sep-13	Combined	1316	13	0.2	0.4	Tree Trench	Streets			Delaware,Schuylkill
	313 *	313-1		17-Sep-13	Combined	1452	0	0.3	0.4	Infiltration/Storage Trench	Streets		Department of Recreation,Passyunk Square Civic Association,South Philadelphia Older Adult Center	Delaware
50002	8 *	8-2	New Kensington Model Neighborhood	4-Nov-11	Combined	1681	3	0.5	1.0	Rain Garden	Streets	$173,494.00	Department of Recreation,New Kensington Community Development Corporation,Pennsylvania Horticulture Society	Delaware
50003	12 *	12-1	Northern Liberties Model Neighborhood	8-Feb-13	Combined	163	7	0.1	0.1	Infiltration/Storage Trench	Streets	$454,930.00	City Play,Mural Arts Program,Northern Liberties Neighborhood Association	Delaware
		12-3		8-Feb-13	Combined	336	7	0.1	0.1	Tree Trench	Streets			Delaware
		12-4		8-Feb-13	Combined	479	7	0.1	0.1	Tree Trench	Streets			Delaware
	91 *	91-1		8-Feb-13	Combined	1463	7	0.4	0.4	Bumpout, Tree Trench	Streets		Northern Liberties Neighborhood Association	Delaware
50005	1 *	1-1	Green Street Project in 16th Street	10-Nov-10	Combined	1676	6	0.5	0.7	Tree Trench	Streets	$402,396.00	Pennsylvania Horticulture Society	Delaware
		1-2		10-Nov-10	Combined	1280	6	0.3	0.4	Tree Trench	Streets			Delaware
		1-3		10-Nov-10	Combined	600	6	0.2	0.2	Tree Trench	Streets			Delaware
	9 *	9-1		10-Nov-10	Combined	494	5	0.1	0.1	Tree Trench	Streets		New Kensington Community Development	Delaware
		9-2		10-Nov-10	Combined	779	5	0.1	0.3	Tree Trench	Streets			Delaware
	18 *	18-1		10-Nov-10	Combined	609	8	0.3	0.2	Tree Trench	Streets			Schuylkill
50006	187	187-1	Columbus Square Park Infrastructure Demonstration Project	26-May-10	Combined	20	0	0.0	0.0	Planter	Streets	$65,506.00	Department of Public Property,Department of Recreation,Friends of Columbus Square	Delaware
		187-2		26-May-10	Combined	20	0	0.0	0.0	Planter	Streets			Delaware
		187-3		26-May-10	Combined	882	0	0.2	0.3	Infiltration/Storage Trench, Planter	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50007	21 *	21-1	Blue Bell Inn Triangle Stormwater Improvements	31-Oct-13	Combined	2066	12	0.6	1.2	Swale	Streets	$278,000.00	Fairmount Park Commission,Pennsylvania Horticulture Society,Philadelphia Department of Parks & Recreation	Cobbs-Darby
50009	20 *	20-10	Queen Lane Bumpouts	14-May-11	Combined	1357	13	0.3	0.6	Tree Trench	Streets	Unknown		TTF
50010	19 *	19-1	Barry Playground - Tree Trenches	14-Oct-13	Combined	2777	36	0.7	0.9	Tree Trench	Streets	$975,000.00	Department of Recreation	Schuylkill
		19-2		14-Oct-13	Combined	3979	36	0.6	1.2	Tree Trench	Streets			Schuylkill
		19-3		14-Oct-13	Combined	2180	36	0.4	0.7	Tree Trench	Streets			Schuylkill
		19-4		14-Oct-13	Combined	4463	36	0.5	1.1	Tree Trench	Streets			Schuylkill
		19-5		14-Oct-13	Combined	2745	36	0.3	0.6	Tree Trench	Streets			Schuylkill
50011	194	194-1	N. 3rd St and Wildey St	1-Jun-09	Combined	849	24	0.2	0.4	Rain Garden	Open Space	$22,236.00	Northern Liberties Neighborhood Association,Pennsylvania Department of Environmental Protection,Pennsylvania Horticulture Society,Philadelphia Department of Parks & Recreation	Delaware
50012	186	186-1	Cliveden Park Extended Detention	1-Oct-07	Combined	876	0	0.6	0.3	Rain Garden	Open Space	$175,000.00	Pennsylvania Department of Environmental	TTF
		186-2		1-Oct-07	Combined	3687	0	0.6	1.0	Rain Garden	Open Space			TTF
50013	208	208-1	West Mill Creek Stormwater Tree Trench	1-Jul-06	Combined	311	4	0.2	0.1	Tree Trench	Streets	$66,050.00	Pennsylvania Department of Environmental Protection,Pennsylvania Horticulture	Schuylkill
		208-2		1-Jul-06	Combined	456	4	0.1	0.2	Tree Trench	Streets			Schuylkill
		208-3		1-Jul-06	Combined	63	4	0.0	0.0	Pervious Paving	Streets			Schuylkill
50014	181	181-1	47th and Grays Ferry Rain Garden	1-Apr-07	Combined	1260	7	0.4	0.7	Rain Garden	Vacant Land	$16,000.00	Pennsylvania Department of Environmental Protection,Pennsylvania Horticulture Society,University City Green	Schuylkill
50015	185	185-1	Clark Park Stormwater Bed	1-Nov-07	Combined	3080	0	0.7	0.9	Infiltration/Storage Trench	Open Space		Pennsylvania Department of Environmental Protection,Pennsylvania Department of Conservation & Natural Resources,Philadelphia Department of Parks & Recreation	Schuylkill

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50016	196	196-1	Mill Creek Farm	1-May-06	Combined	360	4	0.3	0.5	Rain Garden, Swale	Streets	$57,850.00	Pennsylvania Department of Environmental Protection,Philadelphia Water Department,Pennsylvania Horticulture Society	Schuylkill
50019	154 *	154-1	Anna B. Day School, Epiphany of Our Lord, Francis Scott, Dickinson Sq	25-Nov-14	Combined	1853	15	0.4	0.7	Tree Trench	Streets	$948,000.00	Tookany/Tacony-Frankford Watershed Partnership	TTF
		154-2		25-Nov-14	Combined	2754	15	0.4	0.9	Tree Trench	Streets			TTF
		154-3		25-Nov-14	Combined	2349	15	0.5	1.0	Tree Trench	Streets			TTF
		154-4		25-Nov-14	Combined	2926	15	0.4	0.8	Tree Trench	Streets			TTF
	17 *	17-1		25-Nov-14	Combined	2635	5	0.4	0.9	Bumpout, Infiltration/Storage Trench	Streets		Department of Recreation,Friends of Dickinson Park,Southeastern	Delaware
		17-2		25-Nov-14	Combined	1015	5	0.2	0.4	Tree Trench	Streets			Delaware
	79 *	79-1		25-Nov-14	Combined	619	1	0.1	0.2	Infiltration/Storage Trench	Streets		Lower Moyamensing Civic Association	Delaware
	81 *	81-1		25-Nov-14	Combined	1606	2	0.3	0.5	Tree Trench	Streets			Delaware
		81-2		25-Nov-14	Combined	1374	2	0.2	0.5	Infiltration/Storage Trench	Streets			Delaware
50020	2 *	2-1	Welsh and Wakisha School	23-Apr-13	Combined	989	7	0.3	0.3	Infiltration/Storage Trench, Rain Garden	Streets	$679,000.00	Pennsylvania Horticulture Society	Delaware
		2-2		23-Apr-13	Combined	828	7	0.2	0.3	Tree Trench	Streets			Delaware
	157 *	157-1		23-Apr-13	Combined	900	19	0.2	0.3	Tree Trench	Streets		Department of Recreation	Delaware
		157-2		23-Apr-13	Combined	1234	19	0.3	0.4	Tree Trench	Streets			Delaware
		157-3		23-Apr-13	Combined	943	19	0.2	0.3	Tree Trench	Streets			Delaware
	245 *	245-1		23-Apr-13	Combined	974	7	0.2	0.3	Tree Trench	Streets		Pennsylvania Horticulture Society	Delaware
	296 *	296-1		23-Apr-13	Combined	1034	4	0.2	0.3	Tree Trench	Streets			Delaware
	312 *	312-1		23-Apr-13	Combined	1183	7	0.3	0.4	Tree Trench	Streets		Department of Recreation	Delaware
		312-2		23-Apr-13	Combined	1130	7	0.3	0.4	Tree Trench	Streets			Delaware
50022	13	13-1	Madison Park	16-Dec-11	Combined	402	13	0.2	0.2	Infiltration/Storage Trench	Open Space	$99,412.00	City Play,Digsau,Northern Liberties Neighborhood Association,Philadelphia Department of Parks & Recreation	Delaware
50023	192	192-1	Herron Playground porous basketball court	2-Oct-12	Combined	539	12	0.1	0.3	Infiltration/Storage Trench, Rain Garden	Open Space	$190,959.00	Philadelphia Capital Program Office,Philadelphia	Delaware
		192-2		2-Oct-12	Combined	2150	12	0.2	0.4	Pervious Paving	Open Space			Delaware
50024	170	170-1	Work in Shissler Playground Blair and Hewson Street	10-Oct-10	Combined	1533	4	0.2	0.4	Infiltration/Storage Trench	Open Space	$50,000.00	New Kensington Community Development Corporation,Pennsylvania	Delaware
		170-2		10-Oct-10	Combined	1500	4	0.2	0.4	Tree Trench	Open Space			Delaware

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50025	223 *	223-1	A.S. Jenks School, Sacks Playground, Smith Elementary, St. Thomas Aquinas	22-Oct-13	Combined	1684	18	0.3	0.5	Tree Trench	Streets	$1,150,000.00	Lower Moyamensing Civic Association	Delaware
		223-2		22-Oct-13	Combined	1690	18	0.3	0.5	Tree Trench	Streets			Delaware
	224 *	224-1		22-Oct-13	Combined	2813	12	0.4	0.8	Tree Trench	Streets			Delaware
		224-2		22-Oct-13	Combined	1625	12	0.3	0.5	Tree Trench	Streets			Delaware
		224-3		22-Oct-13	Combined	2131	12	0.4	0.8	Tree Trench	Streets			Delaware
	227 *	227-1		22-Oct-13	Combined	1843	18	0.3	0.7	Tree Trench	Streets			Schuylkill
		227-2		22-Oct-13	Combined	1291	18	0.3	0.6	Tree Trench	Streets			Schuylkill
		227-3		22-Oct-13	Combined	1588	18	0.3	0.7	Tree Trench	Streets			Schuylkill
50026	210 *	210-1	Daroff School, Shepard Rec Center, Sayre School, Andrew Hamilton School	13-Dec-12	Combined	2048	42	0.4	0.7	Infiltration/Storage Trench	Streets	$1,659,000.00	Pennsylvania Environmental Council	Cobbs-Darby
		210-2		13-Dec-12	Combined	3420	42	0.5	1.1	Tree Trench	Streets			Cobbs-Darby
		210-3		13-Dec-12	Combined	2828	42	0.5	0.9	Tree Trench	Streets			Cobbs-Darby
	211 *	211-1		13-Dec-12	Combined	2765	73	0.6	0.9	Bumpout, Tree Trench	Streets			Schuylkill
		211-2		13-Dec-12	Combined	3718	73	0.4	0.8	Basin, Planter, Tree Trench	Streets			Schuylkill
		211-3		13-Dec-12	Combined	2799	73	0.4	0.9	Tree Trench	Streets			Schuylkill
	216 *	216-1		13-Dec-12	Combined	4551	14	1.0	2.0	Tree Trench	Streets			Cobbs-Darby
	231 *	231-1		13-Dec-12	Combined	2511	39	0.5	0.8	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		231-2		13-Dec-12	Combined	4884	39	0.8	1.5	Bumpout, Planter, Tree Trench	Streets			Cobbs-Darby,Schuylkill
		231-3		13-Dec-12	Combined	2915	39	0.6	1.0	Tree Trench	Streets			Cobbs-Darby,Schuylkill
50027	212 *	212-1	Samuel Huey School, Bryant School, Christy Rec Center,	23-Nov-12	Combined	2786	15	0.4	0.9	Tree Trench	Streets	$952,000.00	Pennsylvania Environmental Council	Cobbs-Darby
		212-2		23-Nov-12	Combined	1507	15	0.2	0.4	Tree Trench	Streets			Cobbs-Darby
		212-3		23-Nov-12	Combined	886	15	0.1	0.3	Tree Trench	Streets			Cobbs-Darby
	213 *	213-1		23-Nov-12	Combined	1103	19	0.2	0.3	Tree Trench	Streets		Department of Recreation,Pennsylvania Environmental Council	Cobbs-Darby
		213-2		23-Nov-12	Combined	1771	19	0.3	0.6	Tree Trench	Streets			Cobbs-Darby
		213-3		23-Nov-12	Combined	2582	19	0.5	1.1	Tree Trench	Streets			Cobbs-Darby
	214 *	214-1		23-Nov-12	Combined	753	11	0.1	0.2	Tree Trench	Streets			Cobbs-Darby
		214-2		23-Nov-12	Combined	2052	11	0.3	0.7	Tree Trench	Streets			Cobbs-Darby
	215 *	215-1		23-Nov-12	Combined	2534	16	0.4	0.8	Tree Trench	Streets		Pennsylvania Environmental Council	Cobbs-Darby
		215-2		23-Nov-12	Combined	3886	16	0.6	1.2	Tree Trench	Streets			Cobbs-Darby
	59 *	59-1		23-Nov-12	Combined	3251	5	0.5	1.0	Tree Trench	Streets			Cobbs-Darby
50028	175 *	175-1	Phila. Military Academy/MLK Rec Center/FD Elementary /Towey Rec Center	24-Dec-12	Combined	5051	20	0.7	1.5	Tree Trench	Streets	$606,000.00		Delaware
	176 *	176-1		24-Dec-12	Combined	2401	14	0.5	0.9	Tree Trench	Streets			Delaware
	177 *	177-1		24-Dec-12	Combined	3800	10	0.4	0.7	Tree Trench	Streets			Delaware
		177-2		24-Dec-12	Combined	3390	10	0.6	1.1	Tree Trench	Streets			Delaware
	178 *	178-1		24-Dec-12	Combined	2904	6	0.3	0.7	Tree Trench	Streets		Fairmount Park Commission,Pennsylvania	Delaware
		178-2		24-Dec-12	Combined	1348	6	0.1	0.3	Tree Trench	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50029	147 *	147-1	Morris Leeds School, Pleasant Playground, Simons Rec. Center	10-May-13	Combined	709	32	0.3	0.3	Infiltration/Storage Trench	Streets	$1,152,000.00	Department of Recreation	TTF
	179 *	179-1		10-May-13	Combined	1473	80	0.3	0.6	Tree Trench	Streets			TTF
		179-10		10-May-13	Combined	1337	80	0.2	0.5	Tree Trench	Streets			TTF
		179-11		10-May-13	Combined	2499	80	0.4	0.8	Tree Trench	Streets			TTF
		179-12		10-May-13	Combined	1443	80	0.5	0.5	Tree Trench	Streets			TTF
		179-13		10-May-13	Combined	2387	80	0.4	0.8	Tree Trench	Streets			TTF
		179-14		10-May-13	Combined	1974	80	0.3	0.6	Tree Trench	Streets			TTF
		179-2		10-May-13	Combined	1950	80	0.3	0.6	Tree Trench	Streets			TTF
		179-3		10-May-13	Combined	2586	80	0.5	0.8	Tree Trench	Streets			TTF
		179-4		10-May-13	Combined	2778	80	0.5	1.0	Tree Trench	Streets			TTF
		179-5		10-May-13	Combined	4188	80	0.6	1.2	Tree Trench	Streets			TTF
		179-6		10-May-13	Combined	3805	80	0.6	1.3	Tree Trench	Streets			TTF
		179-7		10-May-13	Combined	1518	80	0.2	0.4	Tree Trench	Streets			TTF
		179-8		10-May-13	Combined	1700	80	0.2	0.5	Tree Trench	Streets			TTF
		179-9		10-May-13	Combined	1532	80	0.2	0.4	Tree Trench	Streets			TTF
50030	171	171-1	KendertonField, Cecil B.Moore, Congeso de Latinos, HM Stanton School	27-Sep-18	Combined	1528	11	0.2	0.5	Tree Trench	Streets	$1,331,000.00	Fairmount Park Commission,Pennsylvania Horticulture Society	Delaware
		171-2		27-Sep-18	Combined	1238	11	0.3	0.4	Tree Trench	Streets			Delaware
		171-3		27-Sep-18	Combined	2356	11	0.4	0.7	Tree Trench	Streets			Delaware
	172	172-1		27-Sep-18	Combined	3921	14	0.5	1.0	Bumpout, Tree Trench	Streets			Delaware
		172-2		27-Sep-18	Combined	3573	14	0.3	0.7	Bumpout, Tree Trench	Streets			Delaware
		172-3		27-Sep-18	Combined	1721	14	0.4	0.5	Bumpout, Tree Trench	Streets			Delaware
		172-4		27-Sep-18	Combined	1534	14	0.2	0.4	Tree Trench	Streets			Delaware
		172-5		27-Sep-18	Combined	1943	14	0.4	0.6	Infiltration/Storage Trench	Streets			Delaware
	173	173-1		27-Sep-18	Combined	1152	5	0.2	0.4	Tree Trench	Streets			Delaware
		173-2		27-Sep-18	Combined	1276	5	0.2	0.4	Tree Trench	Streets			Delaware
50031	123	123-1	58th St. Connector -Greenway Ave.	15-Jan-13	Combined	1705	7	0.4	0.6	Rain Garden	Streets	$368,321.00		Cobbs-Darby,Schuylkill
		123-2		15-Jan-13	Combined	1672	7	0.4	0.5	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		123-3		15-Jan-13	Combined	1534	7	0.3	0.6	Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
50032	180	180-1	PHS Tree Trenches	5-Nov-11	Combined	646	4	0.1	0.2	Tree Trench	Streets	$0.00	Pennsylvania Horticulture Society	Delaware
	324	324-1		5-Nov-11	Combined	768	3	0.2	0.3	Tree Trench	Streets			Delaware
	325	325-1		5-Nov-11	Combined	1088	4	0.2	0.3	Tree Trench	Streets			Delaware
	326	326-1		5-Nov-11	Combined	1047	6	0.4	0.3	Tree Trench	Streets			Delaware
	327	327-1		5-Nov-11	Combined	1029	4	0.2	0.3	Tree Trench	Streets			Delaware
	342	342-1		5-Nov-11	Combined	1292	4	0.3	0.6	Tree Trench	Streets			Delaware
50033	46	46-1	Lancaster Ave 59th to 62nd Tree Trenches	1-Nov-10	Combined	2075	17	0.6	0.6	Tree Trench	Streets		Environmental Protection Agency,Philadelphia Department of Commerce,Philadelphia Industrial Development	Schuylkill
		46-2		1-Nov-10	Combined	782	17	0.1	0.2	Bumpout	Streets			Schuylkill
		46-3		1-Nov-10	Combined	1470	17	0.5	0.5	Rain Garden, Swale	Streets			Schuylkill
		46-4		1-Nov-10	Combined	3953	17	0.5	0.9	Swale	Streets			Schuylkill
50034	10 *	10-1	Trenton and Norris, Thompson and Columbia	20-Sep-13	Combined	3428	3	0.7	1.4	Bumpout, Tree Trench	Streets	$581,000.00	New Kensington Community Development Corporation,Pennsylvania	Delaware
	88 *	88-1		20-Sep-13	Combined	2738	0	0.4	0.8	Infiltration/Storage Trench, Rain Garden	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50035	45	45-1	Ben Franklin Parkway Tree Trenches	1-Jun-11	Combined	1011	0	0.2	0.4	Infiltration/Storage Trench	Streets	$215,600.00	Fairmount Park Commission	Schuylkill
		45-2		1-Jun-11	Combined	852	0	0.2	0.3	Infiltration/Storage Trench	Streets			Schuylkill
		45-3		1-Jun-11	Combined	1698	0	0.2	0.5	Infiltration/Storage Trench	Streets			Schuylkill
50036	228 *	228-1	29th / Cambria / William Cramp / Barton / Hunting Park	25-Apr-14	Combined	1189	2	0.2	0.4	Tree Trench	Streets	$623,000.00	Philadelphia Department of Parks & Recreation	Delaware
	277 *	277-1		25-Apr-14	Combined	3380	11	0.6	1.1	Tree Trench	Streets			Delaware
		277-2		25-Apr-14	Combined	1500	11	0.3	0.6	Tree Trench	Streets			Delaware
	278 *	278-1		25-Apr-14	Combined	4885	5	0.9	1.6	Tree Trench	Streets			TTF
	50 *	50-1		25-Apr-14	Combined	3353	0	0.6	1.0	Bumpout, Infiltration/Storage Trench	Streets		Philadelphia Department of Parks & Recreation	Delaware,Schuylkill
50037	250 *	250-1	Cassidy/Overbrook/Shoemaker/Cathedral/Durham/sister Clara/James Rhoads/Belmont	9-Sep-13	Combined	2261	29	0.4	0.8	Tree Trench	Streets	$1,547,000.00		Schuylkill
		250-2		9-Sep-13	Combined	2675	29	0.4	0.8	Tree Trench	Streets			Schuylkill
		250-3		9-Sep-13	Combined	1561	29	0.2	0.5	Tree Trench	Streets			Schuylkill
	251 *	251-1		9-Sep-13	Combined	3614	13	0.6	1.1	Tree Trench	Streets			Schuylkill
	252 *	252-1		9-Sep-13	Combined	1467	15	0.3	0.5	Tree Trench	Streets			Schuylkill
		252-2		9-Sep-13	Combined	1466	15	0.3	0.5	Tree Trench	Streets			Schuylkill
	253 *	253-1		9-Sep-13	Combined	2989	39	0.6	1.0	Tree Trench	Streets			Schuylkill
		253-2		9-Sep-13	Combined	1288	39	0.2	0.3	Tree Trench	Streets			Schuylkill
		253-3		9-Sep-13	Combined	2818	39	0.6	1.0	Tree Trench	Streets			Schuylkill
	254 *	254-1		9-Sep-13	Combined	1488	4	0.2	0.5	Tree Trench	Streets			Schuylkill
		254-2		9-Sep-13	Combined	1809	4	0.3	0.6	Tree Trench	Streets			Schuylkill
	255 *	255-1		9-Sep-13	Combined	3159	9	0.6	1.1	Tree Trench	Streets			Cobbs-Darby
		255-2		9-Sep-13	Combined	2617	9	0.4	0.8	Tree Trench	Streets			Cobbs-Darby
	256 *	256-1		9-Sep-13	Combined	3189	3	0.6	1.1	Tree Trench	Streets			Schuylkill
	257 *	257-1		9-Sep-13	Combined	2921	12	0.6	0.9	Tree Trench	Streets			Schuylkill
50038	247 *	247-1	Donald/Wilson/Vare/StephenGirard/Southwark/Markward/Cherry/JulianAbele	16-May-13	Combined	3566	7	0.5	1.0	Tree Trench	Streets	$1,336,000.00	Department of Public Property	Schuylkill
	258 *	258-1		16-May-13	Combined	3728	23	0.7	1.2	Tree Trench	Streets			Schuylkill
	259 *	259-1		16-May-13	Combined	6155	18	0.8	1.7	Tree Trench	Streets			Schuylkill
		259-2		16-May-13	Combined	2778	18	0.4	0.9	Tree Trench	Streets			Schuylkill
	260 *	260-1		16-May-13	Combined	2991	20	0.5	0.9	Tree Trench	Streets			Schuylkill
		260-2		16-May-13	Combined	1480	20	0.3	0.6	Tree Trench	Streets			Schuylkill
	261 *	261-1		16-May-13	Combined	1604	6	0.2	0.4	Tree Trench	Streets			Schuylkill
	262 *	262-1		16-May-13	Combined	2029	3	0.4	0.7	Tree Trench	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50039	268 *	268-1	Temple / William Gray / Dick Elementary / Parking Lot 12th and Diamond	1-Aug-14	Combined	1715	9	0.4	0.6	Tree Trench	Streets	$889,000.00		Delaware
		268-2		1-Aug-14	Combined	1495	9	0.2	0.5	Infiltration/Storage Trench	Streets			Delaware
		268-3		1-Aug-14	Combined	1015	9	0.2	0.3	Tree Trench	Streets			Delaware
	269 *	269-1		1-Aug-14	Combined	1601	21	0.3	0.5	Tree Trench	Streets			Delaware
		269-2		1-Aug-14	Combined	1776	21	0.3	0.6	Tree Trench	Streets			Delaware
		269-3		1-Aug-14	Combined	1303	21	0.2	0.4	Tree Trench	Streets			Delaware
		269-4		1-Aug-14	Combined	1402	21	0.2	0.4	Tree Trench	Streets			Delaware
		269-5		1-Aug-14	Combined	1605	21	0.2	0.4	Tree Trench	Streets			Delaware
	270 *	270-1		1-Aug-14	Combined	3933	11	0.3	0.7	Tree Trench	Streets			Delaware
		270-2		1-Aug-14	Combined	2708	11	0.3	0.6	Tree Trench	Streets			Delaware
	283 *	283-1		1-Aug-14	Combined	1985	1	0.3	0.6	Tree Trench	Streets		Philadelphia Housing Authority	Delaware
50040	153	153-1	Yorktown Green Streets	20-Feb-19	Combined	1666	15	0.5	0.9	Infiltration/Storage Trench, Planter	Streets	$1,418,000.00		Delaware
		153-2		14-Mar-19	Combined	2677	15	0.5	1.0	Infiltration/Storage Trench, Planter	Streets			Delaware
		153-3		11-Dec-18	Combined	1004	15	0.2	0.4	Infiltration/Storage Trench, Planter	Streets			Delaware
		153-4		7-Nov-18	Combined	997	15	0.2	0.4	Infiltration/Storage Trench, Planter	Streets			Delaware
		153-5		16-Oct-18	Combined	891	15	0.2	0.4	Infiltration/Storage Trench, Planter	Streets			Delaware
		153-6		13-Sep-18	Combined	1327	15	0.3	0.5	Infiltration/Storage Trench, Planter	Streets			Delaware
50041	167 *	167-1	Longstretch, Little Sisters of Poor, McCresh Plground, Cobbs Crk Pkwy. Island	13-Jan-14	Combined	2798	33	0.4	0.8	Tree Trench	Streets	$1,232,000.00	Snyderville Community Development Corporation	Schuylkill
		167-2		13-Jan-14	Combined	2733	33	0.5	1.0	Tree Trench	Streets			Schuylkill
		167-3		13-Jan-14	Combined	4354	33	0.8	1.6	Tree Trench	Streets			Schuylkill
	264 *	264-1		13-Jan-14	Combined	4488	13	0.8	1.6	Planter, Tree Trench	Streets			Cobbs-Darby
	265 *	265-1		13-Jan-14	Combined	1754	12	0.3	0.5	Tree Trench	Streets			Cobbs-Darby
		265-2		13-Jan-14	Combined	1446	12	0.2	0.4	Infiltration/Storage Trench	Streets			Cobbs-Darby
		265-3		13-Jan-14	Combined	2587	12	0.5	0.9	Infiltration/Storage Trench	Streets			Cobbs-Darby
		265-4		13-Jan-14	Combined	1481	12	0.3	0.5	Infiltration/Storage Trench	Streets			Cobbs-Darby
		265-5		13-Jan-14	Combined	1212	12	0.2	0.4	Tree Trench	Streets			Cobbs-Darby
	266 *	266-1		13-Jan-14	Combined	3312	6	0.8	1.5	Infiltration/Storage Trench, Rain Garden	Streets			Cobbs-Darby

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50042	271 *	271-1	Bridesburg Sch., Dorsey Plygrnd, Roosevelt Plygrnd, Magnolia Cem.,Carmell	30-Sep-13	Combined	1930	3	0.4	0.8	Infiltration/Storage Trench, Rain Garden	Streets	$1,765,000.00	Philadelphia Department of Parks & Recreation,Tacony Civic Association	Delaware
		271-2		30-Sep-13	Combined	1108	3	0.2	0.5	Infiltration/Storage Trench	Streets			Delaware
		271-3		30-Sep-13	Combined	4671	3	0.6	1.1	Tree Trench	Streets			Delaware
	272 *	272-1		30-Sep-13	Combined	1128	16	0.2	0.3	Tree Trench	Streets		Tacony Civic Association	Delaware,TTF
		272-2		30-Sep-13	Combined	1438	16	0.3	0.5	Tree Trench	Streets			Delaware,TTF
		272-3		30-Sep-13	Combined	1685	16	0.3	0.6	Tree Trench	Streets			Delaware,TTF
		272-4		30-Sep-13	Combined	1673	16	0.3	0.5	Tree Trench	Streets			Delaware,TTF
		272-5		30-Sep-13	Combined	1583	16	0.3	0.5	Tree Trench	Streets			Delaware,TTF
		272-6		30-Sep-13	Combined	2446	16	0.3	0.7	Tree Trench	Streets			Delaware,TTF
		272-7		30-Sep-13	Combined	2761	16	0.4	0.7	Tree Trench	Streets			Delaware,TTF
	273 *	273-1		30-Sep-13	Combined	2213	35	0.3	0.6	Tree Trench	Streets			Delaware
		273-2		30-Sep-13	Combined	1814	35	0.3	0.5	Tree Trench	Streets			Delaware
		273-3		30-Sep-13	Combined	1725	35	0.3	0.5	Tree Trench	Streets			Delaware
	274 *	274-1		30-Sep-13	Combined	3559	42	0.6	1.1	Tree Trench	Streets		Roosevelt Playground Park Advisory Council,Tacony Civic Association	Delaware
		274-2		30-Sep-13	Combined	2091	42	0.3	0.5	Tree Trench	Streets			Delaware
		274-3		30-Sep-13	Combined	1122	42	0.1	0.2	Tree Trench	Streets			Delaware
		274-4		30-Sep-13	Combined	1667	42	0.3	0.5	Infiltration/Storage Trench, Planter	Streets			Delaware
	275 *	275-1		30-Sep-13	Combined	1968	2	0.3	0.5	Tree Trench	Streets		Tacony Civic Association	Delaware
50043	279 *	279-1	Harpers Hollow, Wakefield Park	4-Dec-12	Combined	2996	0	0.6	1.1	Basin	Open Space	$474,000.00	Philadelphia Department of Parks & Recreation	TTF
	281 *	281-1		4-Dec-12	Combined	1798	0	0.4	0.8	Rain Garden	Open Space			TTF
		281-2		4-Dec-12	Combined	2769	0	0.5	1.0	Rain Garden	Open Space			TTF
50044	280	280-1	Wister Woods, Kemble Park	21-Jan-15	Combined	21592	69	3.1	6.1	Rain Garden, Swale	Open Space	$2,360,000.00	Philadelphia Department of Parks & Recreation	TTF
		280-2		21-Jan-15	Combined	5052	69	0.7	1.4	Infiltration/Storage Trench	Open Space			TTF
		280-3		21-Jan-15	Combined	7996	69	1.2	2.4	Infiltration/Storage Trench	Open Space			TTF
		280-4		21-Jan-15	Combined	2008	69	0.3	0.6	Infiltration/Storage Trench	Open Space			TTF
	282	282-1		21-Jan-15	Combined	9158	7	0.9	1.8	Rain Garden	Open Space			TTF
		282-2		21-Jan-15	Combined	11228	7	1.3	2.6	Rain Garden	Open Space			TTF
		282-3		21-Jan-15	Combined	11275	7	1.3	2.6	Rain Garden	Open Space			TTF
		282-4		21-Jan-15	Combined	9504	7	1.3	2.6	Rain Garden	Open Space			TTF
50045	292	292-1	Ben Franklin Parkway 16-19th St.	16-Mar-17	Combined	3338	0	0.5	1.1	Infiltration/Storage Trench	Streets	Unknown	Department of Public Property,Philadelphia Department of Parks & Recreation	Schuylkill
		292-2		16-Mar-17	Combined	1920	0	0.3	0.5	Infiltration/Storage Trench	Streets			Schuylkill
		292-3		16-Mar-17	Combined	1680	0	0.2	0.5	Infiltration/Storage Trench	Streets			Schuylkill
		292-4		16-Mar-17	Combined	1322	0	0.2	0.3	Infiltration/Storage Trench	Streets			Schuylkill
		292-5		16-Mar-17	Combined	2424	0	0.3	0.6	Infiltration/Storage Trench	Streets			Schuylkill
		292-6		16-Mar-17	Combined	2414	0	0.5	0.8	Infiltration/Storage Trench	Streets			Schuylkill

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50046	243 *	243-1	Womrath Park	27-Sep-12	Combined	3539	7	1.1	1.2	Infiltration/Storage Trench, Rain Garden, Swale	Open Space	$540,000.00	Tookany/Tacony-Frankford Watershed Partnership,Philadelphia Department of Parks & Recreation,Frankford Civic Association	TTF
50047	366	366-1	Philadelphia Zoo Green Streets Project	29-May-13	Combined	875	5	0.2	0.3	Rain Garden	Streets	$357,687.00	Philadelphia Department of Parks & Recreation,Philadelphia Zoo	Schuylkill
		366-10		29-May-13	Combined	816	5	0.1	0.2	Infiltration/Storage Trench, Planter	Streets			Schuylkill
		366-2		29-May-13	Combined	894	5	0.2	0.4	Infiltration/Storage Trench, Rain Garden	Streets			Schuylkill
		366-3		29-May-13	Combined	385	5	0.1	0.1	Rain Garden	Streets			Schuylkill
		366-4		29-May-13	Combined	814	5	0.2	0.4	Rain Garden	Streets			Schuylkill
		366-5		29-May-13	Combined	582	5	0.1	0.2	Rain Garden	Streets			Schuylkill
		366-6		29-May-13	Combined	797	5	0.1	0.3	Rain Garden	Streets			Schuylkill
		366-8		29-May-13	Combined	650	5	0.1	0.2	Infiltration/Storage Trench	Streets			Schuylkill
		366-9		29-May-13	Combined	697	5	0.1	0.2	Infiltration/Storage Trench	Streets			Schuylkill
50048	375	375-1	Kinsey Sch./National Cem./Rowen Sch./Wagner Sch.	26-Oct-17	Combined	3997	10	0.7	1.3	Tree Trench	Streets	$1,108,000.00		TTF
		375-2		26-Oct-17	Combined	2070	10	0.3	0.5	Tree Trench	Streets			TTF
	377	377-1		26-Oct-17	Combined	591	0	0.1	0.2	Infiltration/Storage Trench, Swale	Streets			TTF
		377-2		26-Oct-17	Combined	720	0	0.2	0.4	Infiltration/Storage Trench, Swale	Streets			TTF
		377-3		26-Oct-17	Combined	587	0	0.2	0.3	Infiltration/Storage Trench, Swale	Streets			TTF
	378	378-1		26-Oct-17	Combined	3260	9	0.6	1.2	Tree Trench	Streets			TTF
	379	379-1		26-Oct-17	Combined	3457	11	0.6	1.2	Tree Trench	Streets			TTF
		379-2		26-Oct-17	Combined	1913	11	0.4	0.6	Tree Trench	Streets			TTF
50049	291	291-1	Sharswood & Our Lady of Carmel Schs./ St. Monica/ Taggart Sch.	27-Sep-17	Combined	3023	3	0.4	0.8	Tree Trench	Streets	$1,235,000.00	Community Design Collaborative	Delaware
		291-2		27-Sep-17	Combined	875	3	0.2	0.3	Tree Trench	Streets			Delaware
		291-3		27-Sep-17	Combined	2063	3	0.3	0.6	Infiltration/Storage Trench	Streets			Delaware
	388	388-1		27-Sep-17	Combined	2006	5	0.3	0.6	Infiltration/Storage Trench	Streets			Delaware
		388-2		27-Sep-17	Combined	1494	5	0.4	0.5	Tree Trench	Streets			Delaware
		388-3		27-Sep-17	Combined	985	5	0.2	0.3	Tree Trench	Streets			Delaware
		388-4		27-Sep-17	Combined	1479	5	0.3	0.5	Infiltration/Storage Trench	Streets			Delaware
	389	389-1		27-Sep-17	Combined	2177	3	0.5	0.7	Infiltration/Storage Trench	Streets			Delaware
		389-2		27-Sep-17	Combined	1306	3	0.2	0.5	Tree Trench	Streets			Delaware

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50051	392	392-1	73rd/Elmwood Pk./Patterson Sch./Connell Pk./Mother Mary Sch./St. James Ch.	3-Feb-15	Combined	4871	8	0.8	1.6	Tree Trench	Streets	$2,526,000.00		Cobbs-Darby,Schuylkill
		392-2		3-Feb-15	Combined	4663	8	0.9	1.5	Tree Trench	Streets			Cobbs-Darby,Schuylkill
	393	393-1		3-Feb-15	Combined	4901	9	0.9	1.8	Infiltration/Storage Trench, Rain Garden	Streets		Philadelphia Department of Parks & Recreation	Schuylkill
		393-2		3-Feb-15	Combined	2267	9	0.4	0.7	Tree Trench	Streets			Schuylkill
		393-3		3-Feb-15	Combined	3855	9	0.8	1.2	Rain Garden, Tree Trench	Streets			Schuylkill
		393-4		3-Feb-15	Combined	1081	9	0.1	0.3	Infiltration/Storage Trench	Streets			Schuylkill
		393-5		3-Feb-15	Combined	4995	9	0.9	1.6	Tree Trench	Streets			Schuylkill
	394	394-1		3-Feb-15	Combined	1425	6	0.2	0.4	Tree Trench	Streets			Schuylkill
		394-2		3-Feb-15	Combined	3184	6	0.6	1.0	Tree Trench	Streets			Schuylkill
		394-3		3-Feb-15	Combined	881	6	0.1	0.3	Infiltration/Storage Trench	Streets			Schuylkill
	396	396-1		3-Feb-15	Combined	4331	17	0.7	1.4	Tree Trench	Streets			Schuylkill
		396-2		3-Feb-15	Combined	1413	17	0.4	0.7	Tree Trench	Streets			Schuylkill
		396-3		3-Feb-15	Combined	3229	17	0.5	1.0	Tree Trench	Streets			Schuylkill
	397	397-1		3-Feb-15	Combined	3846	8	0.7	1.2	Tree Trench	Streets			Schuylkill
		397-2		3-Feb-15	Combined	1832	8	0.4	0.7	Tree Trench	Streets			Schuylkill
	398	398-1		3-Feb-15	Combined	12536	18	2.2	3.9	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		398-2		3-Feb-15	Combined	3931	18	0.4	0.8	Tree Trench	Streets			Cobbs-Darby,Schuylkill

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50052	335	335-1	Chelten Hills Cem./Finley Pg./Ivy Hills Cem./Pennypacker Sch./ Sedgwick Sta.	12-Mar-18	Combined	6081	2	1.0	1.8	Bumpout, Infiltration/Storage Trench	Streets	$2,256,000.00	Southeastern Transportation Authority	TTF
	380	380-1		12-Mar-18	Combined	5493	0	1.1	1.7	Infiltration/Storage Trench	Streets			TTF
		380-10		12-Mar-18	Combined	1560	0	0.3	0.5	Infiltration/Storage Trench	Streets			TTF
		380-11		12-Mar-18	Combined	1534	0	0.2	0.4	Infiltration/Storage Trench	Streets			TTF
		380-12		12-Mar-18	Combined	2048	0	0.3	0.6	Infiltration/Storage Trench, Swale	Streets			TTF
		380-2		12-Mar-18	Combined	2615	0	0.4	0.7	Bumpout, Infiltration/Storage Trench	Streets			TTF
		380-3		12-Mar-18	Combined	2709	0	0.4	0.8	Bumpout, Infiltration/Storage Trench	Streets			TTF
		380-4		12-Mar-18	Combined	2922	0	0.4	0.7	Bumpout, Infiltration/Storage Trench	Streets			TTF
		380-5		12-Mar-18	Combined	1544	0	0.2	0.4	Infiltration/Storage Trench	Streets			TTF
		380-6		12-Mar-18	Combined	3284	0	0.4	0.8	Bumpout, Infiltration/Storage Trench	Streets			TTF
		380-9		12-Mar-18	Combined	3185	0	0.5	1.0	Infiltration/Storage Trench, Swale	Streets			TTF
	383	383-1		12-Mar-18	Combined	3622	0	0.6	1.2	Infiltration/Storage Trench	Streets			TTF
		383-2		12-Mar-18	Combined	2952	0	0.6	0.9	Infiltration/Storage Trench	Streets			TTF
50053	314	314-1	Logan Sch./Wayne/Windrim/Richmond Lib./Stokley/Vacant Lot/Skev. Pk./Westmoreland	28-Mar-18	Combined	1465	16	0.3	0.5	Tree Trench	Streets	$1,843,000.00		TTF
		314-2		28-Mar-18	Combined	1746	16	0.4	0.6	Tree Trench	Streets			TTF
		314-3		28-Mar-18	Combined	2932	16	0.8	1.0	Tree Trench	Streets			TTF
	384	384-1		28-Mar-18	Combined	4170	9	0.7	1.3	Tree Trench	Streets			Delaware
	385	385-1		28-Mar-18	Combined	2054	7	0.4	0.7	Tree Trench	Streets			Delaware
		385-2		28-Mar-18	Combined	905	7	0.1	0.3	Tree Trench	Streets			Delaware
	413	413-1		28-Mar-18	Combined	1365	0	0.2	0.4	Bumpout, Infiltration/Storage Trench	Streets		Department of Public Property	TTF
		413-2		28-Mar-18	Combined	1093	0	0.2	0.3	Bumpout, Infiltration/Storage Trench	Streets			TTF

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50055	246	246-1	40th St./Drexel COMAD/Malcom X Pk./42nd St.Vacant Lot/Beeber Sch./Upland Way	20-Mar-19	Combined	2458	13	0.4	0.7	Tree Trench	Streets	$1,938,000.00	Drexel University	Schuylkill
		246-2		20-Mar-19	Combined	2794	13	0.4	0.8	Tree Trench	Streets			Schuylkill
	344	344-1		20-Mar-19	Combined	2506	3	0.3	0.6	Tree Trench	Streets			Schuylkill
	399	399-1		20-Mar-19	Combined	2525	29	0.3	0.6	Tree Trench	Streets		Philadelphia Planning Commission,Philadelphia Department of Parks & Recreation	Cobbs-Darby,Schuylkill
		399-2		20-Mar-19	Combined	3759	29	0.7	1.2	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		399-3		20-Mar-19	Combined	1605	29	0.3	0.5	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		399-4		20-Mar-19	Combined	3382	29	0.5	1.0	Tree Trench	Streets			Cobbs-Darby,Schuylkill
	400	400-1		20-Mar-19	Combined	3279	0	0.5	1.0	Bumpout, Infiltration/Storage Trench, Swale	Streets		American Cities Foundation	Schuylkill
		400-2		20-Mar-19	Combined	1756	0	0.2	0.4	Bumpout, Infiltration/Storage Trench, Swale	Streets			Schuylkill
		400-3		20-Mar-19	Combined	1704	0	0.2	0.4	Bumpout, Infiltration/Storage Trench, Swale	Streets			Schuylkill
		400-4		20-Mar-19	Combined	5082	0	0.8	1.6	Infiltration/Storage Trench, Swale	Streets			Schuylkill
50057	417	417-1	Stenton Ave. & E. Washington Ln.	8-Jul-14	Combined	2326	0	0.3	0.6	Rain Garden	Streets	$34,000.00	Philadelphia Streets Department,Ogontz Avenue Revitalization Corporation,Mayors Office of Transportation & Utilities	TTF
50059	410	410-1	Harrowgate Park	1-Sep-16	Combined	1842	0	0.3	0.5	Infiltration/Storage Trench, Rain Garden	Open Space	$808,000.00	Southeastern Transportation Authority,Philadelphia Department of Parks & Recreation	Delaware
		410-2		1-Sep-16	Combined	2885	0	0.4	0.8	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware
		410-3		1-Sep-16	Combined	4049	0	0.4	0.8	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware
		410-4		1-Sep-16	Combined	5789	0	0.8	1.5	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50060	416	416-1	Hunting Park	31-Jan-20	Combined	1642	29	0.2	0.4	Infiltration/Storage Trench, Rain Garden	Open Space	$1,818,000.00	Philadelphia Department of Parks & Recreation	Delaware,TTF
		416-10		31-Jan-20	Combined	10061	29	1.4	2.8	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware,TTF
		416-2		15-Nov-19	Combined	6476	29	0.9	1.8	Infiltration/Storage Trench	Open Space			Delaware,TTF
		416-3		31-Jan-20	Combined	1828	29	0.3	0.5	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware,TTF
		416-4		7-Oct-19	Combined	2894	29	0.4	0.8	Infiltration/Storage Trench	Open Space			Delaware,TTF
		416-5		2-Nov-19	Combined	2955	29	0.4	0.8	Infiltration/Storage Trench	Open Space			Delaware,TTF
		416-6		19-Sep-19	Combined	972	29	0.2	0.4	Rain Garden	Open Space			Delaware,TTF
		416-7		24-Nov-20	Combined	1963	29	0.3	0.5	Infiltration/Storage Trench	Open Space			Delaware,TTF
		416-8		30-Aug-19	Combined	2233	29	0.3	0.6	Rain Garden	Open Space			Delaware,TTF
		416-9		31-Jan-20	Combined	15146	29	2.1	4.2	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware,TTF
50061	471	471-1	Bustleton Avenue South, TIGER 3 Project (w/PWD Green Streets Funding)	8-Feb-16	Combined	2650	0	0.5	0.9	Infiltration/Storage Trench	Streets	$188,000.00	Philadelphia Streets Department	Delaware
50062	470	470-1	TIGER III: Woodland Ave. Corrdor (For PWD Green Streets Program)	14-Dec-15	Combined	1820	15	0.4	0.7	Tree Trench	Streets	$438,000.00	Philadelphia Streets Department	Cobbs-Darby,Schuylkill
		470-2		14-Dec-15	Combined	770	15	0.2	0.3	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		470-3		14-Dec-15	Combined	3118	15	0.6	1.0	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		470-4		14-Dec-15	Combined	1024	15	0.2	0.3	Tree Trench	Streets			Cobbs-Darby,Schuylkill
50063	310	310-1	Eadom St. Parking Lot - 5312-50 Eadom	2-May-12	Combined	3973	20	0.8	1.2	Rain Garden	Parking	$0.00	Department of Public Property	Delaware
		310-2		2-May-12	Combined	1949	20	0.3	0.6	Rain Garden	Parking			Delaware
		310-3		2-May-12	Combined	675	20	0.1	0.2	Rain Garden	Parking			Delaware
		310-4		2-May-12	Combined	223	20	0.0	0.0	Rain Garden	Parking			Delaware
		310-5		2-May-12	Combined	2689	20	0.6	0.8	Rain Garden	Parking			Delaware
		310-6		2-May-12	Combined	1289	20	0.1	0.3	Rain Garden	Parking			Delaware
50065	367	367-1	Panati Playground	14-May-15	Combined	3770	8	0.9	1.3	Infiltration/Storage Trench, Rain Garden	Open Space	$227,000.00	Department of Public Property,Philadelphia Department of Parks & Recreation	Delaware
50067	276	276-1	29th and Cambria PWD Facility Parking Lot	31-Oct-16	Combined	3963	58	0.8	1.3	Swale, Tree Trench	Streets	$1,023,000.00		Delaware
		276-2		31-Oct-16	Combined	4302	58	0.9	1.4	Swale, Tree Trench	Streets			Delaware
50068	244	244-1	Ingersoll Commons	8-Nov-16	Combined	6056	17	0.7	1.4	Infiltration/Storage Trench, Rain Garden, Swale	Open Space	$795,000.00	Community Ventures,Department of Public Property,Philadelphia Department of Parks & Recreation	Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50069	511	511-1	Callowhill St. from 2nd St. to 7th St.	5-Feb-16	Combined	27	10	0.0	0.0	Stormwater Tree	Streets	$0.00	Philadelphia Streets Department	Delaware
		511-10		5-Feb-16	Combined	27	10	0.0	0.0	Stormwater Tree	Streets			Delaware
		511-2		5-Feb-16	Combined	27	10	0.0	0.0	Stormwater Tree	Streets			Delaware
		511-3		5-Feb-16	Combined	27	10	0.0	0.0	Stormwater Tree	Streets			Delaware
		511-4		5-Feb-16	Combined	27	10	0.0	0.0	Stormwater Tree	Streets			Delaware
		511-5		5-Feb-16	Combined	27	10	0.0	0.0	Stormwater Tree	Streets			Delaware
		511-6		5-Feb-16	Combined	27	10	0.0	0.0	Stormwater Tree	Streets			Delaware
		511-7		5-Feb-16	Combined	27	10	0.0	0.0	Stormwater Tree	Streets			Delaware
		511-8		5-Feb-16	Combined	27	10	0.0	0.0	Stormwater Tree	Streets			Delaware
		511-9		5-Feb-16	Combined	27	10	0.0	0.0	Stormwater Tree	Streets			Delaware
50070	524	524-1	Benson Park	13-Nov-15	Combined	0	0	0.2	0.2	Pervious Paving	Open Space	$6,000.00	Department of Public Property,Philadelphia Department of Parks &	Delaware
		524-2		13-Nov-15	Combined	700	0	0.2	0.3	Infiltration/Storage Trench	Open Space			Delaware
50071	475	475-1	Green2015 - Phase I - Collazo (2.37 GA)	23-Jun-17	Combined	5697	16	1.2	1.9	Infiltration/Storage Trench, Rain Garden	Open Space	$353,000.00	Philadelphia School District,Philadelphia Department of Parks & Recreation,Trust for Public Land	Delaware
50075	479	479-1	Green2015 - Phase I - William Dick Elementary	13-Jun-14	Combined	8738	0	1.5	2.8	Rain Garden	Schools	$207,000.00	Philadelphia School District,Philadelphia Department of Parks & Recreation,Trust for Public Land	Delaware
50077	322	322-1	Baker, Heston, Haverford Triangle	16-Sep-16	Combined	877	10	0.2	0.3	Infiltration/Storage Trench	Vacant Land	$739,000.00		Schuylkill
		322-2		16-Sep-16	Combined	2596	10	0.6	0.8	Rain Garden	Vacant Land			Schuylkill
		322-3		16-Sep-16	Combined	1901	10	0.4	0.7	Infiltration/Storage Trench, Rain Garden, Swale	Vacant Land			Schuylkill
	530	530-1		16-Sep-16	Combined	1419	0	0.3	0.5	Infiltration/Storage Trench, Rain Garden	Streets		Philadelphia Department of Parks & Recreation	Schuylkill
	558	558-1		16-Sep-16	Combined	3638	4	0.7	1.3	Infiltration/Storage Trench, Rain Garden	Vacant Land		Department of Public Property,Philadelphia Department of Parks & Recreation	Schuylkill
50078	303	303-1	Clearview Community Park & Morris Estate Park	7-Oct-16	Combined	3531	0	0.7	1.5	Infiltration/Storage Trench, Rain Garden	Vacant Land	$866,000.00	Tookany/Tacony-Frankford Watershed Partnership	TTF
	642	642-2		7-Oct-16	Combined	1037	13	0.3	0.6	Tree Trench	Open Space		Philadelphia Department of Parks & Recreation	TTF
		642-3		7-Oct-16	Combined	4670	13	0.8	1.5	Infiltration/Storage Trench, Rain Garden	Open Space			TTF
		642-6		7-Oct-16	Combined	1978	13	0.4	0.7	Tree Trench	Open Space			TTF

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50079	401	401-1	Guerin Recreation Center	23-Jul-18	Combined	5641	1	0.7	1.5	Infiltration/Storage Trench	Open Space	$1,148,000.00	Philadelphia Department of Parks & Recreation	Schuylkill
		401-2		23-Jul-18	Combined	9563	1	1.3	2.6	Infiltration/Storage Trench	Open Space			Schuylkill
		401-3		23-Jul-18	Combined	0	1	2.1	0.1	Depaving	Open Space			Schuylkill
50080	588	588-2	Penn Street Trail	13-Jun-13	Combined	1260	25	0.6	0.3	Rain Garden	Streets	$0.00	DRWC	Delaware
		588-3		13-Jun-13	Combined	447	25	0.2	0.1	Rain Garden	Streets			Delaware
50082	597	597-1	33rd and Dauphin St. Sept Bus Loop Green Streets Project	31-Jul-13	Combined	481	0	0.1	0.1	Infiltration/Storage Trench	Streets	$0.00	Southeastern Transportation Authority	Schuylkill
50083	151	151-1	Weccacoe Playground	9-Dec-16	Combined	1181	9	0.3	0.4	Infiltration/Storage Trench, Rain Garden	Open Space	$119,000.00	Philadelphia Department of Parks & Recreation	Delaware
		151-2		9-Dec-16	Combined	0	9	0.3	0.0	Depaving	Open Space			Delaware
		151-3		9-Dec-16	Combined	0	9	0.3	0.0	Depaving	Open Space			Delaware
		151-4		9-Dec-16	Combined	0	9	0.3	0.1	Depaving	Open Space			Delaware
		151-5		9-Dec-16	Combined	0	9	0.3	0.0	Depaving	Open Space			Delaware
		151-6		9-Dec-16	Combined	0	9	0.3	0.0	Depaving	Open Space			Delaware
50084	487	487-1	Moss Playground/Carmella Playground	13-Jan-20	Combined	6088	15	1.0	2.0	Tree Trench	Open Space	$1,742,000.00	Philadelphia Department of Parks & Recreation	Delaware
		487-2		13-Jan-20	Combined	11478	15	1.7	3.5	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware
	580	580-1		13-Jan-20	Combined	4241	0	0.7	1.4	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware,TTF
		580-2		13-Jan-20	Combined	5611	0	0.8	1.6	Rain Garden	Open Space			Delaware,TTF
		580-3		13-Jan-20	Combined	1775	0	0.2	0.5	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware,TTF
		580-4		13-Jan-20	Combined	4630	0	0.8	1.6	Rain Garden	Open Space			Delaware,TTF
		580-5		13-Jan-20	Combined	1943	0	0.3	0.5	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware,TTF
		580-6		13-Jan-20	Combined	875	0	0.1	0.3	Infiltration/Storage Trench	Open Space			Delaware,TTF
50085	574	574-1	Ralph Brooks Park	8-Oct-15	Combined	1609	5	0.3	0.5	Infiltration/Storage Trench, Rain Garden	Open Space	$152,000.00	Philadelphia Department of Parks & Recreation,Councilman Johnson,Urban Roots	Schuylkill

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50088	546	546-1	Rowland and Crispin	11-Sep-20	Combined	2009	16	0.3	0.6	Bumpout, Infiltration/Storage Trench	Streets	$5,141,000.00		Delaware
		546-2		30-Sep-21	Combined	1009	16	0.2	0.4	Tree Trench	Streets			Delaware
		546-3		30-Sep-21	Combined	2120	16	0.3	0.6	Infiltration/Storage Trench, Planter	Streets			Delaware
		546-4		30-Sep-21	Combined	3112	16	0.6	1.0	Infiltration/Storage Trench, Planter	Streets			Delaware
		546-5		11-Sep-20	Combined	2380	16	0.4	0.8	Bumpout, Infiltration/Storage Trench	Streets			Delaware
		546-6		18-Nov-20	Combined	1475	16	0.2	0.5	Tree Trench	Streets			Delaware
		546-7		11-Sep-20	Combined	4188	16	0.8	1.3	Infiltration/Storage Trench, Planter, Swale	Streets			Delaware
		546-8		18-Nov-20	Combined	3616	16	0.6	1.2	Infiltration/Storage Trench, Swale	Streets			Delaware
	595	595-1		8-Sep-22	Combined	2447	16	0.5	0.8	Bumpout, Infiltration/Storage Trench	Streets			Delaware,Pennypack
		595-10		30-Nov-21	Combined	876	16	0.1	0.3	Infiltration/Storage Trench	Streets			Delaware,Pennypack
		595-11		9-Sep-20	Combined	3785	16	0.7	1.2	Bumpout, Infiltration/Storage Trench	Streets			Delaware,Pennypack
		595-12		9-Sep-20	Combined	3027	16	0.5	1.0	Bumpout, Infiltration/Storage Trench	Streets			Delaware,Pennypack
		595-2		8-Sep-22	Combined	5507	16	1.1	1.8	Bumpout, Infiltration/Storage Trench	Streets			Delaware,Pennypack
		595-3		8-Sep-22	Combined	5113	16	1.1	1.6	Bumpout, Infiltration/Storage Trench	Streets			Delaware,Pennypack
		595-4		8-Sep-22	Combined	4327	16	0.8	1.4	Bumpout, Infiltration/Storage Trench	Streets			Delaware,Pennypack
		595-5		8-Sep-22	Combined	5137	16	1.0	1.7	Bumpout, Infiltration/Storage Trench	Streets			Delaware,Pennypack
		595-6		1-Dec-21	Combined	1040	16	0.2	0.3	Tree Trench	Streets			Delaware,Pennypack
		595-7		8-Sep-22	Combined	2842	16	0.6	0.9	Bumpout, Infiltration/Storage Trench	Streets			Delaware,Pennypack
		595-8		8-Sep-22	Combined	4120	16	0.8	1.4	Bumpout, Infiltration/Storage Trench	Streets			Delaware,Pennypack

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
		595-9		9-Sep-20	Combined	6412	16	1.1	2.1	Bumpout, Infiltration/Storage Trench	Streets			Delaware,Pennypack
	596	596-1		27-May-20	Combined	3903	6	0.6	1.3	Bumpout, Infiltration/Storage Trench	Streets			Pennypack
		596-2		27-May-20	Combined	4244	6	0.7	1.4	Bumpout, Infiltration/Storage Trench	Streets			Pennypack
		596-3		26-May-20	Combined	1899	6	0.3	0.6	Bumpout, Infiltration/Storage Trench	Streets			Pennypack
		596-4		26-May-20	Combined	1361	6	0.2	0.4	Bumpout, Infiltration/Storage Trench	Streets			Pennypack
50089	455	455-1	Erie, Francis Hopkins, and Mariana Bracetti	29-Oct-19	Combined	1911	0	0.3	0.5	Bumpout, Infiltration/Storage Trench	Streets	$1,819,000.00		TTF
		455-2		29-Oct-19	Combined	6567	0	0.9	1.8	Infiltration/Storage Trench, Planter	Streets			TTF
	459	459-1		29-Oct-19	Combined	8729	3	1.8	2.9	Planter, Tree Trench	Streets			TTF
		459-2		23-Oct-19	Combined	899	3	0.4	0.3	Infiltration/Storage Trench, Planter	Streets			TTF
50091	589	589-1	Stinger Square	6-Jul-16	Combined	1475	15	0.2	0.5	Infiltration/Storage Trench	Open Space	$232,000.00	Philadelphia Department of Parks & Recreation	Schuylkill
		589-2		6-Jul-16	Combined	1558	15	0.4	0.5	Infiltration/Storage Trench, Rain Garden	Open Space			Schuylkill
50097	483	483-1	Black Coyle McBride Playground	10-Jul-19	Combined	2711	4	0.5	1.0	Infiltration/Storage Trench	Open Space	$1,200,000.00	Philadelphia Department of Parks & Recreation	Delaware
	634	634-1		30-Mar-18	Combined	1683	3	0.3	0.5	Tree Trench	Streets			Delaware
	637	637-1		5-Nov-18	Combined	1371	11	0.2	0.3	Tree Trench	Streets			Delaware
		637-2		16-Aug-18	Combined	3322	11	0.6	1.0	Tree Trench	Streets			Delaware
	638	638-2		9-Jan-18	Combined	786	6	0.1	0.2	Tree Trench	Streets			Delaware
		638-3		2-Feb-18	Combined	958	6	0.1	0.2	Tree Trench	Streets			Delaware
	993	993-1		6-Aug-18	Combined	1471	2	0.2	0.4	Tree Trench	Streets			Delaware
50098	1007	1007-1	Neighborhood Parks - Wissinoming Park	15-Feb-18	Combined	2225	25	0.6	0.7	Infiltration/Storage Trench, Rain Garden	Open Space	$500,000.00	Philadelphia Department of Parks & Recreation	Delaware
		1007-2		15-Feb-18	Combined	4815	25	1.0	1.5	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50101	1049	1049-1	Kingsessing Recreation Center and Street Locations	6-Mar-19	Combined	793	12	0.1	0.3	Tree Trench	Streets	$1,789,000.00		Cobbs-Darby,Schuylkill
		1049-2		19-Mar-19	Combined	1349	12	0.2	0.4	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1049-3		8-Jan-19	Combined	1405	12	0.2	0.4	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1049-4		18-Dec-18	Combined	1312	12	0.2	0.4	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1049-5		26-Mar-19	Combined	1194	12	0.2	0.4	Tree Trench	Streets			Cobbs-Darby,Schuylkill
	608	608-1		15-Jan-19	Combined	9421	17	1.6	3.0	Infiltration/Storage Trench, Rain Garden	Open Space		Philadelphia Department of Parks & Recreation	Schuylkill
		608-2		4-Jun-19	Combined	16397	17	2.2	4.4	Infiltration/Storage Trench, Rain Garden	Open Space			Schuylkill
		608-3		31-Oct-18	Combined	5410	17	0.7	1.4	Infiltration/Storage Trench, Rain Garden	Open Space			Schuylkill
		608-4		19-Feb-19	Combined	3661	17	0.6	1.1	Infiltration/Storage Trench	Open Space			Schuylkill
50102	1012	1012-1	Gray's Ferry Neighborhood Disconnection SMP Lanier Park	6-Oct-16	Combined	224448	0	0.0	0.0	Infiltration/Storage Trench	Open Space	$3,692,000.00	Philadelphia Department of Parks & Recreation	Schuylkill
50103	1024	1024-1	Drainage Well	7-Sep-18	Combined	561	0	0.2	0.2	Drainage Well	Streets	$583,000.00		Cobbs-Darby
	1025	1025-1		7-Sep-18	Combined	258	0	0.2	0.3	Drainage Well	Streets			Delaware
	1029	1029-1		7-Sep-18	Combined	458	0	0.4	0.3	Drainage Well	Streets			Delaware
50104	1050	1050-1	Stenton Park and Streets Locations	6-Apr-18	Combined	2078	34	0.3	0.6	Tree Trench	Streets	$2,294,000.00		TTF
		1050-2		24-May-18	Combined	3651	34	0.5	1.0	Tree Trench	Streets			TTF
		1050-3		14-Jun-18	Combined	1292	34	0.2	0.5	Tree Trench	Streets			TTF
		1050-4		15-Oct-18	Combined	1770	34	0.3	0.6	Tree Trench	Streets			TTF
		1050-5		17-May-18	Combined	2693	34	0.4	0.9	Infiltration/Storage Trench	Streets			TTF
		1050-6		30-Nov-18	Combined	1709	34	0.3	0.6	Tree Trench	Streets			TTF
		1050-7		29-Aug-18	Combined	1620	34	0.3	0.5	Tree Trench	Streets			TTF
		1050-8		29-Aug-18	Combined	2525	34	0.5	0.9	Tree Trench	Streets			TTF
		1050-9		14-May-18	Combined	1273	34	0.2	0.4	Tree Trench	Streets			TTF
	578	578-1		4-Jun-18	Combined	7803	20	1.1	2.1	Infiltration/Storage Trench	Open Space		Philadelphia Department of Parks & Recreation	TTF
		578-2		18-Oct-18	Combined	6283	20	0.8	1.6	Infiltration/Storage Trench, Rain Garden	Open Space			TTF
		578-3		18-Oct-18	Combined	6416	20	0.8	1.7	Infiltration/Storage Trench, Rain Garden	Open Space			TTF
		578-4		7-Dec-18	Combined	2714	20	0.3	0.6	Rain Garden	Open Space			TTF
		578-5		19-Oct-18	Combined	1466	20	0.2	0.5	Tree Trench	Open Space			TTF

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50105	1051	1051-1	Francis Myers Recreation Center and Streets Locations	17-Nov-20	Combined	8410	70	1.8	3.5	Green Gutter, Infiltration/Storage Trench	Streets	$4,242,000.00		Cobbs-Darby,Schuylkill
		1051-10		16-Apr-21	Combined	1902	70	0.3	0.6	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-11		16-Apr-21	Combined	1676	70	0.4	0.9	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		1051-12		16-Apr-21	Combined	3058	70	0.4	0.8	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		1051-13		15-Jul-21	Combined	4459	70	0.9	1.5	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		1051-14		22-Apr-21	Combined	2359	70	0.4	0.7	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-15		28-Apr-21	Combined	3188	70	0.4	0.9	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-16		10-Jun-21	Combined	2674	70	0.4	0.8	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-17		22-Apr-21	Combined	901	70	0.1	0.3	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-18		21-May-21	Combined	4218	70	0.6	1.2	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-19		15-Jul-21	Combined	1325	70	0.2	0.4	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-2		17-Nov-20	Combined	4330	70	0.6	1.2	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-20		2-Jun-21	Combined	653	70	0.1	0.2	Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		1051-21		2-Jun-21	Combined	2531	70	0.4	0.8	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-22		2-Jun-21	Combined	3282	70	0.6	1.0	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-3		25-Jan-21	Combined	2092	70	0.5	0.7	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-4		25-Jan-21	Combined	1135	70	0.2	0.4	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-5		25-Jan-21	Combined	1567	70	0.3	0.5	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-6		25-Jan-21	Combined	1548	70	0.3	0.5	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-7		25-Jan-21	Combined	2894	70	0.4	0.8	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1051-8		22-Apr-21	Combined	1898	70	0.4	0.6	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill

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		1051-9		16-Apr-21	Combined	2506	70	0.4	0.8	Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
50108	1053	1053-1	Fotterall Square Streets	12-May-21	Combined	1274	24	0.2	0.4	Bumpout, Infiltration/Storage Trench	Streets	$1,693,000.00		Delaware
		1053-10		12-May-21	Combined	1842	24	0.4	0.6	Tree Trench	Streets			Delaware
		1053-2		13-May-21	Combined	766	24	0.1	0.3	Bumpout, Tree Trench	Streets			Delaware
		1053-3		17-Sep-21	Combined	3588	24	0.5	1.0	Tree Trench	Streets			Delaware
		1053-4		13-May-21	Combined	1634	24	0.2	0.5	Tree Trench	Streets			Delaware
		1053-5		13-May-21	Combined	1840	24	0.3	0.6	Tree Trench	Streets			Delaware
		1053-6		17-Sep-21	Combined	1469	24	0.2	0.5	Bumpout, Infiltration/Storage Trench	Streets			Delaware
		1053-7		15-Feb-22	Combined	936	24	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
		1053-8		4-Mar-22	Combined	1585	24	0.3	0.5	Infiltration/Storage Trench, Planter	Streets			Delaware
		1053-9		20-Sep-21	Combined	1560	24	0.3	0.5	Tree Trench	Streets			Delaware
	1054	1054-1		7-Mar-22	Combined	1786	3	0.3	0.6	Infiltration/Storage Trench, Rain Garden	Open Space		Philadelphia School District	Delaware
50109	1023	1023-1	Osage Ave from 42nd to 43rd	28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets	$197,000.00		Schuylkill
		1023-10		28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets			Schuylkill
		1023-11		28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets			Schuylkill
		1023-2		28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets			Schuylkill
		1023-3		28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets			Schuylkill
		1023-4		28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets			Schuylkill
		1023-5		28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets			Schuylkill
		1023-6		28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets			Schuylkill
		1023-7		28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets			Schuylkill
		1023-8		28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets			Schuylkill
		1023-9		28-Mar-19	Combined	40	11	0.0	0.0	Stormwater Tree	Streets			Schuylkill
50110	242	242-1	North Morris Park	3-Jul-21	Combined	8165	68	2.3	4.6	Infiltration/Storage Trench, Rain Garden	Streets	$2,290,000.00	Philadelphia Department of Parks & Recreation	Cobbs-Darby
50111	376	376-1	Mt. Airy Church	29-Oct-18	Combined	4812	15	0.7	1.3	Bumpout, Infiltration/Storage Trench	Streets	$967,000.00		TTF
		376-2		29-Oct-18	Combined	1891	15	0.3	0.5	Bumpout, Infiltration/Storage Trench	Streets			TTF
		376-3		29-Oct-18	Combined	1284	15	0.2	0.4	Bumpout, Infiltration/Storage Trench	Streets			TTF
		376-4		29-Oct-18	Combined	1771	15	0.2	0.5	Tree Trench	Streets			TTF
		376-5		29-Oct-18	Combined	1590	15	0.2	0.4	Tree Trench	Streets			TTF
		376-6		29-Oct-18	Combined	2545	15	0.4	0.8	Tree Trench	Streets			TTF

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50112	1055	1055-1	Botanic Ave	9-Feb-18	Combined	5745	50	0.4	0.7	Rain Garden	Streets	$500,000.00	Philadelphia Department of Parks & Recreation	Schuylkill
		1055-2		9-Feb-18	Combined	1526	50	0.7	0.5	Rain Garden	Streets			Schuylkill
		1055-3		9-Feb-18	Combined	9540	50	1.5	2.9	Infiltration/Storage Trench, Rain Garden	Streets			Schuylkill
50113	600	600-1	37th and Mount Vernon Playground	16-Dec-16	Combined	2006	5	0.3	0.5	Infiltration/Storage Trench, Rain Garden	Open Space	$72,000.00	Philadelphia Department of Parks & Recreation	Schuylkill
50118	1059	1059-1	Street Crossings - Aramingo, Cedar, Cambria, Almond	14-Dec-20	Combined	2605	10	0.4	0.9	Infiltration/Storage Trench, Rain Garden	Streets	$1,213,000.00		Delaware
		1059-2		3-Dec-20	Combined	3643	10	0.9	1.2	Infiltration/Storage Trench	Streets			Delaware
		1059-3		30-Jul-20	Combined	1261	10	0.3	0.4	Tree Trench	Streets			Delaware
		1059-4		26-Aug-20	Combined	1618	10	0.3	0.5	Tree Trench	Streets			Delaware
		1059-5		25-Nov-20	Combined	2353	10	0.4	0.8	Bumpout, Tree Trench	Streets			Delaware
50119	1067	1067-1	Cement Park (Northern Liberties Rec Center)	8-May-19	Combined	3163	0	0.7	1.1	Infiltration/Storage Trench	Streets	$1,222,000.00		Delaware
		1067-2		8-May-19	Combined	1024	0	0.1	0.3	Infiltration/Storage Trench, Rain Garden	Streets			Delaware
		1067-3		8-May-19	Combined	1661	0	0.3	0.5	Basin, Infiltration/Storage Trench, Planter	Streets			Delaware
		1067-4		8-May-19	Combined	3191	0	0.5	1.0	Rain Garden	Streets			Delaware
	1068	1068-1		8-May-19	Combined	1603	5	0.3	0.5	Infiltration/Storage Trench, Planter	Streets			Delaware
50120	1070	1070-1	McPherson Streets	24-Mar-21	Combined	3019	56	0.6	1.2	Tree Trench	Streets	$1,924,000.00		Delaware
		1070-10		24-Mar-21	Combined	1437	56	0.3	0.6	Tree Trench	Streets			Delaware
		1070-11		24-Mar-21	Combined	1019	56	0.2	0.3	Tree Trench	Streets			Delaware
		1070-12		24-Mar-21	Combined	1116	56	0.3	0.6	Infiltration/Storage Trench	Streets			Delaware
		1070-13		24-Mar-21	Combined	1688	56	0.3	0.6	Infiltration/Storage Trench	Streets			Delaware
		1070-14		24-Mar-21	Combined	2088	56	0.3	0.6	Tree Trench	Streets			Delaware
		1070-15		24-Mar-21	Combined	1677	56	0.3	0.5	Tree Trench	Streets			Delaware
		1070-16		24-Mar-21	Combined	2454	56	0.6	1.0	Tree Trench	Streets			Delaware
		1070-3		24-Mar-21	Combined	3136	56	0.6	1.0	Tree Trench	Streets			Delaware
		1070-4		24-Mar-21	Combined	2078	56	0.4	0.7	Tree Trench	Streets			Delaware
		1070-5		24-Mar-21	Combined	1478	56	0.2	0.5	Tree Trench	Streets			Delaware
		1070-6		24-Mar-21	Combined	2747	56	0.5	1.0	Infiltration/Storage Trench, Tree Trench	Streets			Delaware
		1070-7		24-Mar-21	Combined	1689	56	0.3	0.5	Tree Trench	Streets			Delaware
		1070-8		24-Mar-21	Combined	2012	56	0.4	0.6	Tree Trench	Streets			Delaware

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50122	1077	1077-1	Mount Sinai	7-Jun-19	Combined	4959	2	0.9	1.8	Infiltration/Storage Trench	Open Space	$3,652,000.00		Delaware,TTF
		1077-2		30-Aug-19	Combined	2646	2	0.5	1.0	Tree Trench	Vacant Land			Delaware,TTF
	1083	1083-1		20-Jun-19	Combined	837	59	0.2	0.3	Infiltration/Storage Trench	Streets		Philadelphia Department of Parks & Recreation	Delaware,TTF
		1083-10		6-May-19	Combined	3808	59	0.7	1.3	Bumpout, Tree Trench	Streets			Delaware,TTF
		1083-11		1-May-19	Combined	1852	59	0.3	0.6	Tree Trench	Streets			Delaware,TTF
		1083-12		3-May-19	Combined	2263	59	0.4	0.7	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1083-13		29-Jul-19	Combined	1353	59	0.3	0.5	Infiltration/Storage Trench, Planter	Streets			Delaware,TTF
		1083-14		17-Jul-19	Combined	3737	59	0.7	1.2	Planter, Tree Trench	Streets			Delaware,TTF
		1083-2		3-Apr-19	Combined	2689	59	0.4	0.8	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1083-3		3-Apr-19	Combined	2539	59	0.4	0.9	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1083-4		3-Apr-19	Combined	7041	59	1.0	2.0	Bumpout, Tree Trench	Streets			Delaware,TTF
		1083-5		4-Jan-19	Combined	2975	59	0.6	1.1	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1083-6		1-Apr-19	Combined	7304	59	1.3	2.3	Infiltration/Storage Trench, Swale	Streets			Delaware,TTF
		1083-7		1-Apr-19	Combined	5245	59	1.0	1.9	Infiltration/Storage Trench, Swale	Streets			Delaware,TTF
		1083-8		20-Dec-18	Combined	2766	59	0.5	0.9	Tree Trench	Streets			Delaware,TTF
		1083-9		20-Dec-18	Combined	1115	59	0.2	0.4	Tree Trench	Streets			Delaware,TTF
50123	1084	1084-1	Allegheny Ave Safety Corridor Improvement Project (MPMS 85417)	10-Jan-19	Combined	1419	0	0.2	0.4	Infiltration/Storage Trench	Streets	Unknown	PennDOT	Delaware
		1084-2		10-Jan-19	Combined	1485	0	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
		1084-3		10-Jan-19	Combined	1027	0	0.2	0.3	Infiltration/Storage Trench	Streets			Delaware
		1084-4		10-Jan-19	Combined	1293	0	0.2	0.3	Infiltration/Storage Trench, Rain Garden	Streets			Delaware
		1084-5		10-Jan-19	Combined	1582	0	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
		1084-6		10-Jan-19	Combined	2086	0	0.3	0.5	Infiltration/Storage Trench	Streets			Delaware
		1084-7		10-Jan-19	Combined	1598	0	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
		1084-8		10-Jan-19	Combined	1106	0	0.1	0.3	Infiltration/Storage Trench	Streets			Delaware
50124	1085	1085-1	Trenton and Auburn Playground	5-Feb-20	Combined	55349	0	7.7	15.4	Infiltration/Storage Trench	Open Space	$3,167,000.00		Delaware

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50125	1087	1087-1	Lawncrest Streets Southeast	7-Sep-21	Combined	3866	9	0.7	1.5	Bumpout, Infiltration/Storage Trench	Streets	$2,446,000.00		Delaware,TTF
		1087-2		8-Sep-21	Combined	5982	9	1.1	2.2	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1087-3		8-Sep-21	Combined	6721	9	1.2	2.4	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1087-4		8-Sep-21	Combined	5698	9	1.0	2.1	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1087-5		2-Sep-21	Combined	5216	9	1.0	1.7	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1087-6		2-Sep-21	Combined	5881	9	1.0	2.0	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1087-7		6-Sep-21	Combined	5031	9	1.0	2.0	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1087-8		3-Sep-21	Combined	4494	9	0.7	1.5	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1087-9		3-Sep-21	Combined	2627	9	0.5	0.9	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
50129	1127	1127-1	Girard Park and Warriner Post Park	29-Jun-20	Combined	5602	11	0.8	1.7	Rain Garden, Tree Trench	Vacant Land	$2,352,000.00	Philadelphia Department of Parks & Recreation	Schuylkill
	1128	1128-1		29-Jun-20	Combined	4925	8	0.8	1.6	Bumpout, Tree Trench	Streets			Schuylkill
		1128-2		29-Jun-20	Combined	4395	8	0.6	1.1	Bumpout, Tree Trench	Streets			Schuylkill
		1128-3		29-Jun-20	Combined	5064	8	0.9	1.7	Bumpout, Tree Trench	Streets			Schuylkill
	1129	1129-1		21-Feb-20	Combined	1139	19	0.1	0.3	Tree Trench	Streets			Schuylkill
		1129-2		21-Feb-20	Combined	690	19	0.1	0.2	Tree Trench	Streets			Schuylkill
		1129-3		10-Jan-20	Combined	1015	19	0.1	0.3	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1129-4		10-Jan-20	Combined	4439	19	0.6	1.1	Tree Trench	Streets			Schuylkill
		1129-5		13-Jan-20	Combined	1374	19	0.2	0.4	Tree Trench	Streets			Schuylkill
		1129-6		17-Jan-20	Combined	4530	19	0.7	1.4	Tree Trench	Streets			Schuylkill
		1129-7		17-Jan-20	Combined	4214	19	0.6	1.2	Infiltration/Storage Trench	Streets			Schuylkill

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50132	1137	1137-1	Max Myers	19-May-21	Combined	12427	17	1.8	3.7	Infiltration/Storage Trench, Rain Garden, Swale	Open Space	$3,089,000.00		Delaware
		1137-2		25-Nov-19	Combined	20572	17	3.2	6.4	Infiltration/Storage Trench, Planter	Streets			Delaware
		1137-3		25-Nov-19	Combined	2893	17	0.7	1.3	Infiltration/Storage Trench	Streets			Delaware
		1137-4		25-Nov-19	Combined	3237	17	0.5	1.0	Infiltration/Storage Trench	Streets			Delaware
		1137-5		25-Nov-19	Combined	1262	17	0.2	0.4	Bumpout, Infiltration/Storage Trench	Streets			Delaware
		1137-6		25-Nov-19	Combined	790	17	0.1	0.2	Infiltration/Storage Trench	Streets			Delaware
		1137-7		25-Nov-19	Combined	5851	17	0.8	1.6	Tree Trench	Streets			Delaware
	1138	1138-1		25-Nov-19	Combined	1208	11	0.2	0.3	Tree Trench	Streets			Delaware
		1138-2		25-Nov-19	Combined	796	11	0.1	0.2	Bumpout, Infiltration/Storage Trench	Streets			Delaware
		1138-3		25-Nov-19	Combined	709	11	0.1	0.2	Bumpout, Infiltration/Storage Trench	Streets			Delaware
		1138-4		25-Nov-19	Combined	3928	11	0.7	1.2	Infiltration/Storage Trench	Streets			Delaware
		1138-5		25-Nov-19	Combined	818	11	0.1	0.2	Bumpout, Infiltration/Storage Trench	Streets			Delaware
		1138-6		25-Nov-19	Combined	2930	11	0.4	0.9	Bumpout, Tree Trench	Streets			Delaware
		1138-7		12-Feb-20	Combined	1566	11	0.3	0.5	Infiltration/Storage Trench	Streets			Delaware
		1138-8		25-Nov-19	Combined	1562	11	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
50133	1139 *	1139-21	Lawncrest Streets Southwest	15-Jul-22	Combined	2125	64	0.4	0.7	Bumpout, Infiltration/Storage Trench	Streets	$5,762,000.00		TTF
		1139-22		15-Jul-22	Combined	4355	64	1.1	1.4	Bumpout, Infiltration/Storage Trench	Streets			TTF
		1139-25		15-Jul-22	Combined	1865	64	0.3	0.6	Infiltration/Storage Trench	Streets			TTF
		1139-26		15-Jul-22	Combined	1674	64	0.2	0.5	Bumpout, Infiltration/Storage Trench	Streets			TTF
		1139-27		15-Jul-22	Combined	3774	64	0.8	1.7	Bumpout, Infiltration/Storage Trench	Streets			TTF
	1298 *	1298-1		15-Jul-22	Combined	1205	0	0.3	0.4	Infiltration/Storage Trench	Streets			TTF

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50134	1140	1140-2	Wharton Square Greening Improvements	8-Feb-19	Combined	1279	11	0.3	0.6	Rain Garden	Open Space	$1,088,000.00		Schuylkill
		1140-3		13-Feb-19	Combined	9545	11	2.0	3.1	Rain Garden, Tree Trench	Open Space			Schuylkill
50135	1142	1142-1	PHA/Blumberg Campus Green Streets	30-Mar-20	Combined	1687	13	0.2	0.4	Infiltration/Storage Trench, Planter	Streets	$291,000.00	Philadelphia Housing Authority	Schuylkill
		1142-2		30-Mar-20	Combined	1726	13	0.2	0.4	Infiltration/Storage Trench, Planter	Streets			Schuylkill
		1142-3		30-Mar-20	Combined	1718	13	0.2	0.4	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1142-4		30-Mar-20	Combined	1747	13	0.2	0.5	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1142-5		30-Mar-20	Combined	1595	13	0.2	0.3	Infiltration/Storage Trench, Planter	Streets			Schuylkill
		1142-6		30-Mar-20	Combined	1485	13	0.2	0.3	Infiltration/Storage Trench, Planter	Streets			Schuylkill
		1142-7		30-Mar-20	Combined	1897	13	0.3	0.5	Infiltration/Storage Trench, Planter	Streets			Schuylkill
		1142-8		30-Mar-20	Combined	1875	13	0.2	0.4	Infiltration/Storage Trench, Planter	Streets			Schuylkill

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50138	1145	1145-1	Buist Avenue Green Streets and Buist Park Improvements	19-Nov-19	Combined	2226	21	0.3	0.6	Bumpout, Tree Trench	Streets	$2,579,000.00	Philadelphia Department of Parks & Recreation	Schuylkill
		1145-10		19-Nov-19	Combined	769	21	0.1	0.3	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1145-11		19-Nov-19	Combined	2709	21	0.5	0.9	Bumpout, Tree Trench	Streets			Schuylkill
		1145-12		19-Nov-19	Combined	2736	21	0.4	0.8	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1145-13		19-Nov-19	Combined	3074	21	0.5	0.9	Bumpout, Tree Trench	Streets			Schuylkill
		1145-2		19-Nov-19	Combined	957	21	0.2	0.3	Infiltration/Storage Trench	Streets			Schuylkill
		1145-3		19-Nov-19	Combined	2011	21	0.4	0.7	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1145-4		19-Nov-19	Combined	1107	21	0.1	0.3	Infiltration/Storage Trench	Streets			Schuylkill
		1145-5		19-Nov-19	Combined	1435	21	0.3	0.5	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1145-6		19-Nov-19	Combined	892	21	0.1	0.3	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1145-7		19-Nov-19	Combined	1822	21	0.4	0.6	Bumpout, Tree Trench	Streets			Schuylkill
		1145-8		19-Nov-19	Combined	961	21	0.1	0.3	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1145-9		19-Nov-19	Combined	1601	21	0.3	0.5	Bumpout, Tree Trench	Streets			Schuylkill
	1146	1146-1		19-Nov-19	Combined	7861	3	1.3	2.6	Bumpout, Infiltration/Storage Trench, Rain Garden	Open Space			Schuylkill
50143	1195	1195-1	Parkside Edge - Green Streets Buyback	19-Jan-18	Combined	11930	0	0.8	1.6	Infiltration/Storage Trench, Rain Garden	Open Space	$1,163,000.00	Fairmount Park Conservancy	Schuylkill
		1195-2		19-Jan-18	Combined	4341	0	0.6	1.2	Rain Garden	Open Space			Schuylkill
		1195-3		19-Jan-18	Combined	9397	0	1.2	2.4	Rain Garden	Open Space			Schuylkill
50145	1163	1163-1	Nelson Playground and Hissey Playground Green Improvement	7-Feb-20	Combined	1861	6	0.3	0.6	Infiltration/Storage Trench, Rain Garden	Open Space	$636,000.00		Delaware
		1163-2		7-Feb-20	Combined	8344	6	1.4	2.6	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50146	1197	1197-1	Point Breeze Vacant Lots	21-May-19	Combined	1750	3	0.3	0.6	Infiltration/Storage Trench, Rain Garden	Vacant Land	$2,193,000.00		Schuylkill
	1198	1198-1		19-Nov-18	Combined	874	43	0.1	0.3	Infiltration/Storage Trench	Streets			Schuylkill
		1198-2		25-Oct-18	Combined	1314	43	0.3	0.4	Tree Trench	Streets			Schuylkill
		1198-3		29-Oct-18	Combined	8816	43	1.7	3.3	Tree Trench	Streets			Schuylkill
		1198-4		9-Nov-18	Combined	1132	43	0.2	0.3	Tree Trench	Streets			Schuylkill
		1198-6		14-Mar-19	Combined	979	43	0.2	0.3	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1198-7		3-May-19	Combined	4256	43	0.5	0.9	Infiltration/Storage Trench, Rain Garden	Streets			Schuylkill
		1198-8		28-Jan-19	Combined	3304	43	0.5	1.0	Tree Trench	Streets			Schuylkill
50148	1200	1200-1	Elmwood Medians Package	8-Oct-20	Combined	7164	21	1.1	2.2	Infiltration/Storage Trench, Rain Garden	Streets	$942,000.00		Cobbs-Darby,Schuylkill
		1200-2		8-Oct-20	Combined	3278	21	0.5	1.0	Infiltration/Storage Trench, Rain Garden	Streets			Cobbs-Darby,Schuylkill
		1200-3		8-Oct-20	Combined	2578	21	0.4	0.8	Infiltration/Storage Trench, Rain Garden	Streets			Cobbs-Darby,Schuylkill
		1200-4		8-Oct-20	Combined	3831	21	0.6	1.2	Infiltration/Storage Trench, Rain Garden	Streets			Cobbs-Darby,Schuylkill
		1200-5		8-Oct-20	Combined	1283	21	0.2	0.4	Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
50149	1202	1202-1	Erie and Rising Sun Street Improvements	30-Jul-19	Combined	1239	30	0.3	0.4	Tree Trench	Streets	$1,690,000.00		Delaware
		1202-10		30-Jul-19	Combined	1303	30	0.2	0.5	Tree Trench	Streets			Delaware
		1202-11		30-Jul-19	Combined	1456	30	0.3	0.5	Tree Trench	Streets			Delaware
		1202-12		30-Jul-19	Combined	1659	30	0.4	0.6	Infiltration/Storage Trench	Streets			Delaware
		1202-2		30-Jul-19	Combined	1316	30	0.3	0.4	Tree Trench	Streets			Delaware
		1202-3		30-Jul-19	Combined	921	30	0.2	0.3	Infiltration/Storage Trench	Streets			Delaware
		1202-4		30-Jul-19	Combined	2074	30	0.3	0.6	Tree Trench	Streets			Delaware
		1202-5		30-Jul-19	Combined	1274	30	0.3	0.4	Infiltration/Storage Trench, Planter	Streets			Delaware
		1202-6		30-Jul-19	Combined	1031	30	0.3	0.4	Tree Trench	Streets			Delaware
		1202-7		30-Jul-19	Combined	1230	30	0.3	0.4	Tree Trench	Streets			Delaware
		1202-8		30-Jul-19	Combined	4158	30	0.9	1.4	Tree Trench	Streets			Delaware
		1202-9		30-Jul-19	Combined	1077	30	0.3	0.4	Tree Trench	Streets			Delaware
	1379	1379-1		30-Jul-19	Combined	5811	3	0.8	1.6	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware
50150	1015	1015-1	Hagert Playground	10-Feb-17	Combined	1941	1	0.4	0.7	Infiltration/Storage Trench, Rain Garden	Open Space	$251,000.00	Philadelphia Department of Parks & Recreation	Delaware
		1015-2		10-Feb-17	Combined	2283	1	0.4	0.7	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware
50151	1204	1204-1	Reading Viaduct	13-Jun-18	Combined	1091	0	0.1	0.3	Bumpout, Infiltration/Storage Trench	Streets	Unknown	Center City District	Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50152	1209	1209-1	Athletic Square	29-Jan-20	Combined	733	9	0.1	0.3	Tree Trench	Streets	$813,000.00		Schuylkill
		1209-2		29-Jan-20	Combined	1659	9	0.3	0.6	Tree Trench	Streets			Schuylkill
		1209-3		29-Jan-20	Combined	1863	9	0.3	0.6	Infiltration/Storage Trench, Planter	Streets			Schuylkill
		1209-4		29-Jan-20	Combined	1243	9	0.2	0.3	Infiltration/Storage Trench	Streets			Schuylkill
		1209-5		29-Jan-20	Combined	2002	9	0.3	0.6	Infiltration/Storage Trench	Streets			Schuylkill
		1209-6		29-Jan-20	Combined	1098	9	0.2	0.3	Infiltration/Storage Trench	Streets			Schuylkill
50155	488	488-1	Smith Playground Green Improvements	22-May-18	Combined	970	8	0.2	0.3	Infiltration/Storage Trench	Open Space	$678,000.00	Department of Public Property,Philadelphia Department of Parks & Recreation,Councilman Johnson,Urban Roots	Schuylkill
		488-2		22-May-18	Combined	4257	8	0.8	1.5	Rain Garden, Tree Trench	Open Space			Schuylkill
		488-3		22-May-18	Combined	2249	8	0.4	0.8	Infiltration/Storage Trench	Open Space			Schuylkill
		488-4		22-May-18	Combined	2168	8	0.4	0.8	Infiltration/Storage Trench	Open Space			Schuylkill
		488-5		22-May-18	Combined	1081	8	0.2	0.3	Infiltration/Storage Trench	Open Space			Schuylkill
50157	1240	1240-1	Kensington Green Street Improvements	17-Mar-20	Combined	1146	18	0.2	0.4	Tree Trench	Streets	$983,000.00		Delaware
		1240-2		20-Mar-20	Combined	490	18	0.1	0.2	Tree Trench	Streets			Delaware
		1240-3		20-Mar-20	Combined	861	18	0.2	0.3	Tree Trench	Streets			Delaware
		1240-4		20-Mar-20	Combined	1481	18	0.3	0.5	Tree Trench	Streets			Delaware
		1240-5		20-Mar-20	Combined	932	18	0.2	0.3	Tree Trench	Streets			Delaware
		1240-6		20-Mar-20	Combined	748	18	0.2	0.3	Infiltration/Storage Trench	Streets			Delaware
		1240-7		20-Mar-20	Combined	4510	18	0.7	1.3	Tree Trench	Streets			Delaware
		1240-8		19-Mar-20	Combined	1436	18	0.4	0.5	Tree Trench	Streets			Delaware
		1240-9		13-Mar-20	Combined	830	18	0.2	0.3	Tree Trench	Streets			Delaware
50158	1221	1221-1	53rd and Baltimore	27-Aug-21	Combined	3099	0	0.5	1.0	Infiltration/Storage Trench, Rain Garden	Streets	$247,000.00	Philadelphia Streets Department	Cobbs-Darby
		1221-2		11-May-21	Combined	6233	0	0.8	1.6	Infiltration/Storage Trench, Rain Garden	Streets			Cobbs-Darby
50160	1242	1242-1	Kensington Neighborhood Greening Phase 2	8-Apr-21	Combined	1993	17	0.3	0.6	Infiltration/Storage Trench	Streets	$1,338,000.00		Delaware
		1242-10		8-Apr-21	Combined	2647	17	0.5	0.8	Infiltration/Storage Trench	Streets			Delaware
		1242-11		17-Aug-22	Combined	2497	17	0.5	0.8	Tree Trench	Streets			Delaware
		1242-2		8-Apr-21	Combined	2418	17	0.5	0.7	Tree Trench	Streets			Delaware
		1242-3		8-Apr-21	Combined	2511	17	0.4	0.8	Infiltration/Storage Trench	Streets			Delaware
		1242-4		8-Apr-21	Combined	1030	17	0.2	0.3	Tree Trench	Streets			Delaware
		1242-7		8-Apr-21	Combined	1268	17	0.2	0.4	Tree Trench	Streets			Delaware
		1242-8		8-Apr-21	Combined	1184	17	0.2	0.4	Tree Trench	Streets			Delaware
		1242-9		8-Apr-21	Combined	915	17	0.2	0.3	Infiltration/Storage Trench	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50162	1265	1265-1	Cedar Park Neighborhood Streets Package 1	17-Feb-20	Combined	1105	16	0.2	0.3	Tree Trench	Streets	$1,951,000.00		Cobbs-Darby,Schuylkill
		1265-10		2-Jul-20	Combined	2992	16	0.5	1.0	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		1265-11		8-Jun-20	Combined	1821	16	0.3	0.6	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1265-12		6-Jul-20	Combined	1483	16	0.3	0.5	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1265-13		20-Jul-20	Combined	926	16	0.2	0.3	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1265-14		29-Jul-20	Combined	1439	16	0.2	0.4	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		1265-15		31-Aug-20	Combined	704	16	0.2	0.3	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1265-2		20-May-20	Combined	2042	16	0.3	0.6	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		1265-3		20-May-20	Combined	1563	16	0.3	0.5	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		1265-4		11-Mar-20	Combined	1214	16	0.3	0.4	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1265-5		18-Sep-20	Combined	1261	16	0.2	0.4	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1265-6		11-Mar-20	Combined	1448	16	0.2	0.5	Tree Trench	Streets			Cobbs-Darby,Schuylkill
		1265-7		6-May-20	Combined	1253	16	0.2	0.4	Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		1265-8		15-Sep-20	Combined	876	16	0.3	0.3	Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
		1265-9		20-May-20	Combined	1123	16	0.2	0.3	Bumpout, Infiltration/Storage Trench	Streets			Cobbs-Darby,Schuylkill
50167	1267	1267-1	Wissinoming	29-Oct-21	Combined	66213	78	11.4	22.7	Rain Garden, Wetland	Open Space	$8,152,000.00		Delaware
		1267-2		5-Nov-21	Combined	22842	78	3.1	6.2	Infiltration/Storage Trench	Open Space			Delaware
		1267-3		5-Nov-21	Combined	47461	78	6.4	12.8	Infiltration/Storage Trench	Open Space			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50170	1272	1272-10	East Park Greenways	11-Feb-22	Combined	1444	6	0.3	0.5	Bumpout, Tree Trench	Streets	$1,429,000.00		Schuylkill
		1272-9		5-Apr-22	Combined	2749	6	0.5	0.9	Bumpout, Tree Trench	Streets			Schuylkill
	1273	1273-1		13-Aug-20	Combined	1819	15	0.3	0.6	Infiltration/Storage Trench, Rain Garden	Streets		Philadelphia Department of Parks & Recreation,Fairmount Park Conservancy	Schuylkill
		1273-2		13-Aug-20	Combined	1470	15	0.3	0.5	Infiltration/Storage Trench, Rain Garden	Streets			Schuylkill
		1273-3		5-Apr-22	Combined	1840	15	0.4	0.6	Infiltration/Storage Trench	Streets			Schuylkill
		1273-4		5-Apr-22	Combined	1370	15	0.3	0.4	Infiltration/Storage Trench	Streets			Schuylkill
		1273-5		9-Feb-22	Combined	2179	15	0.5	0.7	Infiltration/Storage Trench, Rain Garden	Streets			Schuylkill
		1273-6		20-Jan-22	Combined	4424	15	0.9	1.4	Infiltration/Storage Trench, Rain Garden	Streets			Schuylkill
		1273-7		6-May-21	Combined	2493	15	0.5	0.8	Infiltration/Storage Trench, Rain Garden	Streets			Schuylkill
		1273-8		11-Feb-22	Combined	6303	15	1.1	2.0	Tree Trench	Streets			Schuylkill
50171	1274	1274-1	South Street Headhouse Square	12-May-21	Combined	12780	0	2.2	3.8	Infiltration/Storage Trench	Streets	$703,000.00	Department of Public Property,Philadelphia Streets Department	Delaware
50174	1279	1279-1	Tioga Green Streets Phase I & II	5-Aug-20	Combined	1127	29	0.2	0.5	Tree Trench	Streets	$1,689,000.00		Delaware
		1279-10		6-Oct-20	Combined	2402	29	0.4	0.8	Tree Trench	Streets			Delaware
		1279-11		5-Oct-20	Combined	1460	29	0.3	0.5	Tree Trench	Streets			Delaware
		1279-12		5-Oct-20	Combined	923	29	0.2	0.3	Tree Trench	Streets			Delaware
		1279-13		27-Oct-20	Combined	1748	29	0.3	0.6	Infiltration/Storage Trench	Streets			Delaware
		1279-14		6-Oct-20	Combined	1115	29	0.2	0.4	Tree Trench	Streets			Delaware
		1279-2		5-Aug-20	Combined	883	29	0.1	0.3	Tree Trench	Streets			Delaware
		1279-3		5-Aug-20	Combined	1431	29	0.4	0.6	Tree Trench	Streets			Delaware
		1279-4		8-Oct-20	Combined	1087	29	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware
		1279-5		7-Aug-20	Combined	1732	29	0.2	0.5	Tree Trench	Streets			Delaware
		1279-6		8-Jun-20	Combined	1987	29	0.3	0.6	Tree Trench	Streets			Delaware
		1279-7		5-Aug-20	Combined	2034	29	0.3	0.6	Infiltration/Storage Trench	Streets			Delaware
		1279-8		7-Oct-20	Combined	2766	29	0.6	1.0	Infiltration/Storage Trench, Tree Trench	Streets			Delaware
		1279-9		7-Oct-20	Combined	1282	29	0.2	0.4	Tree Trench	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50175	1281	1281-1	American Street Corridor Improvements	30-Aug-18	Combined	3227	269	0.5	0.9	Infiltration/Storage Trench, Rain Garden	Streets	$5,203,000.00		Delaware
		1281-10		21-Apr-21	Combined	7223	269	0.8	1.7	Tree Trench	Streets			Delaware
		1281-11		21-Apr-21	Combined	4097	269	0.5	1.0	Tree Trench	Streets			Delaware
		1281-12		21-Apr-21	Combined	2272	269	0.3	0.6	Infiltration/Storage Trench	Streets			Delaware
		1281-13		21-Apr-21	Combined	6198	269	0.8	1.7	Swale	Streets			Delaware
		1281-14		21-Apr-21	Combined	5196	269	0.5	0.9	Swale	Streets			Delaware
		1281-15		19-Nov-20	Combined	11715	269	1.6	3.2	Infiltration/Storage Trench	Streets			Delaware
		1281-16		19-Nov-20	Combined	5431	269	0.7	1.4	Infiltration/Storage Trench	Streets			Delaware
		1281-17		19-Nov-20	Combined	6771	269	0.9	1.8	Swale	Streets			Delaware
		1281-18		19-Nov-20	Combined	6057	269	0.8	1.6	Swale	Streets			Delaware
		1281-19		1-Dec-20	Combined	5570	269	0.7	1.5	Swale	Streets			Delaware
		1281-2		2-Apr-19	Combined	696	269	0.1	0.2	Tree Trench	Streets			Delaware
		1281-20		1-Dec-20	Combined	7304	269	1.0	2.0	Infiltration/Storage Trench, Swale	Streets			Delaware
		1281-21		1-Dec-20	Combined	4458	269	0.6	1.3	Infiltration/Storage Trench	Streets			Delaware
		1281-22		1-Dec-20	Combined	4057	269	0.5	1.1	Infiltration/Storage Trench	Streets			Delaware
		1281-23		1-Dec-20	Combined	4054	269	0.6	1.1	Infiltration/Storage Trench	Streets			Delaware
		1281-24		1-Dec-20	Combined	3551	269	0.5	0.9	Infiltration/Storage Trench	Streets			Delaware
		1281-25		11-Dec-20	Combined	6744	269	0.7	1.3	Infiltration/Storage Trench	Streets			Delaware
		1281-26		21-May-21	Combined	3236	269	0.5	0.9	Infiltration/Storage Trench	Streets			Delaware
		1281-27		11-Dec-20	Combined	5019	269	0.7	1.4	Infiltration/Storage Trench	Streets			Delaware
		1281-28		11-Dec-20	Combined	3231	269	0.4	0.8	Infiltration/Storage Trench	Streets			Delaware
		1281-29		11-Dec-20	Combined	4144	269	0.4	0.8	Swale	Streets			Delaware
		1281-3		28-Nov-18	Combined	1265	269	0.3	0.4	Tree Trench	Streets			Delaware
		1281-30		11-Dec-20	Combined	6167	269	0.8	1.7	Swale	Streets			Delaware
		1281-31		11-Dec-20	Combined	8133	269	0.9	1.8	Infiltration/Storage Trench, Swale	Streets			Delaware
		1281-32		11-Dec-20	Combined	3879	269	0.5	1.1	Infiltration/Storage Trench, Swale	Streets			Delaware
		1281-33		20-Apr-21	Combined	2375	269	0.3	0.7	Tree Trench	Streets			Delaware
		1281-34		20-Apr-21	Combined	6408	269	0.9	1.7	Tree Trench	Streets			Delaware
		1281-35		12-Dec-20	Combined	3366	269	0.5	0.9	Tree Trench	Streets			Delaware
		1281-36		12-Dec-20	Combined	5900	269	0.8	1.6	Bumpout, Tree Trench	Streets			Delaware
		1281-37		25-May-21	Combined	7784	269	1.0	2.1	Bumpout, Tree Trench	Streets			Delaware
		1281-38		12-Dec-20	Combined	4466	269	0.7	1.4	Infiltration/Storage Trench	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
		1281-39		25-May-21	Combined	7947	269	1.0	2.1	Infiltration/Storage Trench, Rain Garden	Streets			Delaware
		1281-4		5-Apr-21	Combined	3145	269	0.5	0.9	Infiltration/Storage Trench	Streets			Delaware
		1281-40		1-Dec-20	Combined	3191	269	0.4	0.9	Infiltration/Storage Trench	Streets			Delaware
		1281-41		20-Apr-21	Combined	4035	269	0.5	1.1	Tree Trench	Streets			Delaware
		1281-42		20-Apr-21	Combined	3661	269	0.5	1.0	Infiltration/Storage Trench	Streets			Delaware
		1281-5		12-Sep-18	Combined	1805	269	0.2	0.5	Infiltration/Storage Trench, Rain Garden	Streets			Delaware
		1281-6		5-Sep-18	Combined	1778	269	0.2	0.5	Infiltration/Storage Trench, Rain Garden	Streets			Delaware
		1281-7		28-Jun-19	Combined	5014	269	0.6	1.3	Tree Trench	Streets			Delaware
		1281-9		21-Apr-21	Combined	6479	269	0.9	1.8	Tree Trench	Streets			Delaware
50177	1287	1287-1	Wayne and Manheim Streets	5-Nov-20	Combined	1603	21	0.2	0.4	Tree Trench	Streets	$1,776,000.00		Schuylkill,TTF
		1287-10		5-Nov-20	Combined	1128	21	0.2	0.3	Infiltration/Storage Trench	Streets			Schuylkill,TTF
		1287-11		3-Dec-20	Combined	1985	21	0.3	0.6	Infiltration/Storage Trench	Streets			Schuylkill,TTF
		1287-12		10-Jun-20	Combined	1084	21	0.2	0.3	Tree Trench	Streets			Schuylkill,TTF
		1287-13		3-Dec-20	Combined	1301	21	0.2	0.4	Tree Trench	Streets			Schuylkill,TTF
		1287-2		5-Nov-20	Combined	2486	21	0.3	0.7	Tree Trench	Streets			Schuylkill,TTF
		1287-3		5-Nov-20	Combined	1555	21	0.2	0.5	Tree Trench	Streets			Schuylkill,TTF
		1287-4		10-Jun-20	Combined	1998	21	0.3	0.6	Tree Trench	Streets			Schuylkill,TTF
		1287-5		10-Jun-20	Combined	2058	21	0.3	0.6	Tree Trench	Streets			Schuylkill,TTF
		1287-6		10-Jun-20	Combined	1525	21	0.2	0.5	Tree Trench	Streets			Schuylkill,TTF
		1287-7		5-Nov-20	Combined	1911	21	0.5	0.6	Infiltration/Storage Trench	Streets			Schuylkill,TTF
		1287-8		5-Nov-20	Combined	1687	21	0.5	0.5	Infiltration/Storage Trench	Streets			Schuylkill,TTF
		1287-9		10-Jun-20	Combined	868	21	0.2	0.3	Infiltration/Storage Trench	Streets			Schuylkill,TTF

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50179	1288	1288-1	Berks & Sedgley Greening	5-Dec-18	Combined	1201	17	0.2	0.4	Infiltration/Storage Trench, Planter	Streets	$1,795,000.00		Schuylkill
		1288-10		9-Nov-18	Combined	2109	17	0.3	0.6	Infiltration/Storage Trench	Streets			Schuylkill
		1288-11		29-Oct-18	Combined	1483	17	0.3	0.6	Tree Trench	Streets			Schuylkill
		1288-2		5-Dec-18	Combined	807	17	0.1	0.2	Infiltration/Storage Trench	Streets			Schuylkill
		1288-3		20-Dec-18	Combined	862	17	0.2	0.3	Tree Trench	Streets			Schuylkill
		1288-4		5-Dec-18	Combined	1347	17	0.3	0.5	Infiltration/Storage Trench, Planter	Streets			Schuylkill
		1288-5		14-Feb-19	Combined	5680	17	1.2	1.9	Infiltration/Storage Trench, Rain Garden	Streets			Schuylkill
		1288-6		28-Feb-19	Combined	2328	17	0.7	0.8	Infiltration/Storage Trench	Streets			Schuylkill
		1288-7		30-Oct-18	Combined	1260	17	0.2	0.5	Tree Trench	Streets			Schuylkill
		1288-8		25-Oct-18	Combined	2016	17	0.4	0.6	Infiltration/Storage Trench	Streets			Schuylkill
		1288-9		25-Oct-18	Combined	1049	17	0.2	0.4	Infiltration/Storage Trench	Streets			Schuylkill
50182	1296	1296-1	Feltonville Plaza	8-Apr-22	Combined	1042	13	0.2	0.4	Infiltration/Storage Trench, Rain Garden	Streets	$1,295,000.00		TTF
		1296-10		17-Mar-22	Combined	2081	13	0.3	0.6	Tree Trench	Streets			TTF
		1296-11		18-Mar-22	Combined	2182	13	0.5	0.7	Infiltration/Storage Trench	Streets			TTF
		1296-2		24-Mar-22	Combined	1264	13	0.3	0.4	Infiltration/Storage Trench	Streets			TTF
		1296-3		20-Apr-22	Combined	1097	13	0.3	0.4	Infiltration/Storage Trench	Streets			TTF
		1296-4		20-Apr-22	Combined	1647	13	0.3	0.5	Infiltration/Storage Trench	Streets			TTF
		1296-5		4-Apr-22	Combined	1247	13	0.3	0.4	Infiltration/Storage Trench	Streets			TTF
		1296-6		20-Apr-22	Combined	3282	13	0.5	1.0	Bumpout, Infiltration/Storage Trench	Streets			TTF
		1296-7		5-Apr-22	Combined	3315	13	0.5	0.9	Bumpout, Tree Trench	Streets			TTF
		1296-8		24-Mar-22	Combined	2008	13	0.4	0.7	Bumpout, Infiltration/Storage Trench	Streets			TTF
		1296-9		18-Mar-22	Combined	1261	13	0.2	0.5	Infiltration/Storage Trench	Streets			TTF

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50184	1299	1299-1	Port Richmond Green Streets Improvements	7-Oct-20	Combined	1724	35	0.3	0.5	Tree Trench	Streets	$1,653,000.00		Delaware,TTF
		1299-10		7-Oct-20	Combined	1799	35	0.3	0.5	Tree Trench	Streets			Delaware,TTF
		1299-11		7-Oct-20	Combined	2955	35	0.5	0.9	Tree Trench	Streets			Delaware,TTF
		1299-12		7-Oct-20	Combined	1597	35	0.2	0.4	Tree Trench	Streets			Delaware,TTF
		1299-2		7-Oct-20	Combined	1775	35	0.3	0.5	Infiltration/Storage Trench	Streets			Delaware,TTF
		1299-3		7-Oct-20	Combined	1034	35	0.2	0.3	Infiltration/Storage Trench	Streets			Delaware,TTF
		1299-4		7-Oct-20	Combined	1262	35	0.2	0.4	Tree Trench	Streets			Delaware,TTF
		1299-5		7-Oct-20	Combined	2459	35	0.4	0.8	Infiltration/Storage Trench	Streets			Delaware,TTF
		1299-6		7-Oct-20	Combined	2077	35	0.4	0.6	Tree Trench	Streets			Delaware,TTF
		1299-7		7-Oct-20	Combined	2187	35	0.3	0.6	Infiltration/Storage Trench	Streets			Delaware,TTF
		1299-8		7-Oct-20	Combined	2321	35	0.3	0.6	Tree Trench	Streets			Delaware,TTF
		1299-9		7-Oct-20	Combined	1420	35	0.3	0.4	Tree Trench	Streets			Delaware,TTF
50187	1302	1302-1	Palmer Park	22-Jan-21	Combined	2581	2	0.5	0.9	Infiltration/Storage Trench	Streets	$561,000.00	Philadelphia Department of Parks & Recreation	Delaware
	1303	1303-1		22-Jan-21	Combined	1721	3	0.3	0.6	Infiltration/Storage Trench, Planter	Streets			Delaware
		1303-2		22-Jan-21	Combined	629	3	0.2	0.2	Tree Trench	Streets			Delaware
50189	1307	1307-2	Newbold Green Street Improvements	4-Jun-20	Combined	2805	17	0.4	0.8	Tree Trench	Streets	$969,000.00		Schuylkill
		1307-3		16-Jun-20	Combined	1351	17	0.2	0.4	Tree Trench	Streets			Schuylkill
		1307-4		2-Jul-20	Combined	1384	17	0.3	0.5	Tree Trench	Streets			Schuylkill
		1307-5		31-Jul-20	Combined	1156	17	0.2	0.3	Tree Trench	Streets			Schuylkill
		1307-6		18-Aug-20	Combined	1156	17	0.3	0.4	Tree Trench	Streets			Schuylkill
		1307-7		25-Aug-20	Combined	2195	17	0.3	0.7	Tree Trench	Streets			Schuylkill
		1307-8		8-Sep-20	Combined	1594	17	0.3	0.5	Tree Trench	Streets			Schuylkill
50190	1308	1308-1	Clayborn & Lewis Streets GSI	12-Oct-20	Combined	6028	4	1.1	2.3	Tree Trench	Streets	$1,201,000.00		Schuylkill
		1308-3		10-Feb-22	Combined	3140	4	0.5	1.0	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1308-4		10-Feb-22	Combined	6376	4	0.9	1.7	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
50192	1311	1311-1	Heitzman Playground	11-Mar-23	Combined	37149	3	3.8	7.7	Infiltration/Storage Trench	Open Space	$2,726,000.00	Philadelphia Department of Parks & Recreation	Delaware
		1311-2		11-Mar-23	Combined	1290	3	0.2	0.4	Tree Trench	Streets			Delaware
		1311-3		11-Mar-23	Combined	1211	3	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50194	1315	1315-1	East Parkside Streets	26-Apr-22	Combined	2899	18	0.4	0.9	Bumpout, Tree Trench	Streets	$1,212,000.00		Schuylkill
		1315-2		29-Mar-22	Combined	1139	18	0.3	0.4	Tree Trench	Streets			Schuylkill
		1315-3		26-Apr-22	Combined	2534	18	0.4	0.7	Bumpout, Infiltration/Storage Trench	Streets			Schuylkill
		1315-4		31-Mar-22	Combined	1148	18	0.2	0.3	Tree Trench	Streets			Schuylkill
		1315-5		26-Apr-22	Combined	1842	18	0.3	0.6	Tree Trench	Streets			Schuylkill
		1315-6		7-Jun-22	Combined	5347	18	1.2	2.4	Tree Trench	Streets			Schuylkill
		1315-7		27-Apr-22	Combined	1463	18	0.4	0.5	Infiltration/Storage Trench	Streets			Schuylkill
50195	290	290-1	Windrim Avenue Green Street	6-Apr-19	Combined	3830	0	0.6	1.2	Bumpout, Infiltration/Storage Trench	Streets	$949,000.00	Philadelphia Planning Commission,Southeastern Transportation Authority,Nicetown Community Development Corporation	TTF
		290-2		6-Apr-19	Combined	1839	0	0.3	0.6	Bumpout, Infiltration/Storage Trench	Streets			TTF
		290-3		6-Apr-19	Combined	4782	0	0.6	1.2	Bumpout, Infiltration/Storage Trench	Streets			TTF
50202	1334	1334-1	Bringhurst Park Package	4-May-23	Combined	1097	4	0.3	0.4	Infiltration/Storage Trench	Streets	$961,000.00		TTF
		1334-2		4-May-23	Combined	1028	4	0.2	0.3	Infiltration/Storage Trench	Streets			TTF
		1334-3		4-May-23	Combined	1624	4	0.3	0.5	Infiltration/Storage Trench	Streets			TTF
		1334-4		4-May-23	Combined	2646	4	0.5	0.8	Rain Garden, Tree Trench	Open Space			TTF
50205	1341	1341-3	Mantua Greenway Neighborhood Connections	4-Apr-23	Combined	1424	25	0.3	0.5	Infiltration/Storage Trench	Streets	$1,927,000.00		Schuylkill
		1341-5		18-May-23	Combined	1505	25	0.4	0.5	Tree Trench	Streets			Schuylkill
		1341-7		18-May-23	Combined	1251	25	0.3	0.4	Tree Trench	Streets			Schuylkill
		1341-8		19-May-23	Combined	1710	25	0.3	0.6	Tree Trench	Streets			Schuylkill
50211	1347	1347-1	Mifflin Square	1-Aug-22	Combined	4183	13	0.6	1.3	Tree Trench	Open Space	$1,246,000.00		Delaware
		1347-2		23-May-22	Combined	6415	13	0.9	1.8	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware
		1347-3		23-May-22	Combined	3780	13	0.7	1.2	Tree Trench	Open Space			Delaware
		1347-4		23-May-22	Combined	2883	13	0.4	0.8	Tree Trench	Open Space			Delaware

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50212	1348	1348-1	Fairmount Ave Greening Improvements	19-May-20	Combined	2179	16	0.5	0.7	Infiltration/Storage Trench	Streets	$1,175,000.00		Delaware,Schuylkill
		1348-2		4-Jun-20	Combined	1920	16	0.3	0.6	Tree Trench	Streets			Delaware,Schuylkill
		1348-3		25-Jun-20	Combined	1254	16	0.2	0.4	Tree Trench	Streets			Delaware,Schuylkill
		1348-4		7-Aug-20	Combined	1054	16	0.3	0.4	Infiltration/Storage Trench	Streets			Delaware,Schuylkill
		1348-5		17-Jun-20	Combined	2527	16	0.4	0.7	Tree Trench	Streets			Delaware,Schuylkill
		1348-6		7-Aug-20	Combined	2475	16	0.3	0.6	Tree Trench	Streets			Delaware,Schuylkill
		1348-7		7-Aug-20	Combined	5740	16	0.9	1.8	Infiltration/Storage Trench	Streets			Delaware,Schuylkill
		1348-8		7-Aug-20	Combined	1474	16	0.2	0.4	Tree Trench	Streets			Delaware,Schuylkill
		1348-9		7-Aug-20	Combined	1576	16	0.3	0.5	Tree Trench	Streets			Delaware,Schuylkill
50215	1354 *	1354-1	Fairmount Neighborhood Bumpouts	6-Apr-23	Combined	1421	27	0.2	0.4	Bumpout, Infiltration/Storage Trench	Streets	$1,718,000.00		Schuylkill
		1354-2		16-Feb-23	Combined	869	27	0.1	0.3	Tree Trench	Streets			Schuylkill
		1354-3		6-Apr-23	Combined	3099	27	0.6	1.0	Tree Trench	Streets			Schuylkill
		1354-4		6-Apr-23	Combined	4131	27	0.8	1.3	Tree Trench	Streets			Schuylkill
		1354-5		6-Apr-23	Combined	3078	27	0.9	1.0	Bumpout, Tree Trench	Streets			Schuylkill
		1354-6		6-Apr-23	Combined	1713	27	0.5	0.8	Tree Trench	Streets			Schuylkill
		1354-7		16-Feb-23	Combined	948	27	0.2	0.3	Tree Trench	Streets			Schuylkill

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50217	1359	1359-1	Lawncrest Streets North	26-Oct-20	Combined	1855	10	0.5	0.6	Tree Trench	Streets	$1,699,000.00		Delaware,TTF
		1359-10		27-Jan-21	Combined	584	10	0.1	0.2	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1359-11		19-Apr-21	Combined	1421	10	0.3	0.5	Tree Trench	Streets			Delaware,TTF
		1359-12		4-Nov-20	Combined	1504	10	0.3	0.5	Tree Trench	Streets			Delaware,TTF
		1359-13		11-Nov-20	Combined	1743	10	0.4	0.5	Infiltration/Storage Trench	Streets			Delaware,TTF
		1359-14		11-Nov-20	Combined	1368	10	0.4	0.4	Infiltration/Storage Trench	Streets			Delaware,TTF
		1359-2		26-Oct-20	Combined	1062	10	0.2	0.4	Infiltration/Storage Trench	Streets			Delaware,TTF
		1359-3		26-Oct-20	Combined	1053	10	0.2	0.3	Infiltration/Storage Trench	Streets			Delaware,TTF
		1359-4		26-Oct-20	Combined	1732	10	0.5	0.6	Infiltration/Storage Trench	Streets			Delaware,TTF
		1359-5		17-Nov-20	Combined	1184	10	0.3	0.4	Infiltration/Storage Trench	Streets			Delaware,TTF
		1359-6		9-Nov-20	Combined	915	10	0.2	0.3	Infiltration/Storage Trench	Streets			Delaware,TTF
		1359-7		19-Apr-21	Combined	2673	10	0.7	0.8	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1359-8		7-Jan-21	Combined	833	10	0.1	0.2	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
		1359-9		7-Jan-21	Combined	1652	10	0.3	0.5	Bumpout, Infiltration/Storage Trench	Streets			Delaware,TTF
50229	1383	1383-1	Columbia Field	11-Dec-20	Combined	10064	12	1.4	2.8	Infiltration/Storage Trench, Rain Garden	Open Space	$520,000.00		Delaware
50232	1387	1387-1	Waterloo Playground	10-Nov-21	Combined	2550	12	0.4	0.7	Tree Trench	Open Space	$320,000.00	Department of Public Property	Delaware
		1387-2		10-Nov-21	Combined	2096	12	0.5	0.6	Infiltration/Storage Trench, Rain Garden	Open Space			Delaware
50235	1392	1392-1	Heitzman Playground Streets	22-Oct-20	Combined	1614	7	0.3	0.5	Tree Trench	Streets	$1,097,000.00	-	Delaware,TTF
		1392-2		22-Oct-20	Combined	3460	7	0.7	1.1	Tree Trench	Streets			Delaware,TTF
		1392-3		22-Oct-20	Combined	1812	7	0.4	0.6	Infiltration/Storage Trench	Streets			Delaware,TTF
		1392-4		22-Oct-20	Combined	2005	7	0.5	0.7	Infiltration/Storage Trench	Streets			Delaware,TTF
		1392-5		22-Oct-20	Combined	1334	7	0.3	0.4	Tree Trench	Streets			Delaware,TTF
		1392-6		22-Oct-20	Combined	3076	7	0.6	1.1	Infiltration/Storage Trench	Streets			Delaware,TTF
		1392-7		22-Oct-20	Combined	1709	7	0.4	0.5	Infiltration/Storage Trench	Streets			Delaware,TTF

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50236	1393	1393-1	Frankford Pause	13-Jul-22	Combined	1422	0	0.3	0.6	Infiltration/Storage Trench, Rain Garden	Open Space	$195,000.00	Frankford Community Development Corporation	TTF
50237	1394	1394-1	Frankford and Belgrade	30-Sep-21	Combined	980	0	0.3	0.4	Infiltration/Storage Trench	Streets	$122,000.00	-	Delaware
50238	1396	1396-1	Levick Edge	0-Jan-00	Combined	3097	22	0.5	1.1	Bumpout, Infiltration/Storage Trench	Streets	$2,081,000.00	-	Delaware
		1396-10		0-Jan-00	Combined	1254	22	0.2	0.4	Tree Trench	Streets			Delaware
		1396-11		0-Jan-00	Combined	1071	22	0.2	0.4	Tree Trench	Streets			Delaware
		1396-2		0-Jan-00	Combined	1771	22	0.3	0.5	Infiltration/Storage Trench	Streets			Delaware
		1396-3		0-Jan-00	Combined	1408	22	0.3	0.5	Tree Trench	Streets			Delaware
		1396-4		0-Jan-00	Combined	3679	22	0.5	1.0	Bumpout, Tree Trench	Streets			Delaware
		1396-5		0-Jan-00	Combined	2925	22	0.4	0.8	Infiltration/Storage Trench	Streets			Delaware
		1396-6		0-Jan-00	Combined	1814	22	0.3	0.6	Infiltration/Storage Trench	Streets			Delaware
		1396-7		0-Jan-00	Combined	3155	22	0.9	1.1	Tree Trench	Streets			Delaware
		1396-8		0-Jan-00	Combined	1575	22	0.4	0.5	Tree Trench	Streets			Delaware
		1396-9		0-Jan-00	Combined	2896	22	0.6	1.0	Tree Trench	Streets			Delaware
50267	1441 *	1441-1	Holmesburg Streets	30-Jan-23	Combined	1766	14	0.4	0.6	Tree Trench	Streets	$1,152,000.00	-	Pennypack
		1441-2		21-Feb-23	Combined	2572	14	0.7	0.8	Tree Trench	Streets			Pennypack
		1441-3		21-Feb-23	Combined	983	14	0.2	0.4	Infiltration/Storage Trench	Streets			Pennypack
		1441-4		21-Dec-22	Combined	1904	14	0.5	0.6	Tree Trench	Streets			Pennypack
		1441-5		5-Dec-22	Combined	2027	14	0.5	0.7	Infiltration/Storage Trench	Streets			Pennypack
		1441-6		11-Nov-22	Combined	1274	14	0.3	0.4	Tree Trench	Streets			Pennypack
		1441-7		3-Nov-22	Combined	1419	14	0.3	0.6	Tree Trench	Streets			Pennypack

Work Number	Project ID	System Number	Project Name	Construction Completion Date	Sewer Type	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acres (acre-inches)	SMP Type	Program	Green Construction Cost **	Partner(s)	Watershed
50272	1447	1447-1	East Poplar Green Streets	3-Mar-23	Combined	3008	10	0.7	1.0	Tree Trench	Streets	$1,119,000.00	-	Delaware
		1447-2		3-Mar-23	Combined	1683	10	0.4	0.5	Infiltration/Storage Trench, Planter	Streets			Delaware
		1447-3		3-Mar-23	Combined	1552	10	0.3	0.5	Infiltration/Storage Trench	Streets			Delaware
		1447-4		3-Mar-23	Combined	1159	10	0.2	0.4	Infiltration/Storage Trench, Rain Garden	Streets			Delaware
		1447-5		3-Mar-23	Combined	1375	10	0.3	0.4	Infiltration/Storage Trench	Streets			Delaware
		1447-6		3-Mar-23	Combined	2175	10	0.5	0.7	Bumpout, Infiltration/Storage Trench	Streets			Delaware
50279	1459	1459-1	Holman Field	30-Jun-23	Combined	9740	3	1.9	3.7	Tree Trench	Open Space	$994,000.00	-	TTF
50315	1524	1524-6	Lehigh & Sedgley Green Triangle	13-Jan-23	Combined	3365	19	0.6	1.0	Tree Trench	Streets	$1,355,000.00	-	Delaware
		1524-7		5-Jan-23	Combined	1055	19	0.2	0.3	Tree Trench	Streets			Delaware
50320	1544	1544-2	Small Sites & ROW Connections	2-Sep-22	Combined	4930	5	1.1	1.6	Rain Garden, Tree Trench	Vacant Land	$778,000.00	-	Delaware
64056	564	564-1	Two (2) 30 Million Gallon Storage Capacity Tanks at East Park - GC	25-Feb-20	Combined	1637	0	0.5	0.6	Rain Garden	Open Space	Unknown	Southeastern Transportation Authority,Philadelphia Department of Parks & Recreation	Schuylkill
90055	1539	1539-1	Hydrant Relocation and Green Streets Buyback: 2035 E Lehigh Ave. & Frankford Ave.	23-Jul-21	Combined	3274	8	0.6	1.0	Tree Trench	Streets	$220,000.00	Riverwards LLC	Delaware
Total Greened Acres:									**882**					

Appendix 2

Planned Public Green Stormwater Infrastructure Projects

Planned Public Green Infrastructure Reporting Metrics

The Public Planned Projects reporting format and metric definitions are described in Table 1 below.

Table 1: Public Reporting Metric Definitions

Metric	Definition
Work Number	Work Number is a unique assigned identifier from the CIPIT program. A CIPIT work number is attached to construction proposals, bids, work orders, contracts and invoices.
Project ID	This is a unique number, which is assigned automatically by the system when the project is created.
System Number	Unique identifier for system. Composed of the project ID and the System ID.
Completion Date Estimate	Estimated date of construction completion.
Status	Current project status. Statuses include: In Design, Contract Management (In Projects Control), and In Construction.
Greened Acres (acre-inch)	Greened Acres is a metric that accounts for the conversion of a highly impervious urban landscape through the implementation of projects that reduce storm water runoff. A Greened Acre is described as an acre of impervious cover connected (tributary) to a combined sewer that subsequently is reconfigured to utilize green stormwater infrastructure to manage at least one inch of stormwater runoff. If storage is provided, systems can credit up to two inches of the storm water runoff from that acre. The best available Greened Acre value is pulled from the database for regulatory reporting.
Estimated SMP Type(s)	A Stormwater Management Practice (SMP) is a technique that controls the rate and volume of stormwater runoff and/or improves runoff water quality. Multiple SMP types can be grouped together in a larger GSI system. The SMP types were originally defined in Table 2-1 of the IAMP.
Program	Current public programs which a greened acre can be assigned to include: • Alleys/Driveways • Campuses • Facilities • Industry and Business • Open Space • Parking • Schools • Streets • Vacant Land
Estimated Construction Cost	Projects with a status of Construction Complete will have a finalized cost of construction provided. Prior to construction completion PWD provides the engineers estimate for construction cost.
Potential Partner(s)	External entities involved in a project.

Metric	Definition
Watershed	The City of Philadelphia watershed where the project is located. Four of the City's seven watersheds fall at least partially within the combined sewer area. These watersheds are: • Cobbs Creek Watershed • Delaware Direct Watershed • Tookany/Tacony-Frankford Creek Watershed • Schuylkill River Watersheds

Table 2: Planned Public Green Stormwater Infrastructure Projects

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
20479	1451		Combined	Delaware,TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20496	1212	1212-1	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	TBD
20533	1625		Combined	TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20538	1611		Combined	TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20545	1586		Combined	Cobbs-Darby	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20579	1466		Combined	Cobbs-Darby	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
20597	1543		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20604	1610		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20614	1494		Combined,Separate	Cobbs-Darby,Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	$392,000.00
20619	1485		Combined,Separate	Delaware,Pennypack	Streets	Design	Infiltration Storage Trench,		TBD	2026	TBD
20622	1523		Combined	TTF	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
20624	1530		Combined,Separate	Delaware,TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20636	1559		Combined	Cobbs-Darby	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20639	1558		Combined	TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20645	1576		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
20651	1590		Combined,Separate	Delaware,Pennypack	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
20653	1581		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
20659	1617		Combined	Cobbs-Darby	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20662	1650		Combined	TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20664	1624		Combined	TTF	Streets	Design	Stormwater TreeTrench,	Streets Department	TBD	2026	TBD
20669	1657		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
20680	1668		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
20681	1667		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
40780	1496		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
40794	168		Combined,Separate,Non-Contributing	TTF	Open Space	Design	Rain Garden,	Tookany/Tacony-Frankford Watershed Partnership,Philadelphia Department of Parks & Recreation	TBD	2026	TBD
40860	1443	1443-1	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	TBD
40864	1132		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
40875	1515		Combined,Non-Contributing	Cobbs-Darby	Streets	Design	Infiltration Storage Trench,		TBD	2026	TBD
40923	1244		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
40975	1377		Combined	Schuylkill	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
41033	1505		Combined	Schuylkill	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
41064	1452		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
41070	1435		Combined	Delaware,Schuylkill	Streets	Design	Stormwater TreeTrench,	Delaware Valley Regional Planning Commission (DVRPC),Philadelphia Free Library	TBD	2026	$461,000.00
41072	1609		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41098	1518	1518-1	Combined	Cobbs-Darby	Streets	Design	Tree Trench		TBD	2026	$906,000.00
		1518-2	Combined	Cobbs-Darby	Streets	Design	Tree Trench		TBD	2026	
		1518-3	Combined	Cobbs-Darby	Streets	Design	Tree Trench		TBD	2026	
		1518-4	Combined	Cobbs-Darby	Streets	Design	Tree Trench		TBD	2026	
		1518-5	Combined	Cobbs-Darby	Streets	Design	Tree Trench		TBD	2026	
41103	1492		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41105	1497	1497-1	Combined	Cobbs-Darby	Streets	Design	Tree Trench		TBD	2026	$142,000.00
41116	1601		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41117	1551		Combined	Cobbs-Darby	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41122	1514		Combined	Delaware	Streets	Design	Infiltration Storage Trench,		TBD	2026	TBD
41124	1540		Combined	TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41126	1549		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41140	1643		Combined	Cobbs-Darby,Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41144	1596		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41147	1623		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41148	1661		Combined	Delaware	Open Space,Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41153	1595		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41164	1653		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41166	1640		Combined	Schuylkill	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
41167	1633		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41174	1678		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41179	1644		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41180	1614		Combined	TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41181	1615		Combined	TTF	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
41183	1679		Combined	TTF	Streets	Design	Stormwater TreeTrench,	Christ Baptist Church	TBD	2026	TBD
41187	1621		Combined	Delaware,Schuylkill	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
41189	1629		Combined	TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41191	1637		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
41199	1646		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41201	1654		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
41203	1658		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41208	1666		Combined	Delaware	Streets	Design	Stormwater TreeTrench,	Streets Department	TBD	2026	TBD
41211	1671		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41212	1677		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
41220	1681		Combined	Schuylkill	Streets	Design	Infiltration Storage Trench,		TBD	2026	TBD
41221	1686		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50107	1052	1052-1	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Infiltration/Storage Trench		TBD	2026	$3,065,000.00
		1052-10	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1052-11	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1052-12	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1052-13	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1052-14	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Bumpout, Tree Trench		TBD	2026	
		1052-15	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Infiltration/Storage Trench, Planter		TBD	2026	
		1052-2	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Bumpout, Tree Trench		TBD	2026	
		1052-3	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1052-4	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1052-5	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1052-6	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1052-7	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1052-8	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1052-9	Combined	Cobbs-Darby,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
50141	1150		Combined	TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50169	1365		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50242	1404		Combined	TTF	Open Space,Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Rain Garden,	PennDOT,Department of Parks & Recreation (PPR),Councilwoman Bass,Nicetown CDC,Philadelphia Redevelopment Authority (PRA)	TBD	2026	TBD
50243	1405	1405-1	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	$2,663,000.00
		1405-10	Combined	Schuylkill	Streets	Design	Bumpout, Tree Trench		TBD	2026	
		1405-11	Combined	Schuylkill	Streets	Design	Bumpout, Tree Trench		TBD	2026	
		1405-12	Combined	Schuylkill	Streets	Design	Bumpout, Tree Trench		TBD	2026	
		1405-2	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1405-3	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1405-4	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1405-5	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1405-6	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1405-7	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1405-8	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1405-9	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	
50248	1414	1414-1	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	TBD
		1414-2	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1414-3	Combined	Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1414-4	Combined	Schuylkill	Streets	Design	Bumpout, Tree Trench		TBD	2026	
		1414-5	Combined	Schuylkill	Streets	Design	Bumpout, Tree Trench		TBD	2026	
50253	1421	1421-1	Combined	Delaware,Schuylkill	Streets	Design	Infiltration/Storage Trench	Philadelphia Redevelopment Authority (PRA)	TBD	2026	$994,000.00
		1421-2	Combined	Delaware,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1421-3	Combined	Delaware,Schuylkill	Streets	Design	Rain Garden, Tree Trench		TBD	2026	
		1421-4	Combined	Delaware,Schuylkill	Streets	Design	Infiltration/Storage Trench, Rain Garden		TBD	2026	
		1421-5	Combined	Delaware,Schuylkill	Streets	Design	Tree Trench		TBD	2026	
		1421-6	Combined	Delaware,Schuylkill	Streets	Design	Tree Trench		TBD	2026	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50255	1425		Combined,Non-Contributing	Cobbs-Darby	Open Space,Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench,		TBD	2026	TBD
50259	1431		Combined,Separate	Delaware,Pennypack	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,	Commerce Department,Streets Department	TBD	2026	TBD
50265	1439		Combined	Cobbs-Darby	Open Space,Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50270	1445	1445-1	Combined	Delaware	Open Space	Design	Infiltration/Storage Trench, Rain Garden	Streets Department,Department of Public Property (DPP),Neighborhood Gardens Trust (NGT)	TBD	2026	$779,000.00
		1445-2	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
		1445-3	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
		1445-4	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
50274	1449		Combined	Cobbs-Darby,Schuylkill	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50282	1462		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,	Streets Department	TBD	2026	TBD
50283	1467	1467-1	Combined	TTF	Open Space	Design	Infiltration/Storage Trench, Rain Garden	Department of Parks & Recreation (PPR)	TBD	2026	$3,300,000.00
		1467-2	Combined	TTF	Open Space	Design	Bumpout, Infiltration/Storage Trench		TBD	2026	
		1467-3	Combined	TTF	Open Space	Design	Tree Trench		TBD	2026	
50284	1469		Combined	Delaware,Pennypack	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50286	1473		Combined	Cobbs-Darby	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50287	1474		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50292	1480		Combined	Cobbs-Darby,Schuylkill	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50293	1481		Combined	Delaware	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50294	1482		Combined	Cobbs-Darby,Schuylkill	Streets	Design	Stormwater Bump-out,Swale,Stormwater TreeTrench,		TBD	2026	TBD
50300	1498		Combined	Delaware	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50303	1502		Combined	Delaware	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,		TBD	2026	TBD
50304	1503		Combined	Cobbs-Darby,Schuylkill	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50307	1509		Combined	Cobbs-Darby,Schuylkill	Open Space,Streets	Design	Stormwater TreeTrench,	Department of Parks & Recreation (PPR)	TBD	2026	TBD

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50309	1512		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50310	1513		Combined	Schuylkill	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50313	1519		Combined	Delaware	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50314	1522		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50318	1528		Combined	Cobbs-Darby,Schuylkill	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50319	1531		Combined	Cobbs-Darby	Facilities,Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50321	1537		Combined	TTF	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50322	1538		Combined	TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50323	1541		Combined	Cobbs-Darby	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50324	1545		Combined	Delaware,TTF	Streets	Design	Stormwater Bump-out,Rain Garden,Stormwater TreeTrench,		TBD	2026	TBD
50326	1548		Combined	Delaware,TTF	Open Space,Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Swale,Stormwater TreeTrench,		TBD	2026	TBD
50327	1556		Combined	TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50328	1557		Combined	TTF	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50330	1561	1561-1	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	TBD
		1561-2	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
		1561-3	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
		1561-4	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
		1561-5	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
		1561-6	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
		1561-7	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
		1561-8	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
		1561-9	Combined	Delaware	Streets	Design	Tree Trench		TBD	2026	
50331	1564		Combined	Cobbs-Darby	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50332	1568		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50333	1571		Combined	Schuylkill	Open Space,Streets	Design	Infiltration Storage Trench,Rain Garden,		TBD	2026	TBD
50334	1570		Combined	Delaware	Open Space	Design	Infiltration Storage Trench,	Department of Parks & Recreation (PPR)	TBD	2026	TBD
50335	1573		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench,		TBD	2026	TBD
50336	1574		Combined	Cobbs-Darby	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50337	1575		Combined	Delaware	Open Space,Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50338	1577		Combined,Separate	Delaware,Pennypack	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50339	1578		Combined	Schuylkill	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50340	1579		Combined	Delaware	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50341	1580		Combined	Cobbs-Darby	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50342	1583		Combined	Cobbs-Darby,Schuylkill	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50344	1584		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50347	1594		Combined	Delaware	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50349	1597		Combined,Non-Contributing	Cobbs-Darby	Streets,Vacant Land	Design	Infiltration Storage Trench,Rain Garden,		TBD	2026	TBD
50350	1598		Combined	Delaware	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50351	1599		Combined	Cobbs-Darby	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50352	1600		Combined	Delaware	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50353	1602		Combined	Delaware	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50354	1603		Combined	Schuylkill	Open Space,Streets	Design	Infiltration Storage Trench,	Department of Parks & Recreation (PPR),Philadelphia Redevelopment Authority (PRA)	TBD	2026	TBD
50355	1604		Combined,Storm Water Only	Schuylkill	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50356	1605		Combined	Delaware	Open Space,Streets,Vacant Land	Design	Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench,	Department of Parks & Recreation (PPR)	TBD	2026	TBD
50357	1606		Combined,Separate	Delaware,Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50359	1608		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50360	1612		Combined	Delaware	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50361	1613		Combined	Cobbs-Darby,Schuylkill	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50362	1616		Combined	Delaware,Schuylkill	Facilities,Streets	Design	Rain Garden,Stormwater TreeTrench,		TBD	2026	TBD
50363	1618		Combined	Cobbs-Darby	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50364	1619		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50365	1620		Combined	Schuylkill	Open Space,Streets	Design	Stormwater Bump-out,Rain Garden,Stormwater TreeTrench,	Department of Parks & Recreation (PPR)	TBD	2026	TBD

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50366	1622		Combined	Delaware	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50367	1626		Combined,Non-Contributing	Delaware,TTF	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50368	1627		Combined	Schuylkill	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50369	1628		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50370	1630		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50371	1632		Combined	Delaware,TTF	Streets	Design	Rain Garden,Stormwater TreeTrench,		TBD	2026	TBD
50372	1634		Combined	Cobbs-Darby	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50373	1635		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50374	1636		Combined	Schuylkill	Open Space,Streets	Design	Stormwater TreeTrench,	Department of Parks & Recreation (PPR)	TBD	2026	TBD
50375	1638		Combined	Delaware	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50376	1639		Combined	Delaware	Open Space,Streets	Design	Swale,Stormwater Wetland,	Department of Parks & Recreation (PPR)	TBD	2026	TBD
50377	1641		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50378	1642		Combined	Delaware	Facilities,Open Space,Streets	Design	Stormwater Planter,Rain Garden,Stormwater TreeTrench,	Department of Parks & Recreation (PPR)	TBD	2026	TBD
50379	1645		Combined	Delaware,TTF	Open Space,Streets	Design	Infiltration Storage Trench,	Department of Parks & Recreation (PPR)	TBD	2026	TBD
50380	1647		Combined	Delaware	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50381	1648		Combined	Delaware	Streets	Design	Rain Garden,Stormwater TreeTrench,		TBD	2026	TBD
50382	1649		Combined,Separate,Non-Contributing	Schuylkill	Open Space,Streets	Design	Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench,		TBD	2026	TBD
50384	1655		Combined	Schuylkill	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50385	1656		Combined	Delaware	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50386	1659		Combined	Cobbs-Darby	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50387	1660		Combined	TTF	Open Space,Streets	Design	Rain Garden,	Department of Parks & Recreation (PPR)	TBD	2026	TBD
50388	1662		Combined	Delaware	Streets	Design	Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench,		TBD	2026	TBD
50389	1663		Combined,Separate	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50391	1665		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50392	1669		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50393	1670		Combined	Delaware,TTF	Streets	Design	Stormwater TreeTrench,	Streets Department	TBD	2026	TBD
50396	1674		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50397	1675		Combined	Delaware	Streets	Design	Stormwater Bump-out,Stormwater TreeTrench,		TBD	2026	TBD
50398	1676		Combined	Schuylkill	Open Space	Design	Rain Garden,		TBD	2026	TBD

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50400	1682		Combined	Delaware	Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,		TBD	2026	TBD
50401	1683		Combined	Delaware	Open Space,Streets	Design	Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench,	Department of Parks & Recreation (PPR)	TBD	2026	TBD
50402	1684		Combined	Cobbs-Darby	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50404	1687		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50405	1688		Combined	Schuylkill	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
50406	1689		Combined	Delaware	Streets	Design	Stormwater TreeTrench,		TBD	2026	TBD
90357	1672		Combined	Delaware,Schuylkill	Streets	Design	Infiltration Storage Trench,		TBD	2026	TBD
20417	1061	1061-1	Combined	Delaware	Streets	Contract Management	Infiltration/Storage Trench		0.5	2025	$425,000.00
		1061-2	Combined	Delaware	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	
		1061-3	Combined	Delaware	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	
		1061-4	Combined	Delaware	Streets	Contract Management	Infiltration/Storage Trench		0.4	2025	
		1061-5	Combined	Delaware	Streets	Contract Management	Infiltration/Storage Trench		0.6	2025	
20472	1040	1040-1	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.6	2025	$96,000.00
20474	1243	1243-1	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.6	2025	$808,000.00
		1243-2	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.6	2025	
		1243-3	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.4	2025	
		1243-4	Combined	Delaware,TTF	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	
		1243-5	Combined	Delaware,TTF	Streets	Contract Management	Infiltration/Storage Trench		0.6	2025	
		1243-6	Combined	Delaware,TTF	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	
		1243-7	Combined	Delaware,TTF	Streets	Contract Management	Infiltration/Storage Trench		0.7	2025	
		1243-8	Combined	Delaware,TTF	Streets	Contract Management	Infiltration/Storage Trench		0.5	2025	
20485	1126	1126-1	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	$464,000.00
		1126-2	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.4	2025	
		1126-3	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.4	2025	
		1126-4	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.4	2025	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
20487	1133	1133-1	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.5	2025	$298,000.00
		1133-2	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.6	2025	
20517	1418	1418-1	Combined	TTF	Streets	Contract Management	Tree Trench		0.7	2025	$387,000.00
		1418-2	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		1.0	2025	
		1418-3	Combined	TTF	Streets	Contract Management	Tree Trench		0.4	2025	
20536	1330	1330-1	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.7	2025	$810,000.00
		1330-2	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	
		1330-3	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.7	2025	
		1330-4	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.8	2025	
		1330-5	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.8	2025	
20546	1350	1350-1	Combined	TTF	Open Space	Contract Management	Infiltration/Storage Trench		0.7	2025	$267,000.00
		1350-2	Combined	TTF	Parking	Contract Management	Infiltration/Storage Trench		0.2	2025	
20552	1489	1489-1	Combined	Delaware	Streets	Contract Management	Tree Trench		1.2	2025	$1,011,000.00
		1489-2	Combined	Delaware	Streets	Contract Management	Tree Trench		0.9	2025	
		1489-3	Combined	Delaware	Streets	Contract Management	Tree Trench		1.4	2025	
		1489-4	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	
20558	1376	1376-1	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.7	2025	$121,000.00
20559	1463	1463-1	Combined	Delaware	Streets	Contract Management	Tree Trench		0.3	2025	$139,000.00
20562	1395	1395-1	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.5	2025	$310,000.00
		1395-2	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
20564	1419	1419-1	Combined	TTF	Facilities	Contract Management	Infiltration/Storage Trench		0.6	2025	$984,000.00
		1419-2	Combined	TTF	Facilities	Contract Management	Infiltration/Storage Trench		0.6	2025	
		1419-3	Combined	TTF	Facilities	Contract Management	Infiltration/Storage Trench		0.5	2025	
		1419-4	Combined	TTF	Facilities	Contract Management	Infiltration/Storage Trench		1.0	2025	
		1419-5	Combined	TTF	Facilities	Contract Management	Infiltration/Storage Trench		0.6	2025	
		1419-6	Combined	TTF	Vacant Land	Contract Management	Infiltration/Storage Trench		0.4	2025	
		1419-7	Combined	TTF	Industry & Business	Contract Management	Infiltration/Storage Trench		0.7	2025	
20573	1479	1479-1	Combined	Delaware	Streets	Contract Management	Tree Trench		0.8	2025	$195,000.00
20575	1465	1465-1	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.8	2025	$818,000.00
		1465-2	Combined	TTF	Streets	Contract Management	Tree Trench		1.1	2025	
		1465-3	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		1.0	2025	
		1465-4	Combined	TTF	Streets	Contract Management	Tree Trench		0.5	2025	
20578	1542		Combined	Delaware	Streets	Contract Management	Stormwater TreeTrench,		0.7	2025	$241,000.00
20583	1470	1470-1	Combined	TTF	Facilities	Contract Management	Infiltration/Storage Trench		0.3	2025	$616,000.00
		1470-2	Combined	TTF	Schools	Contract Management	Infiltration/Storage Trench		0.7	2025	
		1470-3	Combined	TTF	Facilities	Contract Management	Infiltration/Storage Trench		0.5	2025	
		1470-4	Combined	TTF	Facilities	Contract Management	Infiltration/Storage Trench		0.5	2025	
		1470-5	Combined	TTF	Facilities	Contract Management	Infiltration/Storage Trench		0.7	2025	
20587	1589	1589-1	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.4	2025	$572,000.00
		1589-2	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.8	2025	
20588	1487	1487-2	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.8	2025	$294,000.00
		1487-3	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.6	2025	
20599	1501	1501-1	Combined	Delaware	Streets	Contract Management	Tree Trench		0.7	2025	$508,000.00
		1501-2	Combined	Delaware	Streets	Contract Management	Tree Trench		0.8	2025	
20601	1464	1464-1	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	$209,000.00

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
20609	1484		Combined	Delaware	Streets	Contract Management	Infiltration Storage Trench,Stormwater TreeTrench,		1.5	2025	$478,000.00
20625	1504	1504-1	Combined	TTF	Open Space	Contract Management	Tree Trench		0.7	2025	$155,000.00
20630	1547	1547-1	Combined	Delaware	Streets	Contract Management	Tree Trench		0.6	2025	$576,000.00
		1547-2	Combined	Delaware	Streets	Contract Management	Tree Trench		1.6	2025	
40736	236		Combined	Delaware	Streets	Contract Management	Infiltration Storage Trench,Stormwater Planter,Rain Garden,Stormwater TreeTrench,		1.8	2025	$699,000.00
40880	1591	1591-1	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		1.0	2025	$126,000.00
40899	1219	1219-1	Combined	Delaware	Streets	Contract Management	Tree Trench		0.5	2025	$173,000.00
40904	1134	1134-1	Combined	Delaware	Streets	Contract Management	Tree Trench		0.3	2025	$187,000.00
		1134-2	Combined	Delaware	Streets	Contract Management	Infiltration/Storage Trench		0.5	2025	
40908	1370	1370-1	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	$460,000.00
		1370-2	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	
		1370-3	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.4	2025	
		1370-4	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	
		1370-5	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	
40933	1521		Combined	Delaware	Streets	Contract Management	Stormwater TreeTrench,		1.7	2025	$341,000.00
40939	1331	1331-2	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	$325,000.00
		1331-3	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	
40951	1280	1280-1	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.5	2025	$126,000.00
40965	1369	1369-1	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.4	2025	$141,000.00
40985	1375	1375-1	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.3	2025	$524,000.00
		1375-2	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.3	2025	
		1375-3	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.4	2025	
		1375-4	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.3	2025	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
40989	1340	1340-1	Combined	Pennypack	Streets	Contract Management	Tree Trench		0.4	2025	$517,000.00
		1340-2	Combined	Pennypack	Streets	Contract Management	Tree Trench		0.4	2025	
		1340-3	Combined	Pennypack	Streets	Contract Management	Tree Trench		0.5	2025	
		1340-4	Combined	Pennypack	Streets	Contract Management	Tree Trench		0.5	2025	
		1340-5	Combined	Pennypack	Streets	Contract Management	Tree Trench		0.3	2025	
40990	1355	1355-1	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.3	2025	$555,000.00
		1355-2	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.5	2025	
		1355-3	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.5	2025	
41008	1402	1402-1	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.3	2025	$95,000.00
41049	1398	1398-1	Combined	Delaware	Streets	Contract Management	Tree Trench		0.6	2025	$625,000.00
41068	1407	1407-1	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.4	2025	$94,000.00
41071	1471	1471-1	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.3	2025	$751,000.00
		1471-2	Combined	Schuylkill	Streets	Contract Management	Tree Trench		1.3	2025	
41080	1506		Combined	Schuylkill	Streets	Contract Management	Infiltration Storage Trench,		0.8	2025	$224,000.00
41135	1553		Combined	Delaware	Streets	Contract Management	Stormwater TreeTrench,		1.4	2025	$513,000.00
41137	1588	1588-1	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.3	2025	$399,000.00
		1588-2	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.5	2025	
41149	1555	1555-1	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.6	2025	$194,000.00
50126	1088	1088-1	Combined	TTF	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.8	2025	$858,000.00
		1088-2	Combined	TTF	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.6	2025	
		1088-3	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	
		1088-4	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench, Planter		1.2	2025	
	1262	1262-1	Combined	Delaware	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.8	2025	
		1262-2	Combined	Delaware	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.7	2025	
		1262-3	Combined	Delaware	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		1.2	2025	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50128	1090	1090-1	Combined	Delaware	Streets	Contract Management	Tree Trench		0.6	2025	$2,717,000.00
		1090-10	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	
		1090-11	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	
		1090-12	Combined	Delaware	Streets	Contract Management	Tree Trench		0.3	2025	
		1090-13	Combined	Delaware	Streets	Contract Management	Tree Trench		0.5	2025	
		1090-2	Combined	Delaware	Streets	Contract Management	Tree Trench		0.5	2025	
		1090-3	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	
		1090-4	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	
		1090-5	Combined	Delaware	Streets	Contract Management	Tree Trench		0.3	2025	
		1090-6	Combined	Delaware	Streets	Contract Management	Tree Trench		0.3	2025	
		1090-7	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	
		1090-8	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	
		1090-9	Combined	Delaware	Streets	Contract Management	Tree Trench		0.5	2025	
	1107	1107-1	Combined	Delaware	Streets	Contract Management	Tree Trench	Philadelphia Department of Parks & Recreation	0.4	2025	
		1107-2	Combined	Delaware	Streets	Contract Management	Rain Garden, Tree Trench		0.8	2025	
	1269	1269-1	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	
		1269-2	Combined	Delaware	Streets	Contract Management	Tree Trench		0.3	2025	
50139	1147	1147-1	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.4	2025	$2,466,000.00
		1147-10	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.2	2025	
		1147-11	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.2	2025	
		1147-2	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Infiltration/Storage Trench, Rain Garden		4.5	2025	
		1147-3	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.4	2025	
		1147-4	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.3	2025	
		1147-8	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.2	2025	
		1147-9	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.4	2025	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50176	1283	1283-1	Combined	Schuylkill	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.5	2025	$3,490,000.00
		1283-10	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.7	2025	
		1283-11	Combined	Schuylkill	Streets	Contract Management	Bumpout, Tree Trench		0.3	2025	
		1283-12	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.4	2025	
		1283-13	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.2	2025	
		1283-14	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	
		1283-15	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.6	2025	
		1283-16	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.6	2025	
		1283-2	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.3	2025	
		1283-3	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.3	2025	
		1283-4	Combined	Schuylkill	Streets	Contract Management	Bumpout, Tree Trench		0.5	2025	
		1283-5	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.7	2025	
		1283-6	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.4	2025	
		1283-7	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	
		1283-8	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	
		1283-9	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.3	2025	
50206	1343	1343-1	Combined	Schuylkill	Streets	Contract Management	Tree Trench	Drexel University	0.8	2025	$2,283,000.00
		1343-2	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.6	2025	
		1343-3	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.7	2025	
		1343-4	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.8	2025	
		1343-5	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	
		1343-6	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	
		1343-7	Combined	Schuylkill	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		1.6	2025	
		1343-8	Combined	Schuylkill	Streets	Contract Management	Tree Trench		1.0	2025	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50214	1353	1353-1	Combined	Pennypack	Streets	Contract Management	Tree Trench	Philadelphia Streets Department,Philadelphia Department of Parks & Recreation	0.9	2025	$172,000.00
50233	1389	1389-1	Combined	Cobbs-Darby	Streets	Contract Management	Infiltration/Storage Trench, Rain Garden, Swale		0.5	2025	$1,505,000.00
	1390	1390-2	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.4	2025	
		1390-3	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.4	2025	
		1390-4	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.5	2025	
		1390-5	Combined	Cobbs-Darby	Streets	Contract Management	Infiltration/Storage Trench		0.3	2025	
		1390-6	Combined	Cobbs-Darby	Streets	Contract Management	Infiltration/Storage Trench		0.4	2025	
		1390-7	Combined	Cobbs-Darby	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		1.3	2025	
		1390-8	Combined	Cobbs-Darby	Streets	Contract Management	Infiltration/Storage Trench		0.9	2025	
50240	1401	1401-1	Combined	Cobbs-Darby	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		1.0	2025	$1,710,000.00
		1401-2	Combined	Cobbs-Darby	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.5	2025	
		1401-3	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.5	2025	
		1401-4	Combined	Cobbs-Darby	Streets	Contract Management	Bumpout, Tree Trench		0.7	2025	
		1401-5	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.7	2025	
		1401-6	Combined	Cobbs-Darby	Streets	Contract Management	Infiltration/Storage Trench		0.9	2025	
50252	1420	1420-1	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.7	2025	$2,115,000.00
		1420-2	Combined	TTF	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.7	2025	
		1420-3	Combined	TTF	Streets	Contract Management	Infiltration/Storage Trench		0.9	2025	
		1420-4	Combined	TTF	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		1.3	2025	
		1420-5	Combined	TTF	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.8	2025	
		1420-6	Combined	TTF	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.8	2025	
		1420-7	Combined	TTF	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		2.3	2025	
50257	1428	1428-1	Combined	Delaware	Facilities	Contract Management	Infiltration/Storage Trench, Rain Garden	Department of Parks & Recreation (PPR)	0.9	2025	$236,000.00

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50258	1429	1429-1	Combined	Schuylkill	Streets	Contract Management	Tree Trench		1.3	2025	$1,516,000.00
		1429-2	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.7	2025	
		1429-3	Combined	Schuylkill	Streets	Contract Management	Infiltration/Storage Trench		0.8	2025	
		1429-4	Combined	Schuylkill	Streets	Contract Management	Tree Trench		1.3	2025	
		1429-5	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.7	2025	
		1429-6	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.7	2025	
		1429-7	Combined	Schuylkill	Streets	Contract Management	Tree Trench		1.0	2025	
		1429-8	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.9	2025	
50260	1433	1433-1	Combined	Cobbs-Darby	Open Space	Contract Management	Infiltration/Storage Trench, Rain Garden		4.9	2025	$2,546,000.00
		1433-2	Combined	Cobbs-Darby	Open Space	Contract Management	Infiltration/Storage Trench, Rain Garden		3.3	2025	
		1433-3	Combined	Cobbs-Darby	Open Space	Contract Management	Infiltration/Storage Trench, Rain Garden		2.4	2025	
		1433-4	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		1.3	2025	
		1433-6	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.4	2025	
		1433-7	Combined	Cobbs-Darby	Streets	Contract Management	Infiltration/Storage Trench		0.4	2025	
		1433-8	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.3	2025	
		1433-9	Combined	Cobbs-Darby	Streets	Contract Management	Tree Trench		0.5	2025	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50263	1437	1437-1	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.4	2025	$4,308,000.00
		1437-10	Combined	Delaware,Pennypack	Streets	Contract Management	Infiltration/Storage Trench		0.7	2025	
		1437-11	Combined	Delaware,Pennypack	Streets	Contract Management	Infiltration/Storage Trench		0.6	2025	
		1437-12	Combined	Delaware,Pennypack	Streets	Contract Management	Infiltration/Storage Trench		0.7	2025	
		1437-13	Combined	Delaware,Pennypack	Streets	Contract Management	Infiltration/Storage Trench		0.4	2025	
		1437-14	Combined	Delaware,Pennypack	Streets	Contract Management	Infiltration/Storage Trench		0.7	2025	
		1437-15	Combined	Delaware,Pennypack	Streets	Contract Management	Infiltration/Storage Trench		0.7	2025	
		1437-2	Combined	Delaware,Pennypack	Streets	Contract Management	Bumpout, Tree Trench		1.0	2025	
		1437-3	Combined	Delaware,Pennypack	Streets	Contract Management	Bumpout, Tree Trench		1.7	2025	
		1437-4	Combined	Delaware,Pennypack	Streets	Contract Management	Bumpout, Tree Trench		1.5	2025	
		1437-5	Combined	Delaware,Pennypack	Streets	Contract Management	Bumpout, Tree Trench		1.4	2025	
		1437-6	Combined	Delaware,Pennypack	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		1.4	2025	
		1437-7	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.8	2025	
		1437-8	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.8	2025	
		1437-9	Combined	Delaware,Pennypack	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		0.5	2025	
50269	1444	1444-1	Combined	Delaware,Pennypack	Open Space	Contract Management	Infiltration/Storage Trench	Department of Parks & Recreation (PPR)	5.6	2025	$3,428,000.00
		1444-2	Combined	Delaware,Pennypack	Open Space	Contract Management	Infiltration/Storage Trench		3.9	2025	
50275	1450	1450-1	Combined	Pennypack	Streets	Contract Management	Tree Trench		0.8	2025	$1,299,000.00
		1450-2	Combined	Pennypack	Streets	Contract Management	Tree Trench		0.5	2025	
		1450-3	Combined	Pennypack	Streets	Contract Management	Tree Trench		2.1	2025	
		1450-4	Combined	Pennypack	Streets	Contract Management	Tree Trench		0.7	2025	
		1450-5	Combined	Pennypack	Streets	Contract Management	Infiltration/Storage Trench		0.6	2025	
		1450-6	Combined	Pennypack	Streets	Contract Management	Tree Trench		0.5	2025	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50276	1454	1454-1	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.7	2025	$844,000.00
		1454-2	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.4	2025	
		1454-3	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.3	2025	
		1454-4	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.4	2025	
		1454-5	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.4	2025	
		1454-6	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.4	2025	
50288	1475	1475-1	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		1.1	2025	$2,577,000.00
		1475-2	Combined	Delaware,Pennypack	Streets	Contract Management	Bumpout, Tree Trench		1.6	2025	
		1475-3	Combined	Delaware,Pennypack	Streets	Contract Management	Bumpout, Tree Trench		1.0	2025	
		1475-4	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.5	2025	
		1475-5	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.5	2025	
		1475-6	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.5	2025	
		1475-7	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.8	2025	
		1475-8	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.7	2025	
		1475-9	Combined	Delaware,Pennypack	Streets	Contract Management	Tree Trench		0.3	2025	
50296	1486	1486-1	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.9	2025	$1,376,000.00
		1486-2	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.3	2025	
		1486-3	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.4	2025	
		1486-4	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.4	2025	
		1486-5	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.6	2025	
		1486-6	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.3	2025	
		1486-7	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.7	2025	
		1486-8	Combined	Schuylkill	Streets	Contract Management	Tree Trench		0.8	2025	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50297	1490	1490-1	Combined	Delaware	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		3.0	2025	$4,731,000.00
		1490-10	Combined	Delaware	Streets	Contract Management	Tree Trench		0.4	2025	
		1490-11	Combined	Delaware	Streets	Contract Management	Tree Trench		0.3	2025	
		1490-2	Combined	Delaware	Streets	Contract Management	Bumpout, Tree Trench		2.2	2025	
		1490-3	Combined	Delaware	Streets	Contract Management	Bumpout, Tree Trench		2.0	2025	
		1490-4	Combined	Delaware	Streets	Contract Management	Bumpout, Tree Trench		1.8	2025	
		1490-5	Combined	Delaware	Streets	Contract Management	Tree Trench		1.7	2025	
		1490-6	Combined	Delaware	Streets	Contract Management	Tree Trench		1.4	2025	
		1490-7	Combined	Delaware	Streets	Contract Management	Tree Trench		1.8	2025	
		1490-8	Combined	Delaware	Streets	Contract Management	Bumpout, Tree Trench		1.2	2025	
		1490-9	Combined	Delaware	Streets	Contract Management	Bumpout, Tree Trench		1.5	2025	
50299	1495	1495-1	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Bumpout, Infiltration/Storage Trench		1.0	2025	$2,529,000.00
		1495-10	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.6	2025	
		1495-11	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.7	2025	
		1495-12	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		1.0	2025	
		1495-2	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.6	2025	
		1495-3	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.6	2025	
		1495-4	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.7	2025	
		1495-5	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		1.2	2025	
		1495-6	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	
		1495-7	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Bumpout, Tree Trench		0.6	2025	
		1495-8	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	
		1495-9	Combined	Cobbs-Darby,Schuylkill	Streets	Contract Management	Tree Trench		0.5	2025	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50312	1517	1517-1	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.8	2025	$2,560,000.00
		1517-10	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.6	2025	
		1517-11	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.4	2025	
		1517-12	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.8	2025	
		1517-13	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.3	2025	
		1517-14	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.3	2025	
		1517-2	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		1.2	2025	
		1517-3	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.9	2025	
		1517-4	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.5	2025	
		1517-5	Combined	Delaware,TTF	Streets	Contract Management	Infiltration/Storage Trench, Tree Trench		0.8	2025	
		1517-6	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.4	2025	
		1517-7	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.5	2025	
		1517-8	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.5	2025	
		1517-9	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.3	2025	
50317	1527	1527-1	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.5	2025	$1,893,000.00
		1527-2	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.6	2025	
		1527-3	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		0.6	2025	
		1527-4	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		1.7	2025	
		1527-5	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		1.0	2025	
		1527-6	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		2.3	2025	
		1527-7	Combined	Delaware,TTF	Streets	Contract Management	Tree Trench		1.1	2025	
50346	1587	1587-1	Combined	Delaware	Streets	Contract Management	Infiltration/Storage Trench	Department of Parks & Recreation (PPR)	1.6	2025	$599,000.00

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
20437	1124	1124-1	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		1.1	2024	$351,000.00
		1124-2	Combined	Delaware	Streets	Construction	Tree Trench		0.3	2024	
		1124-3	Combined	Delaware	Streets	Construction	Tree Trench		0.7	2024	
		1124-4	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1124-5	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.8	2024	
		1124-6	Combined	Delaware	Streets	Construction	Tree Trench		0.5	2024	
		1124-7	Combined	Delaware	Streets	Construction	Tree Trench		0.5	2024	
20464	1381	1381-1	Combined	TTF,Wissahickon	Streets	Construction	Infiltration/Storage Trench		0.8	2024	$329,000.00
		1381-2	Combined	TTF,Wissahickon	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
20486	1282	1282-1	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.3	2024	$280,000.00
		1282-2	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1282-3	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1282-4	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.2	2024	
40800	502	502-1	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.5	2024	$355,000.00
40826	1063	1063-1	Combined	Schuylkill	Streets	Construction	Tree Trench		0.7	2024	$445,000.00
		1063-2	Combined	Schuylkill	Streets	Construction	Tree Trench		1.1	2024	
40869	1289	1289-1	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.2	2024	$176,000.00
		1289-2	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.2	2024	
		1289-3	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
40877	1550	1550-1	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.3	2024	TBD
		1550-2	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.2	2024	
40888	1011	1011-1	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	TBD
		1011-10	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1011-2	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1011-3	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1011-4	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1011-5	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1011-6	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1011-7	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1011-8	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1011-9	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
40945	1292	1292-1	Combined	Schuylkill	Streets	Construction	Tree Trench		0.2	2024	TBD
		1292-10	Combined	Schuylkill	Streets	Construction	Tree Trench		0.2	2024	
		1292-2	Combined	Schuylkill	Streets	Construction	Tree Trench		0.2	2024	
		1292-3	Combined	Schuylkill	Streets	Construction	Tree Trench		0.2	2024	
		1292-4	Combined	Schuylkill	Streets	Construction	Tree Trench		0.2	2024	
		1292-5	Combined	Schuylkill	Streets	Construction	Tree Trench		0.2	2024	
		1292-6	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1292-7	Combined	Schuylkill	Streets	Construction	Tree Trench		0.7	2024	
		1292-8	Combined	Schuylkill	Streets	Construction	Tree Trench		0.7	2024	
		1292-9	Combined	Schuylkill	Streets	Construction	Tree Trench		0.2	2024	
41034	1399	1399-1	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.4	2024	$106,000.00
41039	1455	1455-1	Combined	Delaware	Streets	Construction	Tree Trench		0.5	2024	TBD
		1455-2	Combined	Delaware	Streets	Construction	Tree Trench		0.8	2024	
		1455-3	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
		1455-4	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50090	539	539-1	Combined	Delaware	Streets	Construction	Tree Trench		0.7	2024	$1,943,000.00
		539-2	Combined	Delaware	Streets	Construction	Tree Trench		0.5	2024	
		539-3	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		539-4	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		1.0	2024	
	540	540-1	Combined	Delaware	Streets	Construction	Tree Trench		1.4	2024	
		540-2	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.7	2024	
		540-3	Combined	Delaware	Streets	Construction	Tree Trench		0.9	2024	
		540-4	Combined	Delaware	Streets	Construction	Tree Trench		1.6	2024	
50110	242	242-2	Combined	Cobbs-Darby	Streets	Construction	Rain Garden	Philadelphia Department of Parks & Recreation	3.4	2024	$2,290,000.00
50133	1139	1139-1	Combined	TTF	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.9	2024	$5,762,000.00
		1139-10	Combined	TTF	Streets	Construction	Tree Trench		0.6	2024	
		1139-11	Combined	TTF	Streets	Construction	Tree Trench		0.7	2024	
		1139-12	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1139-13	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1139-14	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1139-15	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.6	2024	
		1139-16	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.6	2024	
		1139-17	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.8	2024	
		1139-18	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1139-19	Combined	TTF	Streets	Construction	Tree Trench		0.6	2024	
		1139-2	Combined	TTF	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.9	2024	
		1139-20	Combined	TTF	Streets	Construction	Tree Trench		0.7	2024	
		1139-23	Combined	TTF	Streets	Construction	Infiltration/Storage Trench, Stormwater Tree		1.2	2024	
		1139-24	Combined	TTF	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.6	2024	
		1139-28	Combined	TTF	Streets	Construction	Bumpout, Infiltration/Storage Trench		1.2	2024	
		1139-29	Combined	TTF	Streets	Construction	Tree Trench		1.7	2024	
		1139-3	Combined	TTF	Streets	Construction	Tree Trench		0.9	2024	
		1139-4	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1139-5	Combined	TTF	Streets	Construction	Tree Trench		0.5	2024	
		1139-6	Combined	TTF	Streets	Construction	Tree Trench		0.5	2024	
		1139-7	Combined	TTF	Streets	Construction	Tree Trench		0.3	2024	
		1139-8	Combined	TTF	Streets	Construction	Tree Trench		0.3	2024	
		1139-9	Combined	TTF	Streets	Construction	Tree Trench		0.4	2024	
	1298	1298-2	Combined	TTF	Streets	Construction	Infiltration/Storage Trench		0.8	2024	
50134	1140	1140-1	Combined	Schuylkill	Open Space	Construction	Infiltration/Storage Trench, Rain Garden		3.6	2024	$1,088,000.00
50166	1264	1264-1	Combined	Delaware	Streets	Construction	Tree Trench		1.5	2024	$1,661,000.00
		1264-2	Combined	Delaware	Streets	Construction	Tree Trench		0.3	2024	
		1264-3	Combined	Delaware	Streets	Construction	Bumpout, Tree Trench		0.6	2024	
		1264-4	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench, Planter		1.8	2024	
		1264-5	Combined	Delaware	Streets	Construction	Tree Trench		0.3	2024	
		1264-6	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		1.5	2024	
		1271-1	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.3	2024	
		1271-2	Combined	Cobbs-Darby	Streets	Construction	Infiltration/Storage Trench		0.4	2024	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50168	1271	1271-3	Combined	Cobbs-Darby	Streets	Construction	Bumpout, Tree Trench		1.0	2024	$1,583,000.00
		1271-4	Combined	Cobbs-Darby	Streets	Construction	Infiltration/Storage Trench		0.6	2024	
		1271-5	Combined	Cobbs-Darby	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.3	2024	
		1271-6	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.4	2024	
		1271-7	Combined	Cobbs-Darby	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1271-8	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.3	2024	
50180	1285	1285-1	Combined	Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.8	2024	$1,544,000.00
		1285-2	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1285-3	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1285-4	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1285-5	Combined	Schuylkill	Streets	Construction	Tree Trench		0.8	2024	
		1285-6	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1285-7	Combined	Schuylkill	Streets	Construction	Tree Trench		0.9	2024	
		1285-8	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
50181	1290	1290-1	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.3	2024	$1,623,000.00
		1290-2	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.2	2024	
		1290-3	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1290-4	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.2	2024	
	1291	1291-1	Combined	Schuylkill	Facilities	Construction	Infiltration/Storage Trench, Planter		0.5	2024	
		1291-2	Combined	Schuylkill	Parking	Construction	Infiltration/Storage Trench		3.6	2024	
50186	1301	1301-1	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		0.5	2024	$2,686,000.00
		1301-10	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		1.5	2024	
		1301-11	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Infiltration/Storage Trench		1.3	2024	
		1301-2	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Infiltration/Storage Trench, Tree Trench		1.0	2024	
		1301-3	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1301-4	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.6	2024	
		1301-5	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.8	2024	
		1301-6	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1301-7	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1301-8	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		1.4	2024	
		1301-9	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Infiltration/Storage Trench, Tree Trench		1.4	2024	
50190	1308	1308-2	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.9	2024	$1,201,000.00

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50196	1318	1318-1	Combined	Schuylkill,TTF	Streets	Construction	Infiltration/Storage Trench		0.3	2024	$5,262,000.00
		1318-10	Combined	Schuylkill,TTF	Streets	Construction	Tree Trench		0.5	2024	
		1318-11	Combined	Schuylkill,TTF	Streets	Construction	Tree Trench		0.5	2024	
		1318-12	Combined	Schuylkill,TTF	Streets	Construction	Infiltration/Storage Trench		0.6	2024	
		1318-13	Combined	Schuylkill,TTF	Streets	Construction	Infiltration/Storage Trench		0.8	2024	
		1318-14	Combined	Schuylkill,TTF	Streets	Construction	Infiltration/Storage Trench		0.6	2024	
		1318-2	Combined	Schuylkill,TTF	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1318-3	Combined	Schuylkill,TTF	Streets	Construction	Tree Trench		0.4	2024	
		1318-4	Combined	Schuylkill,TTF	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1318-5	Combined	Schuylkill,TTF	Streets	Construction	Tree Trench		0.6	2024	
		1318-6	Combined	Schuylkill,TTF	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1318-7	Combined	Schuylkill,TTF	Streets	Construction	Tree Trench		0.8	2024	
		1318-8	Combined	Schuylkill,TTF	Streets	Construction	Tree Trench		0.4	2024	
		1318-9	Combined	Schuylkill,TTF	Streets	Construction	Tree Trench		0.4	2024	
	1319	1319-1	Combined	Schuylkill,TTF	Streets	Construction	Infiltration/Storage Trench, Rain Garden	Philadelphia Department of Parks & Recreation	1.9	2024	
		1319-2	Combined	Schuylkill,TTF	Streets	Construction	Tree Trench		1.2	2024	
		1319-3	Combined	Schuylkill,TTF	Streets	Construction	Infiltration/Storage Trench, Rain Garden		0.5	2024	
		1319-4	Combined	Schuylkill,TTF	Streets	Construction	Tree Trench		1.3	2024	
50198	1327	1327-1	Combined	Schuylkill	Streets	Construction	Bumpout, Tree Trench		0.8	2024	$3,110,000.00
		1327-2	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Planter		0.6	2024	
		1327-3	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1327-4	Combined	Schuylkill	Streets	Construction	Tree Trench		0.5	2024	
		1327-5	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Planter, Rain Garden		1.2	2024	
		1327-6	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
		1327-7	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Planter		0.3	2024	
		1327-8	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
50199	1328	1328-10	Combined	Schuylkill	Streets	Construction	Tree Trench		0.5	2024	$2,273,000.00
		1328-11	Combined	Schuylkill	Streets	Construction	Tree Trench		0.7	2024	
		1328-2	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1328-3	Combined	Schuylkill	Streets	Construction	Tree Trench		0.8	2024	
		1328-4	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1328-5	Combined	Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		1.0	2024	
		1328-6	Combined	Schuylkill	Streets	Construction	Bumpout, Tree Trench		0.6	2024	
		1328-7	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
		1328-8	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Planter		0.4	2024	
		1328-9	Combined	Schuylkill	Streets	Construction	Tree Trench		0.5	2024	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50200	1329	1329-1	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	$1,895,000.00
		1329-2	Combined	Schuylkill	Streets	Construction	Tree Trench		0.5	2024	
		1329-3	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
		1329-4	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
		1329-5	Combined	Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.2	2024	
		1329-6	Combined	Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.7	2024	
		1329-7	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
50201	1335	1335-1	Combined	TTF	Vacant Land	Construction	Infiltration/Storage Trench, Rain Garden		6.2	2024	$1,558,000.00
50203	1336	1336-1	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.4	2024	$1,444,000.00
		1336-2	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden, Swale		1.7	2024	
		1336-3	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden		0.6	2024	
		1336-4	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.8	2024	
		1336-5	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.9	2024	
		1336-6	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		1.7	2024	
		1336-7	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		1.5	2024	
50204	1339	1339-1	Combined	Delaware	Streets	Construction	Tree Trench		0.7	2024	$1,425,000.00
		1339-2	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench, Rain Garden		0.7	2024	
		1339-3	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench, Planter		0.7	2024	
		1339-4	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench, Rain Garden		0.7	2024	
		1339-5	Combined	Delaware	Streets	Construction	Tree Trench		0.6	2024	
		1339-7	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1339-8	Combined	Delaware	Streets	Construction	Tree Trench		0.6	2024	
50205	1341	1341-1	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.3	2024	$1,927,000.00
		1341-10	Combined	Schuylkill	Streets	Construction	Tree Trench		0.5	2024	
		1341-11	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
		1341-2	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
		1341-4	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden		1.4	2024	
		1341-6	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1341-9	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50207	1342	1342-1	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	$1,772,000.00
		1342-10	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1342-11	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1342-12	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1342-2	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1342-3	Combined	Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.4	2024	
		1342-4	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1342-5	Combined	Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.3	2024	
		1342-6	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1342-7	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.2	2024	
		1342-8	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1342-9	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
50210	1345	1345-1	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden		0.9	2024	$2,774,000.00
		1345-2	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden		3.9	2024	
		1345-3	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden		0.9	2024	
		1345-4	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden		0.5	2024	
		1345-5	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden		2.7	2024	
		1345-6	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden		0.9	2024	
		1345-7	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden		1.4	2024	
50213	1351	1351-1	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	$1,084,000.00
		1351-2	Combined	Schuylkill	Streets	Construction	Tree Trench		0.5	2024	
		1351-3	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1351-4	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1351-5	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1351-6	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
50218	1357	1357-1	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.6	2024	$2,559,000.00
		1357-10	Combined	Cobbs-Darby	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1357-11	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.6	2024	
		1357-2	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.6	2024	
		1357-3	Combined	Cobbs-Darby	Streets	Construction	Bumpout, Tree Trench		0.7	2024	
		1357-4	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.8	2024	
		1357-5	Combined	Cobbs-Darby	Streets	Construction	Bumpout, Tree Trench		0.5	2024	
		1357-6	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		1.0	2024	
		1357-7	Combined	Cobbs-Darby	Streets	Construction	Bumpout, Tree Trench		0.6	2024	
		1357-8	Combined	Cobbs-Darby	Streets	Construction	Bumpout, Tree Trench		1.1	2024	
		1357-9	Combined	Cobbs-Darby	Streets	Construction	Bumpout, Tree Trench		1.2	2024	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50219	1360	1360-1	Combined	Delaware	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.8	2024	$2,743,000.00
		1360-10	Combined	Delaware	Streets	Construction	Bumpout, Tree Trench		0.6	2024	
		1360-11	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1360-12	Combined	Delaware	Streets	Construction	Bumpout, Tree Trench		0.7	2024	
		1360-2	Combined	Delaware	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.4	2024	
		1360-3	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.8	2024	
		1360-4	Combined	Delaware	Streets	Construction	Bumpout, Tree Trench		0.7	2024	
		1360-5	Combined	Delaware	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.4	2024	
		1360-6	Combined	Delaware	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.5	2024	
		1360-7	Combined	Delaware	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.6	2024	
		1360-8	Combined	Delaware	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.4	2024	
		1360-9	Combined	Delaware	Streets	Construction	Bumpout, Tree Trench		0.8	2024	
50220	1361	1361-1	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.8	2024	$3,305,000.00
		1361-10	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench, Tree Trench		1.9	2024	
		1361-11	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		1.6	2024	
		1361-2	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.5	2024	
		1361-3	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.3	2024	
		1361-4	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.0	2024	
		1361-5	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.5	2024	
		1361-6	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.4	2024	
		1361-7	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.8	2024	
		1361-8	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		0.5	2024	
		1361-9	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
50221	1363	1363-1	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		0.8	2024	$2,025,000.00
		1363-10	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1363-2	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.6	2024	
		1363-3	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		0.7	2024	
		1363-4	Combined	Delaware,TTF	Streets	Construction	Bumpout, Infiltration/Storage Trench		1.1	2024	
		1363-5	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.7	2024	
		1363-6	Combined	Delaware,TTF	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.3	2024	
		1363-8	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.6	2024	
		1363-9	Combined	Delaware,TTF	Streets	Construction	Bumpout, Tree Trench		1.5	2024	
50222	1374	1374-1	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		0.6	2024	$1,005,000.00
		1374-2	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
		1374-3	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		0.5	2024	
		1374-4	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Infiltration/Storage Trench, Tree Trench		0.8	2024	
		1374-5	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.3	2024	
		1382-1	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		0.6	2024	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50226	1382	1382-11	Combined	Delaware,TTF	Streets	Construction	Tree Trench		1.4	2024	$3,289,000.00
		1382-12	Combined	Delaware,TTF	Streets	Construction	Tree Trench		1.3	2024	
		1382-13	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		3.4	2024	
		1382-14	Combined	Delaware,TTF	Streets	Construction	Bumpout, Infiltration/Storage Trench		1.1	2024	
		1382-15	Combined	Delaware,TTF	Streets	Construction	Tree Trench		1.7	2024	
		1382-16	Combined	Delaware,TTF	Streets	Construction	Tree Trench		2.5	2024	
		1382-17	Combined	Delaware,TTF	Streets	Construction	Tree Trench		1.4	2024	
		1382-18	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.9	2024	
		1382-19	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.8	2024	
		1382-2	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.9	2024	
		1382-3	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		0.7	2024	
		1382-5	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		1.4	2024	
		1382-7	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.9	2024	
		1382-9	Combined	Delaware,TTF	Streets	Construction	Tree Trench		1.4	2024	
50234	1388	1388-1	Combined	Delaware	Streets	Construction	Tree Trench	Impact Services CDC	0.3	2024	$1,250,000.00
		1388-2	Combined	Delaware	Streets	Construction	Tree Trench		0.8	2024	
		1388-3	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
		1388-4	Combined	Delaware	Streets	Construction	Tree Trench		0.3	2024	
		1388-5	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
		1388-6	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
		1388-7	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
50241	1403	1403-1	Combined	TTF	Open Space	Construction	Infiltration/Storage Trench, Swale		1.9	2024	$1,418,000.00
		1403-2	Combined	TTF	Open Space	Construction	Infiltration/Storage Trench, Swale		1.6	2024	
		1403-3	Combined	TTF	Open Space	Construction	Rain Garden		2.5	2024	
50245	1410	1410-1	Combined	Delaware	Open Space	Construction	Infiltration/Storage Trench	Councilwoman Sanchez,Department of Parks & Recreation (PPR)	2.3	2024	$138,000.00
50246	1412	1412-1	Combined	Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.9	2024	$3,667,000.00
		1412-10	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		1.0	2024	
		1412-11	Combined	Schuylkill	Streets	Construction	Tree Trench		0.3	2024	
		1412-12	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
		1412-2	Combined	Schuylkill	Streets	Construction	Tree Trench		0.9	2024	
		1412-3	Combined	Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.7	2024	
		1412-4	Combined	Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.6	2024	
		1412-5	Combined	Schuylkill	Streets	Construction	Tree Trench		0.9	2024	
		1412-6	Combined	Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.2	2024	
		1412-7	Combined	Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench, Tree Trench		0.9	2024	
		1412-8	Combined	Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		1.3	2024	
		1412-9	Combined	Schuylkill	Streets	Construction	Tree Trench		1.1	2024	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50247	1413	1413-1	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		0.5	2024	$1,382,000.00
		1413-10	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1413-2	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.4	2024	
		1413-3	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.5	2024	
		1413-4	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.4	2024	
		1413-5	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1413-7	Combined	Delaware,TTF	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.6	2024	
		1413-8	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		0.6	2024	
		1413-9	Combined	Delaware,TTF	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
50262	1436	1436-1	Combined	Cobbs-Darby	Open Space	Construction	Infiltration/Storage Trench, Rain Garden		4.8	2024	$2,077,000.00
		1436-2	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.5	2024	
		1436-3	Combined	Cobbs-Darby	Streets	Construction	Bumpout, Infiltration/Storage Trench		1.5	2024	
		1436-4	Combined	Cobbs-Darby	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.8	2024	
		1436-5	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.5	2024	
		1436-6	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.8	2024	
		1436-7	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.4	2024	
		1436-8	Combined	Cobbs-Darby	Streets	Construction	Tree Trench		0.4	2024	
50264	1438	1438-1	Combined	Delaware	Vacant Land	Construction	Infiltration/Storage Trench, Rain Garden	Arcadia Commons,Neighborhood Gardens Trust (NGT)	1.9	2024	$582,000.00
50266	1440	1440-1	Combined	TTF	Open Space	Construction	Infiltration/Storage Trench	Department of Parks & Recreation (PPR)	3.2	2024	$3,309,000.00
		1440-2	Combined	TTF	Open Space	Construction	Infiltration/Storage Trench		4.5	2024	
		1440-3	Combined	TTF	Streets	Construction	Bumpout, Tree Trench		1.0	2024	
		1440-4	Combined	TTF	Streets	Construction	Bumpout, Tree Trench		1.2	2024	
50268	1442	1442-1	Combined	TTF	Streets	Construction	Inlet Disconnection	PennDOT	1.3	2024	TBD
		1442-10	Combined	TTF	Streets	Construction	Inlet Disconnection		0.3	2024	
		1442-11	Combined	TTF	Streets	Construction	Inlet Disconnection		0.1	2024	
		1442-12	Combined	TTF	Streets	Construction	Inlet Disconnection		0.7	2024	
		1442-13	Combined	TTF	Streets	Construction	Inlet Disconnection		0.5	2024	
		1442-2	Combined	TTF	Streets	Construction	Inlet Disconnection		1.1	2024	
		1442-3	Combined	TTF	Streets	Construction	Inlet Disconnection		0.7	2024	
		1442-4	Combined	TTF	Streets	Construction	Inlet Disconnection		0.5	2024	
		1442-5	Combined	TTF	Streets	Construction	Inlet Disconnection		0.2	2024	
		1442-6	Combined	TTF	Streets	Construction	Inlet Disconnection		0.5	2024	
		1442-7	Combined	TTF	Streets	Construction	Inlet Disconnection		0.2	2024	
		1442-8	Combined	TTF	Streets	Construction	Inlet Disconnection		0.6	2024	
		1442-9	Combined	TTF	Streets	Construction	Inlet Disconnection		0.7	2024	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50271	1446	1446-1	Combined	Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.9	2024	$2,829,000.00
		1446-10	Combined	Schuylkill	Streets	Construction	Tree Trench		1.3	2024	
		1446-11	Combined	Schuylkill	Streets	Construction	Tree Trench		0.5	2024	
		1446-2	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.7	2024	
		1446-3	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		1.1	2024	
		1446-4	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.7	2024	
		1446-5	Combined	Schuylkill	Streets	Construction	Bumpout, Infiltration/Storage Trench		1.2	2024	
		1446-6	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1446-7	Combined	Schuylkill	Streets	Construction	Tree Trench		0.9	2024	
		1446-8	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
		1446-9	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
50281	1461	1461-1	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		0.8	2024	$1,985,000.00
		1461-2	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Tree Trench		0.9	2024	
		1461-3	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1461-4	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.5	2024	
		1461-5	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.0	2024	
		1461-6	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		1.2	2024	
		1461-7	Combined	Cobbs-Darby,Schuylkill	Streets	Construction	Tree Trench		0.9	2024	
50290	1477	1477-1	Combined	Delaware	Streets	Construction	Bumpout, Tree Trench		1.3	2024	$3,293,000.00
		1477-10	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1477-11	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1477-12	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.5	2024	
		1477-2	Combined	Delaware	Streets	Construction	Bumpout, Tree Trench		1.0	2024	
		1477-3	Combined	Delaware	Streets	Construction	Bumpout, Tree Trench		1.1	2024	
		1477-4	Combined	Delaware	Streets	Construction	Bumpout, Tree Trench		1.2	2024	
		1477-5	Combined	Delaware	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.8	2024	
		1477-6	Combined	Delaware	Streets	Construction	Tree Trench		0.8	2024	
		1477-7	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.4	2024	
		1477-8	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.9	2024	
		1477-9	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.7	2024	
50298	1491	1491-1	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.7	2024	$1,810,000.00
		1491-2	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.5	2024	
		1491-3	Combined	Delaware,TTF	Streets	Construction	Tree Trench		1.1	2024	
		1491-4	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.8	2024	
		1491-5	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.5	2024	
		1491-6	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.4	2024	
		1491-7	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.4	2024	
		1491-8	Combined	Delaware,TTF	Streets	Construction	Tree Trench		0.5	2024	

Work Number	Project ID	System Number	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acres (acre-inches)	Completion Date Estimate	Estimated Green Construction Cost
50302	1500	1500-1	Combined	Delaware,TTF	Streets	Construction	Bumpout, Infiltration/Storage Trench		0.9	2024	$3,571,000.00
		1500-2	Combined	Delaware,TTF	Streets	Construction	Bumpout, Tree Trench		1.4	2024	
		1500-3	Combined	Delaware,TTF	Streets	Construction	Bumpout, Tree Trench		1.4	2024	
		1500-4	Combined	Delaware,TTF	Streets	Construction	Bumpout, Tree Trench		1.3	2024	
		1500-5	Combined	Delaware,TTF	Streets	Construction	Bumpout, Tree Trench		1.7	2024	
		1500-6	Combined	Delaware,TTF	Streets	Construction	Bumpout, Tree Trench		1.5	2024	
		1500-7	Combined	Delaware,TTF	Streets	Construction	Bumpout, Tree Trench		1.4	2024	
		1500-8	Combined	Delaware,TTF	Streets	Construction	Bumpout, Tree Trench		1.5	2024	
50315	1524	1524-1	Combined	Delaware	Streets	Construction	Rain Garden, Tree Trench		1.8	2024	$1,330,000.00
		1524-2	Combined	Delaware	Streets	Construction	Tree Trench		0.7	2024	
		1524-3	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
		1524-4	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
		1524-5	Combined	Delaware	Streets	Construction	Infiltration/Storage Trench		0.6	2024	
50316	1525	1525-1	Combined	Delaware	Streets	Construction	Tree Trench		0.5	2024	$1,893,000.00
		1525-2	Combined	Delaware	Streets	Construction	Tree Trench		0.5	2024	
		1525-3	Combined	Delaware	Streets	Construction	Tree Trench		0.5	2024	
		1525-4	Combined	Delaware	Streets	Construction	Tree Trench		0.5	2024	
		1525-5	Combined	Delaware	Streets	Construction	Tree Trench		0.6	2024	
		1525-6	Combined	Delaware	Streets	Construction	Tree Trench		1.2	2024	
		1525-7	Combined	Delaware	Streets	Construction	Tree Trench		0.5	2024	
		1525-8	Combined	Delaware	Streets	Construction	Tree Trench		0.5	2024	
		1525-9	Combined	Delaware	Streets	Construction	Tree Trench		0.6	2024	
50325	1546	1546-1	Combined	Schuylkill	Streets	Construction	Infiltration/Storage Trench, Rain Garden		0.8	2024	$2,782,000.00
		1546-10	Combined	Schuylkill	Streets	Construction	Tree Trench		0.5	2024	
		1546-11	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1546-2	Combined	Schuylkill	Streets	Construction	Tree Trench		0.4	2024	
		1546-3	Combined	Schuylkill	Streets	Construction	Tree Trench		0.5	2024	
		1546-4	Combined	Schuylkill	Streets	Construction	Tree Trench		0.5	2024	
		1546-5	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
		1546-6	Combined	Schuylkill	Streets	Construction	Bumpout, Tree Trench		1.2	2024	
		1546-7	Combined	Schuylkill	Streets	Construction	Bumpout, Tree Trench		0.5	2024	
		1546-8	Combined	Schuylkill	Streets	Construction	Bumpout, Tree Trench		0.8	2024	
		1546-9	Combined	Schuylkill	Streets	Construction	Tree Trench		0.6	2024	
50329	1560	1560-1	Combined	TTF	Open Space	Construction	Infiltration/Storage Trench, Rain Garden	Rebuild	3.1	2024	$882,000.00
50358	1607	1607-1	Combined	Schuylkill	Streets	Construction	Tree Trench		0.8	2024	$880,000.00
90188	1582	1582-1	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	TBD
		1582-2	Combined	Delaware	Streets	Construction	Tree Trench		0.3	2024	
		1582-3	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
		1582-4	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
		1582-5	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
		1582-6	Combined	Delaware	Streets	Construction	Tree Trench		0.4	2024	
		1582-7	Combined	Delaware	Streets	Construction	Tree Trench		0.3	2024	

Appendix 3

Completed Private Development and Incentivized Green Stormwater Infrastructure Projects

Completed Private Development and Incentivized Green Stormwater Infrastructure Reporting Metrics

The reporting format and metric definitions are described in Table 1 below.

Table 1: Private/Incentives Reporting Metric Definitions

Metric	Definition
Tracking Number	Tracking Number is a unique assigned identifier from the Stormwater Plan Review Database.
Watershed	The City of Philadelphia watershed where the project is located. Six of the City's eight watersheds fall at least partially within the combined sewer area. These watersheds are: • Cobbs Creek Watershed • Darby Creek Watershed • Delaware Direct Watershed • Pennypack Creek Watershed • Tookany/Tacony-Frankford Creek Watershed • Schuylkill River Watershed
SMP Type(s)	A Stormwater Management Practice (SMP) is a technique that controls the rate and volume of stormwater runoff and/or improves runoff water quality. Multiple SMP types can be grouped together in a larger GSI system. The SMP types were originally defined in Table 2-1 of the IAMP.
Greened Acres (acre-inch)	Greened Acres is a metric that accounts for the conversion of a highly impervious urban landscape through the implementation of projects that reduce stormwater runoff. A Greened Acre is described as an acre of impervious cover connected (tributary) to a combined sewer that subsequently is reconfigured to utilize green stormwater infrastructure to manage at least one inch of stormwater runoff. If storage is provided, systems can credit up to two inches of the stormwater runoff from that acre. The best available Greened Acre value is pulled from the database for regulatory reporting.

Table 2: Private/Incentives SMP Type Definitions

Private / Incentives SMP Type Definitions	
Basin	Includes surface basins or depressions that are vegetated with mowed grass and subsurface infiltration and detention basins. In both cases, the basins are designed to detain and release stormwater runoff and/or infiltrate where feasible.
Bioinfiltration / Bioretention	A bioinfiltration/bioretention basin is a vegetated basin or depression designed to either infiltrate or release stormwater runoff.
Blue Roof	A blue roof is a storage system designed into a roof surface such that the roof retains stormwater. Blue roofs are designed to reduce the rate of stormwater runoff.

Private / Incentives SMP Type Definitions	
Cistern	Storage tanks (located either above or below ground) that capture and store runoff and can thereby reduce runoff volume. Stored water may drain by gravity or be pumped to its ultimate end use for a variety of non-potable water needs.
Depave	Depaving projects remove existing impervious pavement and restore the surface with grass, other types of vegetation, or loose materials (stone, mulch, etc.) such that the area can thereafter be considered pervious area. Depaving projects remove contributing impervious area from the sewer system. Categorized as a Disconnection and logged in square feet.
Disconnected Impervious Area	Impervious area that discharges to a pervious area. These types could be any of the following: Pavement - Runoff is designed to be directed to a vegetated area that allows for infiltration, filtration, and an increased time of concentration. Planters - At or above grade planter area and number of planters that do not contribute to water quality. Rooftop Area - Rooftop drainage directed to a vegetated area that allows for infiltration, filtration, and increased time of concentration. Tree Credit - New or existing tree canopy from an approved species list that extends over or is in close proximity to impervious area.
Green Roof	Vegetated surface installed over a roof surface. Green roofs are effective in reducing the volume and rates of stormwater runoff.
Porous Pavement	Permeable surface commonly composed of concrete, asphalt, pavers, turf, or rubber play surface. Stormwater flows through the porous surface during a rain event, then drains into the subbase beneath the pavement, where it is stored until it infiltrates into the soil.
WQ Treatment Device	Filter products that reduce pollutant levels by removing sediments, metals, hydrocarbons, and other pollutants from stormwater.

Table 3: Completed Private Development Green Stormwater Infrastructure Projects

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
2005-0052-01	Combined	Verified	Lower Schuylkill River	19139	Basin (2)	3.6
2005-0099-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1)	38
2006-0057-01	Combined	Verified	Delaware Direct	19123	Basin (1)	0
2006-0063-01	Combined	Verified	Delaware Direct	19122	Basin (1)	3.3
2006-0110-01	Combined	Verified	Delaware Direct	19140	Basin (2)	1
2006-30TH-236-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1)	0.6
2006-9349-349-01	Combined	Verified	Delaware Direct	19123	Basin (1)	0.1
2006-94-01	Combined	Verified	Delaware Direct	19148	Basin (3)	2.2
2006-ANGE-268-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2)	1.3
2006-BRID-200-01	Combined	Verified	Delaware Direct	19137	Basin (16), Disconnections (1)	0.7
2006-CINT-431-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1)	9.5
2006-COMM-328-01	Combined	Verified	Cobbs Creek	19139	Porous Pavement (2), Basin (1), Cistern (1)	0.9
2006-EDWI-215-01	Combined	Verified	Delaware Direct	19136	Disconnections (1), Basin (4)	0.8
2006-FEDE-409-01	Combined	Verified	Delaware Direct	19106	Basin (1), Green Roof (1), Disconnections (1)	0.3
2006-GENE-192-01	Combined	Verified	Delaware Direct	19123	Basin (2), Disconnections (1)	0.3
2006-HUNT-445-01	Combined	Verified	Delaware Direct	19133	Basin (48), Porous Pavement (48)	2
2006-LAWT-291-01	Combined	Verified	Delaware Direct	19135	Basin (1)	1.2
2006-LE22-460-01	Combined	Verified	Delaware Direct	19123	Basin (1), Disconnections (1), Porous Pavement (2)	1
2006-MICH-419-01	Combined	Verified	Delaware Direct	19125	Basin (1), Porous Pavement (1)	0.7
2006-MOOR-320-01	Combined	Verified	Delaware Direct	19148	Basin (3)	0.5
2006-NATI-441-01	Combined	Verified	Delaware Direct	19106	Basin (1)	0.5
2006-PILG-444-01	Combined	Verified	Delaware Direct	19111	Basin (2)	1.4
2006-PLEA-297-01	Combined	Verified	Lower Schuylkill River	19131	Basin (3), Disconnections (1)	0

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
2006-PROG-400-01	Combined	Verified	Delaware Direct	19122	Basin (2)	5.5
2006-SAFE-234-01	Combined	Verified	Delaware Direct	19134	Bio-infiltration/Bio-retention (1), Basin (1)	0.6
2006-SOLI-300-01	Combined	Verified	Delaware Direct	19149	Basin (1), Bio-infiltration/Bio-retention (1)	2.7
2006-TACO-337-01	Combined	Verified	Delaware Direct	19149	Basin (1)	0.3
2006-TEMP-210-01	Combined	Verified	Delaware Direct	19122	Basin (1), Porous Pavement (1)	0.6
2006-TEMP-245-01	Combined	Verified	Delaware Direct	19122	Basin (2)	1.3
2006-VILL-194-01	Combined	Verified	Lower Schuylkill River	19145	Disconnections (1), Basin (13)	26.8
2007-4839-625-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1)	0.9
2007-AROU-626-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1)	0.6
2007-BENC-482-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (1), Porous Pavement (1)	1.2
2007-CECI-556-01	Combined	Verified	Delaware Direct	19121	Basin (54)	1.1
2007-DREX-669-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Cistern (1), Porous Pavement (1)	0.8
2007-GAMB-624-01	Combined	Verified	Tacony-Frankford Creek	19124	Porous Pavement (1)	0.1
2007-GAMB-701-01	Combined	Verified	Tacony-Frankford Creek	19124	Bio-infiltration/Bio-retention (1), Disconnections (1), Porous Pavement (2)	1.7
2007-GUIO-721-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1), Porous Pavement (1), Disconnections (1)	1.4
2007-HERR-690-01	Combined	Verified	Delaware Direct	19147	Disconnections (1), Porous Pavement (3)	0.6
2007-HOWI-498-01	Combined	Verified	Delaware Direct	19123	Basin (1), Disconnections (1)	0.3
2007-LASA-593-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (2), Disconnections (1), Porous Pavement (2)	12.2
2007-MCDO-558-01	Combined	Verified	Delaware Direct	19133	Basin (1)	0.5
2007-MCDO-560-01	Combined	Verified	Delaware Direct	19135	Basin (1)	0.1
2007-MTTA-480-01	Combined	Verified	Delaware Direct	19123	Porous Pavement (1), Green Roof (1)	0.3
2007-PASH-524-01	Combined	Verified	Cobbs Creek	19142	Basin (1)	0.8
2007-POWE-679-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1)	0.4

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
2007-SIMO-496-01	Combined	Verified	Tacony-Frankford Creek	19138	Bio-infiltration/Bio-retention (1), Porous Pavement (1)	0.9
2007-SOUT-557-01	Combined	Verified	Delaware Direct	19148	Basin (1)	0.1
2007-THEM-495-01	Combined	Verified	Lower Schuylkill River	19131	Basin (2)	6.4
2007-UNIV-633-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Basin (1), Bio-infiltration/Bio-retention (1)	0.4
2007-WARN-646-01	Combined	Verified	Delaware Direct	19133	Basin (1)	2.9
2007-WARN-651-01	Combined	Verified	Delaware Direct	19133	Basin (1)	2.7
2007-WEST-684-01	Combined	Verified	Cobbs Creek	19139	Basin (1), Disconnections (1)	0
2007-WILL-699-01	Combined	Verified	Delaware Direct	19134	Bio-infiltration/Bio-retention (9), Basin (1)	5
2008-1600-898-01	Combined	Verified	Delaware Direct	19122	Bio-infiltration/Bio-retention (1)	0.5
2008-2116-992-01	Combined	Verified	Lower Schuylkill River	19103	Green Roof (2), Basin (3), Bio-infiltration/Bio-retention (2), Disconnections (1)	0.5
2008-2552-873-01	Combined	Verified	Delaware Direct	19134	Basin (1)	0.7
2008-4014-979-01	Combined	Verified	Delaware Direct	19123	Disconnections (1), Basin (1)	0.8
2008-BARN-986-01	Combined	Verified	Lower Schuylkill River	19130	Disconnections (1), Basin (2), Green Roof (2)	4.4
2008-CAST-875-01	Combined	Verified	Delaware Direct	19149	Basin (1)	0
2008-CLAS-765-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Porous Pavement (1), Basin (2), Green Roof (1)	0.5
2008-COMM-763-01	Combined	Verified	Lower Schuylkill River	19130	Basin (3), Green Roof (1), Porous Pavement (2), Disconnections (1)	2.6
2008-DREX-788-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1), Bio-infiltration/Bio-retention (2), Porous Pavement (1)	1.5
2008-DREX-950-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1), Green Roof (1), Disconnections (2)	0.2
2008-FRAN-921-01	Combined	Verified	Lower Schuylkill River	19104	Porous Pavement (2)	0.3
2008-FRAN-994-01	Combined	Verified	Delaware Direct	19130	Porous Pavement (1), Basin (7)	1.6
2008-MART-980-01	Combined	Verified	Delaware Direct	19147	Basin (1)	0.6

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
2008-NAVA-893-01	Combined	Verified	Lower Schuylkill River	19146	Basin (6)	9.7
2008-NEWK-958-01	Combined	Verified	Delaware Direct	19122	Green Roof (1), Porous Pavement (2), Basin (2), Bio-infiltration/Bio-retention (1)	5.2
2008-NEWL-839-01	Combined	Verified	Delaware Direct	19140	Basin (1)	0.5
2008-NORT-1012-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Basin (1)	0.5
2008-PROP-824-01	Combined	Verified	Lower Schuylkill River	19139	Basin (2), Disconnections (1), Porous Pavement (2)	6.2
2008-ROLA-813-01	Combined	Verified	Tacony-Frankford Creek	19141	Green Roof (2), Basin (1)	0.3
2008-ROTE-960-01	Combined	Verified	Delaware Direct	19148	Basin (1), Bio-infiltration/Bio-retention (1), Porous Pavement (2)	1.3
2008-SCHM-902-01	Combined	Verified	Delaware Direct	19123	Disconnections (1), Green Roof (1), Porous Pavement (1), Basin (2)	5.9
2008-SHER-926-01	Combined	Verified	Delaware Direct	19122	Porous Pavement (1), Green Roof (1)	0.2
2008-STRA-799-01	Combined	Verified	Lower Schuylkill River	19121	Porous Pavement (1), Basin (6)	0.4
2008-STRA-802-01	Combined	Verified	Lower Schuylkill River	19121	Basin (4), Porous Pavement (4)	0.3
2008-THEC-806-01	Combined	Verified	Delaware Direct	19103	Green Roof (2), Basin (1)	0.2
2008-WALG-838-01	Combined	Verified	Delaware Direct	19146	Basin (1), Bio-infiltration/Bio-retention (1)	0.5
2008-WOOD-864-01	Combined	Verified	Lower Schuylkill River	19104	Porous Pavement (1)	0.5
2009-2007-1090-01	Combined	Verified	Delaware Direct	19148	Basin (1)	28.8
2009-7149-1186-01	Combined	Verified	Delaware Direct	19135	Disconnections (1), Basin (1)	0.8
2009-CANC-1145-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (1), Disconnections (1), Bio-infiltration/Bio-retention (1)	6.2
2009-CONG-1210-01	Combined	Verified	Delaware Direct	19133	Basin (1), Disconnections (1), Porous Pavement (1)	2.8
2009-DORA-1041-01	Combined	Verified	Lower Schuylkill River	19131	Basin (2), Porous Pavement (8)	0.7
2009-FRAN-1130-01	Combined	Verified	Delaware Direct	19137	Basin (3), Disconnections (1)	0.5
2009-GLOB-1016-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1), Bio-infiltration/Bio-retention (4)	1.8
2009-HAWT-1102-01	Combined	Verified	Delaware Direct	19147	Disconnections (1), Porous Pavement (1)	0.3

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
2009-HELP-1138-01	Combined	Verified	Lower Schuylkill River	19153	Basin (2)	3.7
2009-IATS-1023-01	Combined	Verified	Delaware Direct	19148	Basin (1), Green Roof (1)	0.8
2009-JANN-1141-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Porous Pavement (2), Green Roof (1)	0.3
2009-LAWR-1044-01	Combined	Verified	Delaware Direct	19140	Basin (1), Porous Pavement (1)	2.9
2009-MANT-1033-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1)	4.6
2009-NEWH-1079-01	Combined	Verified	Lower Schuylkill River	19139	Basin (2), Disconnections (1)	0.7
2009-NEWP-1166-01	Combined	Verified	Delaware Direct	19140	Basin (1), Disconnections (1)	1.3
2009-NICE-1136-01	Combined	Verified	Tacony-Frankford Creek	19140	Basin (1), Bio-infiltration/Bio-retention (3)	0.4
2009-PARK-1197-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Bio-infiltration/Bio-retention (1)	1.5
2009-PASC-1226-01	Combined	Verified	Cobbs Creek	19142	Basin (3), Porous Pavement (1)	4.7
2009-PECO-1133-01	Combined	Verified	Lower Schuylkill River	19146	Basin (2)	4
2009-PENN-1019-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2), Bio-infiltration/Bio-retention (7), Green Roof (1)	3.9
2009-PENN-1144-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Basin (2), Porous Pavement (2), Green Roof (1)	0.4
2009-PHIL-1205-01	Combined	Verified	Delaware Direct	19148	Porous Pavement (1)	14.6
2009-PRES-1037-01	Combined	Verified	Tacony-Frankford Creek	19150	Basin (1), Porous Pavement (1), Bio-infiltration/Bio-retention (1), Disconnections (1)	1.9
2009-PRIN-1147-01	Combined	Verified	Lower Schuylkill River	19121	Basin (1), Green Roof (1)	1.1
2009-RODI-1176-01	Combined	Verified	Lower Schuylkill River	19130	Basin (2)	0.3
2009-SCHU-1140-01	Combined	Verified	Lower Schuylkill River	19103	Disconnections (1)	0.7
2009-SIST-1062-01	Combined	Verified	Lower Schuylkill River	19103	Disconnections (1)	0.1
2009-SIST-1131-01	Combined	Verified	Lower Schuylkill River	19103	Disconnections (2), Green Roof (2), Basin (1)	0.4
2009-STRA-1050-01	Combined	Verified	Lower Schuylkill River	19121	Basin (4)	0.2
2009-STRA-1055-01	Combined	Verified	Lower Schuylkill River	19121	Basin (4)	0.3

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
2009-TDBA-1072-01	Combined	Verified	Delaware Direct	19149	Disconnections (1), Basin (2), Bio-infiltration/Bio-retention (1)	1.5
2009-TEMP-1077-01	Combined	Verified	Delaware Direct	19122	Basin (1), Porous Pavement (1), Bio-infiltration/Bio-retention (1)	0.9
2009-TEMP-1096-01	Combined	Verified	Delaware Direct	19122	Basin (1)	2.6
2009-THEC-1174-01	Combined	Verified	Delaware Direct	19135	Bio-infiltration/Bio-retention (2), Disconnections (1), Green Roof (1)	0.6
2009-THEM-1167-01	Combined	Verified	Delaware Direct	19121	Green Roof (1), Porous Pavement (1), Disconnections (1)	0.4
2009-THEP-1173-01	Combined	Verified	Lower Schuylkill River	19140	Green Roof (1)	0.1
2009-WALM-1045-01	MS4*	Verified	Delaware Direct	19148	Bioretention (3), WQ Treatment Device (1)	8.0
2009-WEST-1222-01	Combined	Verified	Lower Schuylkill River	19139	Disconnections (1), Porous Pavement (2), Green Roof (1)	1.4
2009-WOLC-1169-01	Combined	Verified	Tacony-Frankford Creek	19138	Bio-infiltration/Bio-retention (4), Basin (1), Disconnections (1)	1.7
2010-1800-1260-01	Combined	Verified	Lower Schuylkill River	19146	Basin (1), Disconnections (1)	0.8
2010-1940-1435-01	Combined	Verified	Delaware Direct	19140	Basin (1), Disconnections (1), Porous Pavement (1)	1.1
2010-3737-1331-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (1), Basin (1)	0.3
2010-4109-1277-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (1), Porous Pavement (1)	0.2
2010-411W-1300-01	Combined	Verified	Delaware Direct	19122	Bio-infiltration/Bio-retention (3), Basin (1)	0.1
2010-4FRA-1464-01	Combined	Verified	Lower Schuylkill River	19103	Basin (3), Green Roof (1)	0.9
2010-5526-1348-01	Combined	Verified	Darby Creek	19139	Basin (1), Porous Pavement (2)	0.5
2010-8828-1321-01	Combined	Verified	Pennypack Creek	19136	Basin (2)	2
2010-AGIL-1461-01	Combined	Verified	Delaware Direct	19121	Disconnections (1), Basin (1)	2.3
2010-ARCH-1393-01	Combined	Verified	Delaware Direct	19122	Green Roof (1), Disconnections (1)	0.2
2010-BRID-1233-01	Combined	Verified	Delaware Direct	19137	Basin (1), Porous Pavement (1)	1.6
2010-BROA-1347-01	Combined	Verified	Tacony-Frankford Creek	19141	Basin (1)	1.5

*Combined Sewer Disconnection

2010-CHOP-1367-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Green Roof (1), Basin (2)	2.6
2010-CREA-1427-01	Combined	Verified	Delaware Direct	19125	Green Roof (14), Porous Pavement (15), Disconnections (1)	0.3
2010-DICK-1410-01	Combined	Verified	Delaware Direct	19148	Disconnections (1), Porous Pavement (2)	0.7
2010-DILW-1442-01	Combined	Verified	Lower Schuylkill River	19107	Basin (3), Disconnections (1)	0.7
2010-DREX-1399-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (1), Basin (3)	1.5
2010-EARL-1460-01	Combined	Verified	Lower Schuylkill River	19146	Basin (1), Disconnections (1)	0.7
2010-ESPE-1288-01	Combined	Verified	Tacony-Frankford Creek	19140	Basin (1)	1.7
2010-GEST-1346-01	Combined	Verified	Lower Schuylkill River	19131	Basin (3)	1.1
2010-GRAN-1432-01	Combined	Verified	Lower Schuylkill River	19130	Green Roof (1), Basin (3)	0.6
2010-HUNT-1351-01	Combined	Verified	Tacony-Frankford Creek	19140-2107	Disconnections (1)	0.1
2010-MOYE-1306-01	Combined	Verified	Delaware Direct	19125	Green Roof (2), Porous Pavement (1)	0.6
2010-NORR-1475-01	Combined	Verified	Delaware Direct	19122	Disconnections (1), Basin (1), Porous Pavement (1)	2.9
2010-NORT-1449-01	Combined	Verified	Tacony-Frankford Creek	19124-3024	Basin (2)	1.4
2010-PASC-1238-01	Combined	Verified	Cobbs Creek	19142	Basin (3), Disconnections (1), Porous Pavement (1)	2.2
2010-PHIL-1362-01	Combined	Verified	Delaware Direct	19148	Bio-infiltration/Bio-retention (2), Basin (1)	0.9
2010-PHIL-1469-01	Combined	Verified	Delaware Direct	19148	Disconnections (1), Basin (2), Bio-infiltration/Bio-retention (1)	3.4
2010-PLEA-1444-01	Combined	Verified	Tacony-Frankford Creek	19119	Disconnections (1), Basin (1), Green Roof (1)	0.2
2010-PNKW-1360-01	Combined	Verified	Tacony-Frankford Creek	19140	Basin (1), Porous Pavement (1)	4.2
2010-PROP-1376-01	Combined	Verified	Delaware Direct	19141	Bio-infiltration/Bio-retention (3), Basin (2)	2.9
2010-PSDC-1234-01	Combined	Verified	Delaware Direct	19147	Basin (1)	1.4
2010-PSPH-1353-01	Combined	Verified	Lower Schuylkill River	19131	Basin (2), Green Roof (1)	8.4
2010-STJO-1239-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1), Bio-infiltration/Bio-retention (1), Green Roof (1)	1.3
2010-TEMP-1302-01	Combined	Verified	Delaware Direct	19122	Disconnections (1), Basin (1), Cistern (1)	3.5

2010-THEF-1254-01	Combined	Verified	Lower Schuylkill River	19103	Disconnections (1), Basin (2), Bio-infiltration/Bio-retention (2)	0.4
2010-UNIV-1312-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2), Green Roof (1)	0.7
2010-UNIV-1385-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Bio-infiltration/Bio-retention (1), Basin (1)	1.5
2010-WIST-1397-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (1), Basin (1)	0.4
2011-3343-1653-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1), Porous Pavement (1)	0.8
2011-33RD-1697-01	Combined	Verified	Lower Schuylkill River	19132	Bio-infiltration/Bio-retention (1), Disconnections (1), Green Roof (1)	0.1
2011-4240-1543-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1)	1.1
2011-822N-1632-01	Combined	Verified	Delaware Direct	19123	Porous Pavement (2), Green Roof (1)	0.3
2011-8318-1655-01	Combined	Verified	Lower Schuylkill River	19121	Green Roof (1), Porous Pavement (1)	0.2
2011-BOTT-1646-01	Combined	Verified	Tacony-Frankford Creek	19124	Bio-infiltration/Bio-retention (1), Basin (2)	2.7
2011-CANC-1485-01	Combined	Verified	Tacony-Frankford Creek	19124	Green Roof (1)	0.3
2011-CCTD-1535-01	Combined	Verified	Lower Schuylkill River	19139	Basin (1)	1.8
2011-CHRI-1545-01	Combined	Verified	Delaware Direct	19147	Porous Pavement (1), Green Roof (1), Basin (3)	1
2011-CONV-1491-01	Combined	Verified	Lower Schuylkill River	19107	Green Roof (1), Disconnections (1), Basin (1)	0.3
2011-DIAM-1617-01	Combined	Verified	Delaware Direct	19140	Basin (1), Green Roof (1)	0.4
2011-DOLL-1636-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1)	1.1
2011-DREX-1638-01	Combined	Verified	Lower Schuylkill River	19104	Bio-infiltration/Bio-retention (1), Green Roof (9), Disconnections (1)	0.8
2011-EAST-1687-01	Combined	Verified	Delaware Direct	19107	Green Roof (1), Porous Pavement (1), Basin (1)	0.2
2011-FAIR-1488-01	Combined	Verified	Delaware Direct	19130	Green Roof (1), Basin (1)	0.4
2011-GREE-1706-01	Combined	Verified	Tacony-Frankford Creek	19138	Basin (2), Porous Pavement (1)	2
2011-HAGE-1562-01	Combined	Verified	Delaware Direct	19125	Basin (1), Porous Pavement (2)	2.1
2011-HAMI-1518-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Basin (2), Green Roof (2), Cistern (2)	2.1

2011-HOME-1571-01	Combined	Verified	Delaware Direct	19107	Green Roof (1), Bio-infiltration/Bio-retention (1), Basin (1)	0.2
2011-I95S-1699-01	Combined	Verified	Delaware Direct	19125	Bio-infiltration/Bio-retention (11), Basin (6)	8
2011-JWSD-1674-01	Combined	Verified	Delaware Direct	19122	Basin (1), Disconnections (1)	3.7
2011-KARA-1505-01	Combined	Verified	Lower Schuylkill River	19139	Disconnections (1), Porous Pavement (2), Basin (3)	4
2011-MONT-1516-01	Combined	Verified	Delaware Direct	19122	Basin (1)	3.6
2011-NEWB-1672-01	Combined	Verified	Lower Schuylkill River	19145	Green Roof (23), Porous Pavement (1)	0.4
2011-NEWN-1620-01	Combined	Verified	Delaware Direct	19123	Basin (1), Porous Pavement (1), Green Roof (1)	0.9
2011-NICE-1728-01	Combined	Verified	Tacony-Frankford Creek	19140	Porous Pavement (1), Basin (1)	0.4
2011-NICE-1729-01	Combined	Verified	Tacony-Frankford Creek	19140	Porous Pavement (1), Basin (1)	0.5
2011-NICE-1730-01	Combined	Verified	Tacony-Frankford Creek	19140	Porous Pavement (2), Basin (1)	1.3
2011-NORT-1700-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (1), Porous Pavement (1)	0.9
2011-PENN-1664-01	Combined	Verified	Lower Schuylkill River	19104	Porous Pavement (1)	0.2
2011-PENN-1681-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (1)	0.4
2011-PHIL-1596-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Porous Pavement (2), Basin (1), Bio-infiltration/Bio-retention (1)	3.5
2011-PROP-1483-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1), Porous Pavement (3)	1.6
2011-PROP-1662-01	Combined	Verified	Lower Schuylkill River	19130	Basin (3)	3.7
2011-SAMU-1569-01	Combined	Verified	Delaware Direct	19111	Porous Pavement (1)	0.4
2011-STMA-1508-01	Combined	Verified	Delaware Direct	19147	Basin (2), Green Roof (1), Porous Pavement (1)	0.5
2011-TEMP-1622-01	Combined	Verified	Delaware Direct	19122	Green Roof (4), Blue Roof (4), Basin (2), Porous Pavement (1)	2.2
2011-TEMP-1739-01	Combined	Verified	Delaware Direct	19122	Basin (2), Bio-infiltration/Bio-retention (2), Cistern (1), Porous Pavement (1)	2.4
2011-THEB-1594-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (6), Disconnections (1), Bio-infiltration/Bio-retention (2)	1.6
2011-TOLL-1586-01	Combined	Verified	Lower Schuylkill River	19146	Basin (1), Disconnections (1), Green Roof (1)	3.9

2012-1213-1925-01	Combined	Verified	Delaware Direct	19107	Basin (1), Green Roof (6), Cistern (1)	0.3
2012-1220-1913-01	Combined	Verified	Delaware Direct	19123	Green Roof (2), Porous Pavement (1)	0.4
2012-1426-1805-01	Combined	Verified	Lower Schuylkill River	19102	Green Roof (1), Blue Roof (1)	0.3
2012-1900-1754-01	Combined	Verified	Lower Schuylkill River	19145	Green Roof (1), Porous Pavement (1)	0.6
2012-1919-1929-01	Combined	Verified	Lower Schuylkill River	19103	Basin (1), Green Roof (1), Disconnections (1)	1.2
2012-2549-1840-01	Combined	Verified	Delaware Direct	19125	Porous Pavement (1)	1
2012-3601-2053-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1), Bio-infiltration/Bio-retention (1)	0.4
2012-412N-1844-01	Combined	Verified	Delaware Direct	19123	Green Roof (2), Basin (1), Porous Pavement (1)	1.1
2012-600N-1963-01	Combined	Verified	Delaware Direct	19123	Green Roof (16), Porous Pavement (1)	0.4
2012-701W-2002-01	Combined	Verified	Delaware Direct	19133	Disconnections (1), Basin (2), Porous Pavement (2)	4.7
2012-810A-1974-01	Combined	Verified	Delaware Direct	19107	Basin (1), Bio-infiltration/Bio-retention (2)	0.2
2012-915N-1854-01	Combined	Verified	Delaware Direct	19123	Basin (1), Porous Pavement (1)	1.4
2012-AHMA-1831-01	Combined	Verified	Delaware Direct	19133	Basin (1), Disconnections (1)	2.1
2012-BUIL-1807-01	Combined	Verified	Tacony-Frankford Creek	19111	Disconnections (1)	0.1
2012-CANC-1770-01	Combined	Verified	Tacony-Frankford Creek	19124	Green Roof (1), Bio-infiltration/Bio-retention (1)	0.6
2012-CARP-1765-01	Combined	Verified	Delaware Direct	19146	Porous Pavement (1), Green Roof (2), Bio-infiltration/Bio-retention (2)	0.4
2012-CENT-1791-01	Combined	Verified	Delaware Direct	19122	Porous Pavement (3)	1.3
2012-CIRA-1937-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (2), Basin (1), Blue Roof (1)	2
2012-EPIS-1888-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2), Green Roof (2)	0.2
2012-ESPE-1947-01	Combined	Verified	Tacony-Frankford Creek	19140	Basin (1), Porous Pavement (1), Disconnections (1)	3.7
2012-GARY-1938-01	Combined	Verified	Lower Schuylkill River	19146	Disconnections (1), Bio-infiltration/Bio-retention (4), Basin (2)	1.4
2012-HUNT-1764-01	Combined	Verified	Tacony-Frankford Creek	19140-2107	Disconnections (1), Porous Pavement (2)	1.8
2012-INGE-1798-01	Combined	Verified	Delaware Direct	19121	Basin (1), Disconnections (1)	0.9

2012-INGL-1949-01	Combined	Verified	Lower Schuylkill River	19131	Basin (2), Bio-infiltration/Bio-retention (1), Disconnections (1), Porous Pavement (1)	3.9
2012-LAWR-1945-01	Combined	Verified	Delaware Direct	19123	Porous Pavement (1), Green Roof (2)	0.4
2012-LINC-2012-01	Combined	Verified	Delaware Direct	19148	Porous Pavement (1), Bio-infiltration/Bio-retention (2)	1.8
2012-PENN-1774-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1), Bio-infiltration/Bio-retention (1)	1.1
2012-PENN-1946-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Green Roof (7), Porous Pavement (3), Basin (1), Bio-infiltration/Bio-retention (2), Cistern (1)	1
2012-PRES-1785-01	Combined	Verified	Lower Schuylkill River	19131-3348	Porous Pavement (1), Green Roof (1)	0.5
2012-PROP-1883-01	Combined	Verified	Tacony-Frankford Creek	19138	Basin (1)	2.3
2012-RIVE-2027-01	Combined	Verified	Lower Schuylkill River	19104	Porous Pavement (2), Disconnections (1)	3.3
2012-RODE-1835-01	Combined	Verified	Delaware Direct	19130	Basin (1)	1.3
2012-SCHU-2065-01	Combined	Verified	Lower Schuylkill River	19146	Basin (3), Bio-infiltration/Bio-retention (1), Disconnections (1)	3.3
2012-SENI-1900-01	Combined	Verified	Lower Schuylkill River	19145	Bio-infiltration/Bio-retention (1), Basin (1), Disconnections (1)	0.4
2012-SOUT-1782-01	Combined	Verified	Delaware Direct	19102	Green Roof (1), Basin (1)	0.8
2012-SPAR-1850-01	Combined	Verified	Delaware Direct	19148	Disconnections (1), Porous Pavement (2), Bio-infiltration/Bio-retention (1)	0.7
2012-SPRU-1813-01	Combined	Verified	Delaware Direct	19107	Basin (1), Green Roof (1), Disconnections (1)	0.1
2012-SR00-2026-01	Combined	Verified	Delaware Direct	19125	Bio-infiltration/Bio-retention (35)	2.9
2012-STFR-1986-01	Combined	Verified	Delaware Direct	19125	Bio-infiltration/Bio-retention (1), Basin (1), Disconnections (1)	0.3
2012-SYSC-1931-01	Combined	Verified	Delaware Direct	19148	Bio-infiltration/Bio-retention (1)	3.9
2012-TDBA-2047-01	Combined	Verified	Delaware Direct	19149	Basin (1), Bio-infiltration/Bio-retention (1), Disconnections (1)	1.1
2012-THEM-1892-01	Combined	Verified	Delaware Direct	19106	Green Roof (1), Cistern (1), WQ Treatment Device (1), Disconnections (1)	0.8
2012-TOLL-1898-01	Combined	Verified	Delaware Direct	19147	Disconnections (1), Green Roof (2)	1.2

2012-UNIV-1848-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Porous Pavement (1), Green Roof (1), Bio-infiltration/Bio-retention (6), Basin (2)	1.6
2012-WISS-1891-01	Combined	Verified	Tacony-Frankford Creek	19138	Bio-infiltration/Bio-retention (2), Disconnections (1)	1.3
2013-1118-2248-01	Combined	Verified	Delaware Direct	19107	Green Roof (1), Basin (1), Porous Pavement (1)	0.8
2013-1323-2310-01	Combined	Verified	Delaware Direct	19122	Basin (1), Porous Pavement (1)	0.8
2013-1601-2261-01	Combined	Verified	Delaware Direct	19148	Basin (1), Disconnections (1)	1.5
2013-1900-2151-01	Combined	Verified	Lower Schuylkill River	19132	Basin (3), Bio-infiltration/Bio-retention (1)	2
2013-1901-2109-01	Combined	Verified	Lower Schuylkill River	19146	Basin (1), Porous Pavement (1), Green Roof (1)	0.6
2013-2012-2072-01	Combined	Verified	Lower Schuylkill River	19121	Green Roof (1), Porous Pavement (2)	0.2
2013-2300-2240-01	Combined	Verified	Lower Schuylkill River	19146	Basin (1), Bio-infiltration/Bio-retention (1)	0.9
2013-23RD-2272-01	Combined	Verified	Lower Schuylkill River	19140	Basin (1), Disconnections (1)	0.6
2013-2413-2183-01	Combined	Verified	Delaware Direct	19132	Basin (1), Green Roof (1)	0.8
2013-3541-2376-01	Combined	Verified	Delaware Direct	19134	Basin (1), Disconnections (1)	1
2013-4783-2339-01	Combined	Verified	Pennypack Creek	19136	Disconnections (1), Basin (1), Porous Pavement (2)	1.8
2013-708N-2316-01	Combined	Verified	Delaware Direct	19123	Basin (1), Bio-infiltration/Bio-retention (1)	0.6
2013-8268-2116-01	Combined	Verified	Delaware Direct	19123	Basin (1)	0.8
2013-900S-2174-01	Combined	Verified	Delaware Direct	19147	Basin (1), Bio-infiltration/Bio-retention (1), Disconnections (1), Porous Pavement (1)	1.4
2013-9THS-2075-01	Combined	Verified	Delaware Direct	19123	Basin (1)	4.6
2013-ALDI-2287-01	Combined	Verified	Darby Creek	19151	Bio-infiltration/Bio-retention (4)	0.3
2013-CECI-2157-01	Combined	Verified	Lower Schuylkill River	19121	Basin (1), Green Roof (1), Disconnections (1)	1.6
2013-CHOP-2288-01	Combined	Verified	Delaware Direct	19145	Porous Pavement (2), Basin (1), Bio-infiltration/Bio-retention (1)	1.2
2013-CIRA-2405-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (1), Basin (1), Disconnections (1)	0.6
2013-COBB-2080-01	Combined	Verified	Cobbs Creek	19143	Disconnections (1), Bio-infiltration/Bio-retention (2), Basin (1)	0.8

2013-DREX-2081-01	Combined	Verified	Lower Schuylkill River	19104	Basin (4)	1.3
2013-EDBE-2293-01	Combined	Verified	Delaware Direct	19122	Basin (1)	6.1
2013-FIRS-2202-01	Combined	Verified	Delaware Direct	19124	Bio-infiltration/Bio-retention (7), Disconnections (1)	6.2
2013-GRAC-2328-01	Combined	Verified	Delaware Direct	19134	Basin (1), Bio-infiltration/Bio-retention (2), Disconnections (1)	0.6
2013-HALP-2134-01	Combined	Verified	Lower Schuylkill River	19121	Basin (2), Disconnections (1)	1.6
2013-HELP-2241-01	Combined	Verified	Lower Schuylkill River	19153	Basin (1), Disconnections (1)	2
2013-LIBE-2255-01	Combined	Verified	Delaware Direct	19122	Bio-infiltration/Bio-retention (6), Basin (3)	
2013-MAST-2259-01	Combined	Verified	Lower Schuylkill River	19121	Disconnections (1)	0.6
2013-MUSE-2346-01	Combined	Verified	Lower Schuylkill River	19130	Basin (1), Porous Pavement (1), Disconnections (1)	4.5
2013-NEUR-2140-01	Combined	Verified	Lower Schuylkill River	19104	Bio-infiltration/Bio-retention (3), Green Roof (1), Disconnections (1), Porous Pavement (1)	0.4
2013-NEWC-2114-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Green Roof (1), Porous Pavement (2), Bio-infiltration/Bio-retention (1)	1.4
2013-ONER-2304-01	Combined	Verified	Lower Schuylkill River	19103	Basin (1), Bio-infiltration/Bio-retention (1), Green Roof (1)	0.3
2013-PARK-2357-01	Combined	Verified	Lower Schuylkill River	19130	Bio-infiltration/Bio-retention (1), Disconnections (1)	1
2013-PHIL-2299-01	Combined	Verified	Delaware Direct	19102	Green Roof (2), Basin (1), Disconnections (1)	0.2
2013-PROP-2163-01	Combined	Verified	Tacony-Frankford Creek	19141	Basin (2)	1.2
2013-RESI-2173-01	Combined	Verified	Cobbs Creek	19143	Green Roof (1), Disconnections (1)	0.1
2013-SETT-2085-01	Combined	Verified	Tacony-Frankford Creek	19144	Bio-infiltration/Bio-retention (1), Basin (1), Porous Pavement (1), Disconnections (1), Green Roof (1), Row Connection (1)	2.4
2013-SHOP-2250-01	Combined	Verified	Delaware Direct	19124	Green Roof (6), Basin (7)	9.4
2013-STCH-2103-01	Combined	Verified	Delaware Direct	19134	Disconnections (1), Bio-infiltration/Bio-retention (3)	4.6
2013-STCH-2149-01	Combined	Verified	Delaware Direct	19134	Bio-infiltration/Bio-retention (6), Disconnections (1)	3.8
2013-TACO-2197-01	Combined	Verified	Delaware Direct	19135	Bio-infiltration/Bio-retention (1), Basin (1), Disconnections (1)	2.1

2013-TAJD-2286-01	Combined	Verified	Delaware Direct	19122	Basin (2), Bio-infiltration/Bio-retention (1), Green Roof (1), Disconnections (1)	1.3
2013-TALL-2349-01	Combined	Verified	Delaware Direct	19133	Basin (1), Bio-infiltration/Bio-retention (1)	2.9
2013-TEMP-2178-01	Combined	Verified	Delaware Direct	19140	Bio-infiltration/Bio-retention (1), Basin (1)	1.1
2013-THES-2177-01	Combined	Verified	Delaware Direct	19123	Basin (2)	1.2
2013-THES-2392-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (1), Blue Roof (1)	0.6
2013-UPEN-2280-01	Combined	Verified	Lower Schuylkill River	19104	Basin (3)	1.1
2014-1123-2645-01	Combined	Verified	Delaware Direct	19125	Basin (2)	0.7
2014-1325-2469-01	Combined	Verified	Delaware Direct	19121	Basin (1), Bio-infiltration/Bio-retention (1), Disconnections (1)	0.8
2014-1326-2422-01	Combined	Verified	Delaware Direct	19122	Basin (1)	0.9
2014-1350-2658-01	Combined	Verified	Delaware Direct	19122	Basin (1), Bio-infiltration/Bio-retention (2)	1.1
2014-1515-2746-01	Combined	Verified	Delaware Direct	19106	Basin (2), Porous Pavement (1)	0.8
2014-1601-2434-01	Combined	Verified	Lower Schuylkill River	19103	Basin (1), Bio-infiltration/Bio-retention (2), Porous Pavement (1)	0.3
2014-1601-2440-01	Combined	Verified	Lower Schuylkill River	19103	Basin (1), Bio-infiltration/Bio-retention (5), Green Roof (1), Disconnections (1)	0.7
2014-2013-2751-01	Combined	Verified	Delaware Direct	19125	Basin (1), Porous Pavement (1)	0.5
2014-2201-2677-01	Combined	Verified	Lower Schuylkill River	19145	Basin (1), WQ Treatment Device (1)	1.7
2014-2322-2715-01	Combined	Verified	Lower Schuylkill River	19130	Basin (1), Porous Pavement (1)	0.9
2014-250N-2565-01	Combined	Verified	Delaware Direct	19106	Porous Pavement (3), Green Roof (1)	1.2
2014-3600-2426-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2), Bio-infiltration/Bio-retention (1), Green Roof (1)	1.3
2014-420F-2574-01	Combined	Verified	Delaware Direct	19123	Basin (2), Disconnections (1)	1
2014-4525-2505-01	Combined	Verified	Lower Schuylkill River	19139	Green Roof (1)	0.3
2014-500W-2580-01	Combined	Verified	Delaware Direct	19106	Basin (1), Green Roof (1)	0.4
2014-5454-2552-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1), Bio-infiltration/Bio-retention (5), Porous Pavement (1)	0.9

2014-5800-2463-01	Combined	Verified	Lower Schuylkill River	19131	Disconnections (1), Basin (1)	1.2
2014-63RD-2502-01	Combined	Verified	Cobbs Creek	19139	Basin (1)	1.9
2014-8365-2530-01	Combined	Verified	Delaware Direct	19123	Basin (1)	1.5
2014-ALLE-2455-01	Combined	Verified	Delaware Direct	19125	Green Roof (1), Porous Pavement (1), Disconnections (1)	0.4
2014-ALLE-2522-01	Combined	Verified	Delaware Direct	19133	Basin (1)	0.8
2014-BLUM-2711-01	Combined	Verified	Lower Schuylkill River	19121	Basin (2), Porous Pavement (1)	2.5
2014-CHIC-2755-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (1)	0.8
2014-DOLL-2453-01	Combined	Verified	Delaware Direct	19135-4408	Bio-infiltration/Bio-retention (1), Basin (1)	1.5
2014-DREX-2457-01	Combined	Verified	Lower Schuylkill River	19104	Porous Pavement (2), Disconnections (1)	2.5
2014-ENVI-2646-01	Combined	Verified	Delaware Direct	19148-5607	Basin (5), Bio-infiltration/Bio-retention (1)	2
2014-GIRA-2478-01	Combined	Verified	Delaware Direct	19107	Basin (2), Green Roof (2), Disconnections (1)	1.2
2014-GSTR-2443-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (1), Bio-infiltration/Bio-retention (1)	1.4
2014-HUNT-2525-01	Combined	Verified	Lower Schuylkill River	19140	Basin (1), Bio-infiltration/Bio-retention (1)	0.9
2014-LASA-2425-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1), Bio-infiltration/Bio-retention (4), Porous Pavement (1)	2.2
2014-PAND-2762-01	Combined	Verified	Delaware Direct	19134	Basin (1)	0.5
2014-PERE-2472-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2), Disconnections (1)	0.6
2014-PHAG-2547-01	Combined	Verified	Lower Schuylkill River	19132	Bio-infiltration/Bio-retention (2), Basin (1)	0.3
2014-PHAM-2476-01	Combined	Verified	Lower Schuylkill River	19121	Basin (10), Bio-infiltration/Bio-retention (32)	1.6
2014-PHAO-2459-01	Combined	Verified	Lower Schuylkill River	19132	Basin (1), Bio-infiltration/Bio-retention (1), Porous Pavement (1)	0.4
2014-SEPT-2614-01	Combined	Verified	Delaware Direct	19124	Green Roof (1), Disconnections (1)	0.3
2014-STEN-2616-01	Combined	Verified	Tacony-Frankford Creek	19140	Basin (1), Disconnections (1), Porous Pavement (1)	0.7
2014-STJO-2424-01	Combined	Verified	Delaware Direct	19122	Disconnections (1), Basin (3)	6.9
2014-TEMP-2699-01	Combined	Verified	Delaware Direct	19121	Porous Pavement (1)	0.4

2014-TRUE-2595-01	Combined	Verified	Delaware Direct	19123	Basin (1)	1.5
2014-UNIV-2747-01	Combined	Verified	Lower Schuylkill River	19104	Porous Pavement (1)	0.5
2014-VERN-2690-01	Combined	Verified	Tacony-Frankford Creek	19144	Disconnections (1), Porous Pavement (2)	0.5
2014-VONC-2749-01	Combined	Verified	Lower Schuylkill River	19130	Basin (1), Disconnections (1)	0.5
2014-WEST-2612-01	Combined	Verified	Lower Schuylkill River	19121	Basin (1), Porous Pavement (1), Disconnections (1)	1.9
2014-WISS-2641-01	Combined	Verified	Delaware Direct	19135	Disconnections (1), Porous Pavement (1)	0.4
2015-1002-2906-01	Combined	Verified	Delaware Direct	19123	Basin (1), Bio-infiltration/Bio-retention (3), Porous Pavement (1)	0.9
2015-2338-2915-01	Combined	Verified	Delaware Direct	19125	Basin (1)	0.8
2015-2517-2803-01	Combined	Verified	Delaware Direct	19134	Basin (1), Green Roof (1), Porous Pavement (2)	0.4
2015-3201-2786-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2), Bio-infiltration/Bio-retention (1), Green Roof (2), Disconnections (1)	0.3
2015-3675-2955-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2), Green Roof (1), Porous Pavement (1)	0.7
2015-4050-2828-01	Combined	Verified	Lower Schuylkill River	19104	Bio-infiltration/Bio-retention (1), Basin (1), Disconnections (1)	0.7
2015-40TH-2780-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2), Disconnections (1)	1.2
2015-7092-2945-01	Combined	Verified	Delaware Direct	19147	Porous Pavement (1), Disconnections (1), Basin (1)	0.7
2015-8385-2856-01	Combined	Verified	Delaware Direct	19123	Basin (2), Bio-infiltration/Bio-retention (1), Cistern (1)	1.8
2015-CAMD-2769-01	Combined	Verified	Delaware Direct	19134	Basin (1)	3.4
2015-DLAT-2926-01	Combined	Verified	Delaware Direct	19120	Bio-infiltration/Bio-retention (3), Basin (8), Disconnections (1), Green Roof (1), Porous Pavement (1)	8
2015-GAUD-2962-01	Combined	Verified	Lower Schuylkill River	19140	Basin (1), Bio-infiltration/Bio-retention (1), Porous Pavement (3)	0.6
2015-GROC-2925-01	Combined	Verified	Delaware Direct	19137	Bio-infiltration/Bio-retention (2), Basin (1)	2.6
2015-JFKP-2951-01	Combined	Verified	Lower Schuylkill River	19102	Basin (2), Disconnections (1), Green Roof (1)	1.1
2015-LANI-2871-01	Combined	Verified	Lower Schuylkill River	19145	Porous Pavement (2), Disconnections (1)	0.3
2015-LASA-2848-01	Combined	Verified	Tacony-Frankford Creek	19144	Bio-infiltration/Bio-retention (2), Porous Pavement (1)	1.1

2015-PHIL-2969-01	Combined	Verified	Lower Schuylkill River	19130	Basin (1), WQ Treatment Device (1), Cistern (1)	3.2
2015-PHIL-2982-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Green Roof (1), Basin (1)	0.3
2015-ROBE-2975-01	Combined	Verified	Tacony-Frankford Creek	19140	Bio-infiltration/Bio-retention (1), Basin (1)	0.5
2015-ROYA-2911-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (6), Disconnections (1)	4.4
2015-SOUT-2956-01	Combined	Verified	Lower Schuylkill River	19145	Basin (2), Bio-infiltration/Bio-retention (1)	5.1
2015-TEMP-2829-01	Combined	Verified	Delaware Direct	19122	Basin (1), Porous Pavement (1)	0.3
2015-TEMP-2964-01	Combined	Verified	Delaware Direct	19122	Basin (3), Porous Pavement (1)	12.3
2015-TULI-2824-01	Combined	Verified	Delaware Direct	19122	Basin (2), Green Roof (1), Disconnections (1), Porous Pavement (1), Row Connection (2)	3.3
2015-UCHS-2939-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Basin (2), Bio-infiltration/Bio-retention (1)	3.2
2015-WAYN-2771-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1), Porous Pavement (1), Disconnections (1)	1.2
2015-WYNN-2986-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1), Disconnections (1), Porous Pavement (1)	0.7
FY16-ADAM-4220-01	Combined	Verified	Tacony-Frankford Creek	19120	Basin (1), Bio-infiltration/Bio-retention (1)	1.1
FY16-BARI-4074-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1), Disconnections (1)	0.8
FY16-BERN-4350-01	Combined	Verified	Lower Schuylkill River	19121	Basin (1)	1.4
FY16-CENT-138-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1), Disconnections (1), WQ Treatment Device (1)	0.5
FY16-COLU-4303-01	Combined	Verified	Delaware Direct	19147	Basin (1), Disconnections (1)	0.9
FY16-DREX-4244-01	Combined	Verified	Lower Schuylkill River	19104	Porous Pavement (1), Disconnections (1)	1
FY16-EAST-4017-01	Combined	Verified	Delaware Direct	19125	Basin (1)	0.7
FY16-EAST-4179-01	Combined	Verified	Delaware Direct	19134	Bio-infiltration/Bio-retention (1), Disconnections (1)	0.5
FY16-FAIR-4011-01	Combined	Verified	Delaware Direct	19123	Basin (1)	1.4
FY16-FEDE-4201-01	Combined	Verified	Lower Schuylkill River	19146	Basin (1)	0.9
FY16-FIVE-4029-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (1), Bio-infiltration/Bio-retention (2)	1
FY16-FRAN-4076-01	Combined	Verified	Tacony-Frankford Creek	19124	Disconnections (1)	0

FY16-HANO-4040-01	Combined	Verified	Lower Schuylkill River	19107	Basin (2)	2.7
FY16-HELP-4027-01	Combined	Verified	Delaware Direct	19123	Basin (1), Disconnections (1)	0.3
FY16-JACK-4123-01	Combined	Verified	Delaware Direct	19124	Basin (2), Green Roof (1), Porous Pavement (2), Disconnections (1)	2.2
FY16-KENS-4216-01	Combined	Verified	Delaware Direct	19125	Basin (1), Porous Pavement (3), Bio-infiltration/Bio-retention (1)	0.8
FY16-LAND-4251-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2), Green Roof (2), Porous Pavement (2), WQ Treatment Device (2)	0.5
FY16-LASA-4354-01	Combined	Verified	Tacony-Frankford Creek	19141	Porous Pavement (1), Disconnections (1)	0.2
FY16-LINC-4309-01	Combined	Verified	Delaware Direct	19146	Basin (1), Green Roof (1), Disconnections (1), Porous Pavement (1)	4.1
FY16-LOVE-4088-01	Combined	Verified	Tacony-Frankford Creek	19119	Bio-infiltration/Bio-retention (1), Disconnections (1), Green Roof (1)	0.3
FY16-LUCI-4053-01	Combined	Verified	Lower Schuylkill River	19139	Disconnections (1)	0.3
FY16-NATI-4211-01	Combined	Verified	Delaware Direct	19106	Basin (1)	1.6
FY16-NFRO-4270-01	Combined	Verified	Delaware Direct	19122	Basin (1)	1.2
FY16-PROJ-4329-01	Combined	Verified	Delaware Direct	19122	Basin (1), Green Roof (2), Porous Pavement (1), Disconnections (1)	0.4
FY16-PROP-4298-01	Combined	Verified	Lower Schuylkill River	19103	Basin (1), Green Roof (1)	0.4
FY16-RACE-4127-01	Combined	Verified	Delaware Direct	19106	Porous Pavement (1), Basin (1), WQ Treatment Device (1), Disconnections (1)	2
FY16-SIMP-4337-01	Combined	Verified	Lower Schuylkill River	19131	Bio-infiltration/Bio-retention (2), Basin (1), Disconnections (1)	1.4
FY16-SMIT-4151-01	Combined	Verified	Lower Schuylkill River	19146	Porous Pavement (1), Disconnections (1)	4.3
FY16-STJO-4085-01	Combined	Verified	Lower Schuylkill River	19145	Basin (1), Bio-infiltration/Bio-retention (1), Porous Pavement (1)	1.7
FY16-STRC-4364-01	Combined	Verified	Delaware Direct	19146	Basin (2), Bio-infiltration/Bio-retention (1)	0.7
FY16-TEMP-4178-01	Combined	Verified	Delaware Direct	19121	Bio-infiltration/Bio-retention (1), Basin (1), Porous Pavement (1)	4.2
FY16-TEMP-4277-01	Combined	Verified	Delaware Direct	19122	Porous Pavement (1)	0.4

FY16-THCH-4142-01	Combined	Verified	Lower Schuylkill River	19102	Basin (2), Green Roof (3), WQ Treatment Device (1), Blue Roof (6)	1.3
FY16-UCHS-4213-01	Combined	Verified	Lower Schuylkill River	19104		0
FY16-USCI-4261-01	Combined	Verified	Lower Schuylkill River	19143	Bio-infiltration/Bio-retention (5), Porous Pavement (2)	1.4
FY16-WASH-4360-01	Combined	Verified	Lower Schuylkill River	19146	Basin (1), Bio-infiltration/Bio-retention (1)	2.4
FY17-ABIG-4691-01	Combined	Verified	Delaware Direct	19148	Basin (2), Bio-infiltration/Bio-retention (2)	0.8
FY17-ALDI-4565-01	Combined	Verified	Tacony-Frankford Creek	19124	Bio-infiltration/Bio-retention (12), Basin (1), WQ Treatment Device (1), Disconnections (1)	3.7
FY17-AUTO-4659-01	Combined	Verified	Delaware Direct	19148	Basin (1), WQ Treatment Device (1)	1.2
FY17-BROA-4539-01	Combined	Verified	Lower Schuylkill River	19130	Basin (1), Disconnections (1)	1
FY17-CAMP-4378-01	Combined	Verified	Lower Schuylkill River	19140	Basin (1), Disconnections (1)	0.9
FY17-CANT-4433-01	Combined	Verified	Delaware Direct	19148	Blue Roof (2), Porous Pavement (3), Disconnections (1)	0.9
FY17-CARV-4503-01	Combined	Verified	Delaware Direct	19123	Basin (1), Disconnections (1)	1.7
FY17-EALL-4578-01	Combined	Verified	Delaware Direct	19125	Basin (1), Porous Pavement (1)	0.9
FY17-EAST-4468-01	Combined	Verified	Lower Schuylkill River	19121	Basin (1)	1.1
FY17-EAST-4640-01	Combined	Verified	Cobbs Creek	19139	Bio-infiltration/Bio-retention (5), Basin (2), Green Roof (1), Blue Roof (1), Disconnections (1), WQ Treatment Device (1)	2.3
FY17-EGIR-4646-01	Combined	Verified	Delaware Direct	19125	Green Roof (1), Porous Pavement (1)	0.5
FY17-GROC-4379-01	Combined	Verified	Delaware Direct	19148	Basin (2), WQ Treatment Device (2), Disconnections (1)	6.5
FY17-HAMP-4618-01	Combined	Verified	Delaware Direct	19111	Bio-infiltration/Bio-retention (2), Disconnections (1)	2.5
FY17-LEED-4633-01	Combined	Verified	Tacony-Frankford Creek	19150	Bio-infiltration/Bio-retention (7)	5.2
FY17-LUCI-4480-01	Combined	Verified	Lower Schuylkill River	19139	Basin (2), WQ Treatment Device (2), Disconnections (1), Porous Pavement (2)	1
FY17-MALB-4466-01	Combined	Verified	Delaware Direct	19125	Basin (1), Porous Pavement (1)	0.7
FY17-NBRO-4434-01	Combined	Verified	Delaware Direct	19121	Basin (1), Bio-infiltration/Bio-retention (1), Porous Pavement (1)	0.9
FY17-NORT-4607-01	Combined	Verified	Lower Schuylkill River	19121	Basin (1)	1.2

FY17-NTHS-4495-01	Combined	Verified	Lower Schuylkill River	19130	Green Roof (2), Basin (1)	0.9
FY17-NTHS-4672-01	Combined	Verified	Delaware Direct	19122	Basin (1), Porous Pavement (1), Row Connection (2)	3
FY17-PESS-4511-01	Combined	Verified	Lower Schuylkill River	19145	Basin (5)	9.6
FY17-PHAA-4543-01	Combined	Verified	Lower Schuylkill River	19121	Basin (1), Porous Pavement (1)	0.7
FY17-PHAN-4699-01	Combined	Verified	Delaware Direct	19122	Basin (1), Porous Pavement (1), Disconnections (1), Row Connection (1)	2.5
FY17-PHIL-4417-01	Combined	Verified	Delaware Direct	19121	Basin (1), WQ Treatment Device (1)	2.4
FY17-POPL-4664-01	Combined	Verified	Delaware Direct	19123	Basin (1), WQ Treatment Device (1)	0.6
FY17-PRAT-4660-01	Combined	Verified	Delaware Direct	19124	Basin (1), Disconnections (2), Porous Pavement (1)	0.8
FY17-QUAK-4387-01	Combined	Verified	Lower Schuylkill River	19121	Basin (1)	5.1
FY17-REED-4474-01	Combined	Verified	Delaware Direct	19147	Basin (1), Disconnections (1)	1.5
FY17-RIDG-4764-01	Combined	Verified	Delaware Direct	19130	Basin (2), Bio-infiltration/Bio-retention (1), Green Roof (1), Porous Pavement (1)	5.1
FY17-ROWE-4634-01	Combined	Verified	Tacony-Frankford Creek	19126	Bio-infiltration/Bio-retention (1)	1.2
FY17-SENI-4411-01	Combined	Verified	Lower Schuylkill River	19145	Basin (1), Disconnections (1), Porous Pavement (1), WQ Treatment Device (1)	1
FY17-SOUT-4486-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1), Green Roof (1)	0.6
FY17-SPRU-4443-01	Combined	Verified	Lower Schuylkill River	19139	Basin (1)	1.1
FY17-STHS-4755-01	Combined	Verified	Lower Schuylkill River	19146	Basin (1)	1.2
FY17-STPI-4413-01	Combined	Verified	Cobbs Creek	19143	Bio-infiltration/Bio-retention (1), Disconnections (1)	0.5
FY17-TEMP-4573-01	Combined	Verified	Delaware Direct	19122	Disconnections (1), Porous Pavement (1)	0.2
FY17-THAN-4446-01	Combined	Verified	Lower Schuylkill River	19146	Basin (1), WQ Treatment Device (1)	1
FY17-VIEW-4457-01	Combined	Verified	Delaware Direct	19122	Basin (3), Bio-infiltration/Bio-retention (1), Green Roof (1), Porous Pavement (1), Disconnections (1), Row Connection (1)	4.1
FY17-WALM-4419-01	Combined	Verified	Tacony-Frankford Creek	19114	Basin (1), WQ Treatment Device (1)	15.7
FY17-WEND-4527-01	Combined	Verified	Cobbs Creek	19139	Basin (1)	1.3

FY17-WGOD-4567-01	Combined	Verified	Tacony-Frankford Creek	19141	Basin (1), Porous Pavement (1), Disconnections (1)	1.1
FY17-WHAR-4726-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1), Green Roof (1), Porous Pavement (1), Disconnections (1)	1.6
FY17-WIDE-4636-01	Combined	Verified	Tacony-Frankford Creek	19141	Bio-infiltration/Bio-retention (1)	4.5
FY17-WYNN-4704-01	Combined	Verified	Lower Schuylkill River	19131	Basin (2), Disconnections (1)	0.8
FY17-XXXX-4458-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1)	2.2
FY18-ALBE-4973-01	Combined	Verified	Tacony-Frankford Creek	19141	Basin (1), Disconnections (1)	1.9
FY18-BART-5075-01	Combined	Verified	Lower Schuylkill River	19143	Basin (1)	6.1
FY18-CENT-5008-01	Combined	Verified	Tacony-Frankford Creek	19141	Disconnections (1), Bio-infiltration/Bio-retention (6), Basin (3), Porous Pavement (3)	5.6
FY18-CHES-4832-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (1), Porous Pavement (1)	0.2
FY18-CHES-4975-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Green Roof (1), Porous Pavement (1), Basin (1), Bio-infiltration/Bio-retention (1)	1.2
FY18-DEST-4909-01	Combined	Verified	Delaware Direct	19123	Basin (1)	5.9
FY18-ELEH-4835-01	Combined	Verified	Delaware Direct	19125	Basin (3), Porous Pavement (1)	6.6
FY18-ENOR-4838-01	Combined	Verified	Delaware Direct	19125	Bio-infiltration/Bio-retention (1), Porous Pavement (1)	0.9
FY18-ENOR-5080-01	Combined	Verified	Delaware Direct	19122	Disconnections (1), Green Roof (1), Porous Pavement (3)	0.4
FY18-GALA-5145-01	Combined	Verified	Tacony-Frankford Creek	19138	Bio-infiltration/Bio-retention (2), Basin (1)	0.6
FY18-HAMI-4900-01	Combined	Verified	Lower Schuylkill River	19130	Basin (1), Green Roof (1), WQ Treatment Device (1)	0.7
FY18-HSTX-5076-01	Combined	Verified	Delaware Direct	19134	Basin (1), WQ Treatment Device (1)	1.3
FY18-IRVI-4922-01	Combined	Verified	Cobbs Creek	19143	Porous Pavement (2)	0.8
FY18-LABO-5153-01	Combined	Verified	Delaware Direct	19122	Basin (1), Porous Pavement (1), WQ Treatment Device (1)	1.8
FY18-MERC-4857-01	Combined	Verified	Cobbs Creek	19143	Basin (1), Disconnections (1), WQ Treatment Device (1)	0.5
FY18-NCHW-5147-01	Combined	Verified	Lower Schuylkill River	19104	Disconnections (1), Porous Pavement (2), Green Roof (1), Basin (1), Bio-infiltration/Bio-retention (4)	2

FY18-NICO-5166-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (2), Disconnections (1), Row Connection (1)	2.6
FY18-NORT-4881-01	Combined	Verified	Delaware Direct	19122	Basin (1)	1
FY18-NRDS-4851-01	Combined	Verified	Lower Schuylkill River	19103	Basin (1)	0.8
FY18-PARK-4775-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1), WQ Treatment Device (1)	1.6
FY18-PARK-4896-01	Combined	Verified	Lower Schuylkill River	19131	Disconnections (1)	0.1
FY18-PEAB-4939-01	Combined	Verified	Delaware Direct	19122	Porous Pavement (1)	0.1
FY18-PERK-5001-01	Combined	Verified	Delaware Direct	19130	Green Roof (1), Porous Pavement (1), Disconnections (1)	0.3
FY18-PHAS-4886-01	Combined	Verified	Delaware Direct	19148	Bio-infiltration/Bio-retention (3), Disconnections (1)	2.5
FY18-PHIL-5038-01	Combined	Verified	Delaware Direct	19107	Basin (2), WQ Treatment Device (2)	1.6
FY18-PORT-4941-01	Combined	Verified	Delaware Direct	19125	Basin (1), WQ Treatment Device (1), Disconnections (1)	3.6
FY18-PROJ-4946-01	Combined	Verified	Lower Schuylkill River	19131	Bio-infiltration/Bio-retention (2)	8.4
FY18-PROV-5053-01	Combined	Verified	Pennypack Creek	19114	Disconnections (1), Bio-infiltration/Bio-retention (1), Basin (1)	2.8
FY18-QWEQ-5128-01	Combined	Verified	Lower Schuylkill River	19104	Basin (2), Disconnections (1)	1.6
FY18-RENO-4879-01	Combined	Verified	Cobbs Creek	19143	Bio-infiltration/Bio-retention (1), Disconnections (1)	2.6
FY18-SOLI-4855-01	Combined	Verified	Delaware Direct	19149	Basin (3), Disconnections (1), WQ Treatment Device (2)	10.3
FY18-SUSQ-5052-01	Combined	Verified	Lower Schuylkill River	19132	Bio-infiltration/Bio-retention (1)	1.9
FY18-UHAU-5117-01	Combined	Verified	Delaware Direct	19125	Basin (1)	1.9
FY18-WALN-4820-01	Combined	Verified	Cobbs Creek	19139	Basin (1)	0.7
FY18-WEST-5167-01	Combined	Verified	Delaware Direct	19123	Bio-infiltration/Bio-retention (2)	0.6
FY19-AUTO-5287-01	Combined	Verified	Lower Schuylkill River	19145	Basin (1), WQ Treatment Device (1)	0.6
FY19-CASA-5240-01	Combined	Verified	Delaware Direct	19133	Basin (1)	0.9
FY19-CENT-5325-01	Combined	Verified	Lower Schuylkill River	19130	Porous Pavement (1), Disconnections (1)	0.4
FY19-CHES-5484-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (1), Bio-infiltration/Bio-retention (1)	0.9

FY19-DREX-5307-01	Combined	Verified	Lower Schuylkill River	19104	Basin (1)	0.5
FY19-MARK-5603-01	Combined	Verified	Lower Schuylkill River	19139	Green Roof (2), Bio-infiltration/Bio-retention (4)	6.4
FY19-NORT-5502-01	Combined	Verified	Delaware Direct	19122	Bio-infiltration/Bio-retention (1), Basin (2), Porous Pavement (3)	3.6
FY19-POPL-5344-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1)	0.7
FY19-TEMP-5500-01	Combined	Verified	Delaware Direct	19122	Green Roof (1)	0.3
FY20-GREA-6054-01	Combined	Verified	Pennypack Creek	19149	Basin (2)	1.4
FY20-HELP-5666-01	Combined	Verified	Lower Schuylkill River	19121	Bio-infiltration/Bio-retention (1), Disconnections (1)	0.4
FY20-PHIL-6012-01	Combined	Verified	Cobbs Creek	19142	Basin (2), Porous Pavement (1), WQ Treatment Device (1)	0.8
FY20-ROMO-5984-01	Combined	Verified	Tacony-Frankford Creek	19120	Basin (1)	3.1
FY20-SUMM-5803-01	Combined	Verified	Delaware Direct	19124	Bio-infiltration/Bio-retention (4), Basin (1)	24
FY20-WECC-5809-01	Combined	Verified	Delaware Direct	19148	Basin (1), WQ Treatment Device (1)	2
FY20-WOOD-5724-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1), Porous Pavement (2)	0.6
FY21-ELMW-6094-01	Combined	Verified	Lower Schuylkill River	19142	Bio-infiltration/Bio-retention (1), Basin (1), WQ Treatment Device (1), Disconnections (1)	24.6
FY21-RAMO-6289-01	Combined	Verified	Tacony-Frankford Creek	19120	Basin (1), WQ Treatment Device (1)	4.2
FY21-SAMU-6211-01	Combined	Verified	Delaware Direct	19134	Disconnections (1)	0
FY21-TEMP-6187-01	Combined	Verified	Delaware Direct	19122	Bio-infiltration/Bio-retention (5)	1.8
Total Greened Acres:						**982**

Table 4: Completed Incentivized Green Stormwater Infrastructure Projects

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
2012-5818-1784-01	Combined	Verified	Tacony-Frankford Creek	19144	Bio-infiltration/Bio-retention (1)	0.2
2012-GSFS-2028-01	Combined	Verified	Tacony-Frankford Creek	19144	Bio-infiltration/Bio-retention (1), Disconnections (1)	1.1
2012-WOLF-1792-01	Combined	Verified	Delaware Direct	19137		11.7
2013-1148-2105-01	Combined	Verified	Delaware Direct	19147	Green Roof (1), Basin (3)	1
2013-CARD-2076-01	Combined	Verified	Delaware Direct	19124	Basin (2)	60.6
2013-CARD-2220-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (2)	18.6
2013-METH-2117-01	Combined	Verified	Lower Schuylkill River	19131	Bio-infiltration/Bio-retention (11)	1.2
2013-SITE-2387-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1)	7.2
2013-SITE-2401-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1)	5.8
2014-GLOB-2467-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (2)	0.8
2014-SITE-2501-01	Combined	Verified	Lower Schuylkill River	19131	Bio-infiltration/Bio-retention (1)	44.8
2014-SITE-2549-01	Combined	Verified	Lower Schuylkill River	19145	Basin (1)	6
2014-SITE-2550-01	Combined	Verified	Delaware Direct	19135	Basin (1)	2.6
2014-SITE-2592-01	Combined	Verified	Lower Schuylkill River	19153	Basin (1)	9
2014-SITE-2665-01	Combined	Verified	Lower Schuylkill River	19145	Basin (2)	15.9
2014-SITE-2666-01	Combined	Verified	Lower Schuylkill River	19153	Basin (2)	4.9
2014-SITE-2682-01	Combined	Verified	Lower Schuylkill River	19131	Basin (2)	9.4
2014-WARR-2757-01	Combined	Verified	Tacony-Frankford Creek	19124	Bio-infiltration/Bio-retention (4), Row Connection (3)	3
2014-WILL-2541-01	Combined	Verified	Delaware Direct	19140	Disconnections (1)	0.2
2015-3560-2776-01	Combined	Verified	Delaware Direct	19134	Basin (1)	1.3
2015-FRAN-2954-01	Combined	Verified	Delaware Direct	19130	Bio-infiltration/Bio-retention (3)	0.7
2015-LASA-2865-01	Combined	Verified	Tacony-Frankford Creek	19141	Basin (3)	9.3

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
2015-LEAE-2888-01	Combined	Verified	Lower Schuylkill River	19036	Bio-infiltration/Bio-retention (5), Porous Pavement (1), Basin (2), Row Connection (2)	2.5
2015-LIGH-2907-01	Combined	Verified	Delaware Direct	19140	Basin (1)	0.9
2015-LUTH-2836-01	Combined	Verified	Delaware Direct	19125	Disconnections (1)	0
2015-MART-2832-01	Combined	Verified	Tacony-Frankford Creek	19138	Bio-infiltration/Bio-retention (4), Basin (1), Row Connection (1)	5.2
2015-MAYF-2796-01	Combined	Verified	Delaware Direct	19149	Bio-infiltration/Bio-retention (3), Row Connection (2)	4.7
2015-MINK-2844-01	Combined	Verified	Lower Schuylkill River	19145	Basin (2)	1
2015-NORT-2977-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (6), WQ Treatment Device (2)	22.2
2015-SITE-2809-01	Combined	Verified	Tacony-Frankford Creek	19120	Basin (2), Row Connection (3)	23
2015-SITE-2810-01	Combined	Verified	Lower Schuylkill River	19153	Basin (5)	17.6
2015-SITE-2812-01	Combined	Verified	Pennypack Creek	19136	Basin (2), Row Connection (1)	13.3
2015-STJA-2895-01	Combined	Verified	Tacony-Frankford Creek	19120	Basin (4)	0.6
2015-TAGG-2931-01	Combined	Verified	Delaware Direct	19148	Basin (1), Disconnections (1), Bio-infiltration/Bio-retention (1)	1
FY16-ADAI-4164-01	Combined	Verified	Delaware Direct	19125	Bio-infiltration/Bio-retention (1), Disconnections (1)	2.6
FY16-ADAM-4101-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (1), Disconnections (1)	2.4
FY16-CHES-4233-01	Combined	Verified	Lower Schuylkill River	19146	Basin (2), Porous Pavement (1), Disconnections (1), Row Connection (2)	1.3
FY16-ESSI-4357-01	Combined	Verified	Lower Schuylkill River	19153	Basin (3), Row Connection (2)	10.2
FY16-GAUL-4273-01	Combined	Verified	Delaware Direct	19134	Basin (1)	1.5
FY16-ISTR-4292-01	Combined	Verified	Delaware Direct	19134	Blue Roof (3)	1.1
FY16-JMPA-4286-01	Combined	Verified	Lower Schuylkill River	19142	Bio-infiltration/Bio-retention (1), Disconnections (1)	0.8
FY16-JOMA-4143-01	Combined	Verified	Tacony-Frankford Creek	19124	Bio-infiltration/Bio-retention (1)	1.6
FY16-LASA-4274-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (5)	14.6
FY16-LIND-4086-01	Combined	Verified	Tacony-Frankford Creek	19141	Bio-infiltration/Bio-retention (1)	1.4

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
FY16-NAME-4323-01	Combined	Verified	Tacony-Frankford Creek	19140	Basin (2), Row Connection (1)	8.8
FY16-PHIL-4134-01	Combined	Verified	Lower Schuylkill River	19130	Green Roof (1)	0.1
FY16-RICH-4302-01	Combined	Verified	Delaware Direct	19137	Disconnections (1)	12.2
FY16-SITE-4016-01	Combined	Verified	Lower Schuylkill River	19145	Basin (1)	7.6
FY16-SITE-4020-01	Combined	Verified	Delaware Direct	19136	Basin (2)	3
FY16-SITE-4025-01	Combined	Verified	Pennypack Creek	19136	Basin (1), Row Connection (3)	13.4
FY16-SITE-4039-01	Combined	Verified	Delaware Direct	19148	Basin (4), Row Connection (2)	6.9
FY16-SITE-4104-01	Combined	Verified	Tacony-Frankford Creek	19120	Basin (4), Row Connection (2)	12.8
FY16-SITE-4189-01	Combined	Verified	Tacony-Frankford Creek	19120	Basin (7), Row Connection (1)	15.8
FY16-STHS-4226-01	Combined	Verified	Lower Schuylkill River	19145	Bio-infiltration/Bio-retention (2), Basin (8)	5.2
FY16-WAKE-4282-01	Combined	Verified	Delaware Direct	19137	Basin (2), Row Connection (2)	8.7
FY17-BAKE-4685-01	Combined	Verified	Delaware Direct	19134	Basin (1)	3.4
FY17-BSTR-4742-01	Combined	Verified	Delaware Direct	19134	Basin (4)	10.2
FY17-CAST-4743-01	Combined	Verified	Delaware Direct	19134	Basin (2), Row Connection (2)	7.9
FY17-EADO-4760-01	Combined	Verified	Delaware Direct	19137	Basin (2)	5.9
FY17-ECHE-4667-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1), Bio-infiltration/Bio-retention (1)	4.2
FY17-ECHE-4668-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1), Bio-infiltration/Bio-retention (1), Row Connection (2)	4.4
FY17-EDMU-4680-01	Combined	Verified	Pennypack Creek	19136	Basin (1)	5
FY17-EERI-4396-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (1)	4.6
FY17-ELUZ-4412-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (3), Row Connection (2)	10.4
FY17-ESSI-4624-01	Combined	Verified	Lower Schuylkill River	19153	Basin (3), Row Connection (2)	13.1
FY17-ESSI-4628-01	Combined	Verified	Lower Schuylkill River	19153	Basin (2), Porous Pavement (2), WQ Treatment Device (1), Row Connection (1)	9.1
FY17-FRAN-4728-01	Combined	Verified	Delaware Direct	19125	Green Roof (1)	0.1

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
FY17-GRAY-4520-01	Combined	Verified	Lower Schuylkill River	19143	Basin (3), Row Connection (1)	16.3
FY17-HIST-4671-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1), Bio-infiltration/Bio-retention (1), Disconnections (1)	0.7
FY17-NDAN-4582-01	Combined	Verified	Tacony-Frankford Creek	19140	Basin (1), Row Connection (21)	31.8
FY17-NTHS-4620-01	Combined	Verified	Delaware Direct	19140	Basin (3), Row Connection (2)	15.9
FY17-OVER-4682-01	Combined	Verified	Lower Schuylkill River	19151	Bio-infiltration/Bio-retention (1), Basin (1)	2.4
FY17-PASC-4472-01	Combined	Verified	Lower Schuylkill River	19143	Basin (4), Row Connection (1)	9.2
FY17-POSE-4687-01	Combined	Verified	Pennypack Creek	19136	Basin (1)	5.7
FY17-STEN-4469-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (3), Row Connection (2)	4.5
FY17-STHS-4442-01	Combined	Verified	Lower Schuylkill River	19145	Basin (7)	15.9
FY17-STMA-4406-01	Combined	Verified	Delaware Direct	19122	Bio-infiltration/Bio-retention (1)	2.2
FY17-TACO-4444-01	Combined	Verified	Delaware Direct	19137	Basin (3)	12.6
FY17-WHEA-4544-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (1), Disconnections (1), Row Connection (2)	14
FY18-ACAD-4999-01	Combined	Verified	Pennypack Creek	19114	Basin (1), Row Connection (2)	5.2
FY18-ADAM-5070-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (2), Row Connection (2)	4.8
FY18-BALA-5159-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1)	24.4
FY18-COML-4942-01	Combined	Verified	Delaware Direct	19135	Basin (1)	1.4
FY18-DEPA-4944-01	Combined	Verified	Tacony-Frankford Creek	19422	Basin (1)	11.9
FY18-DREX-5120-01	Combined	Verified	Lower Schuylkill River	19104	Green Roof (1), Disconnections (1)	1
FY18-EERI-4992-01	Combined	Verified	Delaware Direct	19124	Basin (4), Row Connection (2)	11.6
FY18-GRAY-4905-01	Combined	Verified	Lower Schuylkill River	19143	Basin (1), Row Connection (1)	2.3
FY18-LASA-4980-01	Combined	Verified	Tacony-Frankford Creek	19144	Basin (1)	3.3
FY18-NORT-4846-01	Combined	Verified	Lower Schuylkill River	19140	Basin (2), Row Connection (2)	4.1
FY18-OREG-5175-01	Combined	Verified	Delaware Direct	19148	Basin (4), Row Connection (2)	7

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
FY18-ORTH-5057-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (4), Row Connection (2)	7.8
FY18-PAUL-4979-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (1), Row Connection (2)	2.1
FY18-PINN-4913-01	Combined	Verified	Lower Schuylkill River	19131	Basin (3)	2.9
FY18-PRES-4972-01	Combined	Verified	Delaware Direct	19124	Basin (2), Row Connection (7)	10.1
FY18-STOR-5156-01	Combined	Verified	Delaware Direct	19148	Basin (4), Row Connection (3)	67.4
FY18-TALM-4904-01	Combined	Verified	Lower Schuylkill River	19131	Basin (1)	1.2
FY18-TALM-4995-01	Combined	Verified	Lower Schuylkill River	19131	Basin (2)	1.7
FY18-WBUL-4819-01	Combined	Verified	Delaware Direct	19140	Basin (2), Row Connection (1)	7.1
FY18-WHIT-5066-01	Combined	Verified	Tacony-Frankford Creek	19124	Basin (2), Row Connection (1)	8
FY18-WHUN-4834-01	Combined	Verified	Lower Schuylkill River	19140	Basin (1), Row Connection (1)	2.6
FY19-ARDL-5323-01	Combined	Verified	Tacony-Frankford Creek	19138	Bio-infiltration/Bio-retention (2)	3.4
FY19-CAST-5414-01	Combined	Verified	Delaware Direct	19134	Basin (3), Row Connection (6)	9.8
FY19-HOLM-5609-01	Combined	Verified	Pennypack Creek	19136	Basin (2), Disconnections (1), Row Connection (7)	2
FY19-LEON-5611-01	Combined	Verified	Delaware Direct	19122	Basin (2), Row Connection (2)	6.9
FY19-PATT-5479-01	Combined	Verified	Delaware Direct	19148	Basin (2), Bio-infiltration/Bio-retention (4), Disconnections (1)	61.2
FY19-PEER-5261-01	Combined	Verified	Lower Schuylkill River	19145	Basin (2), Row Connection (4)	3.2
FY19-PEER-5346-01	Combined	Verified	Lower Schuylkill River	19151	Basin (1), Bio-infiltration/Bio-retention (1), Row Connection (5)	3.3
FY19-SEPV-5417-01	Combined	Verified	Delaware Direct	19137	Basin (1)	1.8
FY19-STRA-5600-01	Combined	Verified	Lower Schuylkill River	19132	Basin (3), Row Connection (10)	13.1
FY19-WGLE-5241-01	Combined	Verified	Delaware Direct	19132	Basin (2), Row Connection (2)	3.2
FY19-WGLE-5243-01	Combined	Verified	Lower Schuylkill River	19132	Basin (2)	7.8
FY19-WLEH-5378-01	Combined	Verified	Lower Schuylkill River	19132	Basin (3), Bio-infiltration/Bio-retention (1), Row Connection (7)	8.7

Tracking Number	Sewer Type	Category	Watershed	Zip	SMP Type(s) and Count	Greened Acres
FY19-WLEH-5466-01	Combined	Verified	Lower Schuylkill River	19132	Basin (3), Row Connection (4)	6.2
FY20-AWBU-5768-01	Combined	Verified	Tacony-Frankford Creek	19138	Basin (1), Row Connection (6)	3.9
FY20-IKEA-5894-01	Combined	Verified	Delaware Direct	19148	Basin (5), Row Connection (5)	20.6
FY20-PARK-5828-01	Combined	Verified	Lower Schuylkill River	19130	Green Roof (1)	0.2
FY21-DEPA-6266-01	Combined	Verified	Tacony-Frankford Creek	19031	Basin (1)	3.2
FY21-TEOC-6512-01	Combined	Verified	Lower Schuylkill River	19123	Bio-infiltration/Bio-retention (1)	4.2
Total Greened Acres:						**999**

Appendix 4

Green Stormwater Infrastructure Monitoring Status Report

1.0 Introduction

During the reporting period of July 1, 2022 to June 30, 2023, the City's *Green City, Clean Waters* program addressed stormwater runoff reductions in urbanized areas using a combination of traditional infrastructure and green stormwater infrastructure (GSI). GSI systems vary in size, complexity, and interconnectedness to the existing drainage system, but the objective is to infiltrate, evapotranspire, reuse, and/or detain stormwater rather than to convey it directly to the sewer system. Monitoring and testing GSI systems is therefore essential to determine the effectiveness of various SMP types in managing stormwater and reducing combined sewer overflows.

The focus of the *Green City, Clean Waters* monitoring program has been post-construction performance monitoring and testing of public GSI systems but was expanded in FY19 to test public GSI systems during construction. Specifically, a liner testing pilot began in 2019 and has been successful in providing feedback for Construction and GSI Design to improve performance of fully lined systems. The performance testing of fully lined systems in construction is anticipated to increase in coming years due to the pilot's success. In addition, post-construction private GSI monitoring, and testing has been conducted since FY18. The primary goal of GSI monitoring and testing is to measure the performance of GSI systems for reducing stormwater runoff volume. Secondary goals include providing information for improvements to GSI design, construction and maintenance and developing appropriate monitoring methods for the variety of GSI projects installed citywide.

Project characteristics such as contributing drainage area, storage volume, inlet capture efficiency, and slow-release discharge parameters can be observed, allowing for a more complete view of a system's functionality. The comprehensive understanding of GSI through monitoring and testing allows PWD to make informed decisions for current and future projects regarding the GSI design standards, type and frequency of maintenance activities, and program optimization.

2.0 Data Tracking

The data tracking mechanism for *Green City, Clean Waters* GSI monitoring data has evolved significantly since the inception of the program. Raw data are stored on an SMP-by-SMP basis in a filesystem directory tree. Derived data from quality assurance calculations are stored in spreadsheets and relational databases, to be used for various data analyses. In FY23, the Analysis Database underwent its migration from PostgreSQL 9 to PostgreSQL 14, bringing with it a host of modernizations to the associated data structures and connectivity tools. Development on new and updated Shiny apps has continued; the most impactful addition to its app portfolio performs k-means clustering on unmonitored SMP design metrics, which allows monitoring of representative samples of Philadelphia's GSI portfolio. Scoping work for fundamental overhauls to the post-construction status tracking, time series data QA, and public GSI issue tracking workflows took place in FY23. Development also continues on data management scripts, with efforts to port these scripts over to new automation infrastructure beginning at the end of FY23.

3.0 Comprehensive Monitoring Plan Implementation Status

Proposed methods for performance monitoring and testing were outlined in both the draft Comprehensive Monitoring Plan submitted December 1, 2012 and in a response sent to PADEP and the EPA on July 31, 2013. A revised CMP was submitted on January 10th, 2014 and approved by PADEP on May 28, 2014. Since then, standard operating procedures (SOPs) continue to be refined for these methods. The latest monitoring and testing SOPs are available in the Appendices to the FY19 Annual Report.

Continuous water level (CWL) monitoring of GSI systems is the primary method used by PWD to evaluate performance. CWL monitoring is conducted at the stormwater management practice (SMP) level, where one or more SMPs make up a single GSI system. Multiple SMPs may be monitored to assess the overall performance of a single GSI system. In addition to CWL monitoring, PWD conducts testing of GSI, including: capture efficiency testing (CETs) of inlets, simulated runoff testing (SRT) of GSI systems, infiltration testing of porous pavement and permeable pavers, and groundwater monitoring (pre-construction and post-construction of GSI).

The following sections summarize the FY23 (July 1, 2022 through June 30, 2023) monitoring and testing activities for public GSI (both post-construction and construction phases) and private GSI (post-construction only) and ancillary monitoring efforts as described in the CMP.

3.1 Post-Construction Public GSI Monitoring and Testing

3.1.1 Continuous Water Level (CWL) Monitoring

During FY23, PWD completed sensor deployments (HOBO pressure transducers, Onset Computer Corp, Bourne, MA) which were utilized for CWL monitoring of 99 public GSI systems, of which 49 systems were newly monitored this fiscal year (see **Table 3-1**). To date (through FY23), sensor deployments have been completed for CWL monitoring of 449 public GSI systems. All public SMPs with post-construction CWL monitoring are shown in **Figure 3-1**. In addition, **Figure 3-1** shows the barometric pressure sensor and rain gauge locations that are utilized in the CWL monitoring process.

In selecting water level monitoring locations, PWD has attempted to roughly allocate monitoring effort according to the types of SMPs constructed for the *Green City, Clean Waters* program. **Table 3-2** is a breakdown by SMP type showing the number of public SMPs with CWL monitoring compared to the total number of SMPs of each type.

Table 3-1: Summary of Post-Construction CWL Monitoring of Public SMPs

	FY23	To-Date (through FY23)
Sensor Deployments	246	3825
Systems Monitored	99	449
Systems Newly Monitored	49	

Table 3-2: Post-Construction CWL Monitoring of Public SMPs Listed by Type

SMP Type	Monitored SMPs (before and during FY23)	Total Constructed Public SMPs
Tree Trench	274	477
Stormwater Tree	0	108
Planter	27	153
Bumpout	13	132
Rain Garden	59	147
Infiltration/Storage Trench	129	458
Permeable Pavement	2	14
Swale	3	34
Basin	1	8
Drainage Well	4	4
Green Roof	0	2
Total	**512**	**1548**

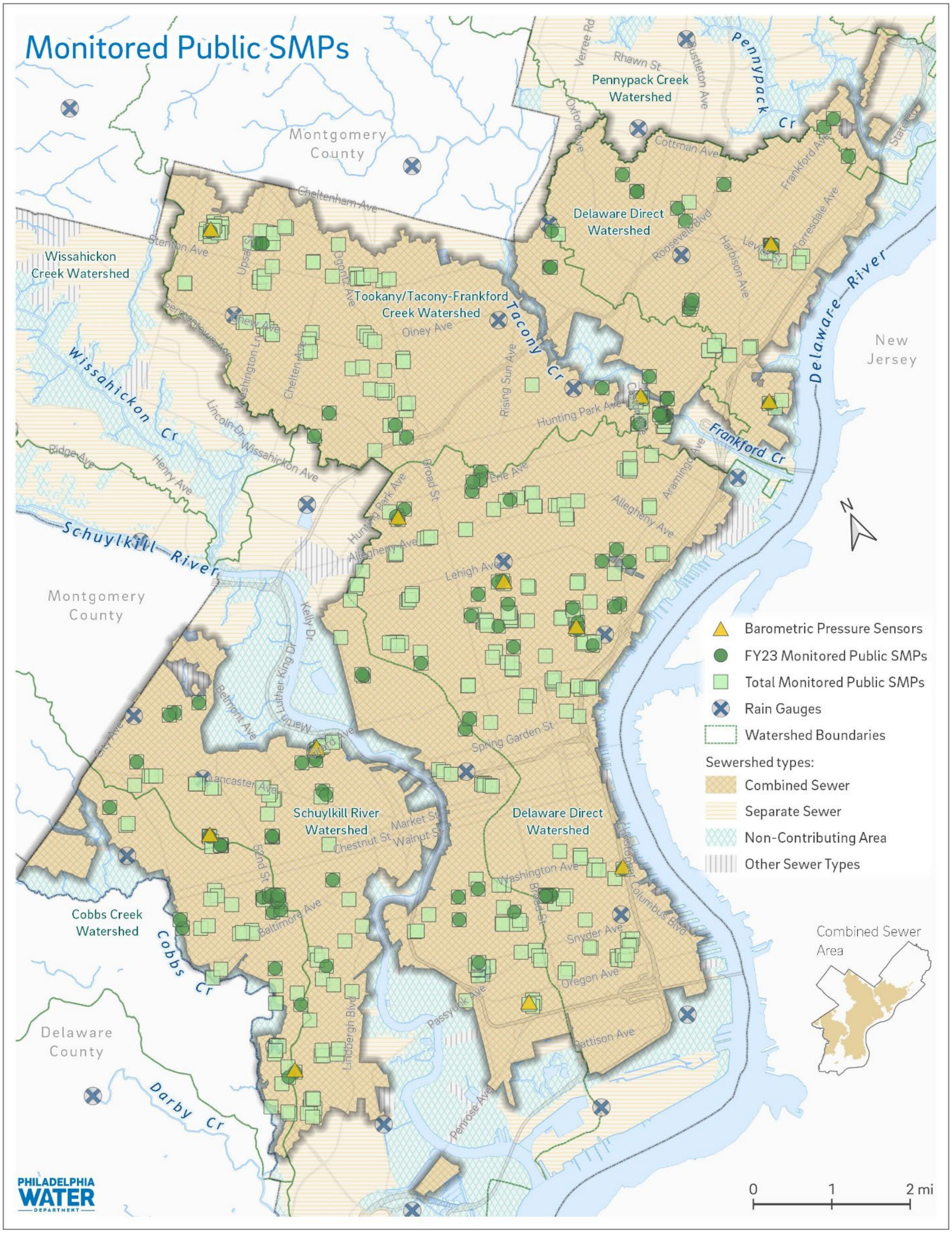


Figure 3-1: Location of Public SMPs with Post-Construction CWL Monitoring

3.1.2 Simulated Runoff Testing (SRT)

Systems that show abnormal water level response typically undergo simulated runoff testing (SRT) using water hydrant flow, dye testing, and/or CCTV to determine if there are performance issues. As described in **Table 3-3**, 44 pre-inspection SRTs were performed on public GSI systems between July 1, 2022 to June 30, 2023. To date (through FY23), a total of 285 post-construction SRTs have been performed on public GSI systems. The breakdown of SRTs per SMP type is shown in **Table 3-4**. FY23 SRT locations are shown **Figure 3-2**.

Table 3-3: Post-Construction SRTs performed on Public Systems

SRT Type	FY23	To-Date (through FY23)
Pre-Inspection Dye Test	35	142
CCTV Dye Test	8	56
Performance SRT	1	87
Total	**44**	**285**

Table 3-4: Public Systems with Post-Construction SRTs Performed

System Type	FY23	To-Date (through FY23)
Bumpout	11	21
Drainage Well	0	3
Permeable Pavement	0	2
Planter	4	16
Rain Garden	4	19
Stormwater Tree	0	10
Swale	0	3
Tree Trench	22	88
Trench	16	48
Total	**57**	**210**

Note: A single GSI system may consist of one or more SMPs; therefore, the number of SMPs tested may be larger than the number of GSI systems tested.

3.1.3 Capture Efficiency Testing (CET)

Capture efficiency testing (CET) is performed on a GSI inlet to assess how well the SMP is receiving flow. Typically, all inlets at a GSI system are tested to assess a GSI system's overall capture efficiency which aids in understanding the system's overall performance. In FY23, 127 public GSI systems underwent capture efficiency testing (see **Table 3-5**). To date (through FY23), 535 public GSI systems have undergone capture efficiency testing.

Table 3-5: Public Systems with CETs Administered

	FY23	To-date (through FY23)
No. of Systems with CETs Administered	127	535

3.1.4 Porous Pavement and Permeable Paver Surface Infiltration Rate Testing

PWD uses ASTM Standards (ASTM Committee D18, ASTM C1701/C1701M-09 Standard Test method for Infiltration Rate of In Place Pervious Concrete, 2009) (ASTM Committee C15, 2013), with minor modifications for porous pavement and permeable paver infiltration testing. Development of these procedures was completed in FY13, and refinement of the methods is ongoing. Sections of schedule 60 PVC pipe are used as infiltration rings to perform multiple tests at a time. As described in **Table 3-6**, infiltration testing was performed on five public GSI systems in FY23 and 22 systems to date (through FY23). **Figure 3-2** shows the public GSI systems where infiltration testing has been performed.

Table 3-6: Public Systems with Infiltration Testing Administered

	FY23	To-Date (through FY23)
No. of Systems with Infiltration Testing Administered	5	22

3.1.5 Leakage Testing

Public GSI structures, including green inlets, outlet structures and weirs, are known to leak based on field observations during SRTs. A repair method using injection foam and mortar has been piloted to address this issue. A leakage testing method was adopted in FY23 to measure leakage before and after repair work to determine the effectiveness of the repair. In FY23, 25 public GSI systems had leakage tests performed. Repair work is ongoing and leakage testing will be utilized to assess the near and long-term effectiveness of the repair method.

3.2 Public GSI Monitoring Testing During Construction

3.2.1 Simulated Runoff Testing (SRT)

SRTs are performed during construction to assess system performance and address any performance issues before PWD accepts ownership. As described in **Table 3-7**, 77 performance SRTs were performed on public GSI systems between July 1, 2022 to June 30, 2023. To date (through FY23), a total of 122 construction-phase SRTs have been performed on public GSI systems. The breakdown of SRTs per SMP type is shown in **Table 3-8**. FY23 SRT locations are shown **Figure 3-2**.

Table 3-7: Construction-Phase SRTs Performed on Public Systems

SRT Type	FY23	To-Date (through FY23)
Pre-Inspection Dye Test	0	4
CCTV Dye Test	0	2
Performance SRT	77	116
Total	**77**	**122**

Table 3-8: Public Systems with Construction-Phase SRTs Performed

System Type	FY23	To-Date (through FY23)
Bumpout	6	8
Rain Garden	9	16
Tree Trench	19	33
Trench	36	47
Planter	1	1
Swale	2	2
Total	**73**	**107**

Note: A single GSI system may consist of one or more SMPs; therefore, the number of SMPs tested may be larger than the number of GSI systems tested.

3.3 Groundwater Level Monitoring for Public GSI

PWD installs sensors within groundwater monitoring wells near proposed SMP locations to characterize seasonal groundwater fluctuations and determine the feasibility of the site for GSI. As shown in **Table 3-9**, one site was monitored in FY23 to assess the feasibility of the site prior to GSI implementation. PWD also installs sensors within groundwater monitoring wells near active SMPs to assess the effect of infiltrating SMPs on the water table. A total of 12 GSI systems underwent post-construction groundwater monitoring to date.

Table 3-9: Groundwater Monitoring for Public GSI

Monitoring Phase	FY23	To-Date (through FY23)
Prior to Construction of GSI (Systems)	1	9
Post-Construction (Active GSI)	0	12

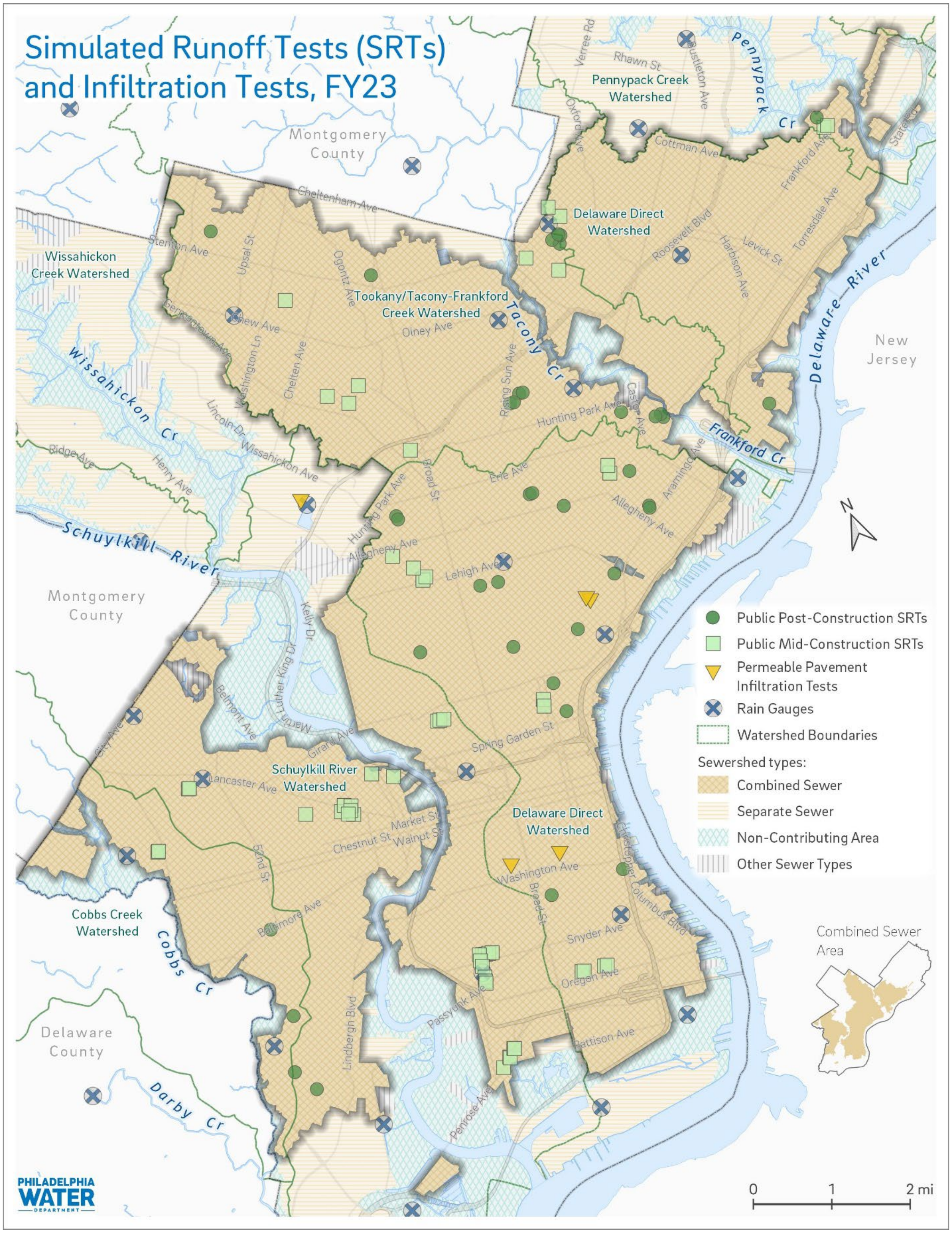


Figure 3-2: Simulated Runoff Tests and Porous Pavement Tests

3.4 Post-Construction Private GSI Monitoring and Testing

3.4.1 Continuous Water Level (CWL) Monitoring

During FY23, the Water Department completed 25 sensor deployments which were utilized for CWL monitoring of private GSI systems with no newly monitored systems this fiscal year (see **Table 3-10**). To date (through FY23), 453 sensor deployments have been completed for CWL monitoring of six private GSI systems. All private SMPs with post-construction CWL monitoring are shown in **Figure 3-3**. In addition, **Figure 3-3** shows the barometric pressure sensor and rain gauge locations that are utilized in the CWL monitoring process. **Table 3-11** is a breakdown by SMP type showing the number of private SMPs with CWL monitoring compared to the total number of SMPs of each type.

Table 3-10: Summary of Post-Construction CWL Monitoring of Private Systems

	FY23	To-Date (through FY23)
Sensor Deployments	25	453
Systems	6	26
Systems Newly Monitored	0	

Table 3-11: Post-Construction CWL-Monitoring of Private Systems Listed by Type

System Type	Monitored SMPs (before and during FY23)	Total Constructed Private SMPs
Basin	14	1325
Bioinfiltration/Bioretention	12	578
Porous Pavement	0	271
Cistern	0	11
Blue Roof	0	10
Total	**26**	**2195**

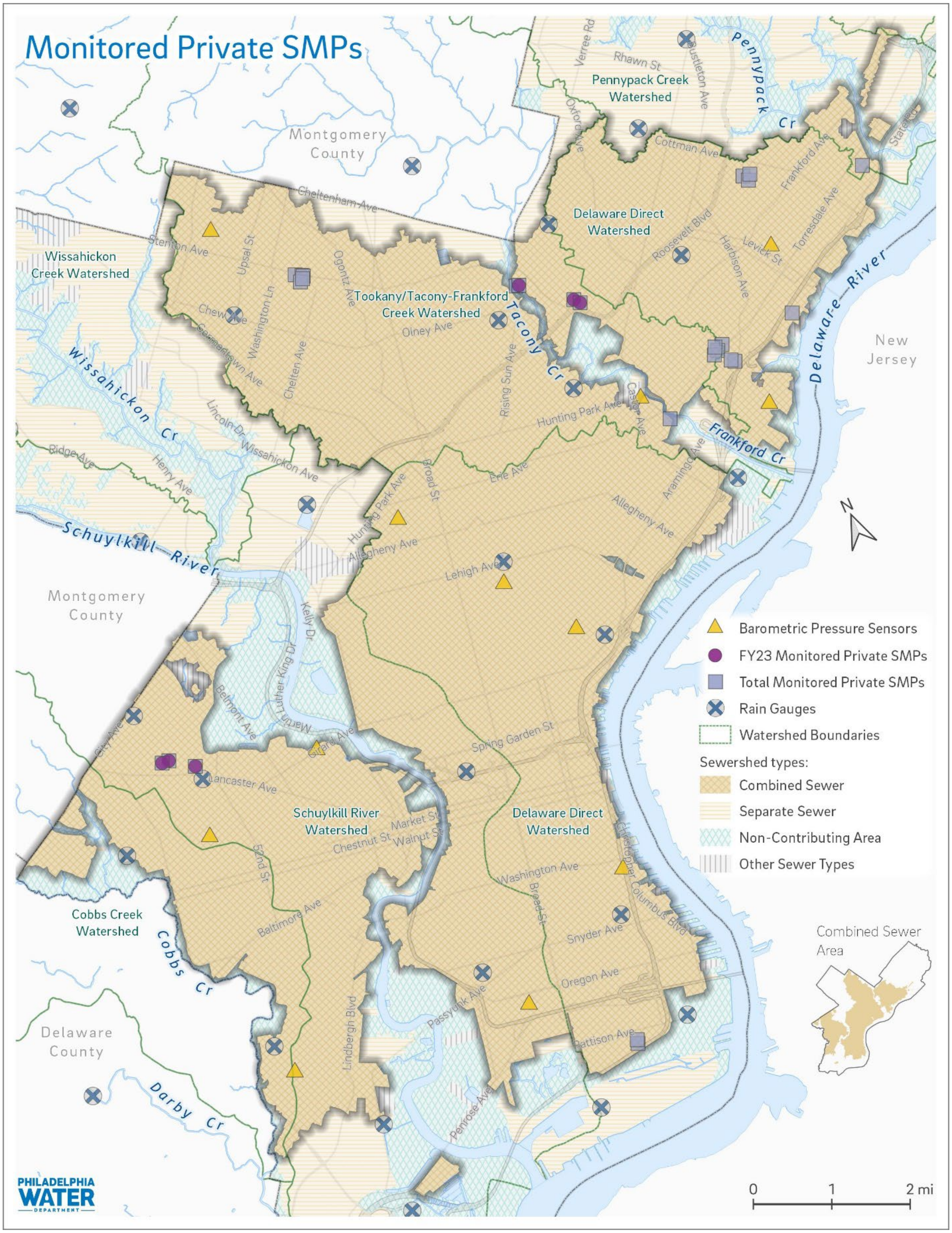


Figure 3-3: Location of Private SMPs with Post-Construction CWL Monitoring

3.4.2 Simulated Runoff Testing (SRT)

Systems that show abnormal water level response typically undergo simulated runoff testing (SRT) using water hydrant flow, dye testing, and/or CCTV to determine if there are performance issues. As described in **Table 3-12**, no pre-inspection SRTs and performance SRTs were performed on private GSI systems between July 1, 2022 to June 30, 2023. To date (through FY23), a total of 27 post-construction SRTs have been performed on private GSI systems. The breakdown of SRTs per SMP type is shown in **Table 3-13**. FY23 SRT locations are shown **Figure 3-2**.

Table 3-12: Post-Construction SRTs performed on Private Systems

SRT Type	FY23	To-Date (through FY23)
Pre-Inspection Dye Test	0	8
CCTV Dye Test	0	1
Performance SRT	0	18
Total	**0**	**27**

Table 3-13: Private SMPs with Post-Construction SRTs Performed

System Type	FY23	To-Date (through FY23)
Bioinfiltration/Bioretention	0	1
Basin	0	15
Total	**0**	**16**

Note: A single GSI system may consist of one or more SMPs; therefore, the number of SMPs tested may be larger than the number of GSI systems tested.

3.4.3 Capture Efficiency Testing (CET)

Capture efficiency testing (CET) is performed on a GSI inlet to assess how well the SMP is receiving flow. Typically, all inlets at a GSI system are tested to assess a GSI system's overall capture efficiency which aids in understanding the system's overall performance. In FY23, no private GSI systems had capture efficiency testing (see **Table 3-14**). To date (through FY23), 17 private GSI systems have had capture efficiency testing.

Table 3-14: Private Systems with CETs Administered

	FY23	To-Date (through FY23)
No. of Systems with CETs Administered	0	17

3.4.4 Leakage Testing

Older private GSI systems are known to have defective outlet structure weirs based on field observations. A retrofit of these weirs was implemented in FY23. A leakage testing method was adopted to measure leakage to determine the effectiveness of the retrofit. In FY23, seven private GSI systems had leakage tests performed.

3.5 Sewer System Monitoring

The Water Department continues to perform sewer system monitoring per the methods outlined in the CMP. More information is available in **Appendix B**.

3.6 Meteorological Monitoring

The Water Department continues to perform meteorological monitoring, including operation and maintenance of a rain gauge network, as described in the CMP. More information is available in **Appendix B.**

4.0 CMP Implementation Successes and Challenges Encountered

The GSI monitoring program has been successful in meeting monitoring and testing demands in FY23 despite some challenges. The COVID pandemic continues to be a consideration which the data collection team takes seriously when carrying out routine field activities. A COVID safety protocol for field activities was developed in 2020 for the monitoring team and has proven effective at keeping staff safe while performing their duties.

As requested, the GSI monitoring team continues to provide monitoring assistance to Operations and GSI Implementation to collect data from systems where challenges have been observed and to interpret cause(s) and verify remediation measures. Most notably, the monitoring team developed a test method to measure leakage from GSI structures, including inlets, outlet structures and weirs. Leakage testing was performed on public GSI structures to assess the effectiveness of injection foam as a repair method. Similarly, leakage testing was performed on private GSI outlet structures to assess the watertightness of retrofitted weir structures. The results from both testing campaigns provided meaningful data to inform retrofit and repair decision making.

The program has seen a continued demand for performing SRTs on fully lined GSI systems during construction. Due to the time-sensitive nature of construction, there is a quick turnaround time required for performing these SRTs and relaying findings to construction staff. The monitoring team has adapted methods accordingly to deliver effective and timely testing.

Appendix B – Flow Monitoring

APPENDIX B –
FLOW MONITORING

Table 1 - Summary of All Monitors

	# of Permanent Monitors	# of Temporary Monitors
Combined/Separate Sewer Monitors	469	64
Outlying Community Monitors	63	-
Pumping Stations	82	-
Rain Gages	37	1
Total	651	65

Table 2 - Listing of Monitored Outlying Community Connections

Site ID	Connection Type	Township	Measurement Name	Measurement Type
MA_1	STD	Abington	TEMPORARY	FLOW
MA_2	MTR	Abington	METERING CHAMBER FLOW	FLOW
MA_3	STD	Abington	TEMPORARY	FLOW
MA_4	STD	Abington	TEMPORARY	FLOW
MAx1	STD	Abington	TEMPORARY	FLOW
MB_1	MTR	Bucks Co.	METERING CHAMBER FLOW	FLOW
MBE_01	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_02	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_03	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_04	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_05	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_06	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_07	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_08	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_09	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_10	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_11	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_12	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_13	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_14	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_15		Bensalem	UNMONITORED	
MBE_16	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MBE_17	MTR	Bensalem	METERING CHAMBER FLOW	FLOW
MC_1	MTR	Cheltenham	METERING CHAMBER FLOW	FLOW
MC_2	MTR	Cheltenham	METERING CHAMBER FLOW	FLOW
MC_3	MTR	Abington	METERING CHAMBER FLOW	FLOW
MCx_1	MTR	Cheltenham	METERING CHAMBER FLOW	FLOW
MCx_2	MTR	Cheltenham	METERING CHAMBER FLOW	FLOW
MCx_3	MTR	Cheltenham	METERING CHAMBER FLOW	FLOW
MCx_4	MTR	Cheltenham	METERING CHAMBER FLOW	FLOW
MCx_5	MTR	Cheltenham	METERING CHAMBER FLOW	FLOW
MCx_6	MTR	Cheltenham	METERING CHAMBER FLOW	FLOW
MCx_7	MTR	Cheltenham	METERING CHAMBER FLOW	FLOW
MD_1	MTR	Delaware Co.	METERING CHAMBER FLOW	FLOW
ML_1	MTR	Lower Merion	METERING CHAMBER FLOW	FLOW
ML_2	STD	Lower Merion	TEMPORARY	FLOW
ML_3	MTR	Lower Merion	METERING CHAMBER FLOW	FLOW
ML_4	MTR	Lower Merion	METERING CHAMBER FLOW	FLOW

Site ID	Connection Type	Township	Measurement Name	Measurement Type
ML_5	MTR	Lower Merion	METERING CHAMBER FLOW	FLOW
ML_6	MTR	Lower Merion	METERING CHAMBER FLOW	FLOW
ML_7	MTR	Lower Merion	METERING CHAMBER FLOW	FLOW
MLM_1	MTR	Lower Moreland	METERING CHAMBER FLOW	FLOW
MLM_2	MTR	Lower Moreland	METERING CHAMBER FLOW	FLOW
MLM_3	STD	Lower Moreland	TEMPORARY	FLOW
MLM_4	STD	Lower Moreland	TEMPORARY	FLOW
MLM_5	STD	Lower Moreland	TEMPORARY	FLOW
MLM_6	STD	Lower Moreland	TEMPORARY	UNKNOWN
MLM_7	STD	Lower Moreland	TEMPORARY	UNKNOWN
MS_1	STD	Springfield	TEMPORARY	FLOW
MS_2	MTR	Springfield	METERING CHAMBER FLOW	FLOW
MS_3	MTR	Springfield	METERING CHAMBER FLOW	FLOW
MS_4	STD	Springfield	TEMPORARY	FLOW
MS_5	STD	Springfield	TEMPORARY	FLOW
MS_6	MTR	Springfield	METERING CHAMBER FLOW	FLOW
MS_7	STD	Springfield	TEMPORARY	UNKNOWN
MS_8	STD	Springfield	TEMPORARY	FLOW
MSH_1	MTR	Southampton	METERING CHAMBER FLOW	FLOW
MSH_2	STD	Southampton	TEMPORARY	FLOW
MSHX_1	STD	Southampton	TEMPORARY	FLOW
MSHX_2	STD	Southampton	TEMPORARY	FLOW
MUD_1N	MTR	Upper Darby	METERING CHAMBER FLOW	FLOW
MUD_1S	MTR	Upper Darby	METERING CHAMBER FLOW	FLOW
MUD_1O	MTR	Upper Darby	METERING CHAMBER FLOW	FLOW

*STD – temporary flow monitor

**MTR – Permanent monitor

Table 3 - Listing of Combined/Separate Sewer Monitors

Site Name	Interceptor	Waterbody	Measurement Name	Measurement Type
C_01	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_01	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_02	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_02	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_04	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_04	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_05	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_05	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_06	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_06	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_07	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_07	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_09	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_09	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_10	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_10	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_11	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_11	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_12	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_12	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_14	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_14	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_15	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_15	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_17	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_17	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_18	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_18	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_19	Cobbs Creek Low Level	Cobbs Creek	SWO LEVEL	LEVEL
C_19	Cobbs Creek Low Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_20	Cobbs Creek Low Level	Cobbs Creek	SWO LEVEL	LEVEL
C_20	Cobbs Creek Low Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_21	Cobbs Creek Low Level	Cobbs Creek	SWO LEVEL	LEVEL
C_21	Cobbs Creek Low Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_22	Cobbs Creek Low Level	Cobbs Creek	SWO LEVEL	LEVEL
C_22	Cobbs Creek Low Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_23	Cobbs Creek Low Level	Cobbs Creek	SWO LEVEL	LEVEL
C_23	Cobbs Creek Low Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_24	Cobbs Creek Low Level	Cobbs Creek	SWO LEVEL	LEVEL
C_24	Cobbs Creek Low Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_26	Cobbs Creek Low Level	Cobbs Creek	SWO LEVEL	LEVEL
C_26	Cobbs Creek Low Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_28A	Cobbs Creek Low Level	Cobbs Creek	SWO LEVEL	LEVEL

Site Name	Interceptor	Waterbody	Measurement Name	Measurement Type
C_28A	Cobbs Creek Low Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_29	Cobbs Creek Low Level	Cobbs Creek	SWO LEVEL	LEVEL
C_29	Cobbs Creek Low Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_30	Cobbs Creek Low Level	Cobbs Creek	SWO LEVEL	LEVEL
C_30	Cobbs Creek Low Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_31	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_31	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_32	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_32	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_33	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_33	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_34	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_34	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_35	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_35	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_36	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_36	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
C_37	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
C_37	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
CSPS	Central Schuylkill	Schuylkill River	INTERCEPTOR LEVEL N	LEVEL
CSPS	Central Schuylkill	Schuylkill River	INTERCEPTOR LEVEL S	LEVEL
D_02	Upper Delaware Low Level	Delaware River	DWO GATE POSITION	POSITION
D_02	Upper Delaware Low Level	Delaware River	DWO LEVEL	LEVEL
D_02	Upper Delaware Low Level	Delaware River	SWO GATE POSITION	POSITION
D_02	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_02	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_03	Upper Delaware Low Level	Delaware River	DWO GATE POSITION	POSITION
D_03	Upper Delaware Low Level	Delaware River	DWO LEVEL	LEVEL
D_03	Upper Delaware Low Level	Delaware River	SWO GATE POSITION	POSITION
D_03	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_03	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_04	Upper Delaware Low Level	Delaware River	DWO GATE POSITION	POSITION
D_04	Upper Delaware Low Level	Delaware River	DWO LEVEL	LEVEL
D_04	Upper Delaware Low Level	Delaware River	SWO GATE POSITION	POSITION
D_04	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_04	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_05	Upper Delaware Low Level	Delaware River	DWO GATE POSITION	POSITION
D_05	Upper Delaware Low Level	Delaware River	DWO LEVEL	LEVEL
D_05	Upper Delaware Low Level	Delaware River	SWO GATE POSITION	POSITION
D_05	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_05	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_06	Upper Delaware Low Level	Delaware River	DWO LEVEL	LEVEL
D_06	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_06	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL

Site Name	Interceptor	Waterbody	Measurement Name	Measurement Type
D_07	Upper Delaware Low Level	Delaware River	DWO GATE POSITION	POSITION
D_07	Upper Delaware Low Level	Delaware River	DWO LEVEL	LEVEL
D_07	Upper Delaware Low Level	Delaware River	SWO GATE POSITION 1	POSITION
D_07	Upper Delaware Low Level	Delaware River	SWO GATE POSITION 2	POSITION
D_07	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_07	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_08	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_08	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_09	Upper Delaware Low Level	Delaware River	DWO GATE POSITION	POSITION
D_09	Upper Delaware Low Level	Delaware River	DWO LEVEL	LEVEL
D_09	Upper Delaware Low Level	Delaware River	SWO GATE POSITION	POSITION
D_09	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_09	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_11	Upper Delaware Low Level	Delaware River	DWO GATE POSITION	POSITION
D_11	Upper Delaware Low Level	Delaware River	DWO LEVEL	LEVEL
D_11	Upper Delaware Low Level	Delaware River	SWO GATE POSITION	POSITION
D_11	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_11	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_12	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_12	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_13	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_13	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_15	Upper Delaware Low Level	Delaware River	DWO GATE POSITION	POSITION
D_15	Upper Delaware Low Level	Delaware River	DWO LEVEL	LEVEL
D_15	Upper Delaware Low Level	Delaware River	SWO GATE POSITION	POSITION
D_15	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_15	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_17	Somerset	Delaware River	SWO LEVEL	LEVEL
D_17	Somerset	Delaware River	TRUNK LEVEL	LEVEL
D_18	Somerset	Delaware River	SWO LEVEL	LEVEL
D_18	Somerset	Delaware River	TRUNK LEVEL	LEVEL
D_19	Somerset	Delaware River	SWO LEVEL	LEVEL
D_19	Somerset	Delaware River	TRUNK LEVEL	LEVEL
D_20	Somerset	Delaware River	SWO LEVEL	LEVEL
D_20	Somerset	Delaware River	TRUNK LEVEL	LEVEL
D_21	Somerset	Delaware River	SWO LEVEL	LEVEL
D_21	Somerset	Delaware River	TRUNK LEVEL	LEVEL
D_22	Somerset	Delaware River	SWO LEVEL	LEVEL
D_22	Somerset	Delaware River	TRUNK LEVEL	LEVEL
D_23	Somerset	Delaware River	SWO LEVEL	LEVEL
D_23	Somerset	Delaware River	TRUNK LEVEL	LEVEL
D_24	Somerset	Delaware River	SWO LEVEL	LEVEL
D_24	Somerset	Delaware River	TRUNK LEVEL	LEVEL
D_25	Somerset	Delaware River	SWO LEVEL	LEVEL

Site Name	**Interceptor**	**Waterbody**	**Measurement Name**	**Measurement Type**
D_25	Somerset	Delaware River	TRUNK LEVEL	LEVEL
D_37	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_37	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_38	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_38	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_39	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_39	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_40	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_40	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_41	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_41	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_42	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_42	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_43	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_43	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_47	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_47	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_48	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_48	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_49	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_49	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_50	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_50	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_51	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_51	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_51A	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_52	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_52	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_53	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_53	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_54	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_54	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_58	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_58	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_61	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_61	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_63	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_63	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_64	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_64	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_65	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_65	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_66	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_66	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL

Site Name	Interceptor	Waterbody	Measurement Name	Measurement Type
D_67	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_67	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_68	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_68	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_69	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_69	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_70	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_70	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_72	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_72	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
D_73	Lower Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
D_73	Lower Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
F_03	Lower Frankford Low Level	Frankford Creek	SWO LEVEL	LEVEL
F_03	Lower Frankford Low Level	Frankford Creek	TRUNK LEVEL	LEVEL
F_04	Lower Frankford Low Level	Frankford Creek	SWO LEVEL	LEVEL
F_04	Lower Frankford Low Level	Frankford Creek	TRUNK LEVEL	LEVEL
F_05	Lower Frankford Low Level	Frankford Creek	SWO LEVEL	LEVEL
F_05	Lower Frankford Low Level	Frankford Creek	TRUNK LEVEL	LEVEL
F_06	Lower Frankford Low Level	Frankford Creek	SWO LEVEL	LEVEL
F_06	Lower Frankford Low Level	Frankford Creek	TRUNK LEVEL	LEVEL
F_07	Lower Frankford Low Level	Frankford Creek	SWO LEVEL	LEVEL
F_07	Lower Frankford Low Level	Frankford Creek	TRUNK LEVEL	LEVEL
F_08	Lower Frankford Low Level	Frankford Creek	SWO LEVEL	LEVEL
F_08	Lower Frankford Low Level	Frankford Creek	TRUNK LEVEL	LEVEL
F_09	Lower Frankford Low Level	Frankford Creek	SWO LEVEL	LEVEL
F_09	Lower Frankford Low Level	Frankford Creek	TRUNK LEVEL	LEVEL
F_10	Lower Frankford Low Level	Frankford Creek	SWO LEVEL	LEVEL
F_10	Lower Frankford Low Level	Frankford Creek	TRUNK LEVEL	LEVEL
F_11	Lower Frankford Low Level	Frankford Creek	SWO LEVEL	LEVEL
F_11	Lower Frankford Low Level	Frankford Creek	TRUNK LEVEL	LEVEL
F_12	Lower Frankford Low Level	Frankford Creek	SWO LEVEL	LEVEL
F_12	Lower Frankford Low Level	Frankford Creek	TRUNK LEVEL	LEVEL
F_13	Lower Frankford Creek	Frankford Creek	DWO LEVEL	LEVEL
F_13	Lower Frankford Creek	Frankford Creek	SWO LEVEL	LEVEL
F_13	Lower Frankford Creek	Frankford Creek	TRUNK LEVEL	LEVEL
F_14	Lower Frankford Creek	Frankford Creek	SWO LEVEL	LEVEL
F_14	Lower Frankford Creek	Frankford Creek	TRUNK LEVEL	LEVEL
F_23	Lower Frankford Creek	Frankford Creek	SWO LEVEL	LEVEL
F_23	Lower Frankford Creek	Frankford Creek	TRUNK LEVEL	LEVEL
F_24	Lower Frankford Creek	Frankford Creek	SWO LEVEL	LEVEL
F_24	Lower Frankford Creek	Frankford Creek	TRUNK LEVEL	LEVEL
F_25	Lower Frankford Creek	Frankford Creek	DWO GATE POSITION	POSITION
F_25	Lower Frankford Creek	Frankford Creek	SWO GATE POSITION 1	POSITION
F_25	Lower Frankford Creek	Frankford Creek	SWO GATE POSITION 2	POSITION

Site Name	Interceptor	Waterbody	Measurement Name	Measurement Type
F_25	Lower Frankford Creek	Frankford Creek	SWO LEVEL	LEVEL
F_25	Lower Frankford Creek	Frankford Creek	TRUNK LEVEL	LEVEL
H_29		Schuylkill River	DWO LEVEL	LEVEL
H_29		Schuylkill River	SWO LEVEL	LEVEL
H_29		Schuylkill River	TRUNK LEVEL	LEVEL
H_35		Schuylkill River	BLOWER 1 RUN	EVENT
H_35		Schuylkill River	BLOWER 2 RUN	EVENT
H_35		Schuylkill River	DAM AIR PRESSURE	PSI
H_35		Schuylkill River	DWO GATE POSITION	POSITION
H_35		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
H_35		Schuylkill River	SWO GATE POSITION	POSITION
H_35		Schuylkill River	SWO LEVEL	LEVEL
H_35		Schuylkill River	TRUNK LEVEL	LEVEL
I_BYH09		Byberry Creek	INTERCEPTOR LEVEL	LEVEL
I_CCHLC07	Cobbs Creek High Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCHLC12	Cobbs Creek High Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCHLC13	Cobbs Creek High Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCHLC14	Cobbs Creek High Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCHLC17	Cobbs Creek High Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCHLC18	Cobbs Creek High Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCHLC34	Cobbs Creek High Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCHLH18	Cobbs Creek High Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCLLC19	Cobbs Creek Low Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCLLC20	Cobbs Creek Low Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCLLC22	Cobbs Creek Low Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCLLC24	Cobbs Creek Low Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCLLC26	Cobbs Creek Low Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_CCLLH01	Cobbs Creek Low Level	Cobbs Creek	INTERCEPTOR LEVEL	LEVEL
I_COHOH16		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_CSESH11	Central Schuylkill East Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_CSESH15	Central Schuylkill East Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_CSESS09	Central Schuylkill East Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_CSESS14	Central Schuylkill East Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_CSESS17	Central Schuylkill East Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_CSESS26	Central Schuylkill East Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_CSSSH15	Central Schuylkill	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_CVBH08		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_FHLH03	Frankford High Level	Frankford Creek	INTERCEPTOR LEVEL	LEVEL
I_FHLTT08	Frankford High Level	Frankford Creek	INTERCEPTOR LEVEL	LEVEL
I_FHLTT15	Frankford High Level	Frankford Creek	INTERCEPTOR LEVEL	LEVEL
I_FLLH03	Frankford Low Level	Frankford Creek	INTERCEPTOR LEVEL	LEVEL
I_LDLLD43	Lower Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_LDLLD45	Lower Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_LDLLD47	Lower Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL

Site Name	Interceptor	Waterbody	Measurement Name	Measurement Type
I_LDLLD53	Lower Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_LDLLD62	Lower Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_LDLLD69	Lower Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_LDLLD70	Lower Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_LFCH07	Lower Frankford Creek	Frankford Creek	INTERCEPTOR LEVEL	LEVEL
I_LFCH19	Lower Frankford Creek	Frankford Creek	INTERCEPTOR LEVEL	LEVEL
I_LFLLF08	Lower Frankford Low Level	Frankford Creek	INTERCEPTOR LEVEL	LEVEL
I_LFLLF10	Lower Frankford Low Level	Frankford Creek	INTERCEPTOR LEVEL	LEVEL
I_LSESH15	Lower Schuylkill East Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_LSESS36	Lower Schuylkill East Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_LSWSH01	Lower Schuylkill West Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_LSWSS33	Lower Schuylkill West Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_LSWSS38	Lower Schuylkill West Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_LSWSS45	Lower Schuylkill West Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_MRH21	Main Relief Sewer	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_OH12		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_PASYH13		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_PDRLH01		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_PDRLH02		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_PENRH02		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_PH04	Pennypack	Pennypack Creek	INTERCEPTOR LEVEL	LEVEL
I_PH05	Pennypack	Pennypack Creek	INTERCEPTOR LEVEL	LEVEL
I_PH06	Pennypack	Pennypack Creek	INTERCEPTOR LEVEL	LEVEL
I_PH10	Pennypack	Pennypack Creek	INTERCEPTOR LEVEL	LEVEL
I_PMPFH03		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_PP02	Pennypack	Pennypack Creek	INTERCEPTOR LEVEL	LEVEL
I_PP04	Pennypack	Pennypack Creek	INTERCEPTOR LEVEL	LEVEL
I_PP05	Pennypack	Pennypack Creek	INTERCEPTOR LEVEL	LEVEL
I_PQH09	Poquessing	Poquessing Creek	INTERCEPTOR LEVEL	LEVEL
I_PRH10		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SD19	Somerset	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_SD21	Somerset	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_SD25	Somerset	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_SH03	Somerset	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_SRH05		Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SWMGCH LH01	Southwest Main Gravity	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SWMGEH LH01	Southwest Main Gravity	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SWMGH17	Southwest Main Gravity	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SWMGH20	Southwest Main Gravity	Schuylkill River	C GATE POSITION	POSITION

Site Name	**Interceptor**	**Waterbody**	**Measurement Name**	**Measurement Type**
I_SWMGH20	Southwest Main Gravity	Schuylkill River	E GATE POSITION	POSITION
I_SWMGH20	Southwest Main Gravity	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SWMGH20	Southwest Main Gravity	Schuylkill River	W GATE POSITION	POSITION
I_SWMGS28	Southwest Main Gravity	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SWMGS34	Southwest Main Gravity	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SWMGS43	Southwest Main Gravity	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SWMGS47	Southwest Main Gravity	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SWMGS50	Southwest Main Gravity	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_SWMGWHLH01	Southwest Main Gravity	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
I_UDLLD04	Upper Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_UDLLD08	Upper Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_UDLLH03	Upper Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_UDLLH04	Upper Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_UDLLH07	Upper Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_UDLLH14	Upper Delaware Low Level	Delaware River	INTERCEPTOR LEVEL	LEVEL
I_WBH06		Wissahickon Creek	INTERCEPTOR LEVEL	LEVEL
I_WHLH08	Wissahickon High Level	Wissahickon Creek	INTERCEPTOR LEVEL	LEVEL
I_WLLH11	Wissahickon Low Level	Wissahickon Creek	INTERCEPTOR LEVEL	LEVEL
P_01	Pennypack	Pennypack Creek	SWO LEVEL	LEVEL
P_01	Pennypack	Pennypack Creek	TRUNK LEVEL	LEVEL
P_02	Pennypack	Pennypack Creek	SWO LEVEL	LEVEL
P_02	Pennypack	Pennypack Creek	TRUNK LEVEL	LEVEL
P_03	Pennypack	Pennypack Creek	SWO LEVEL	LEVEL
P_03	Pennypack	Pennypack Creek	TRUNK LEVEL	LEVEL
P_04	Pennypack	Pennypack Creek	SWO LEVEL	LEVEL
P_04	Pennypack	Pennypack Creek	TRUNK LEVEL	LEVEL
P_05	Pennypack	Pennypack Creek	SWO LEVEL	LEVEL
P_05	Pennypack	Pennypack Creek	TRUNK LEVEL	LEVEL
R_06	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
R_06	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
R_07	Main Relief Sewer	Schuylkill River	SWO LEVEL	LEVEL
R_07	Main Relief Sewer	Schuylkill River	TRUNK LEVEL	LEVEL
R_12	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
R_12	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
R_13	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
R_13	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL
R_14	Upper Delaware Low Level	Delaware River	SWO LEVEL	LEVEL
R_14	Upper Delaware Low Level	Delaware River	TRUNK LEVEL	LEVEL

Site Name	Interceptor	Waterbody	Measurement Name	Measurement Type
R_15	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
R_15	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
R_18	Frankford High Level	Tacony Creek	INTERCEPTOR LEVEL	LEVEL
R_18	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
R_20	Central Schuylkill East Side	Schuylkill River	INTERCEPTOR LEVEL	LEVEL
R_20	Central Schuylkill East Side	Schuylkill River	STORMWATER LEVEL	LEVEL
R_24	Cobbs Creek High Level	Cobbs Creek	SWO LEVEL	LEVEL
R_24	Cobbs Creek High Level	Cobbs Creek	TRUNK LEVEL	LEVEL
S_01	Central Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_01	Central Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_03	Central Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_03	Central Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_04	Central Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_04	Central Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_05	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_05	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_06	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_06	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_07	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_07	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_08	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_08	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_09	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_09	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_10	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_10	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_11	Central Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_11	Central Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_12	Central Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_12	Central Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_12A	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_12A	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_13	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_13	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_15	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_15	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_17	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_17	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_18	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_18	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_19	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_19	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_22	Central Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_22	Central Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL

Site Name	Interceptor	Waterbody	Measurement Name	Measurement Type
S_23	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_23	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_25	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_25	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_26	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_26	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_27	Central Schuylkill East Side	Schuylkill River	DWO LEVEL	LEVEL
S_27	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_27	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_28	Central Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_28	Central Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_30	Southwest Main Gravity	Schuylkill River	SWO LEVEL	LEVEL
S_30	Southwest Main Gravity	Schuylkill River	TRUNK LEVEL	LEVEL
S_31	Lower Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_31	Lower Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_32	Lower Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_32	Lower Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_33	Lower Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_33	Lower Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_34	Lower Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_34	Lower Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_35	Lower Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_35	Lower Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_36	Lower Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_36	Lower Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_36A	Lower Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_36A	Lower Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_37	Lower Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_37	Lower Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_38	Lower Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_38	Lower Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_39	Lower Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_39	Lower Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_40	Lower Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_40	Lower Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_42	Lower Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_42	Lower Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_42A	Lower Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_42A	Lower Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_43	Lower Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_43	Lower Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_44	Lower Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_44	Lower Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_45	Lower Schuylkill West Side	Schuylkill River	DWO LEVEL	LEVEL

Site Name	**Interceptor**	**Waterbody**	**Measurement Name**	**Measurement Type**
S_45	Lower Schuylkill West Side	Schuylkill River	SWO LEVEL	LEVEL
S_45	Lower Schuylkill West Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_46	Lower Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_46	Lower Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_47	Lower Schuylkill East Side	Schuylkill River	SWO LEVEL	LEVEL
S_47	Lower Schuylkill East Side	Schuylkill River	TRUNK LEVEL	LEVEL
S_50	Southwest Main Gravity	Schuylkill River	SWO LEVEL	LEVEL
S_50	Southwest Main Gravity	Schuylkill River	TRUNK LEVEL	LEVEL
S_51	Southwest Main Gravity	Schuylkill River	SWO LEVEL	LEVEL
S_51	Southwest Main Gravity	Schuylkill River	TRUNK LEVEL	LEVEL
T_01	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_01	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_03	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_03	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_04	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_04	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_05	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_05	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_06	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_06	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_07	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_07	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_08	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_08	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_09	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_09	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_10	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_10	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_11	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_11	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_12	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_12	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_13	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_13	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_14	Frankford High Level	Tacony Creek	DWO GATE 1	POSITION
T_14	Frankford High Level	Tacony Creek	DWO GATE 2	POSITION
T_14	Frankford High Level	Tacony Creek	SWO CREST GATE	POSITION
T_14	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_14	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL
T_15	Frankford High Level	Tacony Creek	SWO LEVEL	LEVEL
T_15	Frankford High Level	Tacony Creek	TRUNK LEVEL	LEVEL

Table 4 - Listing of all Rain Gages (7/1/2022 - 6/30/2023)

Rain Gage	**Location**	**Percent Working**

RG_1	70th and Essington Ave	48.73%
RG_2	66th and Regent St	95.81%
RG_3	Fox Chase Rd. and Castor Ave	94.26%
RG_4	State Rd and Pennypack St	95.96%
RG_5	3rd and Mifflin St	92.53%
RG_6	Cardinal Ave and City Line Ave	82.60%
RG_7	G St. and E Annsbury St	88.32%
RG_8	N Water St. and E Clarkson Ave	96.04%
RG_9	54th and Lancaster Ave	95.54%
RG_10	Pine Rd and Susquehanna Rd	95.18%
RG_11	Rising Sun Ave and Lardner St	63.28%
RG_12	Pattison Ave and Columbus Blvd	93.23%
RG_13	Glendale Ave and Algon Ave	95.54%
RG_14	Delaware Ave and Lewis St	95.52%
RG_15	E Montgomery Ave and Thompson St	91.18%
RG_16	19th and Wood St	94.44%
RG_17	Saul St. and Benner St	96.06%
RG_18	Fox St. and Roosevelt Blvd	81.09%
RG_19	Chew Ave and Sharpnack St	98.26%
RG_20	Woodhaven Rd and Knights Rd	52.36%
RG_21	Shawmont Ave and Eva St	95.40%
RG_22	N 67th and Callowhill St	94.56%
RG_23	Penrose Ave and Mingo Ave	72.43%
RG_24	Lockart Rd and Lockart Ln	70.23%
RG_25	24th and Wolf St	5.14%
RG_26	621 Lehigh Ave	40.57%
RG_27	Grant Ave and Ashford Rd	96.01%
RG_28	1350 Southampton Rd	72.06%
RG_29	Springfield Way and PaperMill Rd	92.33%
RG_30	7609 Montgomery Ave	0.00%
RG_31	Valley Rd and Old Valley Rd	88.49%
RG_32	Rozel Ave and Crushmore Rd	79.99%
RG_33	Jackson St and E Broadway Ave	95.91%
RG_34	Lawrence Rd and Chester Ave	73.34%
RG_35	Hagysford Rd and Tower Lane	93.88%
RG_36	Schuylkill Canal and Lock St	63.18%
RG_37	S 13 St and Normandy Pl	16.47%

Table 5 - Listing of All Pumping Station Monitors

Monitor ID	Type of Pumping Station	Measurement Name	Measurement Type	Address
PS_26VA	Storm Water	PUMP 1 RUN	EVENT	26th and Vare Ave
PS_26VA	Storm Water	PUMP 2 RUN	EVENT	27th and Vare Ave
PS_26VA	Storm Water	WET WELL LEVEL	LEVEL	28th and Vare Ave
PS_42ST	Waste Water	PUMP 1 RUN	EVENT	761 S 43rd St
PS_42ST	Waste Water	PUMP 2 RUN	EVENT	762 S 43rd St
PS_42ST	Waste Water	PUMP 3 RUN	EVENT	763 S 43rd St
PS_42ST	Waste Water	WET WELL LEVEL	LEVEL	764 S 43rd St
PS_BANK	Waste Water	PUMP 1 RUN	EVENT	15 S Bank St (Bank & Elbow Ln)
PS_BANK	Waste Water	PUMP 2 RUN	EVENT	16 S Bank St (Bank & Elbow Ln)
PS_BANK	Waste Water	WET WELL LEVEL	LEVEL	17 S Bank St (Bank & Elbow Ln)
PS_BELD	Waste Water	PUMP 1 RUN	EVENT	751 S Manatawna St (Belfry & Steeple)
PS_BELD	Waste Water	PUMP 2 RUN	EVENT	752 S Manatawna St (Belfry & Steeple)
PS_BELD	Waste Water	WET WELL LEVEL	LEVEL	753 S Manatawna St (Belfry & Steeple)
PS_BLVD	Storm Water	PUMP 1 RUN	EVENT	4251 N Broad St (Broad & Roosevelt Blvd)
PS_BLVD	Storm Water	PUMP 2 RUN	EVENT	4252 N Broad St (Broad & Roosevelt Blvd)
PS_BLVD	Storm Water	PUMP 3 RUN	EVENT	4253 N Broad St (Broad & Roosevelt Blvd)
PS_BLVD	Storm Water	PUMP 4 RUN	EVENT	4254 N Broad St (Broad & Roosevelt Blvd)
PS_BLVD	Storm Water	WET WELL LEVEL	LEVEL	4255 N Broad St (Broad & Roosevelt Blvd)
PS_CSPS	Waste Water	N GATE POSITION	POSITION	600 University Ave (34th St Bridge & University)
PS_CSPS	Waste Water	N SIPHON LEVEL	LEVEL	601 University Ave (34th St Bridge & University)

Monitor ID	Type of Pumping Station	Measurement Name	Measurement Type	Address
PS_CSPS	Waste Water	N SIPHON LEVEL	LEVEL	602 University Ave (34th St Bridge & University)
PS_CSPS	Waste Water	N WET WELL LEVEL	LEVEL	603 University Ave (34th St Bridge & University)
PS_CSPS	Waste Water	PUMP 1 RUN	EVENT	604 University Ave (34th St Bridge & University)
PS_CSPS	Waste Water	PUMP 2 RUN	EVENT	605 University Ave (34th St Bridge & University)
PS_CSPS	Waste Water	PUMP 3 RUN	EVENT	606 University Ave (34th St Bridge & University)
PS_CSPS	Waste Water	PUMP 4 RUN	EVENT	607 University Ave (34th St Bridge & University)
PS_CSPS	Waste Water	PUMP 5 RUN	EVENT	608 University Ave (34th St Bridge & University)
PS_CSPS	Waste Water	PUMP 6 RUN	EVENT	609 University Ave (34th St Bridge & University)
PS_CSPS	Waste Water	S GATE POSITION	POSITION	610 University Ave (34th St Bridge & University)
PS_CSPS	Waste Water	S WET WELL LEVEL	LEVEL	611 University Ave (34th St Bridge & University)
PS_FORD	Waste Water	PUMP 1 RUN	EVENT	3800 Ford Rd (Across from West Park Hospital)
PS_FORD	Waste Water	PUMP 2 RUN	EVENT	3801 Ford Rd (Across from West Park Hospital)
PS_FORD	Waste Water	WET WELL LEVEL	LEVEL	3802 Ford Rd (Across from West Park Hospital)
PS_HOGI	Waste Water	PUMP 1 RUN	EVENT	3 Hog Island Rd (east of Airport control tower)
PS_HOGI	Waste Water	PUMP 2 RUN	EVENT	4 Hog Island Rd (east of Airport control tower)
PS_HOGI	Waste Water	WET WELL LEVEL	LEVEL	5 Hog Island Rd (east of Airport control tower)
PS_LIND	Waste Water	PUMP 1 RUN	EVENT	5200 Linden Ave (Linden & Milnor)
PS_LIND	Waste Water	PUMP 2 RUN	EVENT	5201 Linden Ave (Linden & Milnor)
PS_LIND	Waste Water	WET WELL LEVEL	LEVEL	5202 Linden Ave (Linden & Milnor)
PS_LOCK	Waste Water	PUMP 1 RUN	EVENT	10778 Lockart Rd (Lockart St & Locart Ln)
PS_LOCK	Waste Water	PUMP 2 RUN	EVENT	10779 Lockart Rd (Lockart St & Locart Ln)

Monitor ID	Type of Pumping Station	Measurement Name	Measurement Type	Address
PS_LOCK	Waste Water	WET WELL LEVEL	LEVEL	10780 Lockart Rd (Lockart St & Locart Ln)
PS_MILN	Waste Water	PUMP 1 RUN	EVENT	9647 Milnor St (between Grant Ave & Eden St)
PS_MILN	Waste Water	PUMP 2 RUN	EVENT	9648 Milnor St (between Grant Ave & Eden St)
PS_MILN	Waste Water	PUMP 3 RUN	EVENT	9649 Milnor St (between Grant Ave & Eden St)
PS_MILN	Waste Water	WET WELL LEVEL	LEVEL	9650 Milnor St (between Grant Ave & Eden St)
PS_MING	Storm Water	BASIN LEVEL	LEVEL	7000 Penrose Ave (Schuylkill River under Platt Bridge)
PS_MING	Storm Water	PUMP 1 RUN	EVENT	7001 Penrose Ave (Schuylkill River under Platt Bridge)
PS_MING	Storm Water	PUMP 2 RUN	EVENT	7002 Penrose Ave (Schuylkill River under Platt Bridge)
PS_MING	Storm Water	PUMP 3 RUN	EVENT	7003 Penrose Ave (Schuylkill River under Platt Bridge)
PS_MING	Storm Water	PUMP 4 RUN	EVENT	7004 Penrose Ave (Schuylkill River under Platt Bridge)
PS_MING	Storm Water	PUMP 5 RUN	EVENT	7005 Penrose Ave (Schuylkill River under Platt Bridge)
PS_MING	Storm Water	PUMP 6 RUN	EVENT	7006 Penrose Ave (Schuylkill River under Platt Bridge)
PS_NEIL	Waste Water	PUMP 1 RUN	EVENT	4000 Neill Dr (Neill Dr & Falls Rd)
PS_NEIL	Waste Water	PUMP 1 RUN	EVENT	4001 Neill Dr (Neill Dr & Falls Rd)
PS_NEIL	Waste Water	PUMP 3 RUN	EVENT	4002 Neill Dr (Neill Dr & Falls Rd)
PS_NEIL	Waste Water	WET WELL LEVEL	LEVEL	4003 Neill Dr (Neill Dr & Falls Rd)
PS_P603	Waste Water	PUMP 1 RUN	EVENT	2000 Langley Ave (PNBC)
PS_P603	Waste Water	PUMP 2 RUN	EVENT	2001 Langley Ave (PNBC)
PS_P603	Waste Water	WET WELL LEVEL	LEVEL	2002 Langley Ave (PNBC)
PS_P648	Waste Water	PUMP 1 RUN	EVENT	PNBC
PS_P648	Waste Water	PUMP 2 RUN	EVENT	PNBC
PS_P648	Waste Water	WET WELL LEVEL	LEVEL	PNBC
PS_P796	Waste Water	PUMP 1 RUN	EVENT	4801 S 13th St (PNBC)

Monitor ID	Type of Pumping Station	Measurement Name	Measurement Type	Address
PS_P796	Waste Water	PUMP 2 RUN	EVENT	4802 S 13th St (PNBC)
PS_P796	Waste Water	PUMP 3 RUN	EVENT	4803 S 13th St (PNBC)
PS_P796	Waste Water	WET WELL LEVEL	LEVEL	4804 S 13th St (PNBC)
PS_POLI	Waste Water	PUMP 1 RUN	EVENT	
PS_POLI	Waste Water	PUMP 2 RUN	EVENT	
PS_POLI	Waste Water	WET WELL LEVEL	LEVEL	
PS_RENN	Waste Water	PUMP 1 RUN	EVENT	11064 Rennard St (Philmont Shopping Center)
PS_RENN	Waste Water	PUMP 2 RUN	EVENT	11065 Rennard St (Philmont Shopping Center)
PS_RENN	Waste Water	WET WELL LEVEL	LEVEL	11066 Rennard St (Philmont Shopping Center)
PS_SPLA	Waste Water	PUMP 1 RUN	EVENT	9021 Buttonwood Pl (Spring Lane Meadows)
PS_SPLA	Waste Water	PUMP 2 RUN	EVENT	9022 Buttonwood Pl (Spring Lane Meadows)
PS_SPLA	Waste Water	WET WELL LEVEL	LEVEL	9023 Buttonwood Pl (Spring Lane Meadows)

Table 6 - Listing of all Temporary Flow Monitors Deployed by Projects

Site Name	Start	End	Project
S05-000012	03/30/11	Present	CSO
S45-001110	10/13/11	Present	CSO Long-term
D63-000035	10/14/11	Present	CSO Long-term
BC-0055	11/30/11	Present	I&I Long-term
IALL-B0355	12/12/11	Present	I&I Long-term
C17-003360	12/13/11	Present	CSO Long-term
T14-013875	01/30/12	Present	CSO Long-term; SFR Support
M005-09-0140	09/27/12	Present	Stormwater Long-term; SFR Support
PC-0040	01/21/14	Present	I&I Long-term; SSO Support
D45-000015	05/08/14	Present	CSO Long-term
UDLL-0045	05/29/14	Present	CSO Long-term
USE-0365	05/29/14	06/12/23	I&I Long-term; SSO Support
SWMG-B0265	06/24/14	Present	CSO Long-term
UDLL-0085	06/25/14	Present	CSO Long-term
UDLL-0275	09/19/14	Present	CSO Long-term
WLL-0675	03/13/15	Present	I&I Long-term
THL-0085	04/14/15	Present	CSO Long-term
UDLL-0120	07/29/15	Present	I/I
S051-08-S0015	04/28/16	Present	I&I Long-term; SSO Support
S051-08-S0180	04/29/16	Present	I&I Long-term; SSO Support
S059-04-S0027	05/04/16	Present	I&I Long-term; SSO Support
S051-05-S0015	05/05/16	06/09/22	I&I Long-term; SSO Support
CV-0145	06/24/16	02/04/22	I&I Long-term; SSO Support
GSI DST-010-03	05/24/17	Present	GSI Long-term
GSI DD RG	06/23/17	Present	GSI Long-term
S50-011230	08/29/17	Present	CSO Long-term
DD DST-010-01	11/07/17	Present	GSI Long-term
THL-0045	11/23/17	Present	CSO Long-term

Site Name	Start	End	Project
S05-000012	03/30/11	Present	CSO
CF-DST-4	04/27/18	Present	GSI Long-term
T14-000252	12/06/18	Present	CSO
T14-000140	01/10/19	Present	CSO
T14-000115	01/10/19	Present	CSO Long-term
CV-0162	08/28/19	Present	I&I SSO Support
CV-B0250	10/24/19	Present	I&I SSO Support
P108-11-0045	04/06/21	3/1/2022	Stormwater
P108-11-0030	04/09/21	3/1/2022	Stormwater
C17-000865	03/08/22	Present	CSO
C17-000895	03/08/22	Present	CSO
C17-000905	03/08/22	Present	CSO
CV-0145	05/20/22	Present	I&I Long-term; SSO Support
CV-0130	05/20/22	Present	I&I SSO Support
PC-1065 (MSHX-02)	06/30/22	Present	I&I SSO Support
S31-000010	08/29/22	Present	CSO
S44-000015	08/29/22	Present	CSO
S059-02-S0010	08/30/22	Present	I&I SSO Support
P083-03-S0050	08/30/22	Present	I&I SSO Support
WLL-0565	08/31/22	Present	I&I SSO Support
WLL-0650	08/31/22	Present	I&I SSO Support
USE-0400	08/31/22	06/07/23	CSO
S051-05-S0015	09/09/22	Present	I&I Long-term; SSO Support
P108-17-S0010	09/21/22	Present	I&I SSO Support
Q120-02-S0010	09/23/22	Present	I&I SSO Support
CSE-0030	09/29/22	Present	CSO
S20-000015	09/30/22	Present	CSO
S20-000070	09/30/22	Present	CSO
Q109-07-S0025	10/24/22	Present	I&I SSO Support
F03-000055	10/25/22	Present	CSO
LSW-0077	10/28/22	Present	CSO
CCHL-0430	01/18/23	Present	I&I SSO Support
CCHL-0570	01/18/23	Present	CSO

Site Name	Start	End	Project
S05-000012	03/30/11	Present	CSO
T089-04-S0055	02/23/23	Present	I&I SSO Support
T089-04-S0095	02/23/23	Present	I&I SSO Support
T089-04-S0165	02/23/23	Present	I&I SSO Support
THL-0225	03/21/23	Present	CSO

Table 7 - Listing of Outlying Community Contract Limits

Metered	Contract Limits					
Standardized	Instantaneous		Daily Max	Township Total		
Site ID	CFS	MGD	MGD	Inst. CFS	Inst. MGD	Daily Max MGD
MA1						
MA2						
MA3						
MA4						
MAx1						
Abington Total				9.542	6.168	4.453
MB1				74.26	47.996	33
Bucks Total						
MBE1						
MBE2						
MBE3						
MBE4						
MBE5						
MBE6						
MBE7						
MBE8						
MBE9						
MBE10						
MBE11						
MBE12						
MBE13						
MBE14						
MBE15						
MBE16						
Bensalem Total				11.74	7.588	6.133
MC1	2.75	1.777				
MC2	18	11.634				
MC3	0.480	0.31				
MCx1	8	5.171	Combined total for all the MCx#			
MCx2						
MCx3						
MCx4						
MCx5						
MCx6						
MCx7						

Metered	Contract Limits					
Standardized	Instantaneous		Daily Max	Township Total		
Site ID	CFS	MGD	MGD	Inst. CFS	Inst. MGD	Daily Max MGD
Cheltenham Total				20.75	13.411	13.380
MD1	155	100.179	50	155	100	50
DELCORA Total				155	100	50
ML1			5.474			
ML2			1.48			
ML3						
ML4			10.264			
ML5			1.848			
ML6			0.252			
ML7			0.84			
Lower Merion Total				31.57	20.404	14.5
MLM1						
MLM2	3.71	2.4	1.8			
MLM3						
MLM4						
MLM5						
MLM6						
MLM7						
Lower Moreland Total				5.88	3.80	2.85
MS1						
MS2						
MS3						
MS4						
MS5						
MS6						
MS7						
MS8						
Springfield Total				8.58	5.55	4.2
MSH1						
MSH2						
MSHX_1						
MSHX_2						
Southampton Total				15.79	10.205	7.14
MUD-N						
MUD-S						
MUD-O						

Metered	**Contract Limits**					
Standardized	**Instantaneous**		**Daily Max**	**Township Total**		
Site ID	**CFS**	**MGD**	**MGD**	**Inst. CFS**	**Inst. MGD**	**Daily Max MGD**
MUD-1						
Upper Darby Total				35	22.621	17

Appendix C – FY23 CSO Program Maintenance Annual Report

FLOW CONTROL UNIT

FY2023 ANNUAL REPORT

PHILADELPHIA WATER DEPARTMENT

Submitted By:
Michael D. Hengstler
Water Conveyance System Superintendent
PWD-Flow Control

FLOW CONTROL UNIT-FY23
OPERATION and MAINTENANCE

The Collector System Flow Control Unit’s primary responsibilities are divided into four groups: Combined Sewer Overflow (CSO) Regulator Maintenance, Pumping Station Operation & Maintenance, Collector System Instrumentation and CCTV Technical Inspections. The Wastewater Pumping Group main office is located at 5202 Pennypack Street in the Torresdale Raw Water Pumping Station. The WWP Group assembles at this facility, which also has a maintenance machine shop, storage garage, and workshop to handle maintenance assignments. The other three groups have maintenance shops and assemble at the Fox Street Headquarters Facility. Brief descriptions of each group's responsibilities and their FY23 annual year highlights follow. Numerous vacancies in the unit have hindered some of the work being completed but goals and critical infrastructure is being kept in service and running without major failures or downtime.

CSO REGULATOR MAINTENANCE GROUP

Inspecting and servicing the combined sewer overflow regulating and diversion chambers are completed by 19 Interceptor maintenance personnel. This group is responsible for the operations, maintenance, inspections, and cleaning of 175 combined sewer-regulating chambers, 89 tide gate chambers, 26 storm relief chambers, 12 sanitary flow diversions, several siphons and other related wastewater control devices throughout the collection system. Currently the Philadelphia Water Department Flow Control Unit maintains ten types of CSO regulators and storage systems:

Brown & Brown (B&B) mechanical
Computer Controlled Sluice Gates
Computer Controlled B&B Shutter Gates
Static Dams
Slot type regulators
Mechanical Sluice Gates
Side Overflow Weirs
Inflatable Rubber Dam
Water Hydraulic Sluice Gates
Computer Controlled Crest Gates

Mechanical or operational malfunctions of regulators and tide gates can cause dry weather discharges and stream and river inflow. These types of events can have a major impact on the Wastewater and Fresh Water Treatment Plant's performance and the quality of stream water. They can also affect the recreational use of our local waterways. Thus, the combined sewer regulator systems are closely monitored for potential blockages and when identified the problems are corrected quickly. CSO chamber Inspections and clearing of any regulator blockages prior to causing a dry weather discharge are the primary responsibilities of this group and are key areas in assessing the group's overall performance.

By continually tracking and analyzing Dry Weather Discharges it can be determined if new or modified maintenance procedures would help to prevent them from occurring. Although our established procedures have greatly reduced the number and duration of these discharges, the combined system picks up all manner of trash and debris that is unpredictable in its pattern of causing flow disruptions. Despite incorporating best management practices such as having all inlets trapped and cleaned, preventative maintenance schedules for sewer flushing and cleaning of the regulators, CCTV inspection of DWO pipes, etc., it is virtually impossible to eliminate all blockages before they occur.

The PWD Flow Control Unit continues to aggressively control and minimize these dry weather overflows by utilizing the latest technology-based controls including our Collector System Remote Monitoring Network that currently includes over 320 sites with over 720 individual level and/or flow measurements. Training the CSO maintenance personnel in the use of the system's computer programs for analyzing the trend data has developed a comprehensive understanding of individual CSO sites and their distinctive flow patterns. This familiarity helps them recognize abnormal conditions quickly at a location so that they can respond before the conditions develop into a dry weather CSO blockage or discharge.

The CSO Maintenance Group performed 4264 inspections of the regulating chambers in FY23. The work includes frequent visual inspections of the equipment and flow patterns to make sure everything is operating properly. The more comprehensive work such as the cleaning and lubricating of the mechanical equipment is scheduled during lower flow periods between rain events.

In FY23, the crews cleared 165 regulator blockages before they developed into a CSO dry weather discharge. There were 1 CSO dry weather discharges for this year which were promptly stopped within 1 hour of discovery.

Many discharges are a result of debris such as rags, sticks, stones, and other debris that become lodged in the CSO regulator diversion or the dry weather outlet pipe during dry weather periods. During the current pandemic high volumes of disposable wipes have been a major cause of the blockages. These types of blockages are virtually unpredictable so frequent inspections and closely observing the monitoring trend data is essential to our prevention program. Following moderate to heavy rain events the CSO regulators can have grit, sticks, rags and other debris caught at various places in and around the regulator that could eventually result in a discharge. The CSO maintenance crews perform quick topside inspections of the CSO sites throughout the city for several days following these events to remove or clear away any of this storm debris. The work schedule will then revert to the more comprehensive maintenance such as cleaning, lubricating, adjusting equipment and performing minor repairs to the mechanical regulators.

CSO Regulator Group with the help of Sewer maintenance and Mobile Dredging Vactoring Services, cleaned and removed approximately 28.93 tons of debris and grit from the D-25 regulating chamber, 10.07 tons of debris and grit from the D-37 regulating chamber, and 69.9 tons of debris and grit from the D-45 regulating chamber.

The CSO Regulator Group responded to numerous requests to check and close tide gates on the Southeast Water Treatment Plants Sewer districts after rain events.

WASTEWATER PUMPING STATION MAINTENANCE GROUP

The Wastewater Pumping Station Maintenance Group consisting of 35 maintenance personnel are located at the 5202 Pennypack St. Maintenance Shop. They are responsible for the operations and maintenance of 17 wastewater-pumping stations, 3 stormwater pumping stations, 2 sodium hypochlorite dosing stations, 11 computer-controlled CSO storage regulators and several in-line and offline wastewater-storage facilities among other duties.

Many of the pumping stations provide for only one running pump and one reserve pump. This arrangement means that pump breakdowns are responded to immediately and that overhauls need to be completed in a minimum amount of time. The main pump availability statistic is a good indicator of the Maintenance Group's performance in this area. The main pumping units were in service 98.17% of the time in FY23. The WWP Group completed 9 main wastewater pump overhauls at the stations. These overhauls consist of repair and replacement of the worn pump and motor components to bring the equipment's performance up to new operating condition.

The Wastewater Pumping Station Maintenance Group had one main pump out of service during annual year FY23 because of failures or breakdowns. The reason that pumps are not out of service is that during pump maintenance and overhauls the in-service pump is rotated out of activity and replaced by the spare pump for the station. This accomplishes two things; one the station always has its full complement of pumps available and the spare pump for the station gets used.

In addition to the pumping station maintenance, the group maintains a variety of other equipment throughout the Collector System. They are responsible for the operations and maintenance of the two sodium hypochlorite dosing stations. The stations are located next to the Queen Lane Raw Water pumping station, which injects hypo into the Upper Schuylkill East Interceptor, and at the Totem Rd. pumping station, which injects hypo into the Bucks

County force main. The group is responsible for maintaining adequate supply of the chemical, over 615,829 gallons in FY23, for monitoring the downstream hydrogen sulfide levels and adjusting the dosage levels in addition to the maintenance and repair of the equipment. The Ridge Avenue dosing station was taken offline in May of 2023.

The group also fabricates and repairs bar screens, debris grills and other equipment for the Collector System and performs major maintenance of the CSO mechanical regulators such as installation of tide gates, overflow gates and servicing of the Brown & Brown regulators.

Flow diversions in the sewer system are also installed by this group. During the repairs and maintenance at the Southeast Water Treatment Plant the crew installed diversions to limit flow to the plant and redirect it to the other treatment plants.

The Rennard Pumping Station betterment construction project is complete, and the Mingo Creek Betterment Project is ongoing. Two other construction projects will be starting in FY24. The Ford Road PS betterment and the Linden Avenue betterment.

COLLECTOR SYSTEM INSTRUMENTATION MAINTENANCE GROUP

The fourteen Instrument and Electronic Technicians located at the Fox Street facility are primarily responsible for installing, calibrating, and maintaining the electronic and instrumentation equipment in the Collector System monitoring and control network. They also repair, calibrate, and certify the hazardous gas detection meters for the Department as well as install temporary flow and level monitors for various units in the Water Department.

One of the primary responsibilities of the CS Instrumentation Group is to maintain the network of level sensors, flow meters, and rain gauges and keep them up and running with a minimum of downtime while maintaining accurate and reliable data. The network currently consists of 258 level and flow monitoring locations in the NE, SE, and SW Drainage Districts, 35 gauges in the citywide rain gauge network, 56 Township flow-metering stations, and several additional monitors at various control sites. It is crucial that the remote site equipment is communicating and downloading data to the server so that the information is available for trend chart viewing and analysis for the users. The CSO maintenance group relies heavily on these charts to monitor the performance of all the CSO regulators while paying special attention to the sites that have had recent or a history of discharges. The monitoring data is used for a wide variety of other purposes such as calibrating the Collector System's hydraulic model, generating township sewage flows for billing and for various Planning and Engineering studies.

The CS Instrumentation Maintenance group performed 1875 maintenance inspections in FY23. The data collection system used by Flow Control are TELOG units.

CCTV TECHNICAL INSPECTIONS GROUP

The CCTV Technical Inspections group consists of one Supervisor, two group leaders, and sixteen technicians who operate and maintain the seven closed circuit TV camera trucks and Green Storm Infrastructure inspection cameras. The seven CCTV trucks and CCTV Contractor completed 2761 inspections and logged 74.49 miles of sewer inspections in FY23. The CCTV GSI Unit completed 1379 inspections logging 11.07 miles. These inspections consisted of Post Construction Inspections and Maintenance Inspections. A breakdown of the types of inspections completed and mileage for the types of inspections is located on the Sewer Assessment Program CCTV Sewer Inspection Report.

The CCTV group has several primary functions which include inspections of sewers turned in for sewer complaints, special inspection requests from the Water/ Sewer Design group and the post construction inspection program which involves videoing the sewer at the completion of all sewer construction work. Another function of the group is to work with the Defective Connection Program group and Collector System Engineering group to identify the defective lateral connections. An ongoing project is identifying possible cross connections in the MCX-2 sewer shed.

SERVICE LEVEL GOALS

The goal of the Flow Control Unit is to maintain and exceed the service level goals. One area that directly affects the service level of the Flow Control Unit is personnel vacancies.

MONTH	Main Pump Availability	CSO Discharges per 100 Inspections	CCTV Inspections	% Metering Chambers Operational	% CSO Level Meters Operational
GOAL	**95% or Higher**	**0**	**2.8 Miles**	**95% or Higher**	**90% or Higher**
22-Jul	96.00%	0	7.53	98.00%	96.90%
22-Aug	100.00%	0.3	7.76	98.00%	96.40%
22-Sep	100.00%	0	7.09	93.00%	92.70%
22-Oct	100.00%	0	8.8	97.00%	96.10%
22-Nov	100.00%	0	5.02	98.00%	96.40%
22-Dec	100.00%	0	6.83	96.00%	97.50%
23-Jan	100.00%	0	7.47	97.00%	95.10%
23-Feb	97.00%	0	4.61	96.00%	92.00%
23-Mar	97.00%	0	6.75	96.00%	95.00%
23-Apr	96.00%	0	8.06	96.00%	98.60%
23-May	96.00%	0	9.44	97.00%	97.50%
23-Jun	96.00%	0	6.2	98.00%	97.80%
	AVE	**AVE**	**TOTAL**	**AVE**	**AVE**
FY23	**98.17%**	**0.0025**	**85.56**	**96.67%**	**96.00%**

FLOW CONTROL PERSONNEL SUMMARY

The Flow Control Unit makes every effort to fill all 97 approved positions to maintain the service level goals. The Flow Control unit currently has a 20% vacancy rate with the majority of vacancies in the Electronics field. The unit has been active in the apprenticeship program and currently has 1 apprentice working in the Electrical group of the Wastewater pumping group.

97 Flow Control Positions	Active	Vacant	Total
Clerk III	1	0	1
Custodial Worker	1	0	1
Data Services Support Clerk	1	0	1
Electrician 2	4	0	4
Electronic Equipment Supervisor	2	0	2
Electronic Technician 1	6	10	16
Electronic Technician 2	16	0	16
Electronic Technician Grp. Leader	4	0	4
Electronic Technician Trainee	2	0	2
Ind. Process Mach. Mech. Grp. Leader	2	0	2
Industrial Electrician 2	1	0	1
Industrial Electrician Group Leader	1	0	1
Industrial Process Mach. Mech.	10	0	10
Interceptor Service Worker I	7	0	7
Interceptor Service Worker II	6	0	6
Interceptor Services Supervisor	2	0	2
Mach. & Equipment Mech.1	1	3	4
Mach. & Equipment Mech.2	1	0	1
Office Clerk 2	2	0	2
Public Works Trainee	1	0	1
Sewer Maintenance Inspector	3	0	3
Trades Helper (P)	1	1	2
Water Conveyance Sys. Asst. Supt. (P)	2	0	2
Water Conveyance Sys. Supt.	1	0	1
Water Operations Repair Helper	5	0	5
Totals	**83**	**14**	**97**
Non-Civil Service			
Community Apprentice	4	**0**	**4**

FLOW CONTROL FY23 ANNUAL REPORT

SPREADSHEETS

PART 1 DRY WEATHER STATUS REPORT	PHILADELPHIA WATER DEPARTMENT WASTE AND STORM WATER COLLECTION FLOW CONTROL UNIT	Section 1 July 2022 - June 2023

COLLECTOR	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	21	10	12	6	7	12	7	10	10	10	12	7	124
DISCHARGES													
BLOCKS CLEARED			5										5
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	20	25	26	25	26	21	21	20	29	31	29	28	301
DISCHARGES													
BLOCKS CLEARED			6	3				1	3	1		1	15
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	7	6	13	8	7	6	6	7	8	12	12	12	104
DISCHARGES													
BLOCKS CLEARED			4		1				1		1	1	8
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	16	20	23	19	21	21	11	14	20	24	29	22	240
DISCHARGES													
BLOCKS CLEARED		1	4	3	1			1				2	12
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	27	33	19	29	20	16	33	14	27	29	34	23	304
DISCHARGES		1											1
BLOCKS CLEARED	1					1			6		1		9
SOMERSET - 9 UNITS													
INSPECTIONS	18	22	18	14	17	9	22	12	19	20	25	18	214
DISCHARGES													
BLOCKS CLEARED	2		3		1		1			1			8
LOWER DELAWARE LOW LEVEL - 33 UNITS													
INSPECTIONS	40	58	68	87	66	86	64	49	65	65	72	65	785
DISCHARGES													
BLOCKS CLEARED	5	1	42	10	2					3		1	64
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	37	28	40	34	30	36	45	25	42	40	42	29	428
DISCHARGES													
BLOCKS CLEARED	1	2	4	1		2				1		1	12
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	16	18	14	14	11	21	13	15	16	17	19	25	199
DISCHARGES													
BLOCKS CLEARED	1			1		2		2				2	8
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	15	14	18	16	18	18	17	10	20	22	19	12	199
DISCHARGES													
BLOCKS CLEARED													
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	16	14	24	21	16	16	21	15	23	21	19	33	239
DISCHARGES													
BLOCKS CLEARED	1			1							1		3
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	4	13	8	6	8	11	11	7	9	8	8	13	106
DISCHARGES													
BLOCKS CLEARED			2			1		1		1		4	9
COBBS CREEK HIGH LEVEL - 24 UNITS													
INSPECTIONS	28	44	48	41	30	28	41	24	63	49	60	48	504
DISCHARGES													
BLOCKS CLEARED						1				2		1	4
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	12	13	21	24	13	14	12	12	26	24	24	15	210
DISCHARGES													
BLOCKS CLEARED			1	1									2
RELIEF SEWERS - 26 UNITS													
INSPECTIONS	20	34.00	20	21	33	25	4	20	32	35	42	21	307
DISCHARGES													
BLOCKS CLEARED			6										6
TOTALS / MONTH for 201 REGULATOR UNITS													**Totals**
TOTAL INSPECTIONS	297	352	372	365	323	340	328	254	409	407	446	371	4264
TOTAL DISCHARGES		1											1
TOTAL BLOCKS CLEARED	11	4	77	20	5	7	1	5	10	9	3	13	165
AVER. # of INSP. / BC	27	88	5	18	65	49	328	51	41	45	149	29	74
DISC / 100 INSPECTIONS	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel 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. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

PART 1
DRY WEATHER STATUS
REPORT

PRECIPITATION FOR THE PERIOD: July 2022 - June 2023

Section 2

Date	Rain Inches	Date	Rain Inches	Date	Rain Inches	Date	Rain Inches	Date	Rain Inches	Date	Rain Inches	Date	Rain Inches	Date	Rain Inches	Date	Rain Inches	Date	Rain Inches	Date	Rain Inches	Date	Rain Inches
1-Jul		1-Aug	**0.26**	1-Sep		1-Oct	**0.95**	1-Nov	**0.05**	1-Dec		1-Jan	**0.01**	1-Feb	**0.02**	1-Mar		1-Apr	**0.83**	1-May	**0.05**	1-Jun	
2-Jul	**0.05**	2-Aug	**0.06**	2-Sep		2-Oct	**1.76**	2-Nov		2-Dec		2-Jan		2-Feb		2-Mar		2-Apr		2-May	**0.01**	2-Jun	**0.35**
3-Jul	**0.06**	3-Aug		3-Sep		3-Oct	**0.56**	3-Nov		3-Dec	**0.51**	3-Jan	**0.14**	3-Feb		3-Mar	**0.57**	3-Apr		3-May	**0.01**	3-Jun	
4-Jul		4-Aug	**0.01**	4-Sep		4-Oct	**0.58**	4-Nov		4-Dec		4-Jan		4-Feb		4-Mar	**0.32**	4-Apr		4-May	**0.01**	4-Jun	
5-Jul		5-Aug		5-Sep		5-Oct	**0.01**	5-Nov		5-Dec		5-Jan	**0.14**	5-Feb		5-Mar		5-Apr		5-May	**0.01**	5-Jun	
6-Jul		6-Aug		6-Sep	**3.11**	6-Oct		6-Nov		6-Dec	**0.65**	6-Jan	**0.05**	6-Feb		6-Mar		6-Apr	**0.44**	6-May		6-Jun	
7-Jul	**0.38**	7-Aug		7-Sep	**0.01**	7-Oct		7-Nov		7-Dec	**0.14**	7-Jan		7-Feb		7-Mar	**0.01**	7-Apr		7-May		7-Jun	
8-Jul	**0.05**	8-Aug		8-Sep		8-Oct	**0.02**	8-Nov		8-Dec		8-Jan		8-Feb		8-Mar		8-Apr		8-May		8-Jun	
9-Jul	**0.10**	9-Aug	**0.03**	9-Sep		9-Oct		9-Nov		9-Dec		9-Jan	**0.02**	9-Feb		9-Mar		9-Apr		9-May		9-Jun	
10-Jul		10-Aug		10-Sep		10-Oct		10-Nov		10-Dec		10-Jan		10-Feb		10-Mar	**0.35**	10-Apr		10-May		10-Jun	
11-Jul		11-Aug	**0.86**	11-Sep	**0.47**	11-Oct		11-Nov	**0.46**	11-Dec	**0.09**	11-Jan		11-Feb		11-Mar	**0.08**	11-Apr		11-May		11-Jun	
12-Jul		12-Aug		12-Sep	**0.04**	12-Oct		12-Nov	**0.03**	12-Dec		12-Jan	**0.10**	12-Feb	**0.16**	12-Mar		12-Apr		12-May		12-Jun	**1.19**
13-Jul		13-Aug		13-Sep	**0.45**	13-Oct	**1.04**	13-Nov	**0.06**	13-Dec		13-Jan	**0.03**	13-Feb		13-Mar	**0.12**	13-Apr	**0.55**	13-May	**0.02**	13-Jun	
14-Jul		14-Aug		14-Sep		14-Oct		14-Nov		14-Dec		14-Jan		14-Feb		14-Mar		14-Apr		14-May		14-Jun	**0.14**
15-Jul	**0.02**	15-Aug		15-Sep		15-Oct		15-Nov	**1.03**	15-Dec	**1.56**	15-Jan		15-Feb		15-Mar		15-Apr	**0.01**	15-May		15-Jun	
16-Jul	**0.11**	16-Aug		16-Sep		16-Oct		16-Nov	**0.17**	16-Dec	**0.24**	16-Jan		16-Feb	**0.20**	16-Mar		16-Apr		16-May		16-Jun	**1.99**
17-Jul	**0.02**	17-Aug		17-Sep		17-Oct	**0.52**	17-Nov		17-Dec		17-Jan		17-Feb	**0.95**	17-Mar	**0.03**	17-Apr	**0.12**	17-May		17-Jun	
18-Jul	**0.05**	18-Aug		18-Sep		18-Oct		18-Nov		18-Dec		18-Jan		18-Feb		18-Mar		18-Apr		18-May		18-Jun	
19-Jul		19-Aug		19-Sep	**0.03**	19-Oct		19-Nov		19-Dec		19-Jan	**0.90**	19-Feb		19-Mar		19-Apr		19-May		19-Jun	
20-Jul		20-Aug		20-Sep		20-Oct		20-Nov		20-Dec		20-Jan		20-Feb		20-Mar		20-Apr		20-May	**0.36**	20-Jun	
21-Jul		21-Aug	**0.18**	21-Sep		21-Oct		21-Nov		21-Dec		21-Jan		21-Feb	**0.09**	21-Mar		21-Apr		21-May		21-Jun	**0.05**
22-Jul		22-Aug	**1.72**	22-Sep	**0.06**	22-Oct		22-Nov		22-Dec	**0.73**	22-Jan	**0.58**	22-Feb	**0.02**	22-Mar		22-Apr	**0.77**	22-May	**0.10**	22-Jun	**0.01**
23-Jul		23-Aug		23-Sep		23-Oct	**0.17**	23-Nov		23-Dec	**0.39**	23-Jan	**0.23**	23-Feb		23-Mar	**0.43**	23-Apr	**0.15**	23-May		23-Jun	**1.67**
24-Jul		24-Aug		24-Sep		24-Oct	**0.47**	24-Nov		24-Dec		24-Jan		24-Feb		24-Mar	**0.19**	24-Apr		24-May		24-Jun	**0.38**
25-Jul	**0.65**	25-Aug		25-Sep	**0.44**	25-Oct	**0.06**	25-Nov	**0.01**	25-Dec		25-Jan	**1.25**	25-Feb		25-Mar	**0.24**	25-Apr		25-May		25-Jun	**3.80**
26-Jul		26-Aug		26-Sep		26-Oct	**0.02**	26-Nov		26-Dec		26-Jan	**0.22**	26-Feb		26-Mar		26-Apr	**0.21**	26-May		26-Jun	**0.90**
27-Jul		27-Aug		27-Sep		27-Oct		27-Nov	**0.35**	27-Dec		27-Jan		27-Feb	**0.30**	27-Mar	**0.18**	27-Apr	**0.14**	27-May		27-Jun	**1.67**
28-Jul	**0.79**	28-Aug	**0.07**	28-Sep		28-Oct		28-Nov		28-Dec		28-Jan		28-Feb	**0.12**	28-Mar		28-Apr	**1.06**	28-May		28-Jun	
29-Jul	**0.02**	29-Aug		29-Sep		29-Oct		29-Nov		29-Dec		29-Jan				29-Mar		29-Apr	**0.61**	29-May		29-Jun	
30-Jul		30-Aug	**0.36**	30-Sep	**0.02**	30-Oct		30-Nov	**0.66**	30-Dec		30-Jan				30-Mar		30-Apr	**1.62**	30-May		30-Jun	
31-Jul	**0.15**	31-Aug				31-Oct	**0.21**			31-Dec	**0.31**	31-Jan	**0.03**			31-Mar				31-May			
Jul-22		**Aug-22**		**Sep-22**		**Oct-22**		**Nov-22**		**Dec-22**		**Jan-23**		**Feb-23**		**Mar-23**		**Apr-23**		**May-23**		**Jun-23**	
Total Rain		**Total Rain**		**Total Rain**		**Total Rain**		**Total Rain**		**Total Rain**		**Total Rain**		**Total Rain**		**Total Rain**		**Total Rain**		**Total Rain**		**Total Rain**	
2.45		**3.55**		**4.63**		**6.37**		**2.82**		**4.62**		**3.70**		**1.86**		**2.52**		**6.51**		**0.57**		**12.15**	

Note: Rain Gauge RG-17 & RG-18 are being used for the Precipitation Report.

PART 1
DRY WEATHER STATUS
REPORT

DRY WEATHER DISCHARGES FOR THE PERIOD: July 2022 - June 2023

Section 3

Discharge Observed		Discharge Stopped		Last Inspection						
Date	Time	Date	Time	Date	Time	Site ID	Collector	Type Unit	Location	Comment
12-Aug-22	11:38:00 AM	12-Aug-22	12:40:00 PM	16-Jul-22	9:48:00 AM	T-11	FHL	SLOT	E. RUSCOMB ST. ~460' W. OF WHITAKER AVE.	Slot Blockage Flow Over Dam

CSO REGULATING CHAMBER MONTHLY INSPECTION

NEWPC & SEWPC PLANT REGULATORS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK 5 NEWPC UNITS															
P01	4	2	2	1	1	2	1	2	2	2	2	1	22	1.8	16.6
P02	4	2	2	1	1	2	1	2	2	2	2	1	22	1.8	16.6
P03	5	2	3	2	2	3	2	2	2	2	3	2	30	2.5	12.2
P04	5	2	3	1	2	3	2	2	2	2	3	2	29	2.4	12.6
P05	3	2	2	1	1	2	1	2	2	2	2	1	21	1.8	17.4
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS															
D02	2	2	2	2	2	3	2	2	3	3	3	3	29	2.4	12.6
D03	3	2	2	2	2	2	2	2	3	3	3	4	30	2.5	12.2
D04	3	3	3	3	3	2	2	4	4	4	3	3	37	3.1	9.9
D05	2	2	2	2	2	2	2	2	3	3	3	2	27	2.3	13.5
D06	2	2	2	2	2	2	2	2	2	3	3	2	26	2.2	14.0
D07	2	2	2	2	2	2	2	2	2	3	2	2	25	2.1	14.6
D08	1	2	2	2	2	2	2	1	2	2	2	2	22	1.8	16.6
D09	1	2	2	2	2	2	2	1	2	2	2	2	22	1.8	16.6
D11	1	2	2	2	2	1	1	1	2	2	2	2	20	1.7	18.2
D12	1	2	2	2	2	1	2	1	2	2	2	2	21	1.8	17.4
D13	1	2	2	2	2	1	1	1	2	2	2	2	20	1.7	18.2
D15	1	2	3	2	3	1	1	1	2	2	2	2	22	1.8	16.6
LOWER FRANKFORD CREEK 6 NEWPC UNITS															
F13	1	1	2	3	1	1	1	1	2	2	2	2	19	1.6	19.2
F14	2	1	2	1	2	1	1	2	2	2	2	2	20	1.7	18.2
F21	1	1	2	1	1	1	1	1	1	2	2	2	16	1.3	22.8
F23	1	1	3	1	1	1	1	1	1	2	2	2	17	1.4	21.5
F24	1	1	2	1	1	1	1	1	1	2	2	2	16	1.3	22.8
F25	1	1	2	1	1	1	1	1	1	2	2	2	16	1.3	22.8
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS															
F03	1	2	2	2	2	1	1	1	2	2	3	2	21	1.8	17.4
F04	1	2	2	2	2	1	1	1	2	2	3	2	21	1.8	17.4
F05	1	2	2	2	2	1	1	1	2	2	2	2	20	1.7	18.2
F06	3	3	3	2	3	3	2	2	2	3	3	3	32	2.7	11.4
F07	1	2	2	2	2	2	1	1	2	2	3	2	22	1.8	16.6
F08	1	2	2	2	3	2	1	1	2	2	3	2	23	1.9	15.9
F09	2	2	3	2	3	3	1	2	2	3	4	3	30	2.5	12.2
F10	1	1	2	1	1	2	1	1	2	2	2	2	18	1.5	20.3
F11	3	2	3	1	1	3	1	2	2	3	3	2	26	2.2	14.0
F12	2	2	2	3	2	3	1	2	2	3	3	2	27	2.3	13.5
FRANKFORD HIGH LEVEL 14 NEWPC UNITS															
T01	1	2	1	2	2	1	1	1	2	2	3	2	20	1.7	18.2
T03	2	2	1	2	2	1	2	1	2	2	3	2	22	1.8	16.6
T04	1	2	1	2	2	1	1	1	2	2	3	2	20	1.7	18.2
T05	1	3	1	2	2	1	1	1	2	2	2	2	20	1.7	18.2
T06	1	3	1	2	2	1	1	1	2	2	2	2	20	1.7	18.2
T07	3	2	1	2	2	1	1	1	2	2	2	1	20	1.7	18.2
T08	1	3	1	1	1	1	2	1	2	3	2	1	19	1.6	19.2
T09	1	2	1	2	1	2	2	1	1	2	2	1	18	1.5	20.3
T10	4	3	2	3	1	2	4	1	2	2	3	2	29	2.4	12.6
T11	3	3	1	3	1	1	4	1	2	2	2	2	25	2.1	14.6
T12	2	2	2	1	1	1	4	1	2	2	2	2	22	1.8	16.6
T13	3	2	2	3	1	1	4	1	2	2	3	2	26	2.2	14.0
T14	3	2	2	2	1	1	3	1	2	2	2	1	22	1.8	16.6
T15	1	2	2	2	1	1	3	1	2	2	3	1	21	1.8	17.4

1	TOTAL DISCHARGES FOR NE & SE DISTRICTS	DTR = DAYS TO RETURN TO SITE
0.1	AVERAGE DISCHARGES PER MONTH	I/D/C = INSPECTIONS PER DAY PER CREW
16.4	AVER. DAYS BEFORE RETURNING TO SITE	I/D = INSPECTIONS PER DISCHARGE
2.8	AVER. INSPECTIONS PER DAY PER CREW	

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL 9 NEWPC UNITS															
D17	2	2	2	1	2	1	3	1	2	2	3	2	23	1.9	15.9
D18	2	2	2	1	2	1	3	1	2	2	3	2	23	1.9	15.9
D19	2	2	2	1	2	1	3	1	2	4	3	2	25	2.1	14.6
D20	2	2	2	1	2	1	3	1	2	2	3	2	23	1.9	15.9
D21	2	2	2	2	2	1	2	1	2	2	3	2	23	1.9	15.9
D22	2	2	2	2	2	1	2	1	3	2	3	2	24	2.0	15.2
D23	2	2	2	2	2	1	2	2	2	2	2	2	23	1.9	15.9
D24	2	2	2	2	2	1	1	2	2	2	2	2	22	1.8	16.6
D25	2	6	2	2	1	1	3	2	2	2	3	2	28	2.3	13.0
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS															
D37	2	3	2	3	2	4	4	3	2	3	3	2	33	2.8	11.1
D38	2	2	2	3	2	4	2	3	2	2	3	2	29	2.4	12.6
D39	2	2	2	3	2	4	3	2	3	2	3	2	30	2.5	12.2
D40	2	2	2	2	2	3	2	2	2	2	3	2	26	2.2	14.0
D41	2	2	2	2	2	3	2	2	2	2	3	2	26	2.2	14.0
D42	2	2	2	2	2	2	2	2	2	2	2	2	24	2.0	15.2
D43	1	2	2	2	2	2	1	2	2	2	2	2	22	1.8	16.6
D44	1	2	2	2	2	2	1	2	2	2	2	2	22	1.8	16.6
D45	1	3	2	2	2	3	2	2	2	2	2	2	25	2.1	14.6
D46	1	2	3	3	2	2	1	2	2	2	2	2	24	2.0	15.2
D47	1	2	2	3	2	2	1	2	2	2	2	2	23	1.9	15.9
D48	1	2	2	2	2	2	1	2	2	2	2	2	22	1.8	16.6
D49	1	2	2	2	2	2	1	2	2	2	2	2	22	1.8	16.6
D50	1	1	2	2	2	2	1	1	2	2	2	2	20	1.7	18.2
D51	1	1	2	2	2	3	2	1	2	2	2	2	22	1.8	16.6
D51A	1	1	2	2	2	3	1	1	2	2	2	1	20	1.7	18.2
D52	1	1	2	2	2	3	1	1	2	2	2	1	20	1.7	18.2
D53	1	1	2	2	2	4	1	1	2	2	2	2	22	1.8	16.6
D54	1	1	2	2	2	4	1	1	0	1	2	1	18	1.5	20.3
D58	1	2	2	2	3	2	2	1	2	2	2	2	23	1.9	15.9
D61	1	1	2	2	2	3	1	1	2	2	2	1	20	1.7	18.2
D62	1	1	2	2	2	2	1	1	2	2	2	2	20	1.7	18.2
D63	1	1	2	2	2	1	1	1	2	2	3	2	20	1.7	18.2
D64	2	2	2	2	2	2	1	1	2	2	2	2	22	1.8	16.6
D65	1	2	2	2	1	2	3	1	2	2	2	2	22	1.8	16.6
D66	1	1	3	2	2	2	4	1	2	2	2	3	25	2.1	14.6
D67	1	2	2	5	1	2	3	1	2	1	2	2	24	2.0	15.2
D68	1	2	2	5	3	3	4	2	2	2	2	3	31	2.6	11.8
D69	1	2	2	5	2	3	3	1	2	2	2	3	28	2.3	13.0
D70	1	2	2	5	2	3	3	1	2	2	2	3	28	2.3	13.0
D71	1	2	2	4	2	3	4	1	2	2	2	3	28	2.3	13.0
D72	1	2	2	3	2	2	3	1	2	2	2	1	23	1.9	15.9
D73	1	2	2	3	2	2	1	1	2	2	2	1	21	1.8	17.4
TOTAL	149	174	179	188	164	171	164	126	178	191	213	175	2072		
I /D/C	2.4	2.9	2.9	3.1	2.7	2.8	2.7	2.1	2.9	3.1	3.5	2.9			
UP	21	10	12	6	7	12	7	10	10	10	12	7	124	2.1	15.1
UDLL	20	25	26	25	26	21	21	20	29	31	29	28	301	2.1	15.0
LFC	7	6	13	8	7	6	6	7	8	12	12	12	104	1.4	21.2
LFLL	16	20	23	19	21	21	11	14	20	24	29	22	240	2.0	15.7
FHL	27	33	19	29	20	16	33	14	27	29	34	23	304	1.8	17.1
SLL	18	22	18	14	17	9	22	12	19	20	25	18	214	2.0	15.4
LDLL	40	58	68	87	66	86	64	49	65	65	72	65	785	2.0	15.7

CSO REGULATING CHAMBER DISCHARGE **NEWPC & SEWPC PLANT REGULATORS**

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UPPER PENNYPACK 5 NEWPC UNITS													
P01													0
P02													0
P03													0
P04													0
P05													0
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS													
D02													0
D03													0
D04													0
D05													0
D06													0
D07													0
D08													0
D09													0
D11													0
D12													0
D13													0
D15													0
LOWER FRANKFORD CREEK 6 NEWPC UNITS													
F13													0
F14													0
F21													0
F23													0
F24													0
F25													0
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS													
F03													0
F04													0
F05													0
F06													0
F07													0
F08													0
F09													0
F10													0
F11													0
F12													0
FRANKFORD HIGH LEVEL 14 NEWPC UNITS													
T01													0
T03													0
T04													0
T05													0
T06													0
T07													0
T08													0
T09													0
T10													0
T11		1											1
T12													0
T13													0
T14													0
T15													0

	NO OF DISCHARGES IN DISTRICT												TOTAL
UP	0	0	0	0	0	0	0	0	0	0	0	0	0
UDLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LFC	0	0	0	0	0	0	0	0	0	0	0	0	0
LFLL	0	0	0	0	0	0	0	0	0	0	0	0	0
FHL	0	1	0	0	0	0	0	0	0	0	0	0	1
SLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LDLL	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL 9 NEWPC UNITS													
D17													0
D18													0
D19													0
D20													0
D21													0
D22													0
D23													0
D24													0
D25													0
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS													
D37													0
D38													0
D39													0
D40													0
D41													0
D42													0
D43													0
D44													0
D45													0
D46													0
D47													0
D48													0
D49													0
D50													0
D51													0
D51A													0
D52													0
D53													0
D54													0
D58													0
D61													0
D62													0
D63													0
D64													0
D65													0
D66													0
D67													0
D68													0
D69													0
D70													0
D71													0
D72													0
D73													0
D75													0
													TOTAL DISC
	0	1	0	0	0	0	0	0	0	0	0	0	1

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
UP	0	0	5	0	0	0	0	0	0	0	0	0	5
UDLL	0	0	6	3	0	0	0	1	3	1	0	1	15
LFC	0	0	4	0	1	0	0	0	1	0	1	1	8
LFLL	0	1	4	3	1	0	0	1	0	0	0	2	12
FHL	1	0	0	0	0	1	0	0	6	0	1	0	9
SLL	2	0	3	0	1	0	1	0	0	1	0	0	8
LDLL	5	1	42	10	2	0	0	0	0	3	0	1	64

CSO REGULATING CHAMBER MONTHLY BLOCKS CLEARED **NEWPC & SEWPC PLANT REGULATORS**

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UPPER PENNYPACK 5 NEWPC UNITS													
P01			1										1
P02			1										1
P03			2										2
P04			1										1
P05													0
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS													
D02									1				1
D03			1						1			1	3
D04			1	1					1				3
D05													0
D06										1			1
D07													0
D08				1				1					2
D09			1										1
D11			1										1
D12			1	1									2
D13													0
D15			1										1
LOWER FRANKFORD CREEK 6 NEWPC UNITS													
F13			1								1	1	3
F14													0
F21													0
F23			2										2
F24			1						1				2
F25					1								1
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS													
F03													0
F04													0
F05													0
F06			1										1
F07		1										1	2
F08				1									1
F09			1	1	1			1					4
F10												1	1
F11			1										1
F12			1	1									2
FRANKFORD HIGH LEVEL 14 NEWPC UNITS													
T01													0
T03													0
T04													0
T05											1		1
T06													0
T07													0
T08													0
T09						1							1
T10	1								1				2
T11									1				1
T12									1				1
T13									1				1
T14									1				1
T15									1				1

10.1 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL 9 NEWPC UNITS													
D17							1						1
D18										1			1
D19													0
D20													0
D21													0
D22													0
D23	2		1		1								4
D24			1										1
D25			1										1
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS													
D37	1		1										2
D38			1	1									2
D39			2										2
D40	1		2	2	1								6
D41			2	1									3
D42	1		2										3
D43			2	2									4
D44			2		1								3
D45			2										2
D46			2	1									3
D47			2	1									3
D48			2										2
D49			2							1			3
D50			2										2
D51			1							1			2
D51A			1										1
D52			1										1
D53			1										1
D54			1										1
D58			1										1
D61			1	1									2
D62		1	1										2
D63			1										1
D64	2		1										3
D65			1										1
D66			1									1	2
D67				1									1
D68													0
D69			1										1
D70			1										1
D71													0
D72			1							1			2
D73			1										1
D75													0
													TOTAL
	8	2	64	16	5	1	1	2	10	5	2	5	121
UP	0	0	5	0	0	0	0	0	0	0	0	0	5
UDLL	0	0	6	3	0	0	0	1	3	1	0	1	15
LFC	0	0	4	0	1	0	0	0	1	0	1	1	8
LFLL	0	1	4	3	1	0	0	1	0	0	0	2	12
FHL	1	0	0	0	0	1	0	0	6	0	1	0	9
SLL	2	0	3	0	1	0	1	0	0	1	0	0	8
LDLL	5	1	42	10	2	0	0	0	0	3	0	1	64

CSO REGULATING CHAMBER MONTHLY INSPECTION

SWWPC PLANT REGULATORS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS															
S05	2	2	2	2	2	2	2	2	3	3	2	1	25	2.1	14.6
S06	2	1	2	2	2	2	2	2	3	3	2	1	24	2.0	15.2
S07	2	1	2	2	2	2	2	1	3	2	2	1	22	1.8	16.6
S08	2	1	2	2	2	2	2	1	2	2	2	2	22	1.8	16.6
S09	2	1	2	2	2	2	2	1	2	2	3	2	23	1.9	15.9
S10	2	1	2	2	2	2	3	1	2	2	2	1	22	1.8	16.6
S12	3	2	3	2	2	2	3	2	2	3	3	2	29	2.4	12.6
S12A	3	2	3	2	2	2	3	2	2	2	3	2	28	2.3	13.0
S13	3	2	3	2	2	2	3	2	2	2	3	2	28	2.3	13.0
S15	3	2	3	2	1	2	3	2	2	2	3	3	28	2.3	13.0
S16	2	1	2	2	1	2	2	1	2	2	2	1	20	1.7	18.2
S17	2	1	2	2	1	2	1	1	2	2	2	1	19	1.6	19.2
S18	1	1	1	2	1	2	3	1	2	3	2	1	20	1.7	18.2
S19	2	3	3	2	1	2	4	2	3	2	3	2	29	2.4	12.6
S21	2	3	2	2	2	3	3	1	3	2	2	2	27	2.3	13.5
S23	2	2	2	2	2	3	3	1	3	2	2	2	26	2.2	14.0
S25	1	1	2	1	2	1	2	1	2	2	2	2	19	1.6	19.2
S26	1	1	2	1	1	1	2	1	2	2	2	1	17	1.4	21.5
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS															
S31	2	3	1	1	1	2	2	1	2	2	2	1	20	1.7	18.2
S35	3	2	2	1	1	3	2	1	2	2	2	2	23	1.9	15.9
S36	1	1	1	0	0	0	0	1	1	2	2	1	10	0.8	36.5
S36A	1	3	2	2	3	5	1	1	2	2	2	2	26	2.2	14.0
S37	1	1	1	0	0	0	0	1	1	2	2	1	10	0.8	36.5
S42	3	3	3	6	2	5	3	5	2	2	3	7	44	3.7	8.3
S42A	2	3	2	2	2	4	3	3	2	2	2	6	33	2.8	11.1
S44	1	1	0	0	0	0	0	1	2	1	2	2	10	0.8	36.5
S46	2	1	2	2	2	2	2	1	2	2	2	3	23	1.9	15.9
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS															
S01	2	2	2	2	2	1	2	1	2	3	2	2	23	1.9	15.9
S02	2	2	2	2	2	2	2	1	2	3	2	2	24	2.0	15.2
S03	2	2	2	2	2	2	2	1	2	3	2	2	24	2.0	15.2
S04	2	1	2	2	2	2	2	2	2	3	2	1	23	1.9	15.9
S11	2	1	2	2	3	2	4	1	2	2	3	1	25	2.1	14.6
S14	2	1	2	1	2	1	1	1	2	2	2	1	18	1.5	20.3
S20	1	2	2	2	1	2	2	1	2	2	2	1	20	1.7	18.2
S22	1	1	2	2	2	3	1	1	3	2	2	1	21	1.8	17.4
S24	1	2	2	1	2	3	1	1	3	2	2	1	21	1.8	17.4
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS															
S27	1	1	2	1	1	2	1	1	2	2	2	2	18	1.5	20.3
S28	1	1	2	1	1	1	2	1	2	2	2	1	17	1.4	21.5
S30	2	1	3	1	1	2	2	1	2	2	2	1	20	1.7	18.2
S34	2	1	2	2	1	1	3	1	2	2	2	2	21	1.8	17.4
S39	2	1	2	1	1	1	1	1	2	2	2	2	18	1.5	20.3
S40	1	1	2	2	1	1	1	1	2	2	2	2	18	1.5	20.3
S43	1	1	2	2	1	1	1	1	2	2	2	3	19	1.6	19.2
S47	1	1	2	2	2	2	1	1	2	2	1	2	19	1.6	19.2
S50	3	3	5	6	5	3	7	6	5	3	2	13	61	5.1	6.0
S51	2	3	2	3	2	2	2	1	2	2	2	5	28	2.3	13.0
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS															
S32	1	3	2	1	1	3	3	1	2	2	3	6	28	2.3	13.0
S33	1	3	2	1	2	3	3	3	2	2	2	3	27	2.3	13.5
S38	1	3	2	2	2	3	2	2	3	2	2	2	26	2.2	14.0
S45	1	4	2	2	3	2	3	1	2	2	1	2	25	2.1	14.6

0 TOTAL DISCHARGES IN SW DISTRICT

0.0 AVERAGE DISCHARGES PER MONTH

17.7 AVER. DAYS BEFORE RETURNING TO SITE

1.7 AVER. INSPECTIONS PER DAY PER CREW

DTR = DAYS TO RETURN TO SITE

I/D/C = INSPECTIONS PER DAY PER CREW

I/D = INSPECTIONS PER DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
COBBS CREEK HIGH LEVEL 24 SWWPC UNITS															
C01	1	2	2	2	2	1	3	1	2	2	2	2	22	1.8	16.6
C02	1	2	2	2	2	1	3	1	2	2	2	2	22	1.8	16.6
C04	1	2	2	2	2	1	3	1	2	2	2	2	22	1.8	16.6
C04A	1	2	2	2	2	1	1	1	2	2	2	2	20	1.7	18.2
C05	1	2	2	2	2	1	2	1	2	2	2	2	21	1.8	17.4
C06	2	2	3	2	2	2	3	1	3	2	3	3	28	2.3	13.0
C07	2	2	3	2	1	2	3	1	3	2	2	3	26	2.2	14.0
C09	2	2	2	2	1	1	3	1	4	2	2	3	25	2.1	14.6
C10	1	1	2	2	1	1	2	1	3	2	2	2	20	1.7	18.2
C11	2	2	3	2	1	2	2	1	4	2	3	3	27	2.3	13.5
C12	1	1	2	2	1	1	2	1	3	2	3	3	22	1.8	16.6
C13	1	1	2	2	1	1	2	1	3	2	3	3	22	1.8	16.6
C14	1	2	2	2	1	1	1	1	4	3	3	2	23	1.9	15.9
C15	1	1	3	2	1	1	1	1	3	2	3	2	21	1.8	17.4
C16	1	1	3	2	1	1	1	1	3	2	3	2	21	1.8	17.4
C17	1	1	3	2	1	1	1	1	3	2	2	2	20	1.7	18.2
C18	1	1	3	2	1	1	1	1	3	2	2	2	20	1.7	18.2
C31	1	4	1	1	1	1	1	1	2	2	2	1	18	1.5	20.3
C32	1	2	1	1	1	1	1	1	2	2	2	2	17	1.4	21.5
C33	1	3	1	1	1	1	1	1	2	2	3	1	18	1.5	20.3
C34	1	2	1	1	1	1	1	1	2	2	3	1	17	1.4	21.5
C35	1	2	1	1	1	2	1	1	2	2	3	1	18	1.5	20.3
C36	1	2	1	1	1	1	1	1	2	2	3	1	17	1.4	21.5
C37	1	2	1	1	1	1	1	1	2	2	3	1	17	1.4	21.5
COBBS CREEK LOW LEVEL 12 SWWPC UNITS															
C19	1	1	3	2	1	1	1	1	3	2	2	2	20	1.7	18.2
C20	1	1	2	2	1	1	1	1	2	2	2	2	18	1.5	20.3
C21	1	1	2	2	1	1	1	1	2	2	2	2	18	1.5	20.3
C22	1	1	2	2	1	1	1	1	2	2	2	1	17	1.4	21.5
C23	1	1	2	2	1	1	1	1	2	2	2	1	17	1.4	21.5
C24	1	1	2	2	1	1	1	1	2	2	2	1	17	1.4	21.5
C25	1	2	2	2	2	2	1	1	3	2	2	1	21	1.8	17.4
C26	1	1	2	2	1	1	1	1	2	2	2	1	17	1.4	21.5
C27	1	1	1	2	1	2	1	1	2	2	2	1	17	1.4	21.5
C28A	1	1	1	2	1	1	1	1	2	2	2	1	16	1.3	22.8
C29	1	1	1	2	1	1	1	1	2	2	2	1	16	1.3	22.8
C30	1	1	1	2	1	1	1	1	2	2	2	1	16	1.3	22.8
TOTAL	128	144	173	156	126	144	160	108	199	181	191	175	1885		
I /D/C	1.4	1.6	1.9	1.7	1.4	1.6	1.8	1.2	2.2	2.0	2.1	1.9			
CSES	37	28	40	34	30	36	45	25	42	40	42	29	428	2.0	15.8
LSES	16	18	14	14	11	21	13	15	16	17	19	25	199	1.8	21.4
CSW	15	14	18	16	18	18	17	10	20	22	19	12	199	1.8	16.7
SWMG	16	14	24	21	16	16	21	15	23	21	19	33	239	2.0	17.5
LSW	4	13	8	6	8	11	11	7	9	8	8	13	106	2.2	13.8
CCHL	28	44	48	41	30	28	41	24	63	49	60	48	504	1.8	17.7
CCLL	12	13	21	24	13	14	12	12	26	24	24	15	210	1.5	21.0

CSO REGULATING CHAMBER DISCHARGE

SWWPC PLANT REGULATORS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS													
S05													0
S06													0
S07													0
S08													0
S09													0
S10													0
S12													0
S12A													0
S13													0
S15													0
S16													0
S17													0
S18													0
S19													0
S21													0
S23													0
S25													0
S26													0
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS													
S31													0
S35													0
S36													0
S36A													0
S37													0
S42													0
S42A													0
S44													0
S46													0
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS													
S01													0
S02													0
S03													0
S04													0
S11													0
S14													0
S20													0
S22													0
S24													0
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS													
S27													0
S28													0
S30													0
S34													0
S39													0
S40													0
S43													0
S47													0
S50													0
S51													0
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS													
S32													0
S33													0
S38													0
S45													0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL 24 SWWPC UNITS													
C01													0
C02													0
C04													0
C04A													0
C05													0
C06													0
C07													0
C09													0
C10													0
C11													0
C12													0
C13													0
C14													0
C15													0
C16													0
C17													0
C18													0
C31													0
C32													0
C33													0
C34													0
C35													0
C36													0
C37													0
COBBS CREEK LOW LEVEL 12 SWWPC UNITS													
C19													0
C20													0
C21													0
C22													0
C23													0
C24													0
C25													0
C26													0
C27													0
C28A													0
C29													0
C30													0
													TOTAL DISC
	0	0	0	0	0	0	0	0	0	0	0	0	0

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
CSE	1	2	4	1	0	2	0	0	0	1	0	1	12
LSE	1	0	0	1	0	2	0	2	0	0	0	2	8
CSW	0	0	0	0	0	0	0	0	0	0	0	0	0
SWG	1	0	0	1	0	0	0	0	0	0	1	0	3
LSW	0	0	2	0	0	1	0	1	0	1	0	4	9
CCHL	0	0	0	0	0	1	0	0	0	2	0	1	4
CCLL	0	0	1	1	0	0	0	0	0	0	0	0	2

	NO OF DISCHARGES IN DISTRICT												TOTAL
CSE	0	0	0	0	0	0	0	0	0	0	0	0	0
LSE	0	0	0	0	0	0	0	0	0	0	0	0	0
CSW	0	0	0	0	0	0	0	0	0	0	0	0	0
SWG	0	0	0	0	0	0	0	0	0	0	0	0	0
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	0	0	0	0	0	0	0	0	0	0	0	0	0
CCLL	0	0	0	0	0	0	0	0	0	0	0	0	0

CSO REGULATING CHAMBER MONTHLY BLOCKS CLEARED

SWWPC PLANT REGULATORS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS													
S05													0
S06													0
S07													0
S08				1		1							2
S09													0
S10													0
S12		1											1
S12A		1											1
S13													0
S15													0
S16						1							1
S17			1										1
S18										1		1	2
S19													0
S21			1										1
S23			1										1
S25	1		1										2
S26													0
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS													
S31													0
S35													0
S36													0
S36A						1							1
S37													0
S42	1			1				2				1	5
S42A						1						1	2
S44													0
S46													0
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS													
S01													0
S02													0
S03													0
S04													0
S11													0
S14													0
S20													0
S22													0
S24													0
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS													
S27													0
S28													0
S30													0
S34													0
S39													0
S40				1									1
S43													0
S47													0
S50	1										1		2
S51													0
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS													
S32												3	3
S33			1					1		1			3
S38			1			1						1	3
S45													0

3.2 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL 24 SWWPC UNITS													
C01													0
C02													0
C04													0
C04A													0
C05													0
C06													0
C07													0
C09													0
C10													0
C11													0
C12													0
C13													0
C14												1	1
C15													0
C16													0
C17										1			1
C18													0
C31													0
C32													0
C33													0
C34													0
C35						1							1
C36										1			1
C37													0
COBBS CREEK LOW LEVEL 12 SWWPC UNITS													
C19				1									1
C20													0
C21													0
C22													0
C23													0
C24													0
C25			1										1
C26													0
C27													0
C28A													0
C29													0
C30													0
													TOTAL
	3	2	7	4	0	6	0	3	0	4	1	8	38
CSE	1	2	4	1	0	2	0	0	0	1	0	1	12
LSE	1	0	0	1	0	2	0	2	0	0	0	2	8
CSW	0	0	0	0	0	0	0	0	0	0	0	0	0
SWG	1	0	0	1	0	0	0	0	0	0	1	0	3
LSW	0	0	2	0	0	1	0	1	0	1	0	4	9
CCHL	0	0	0	0	0	1	0	0	0	2	0	1	4
CCLL	0	0	1	1	0	0	0	0	0	0	0	0	2

RELIEF SEWER MONTHLY INSPECTION

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R01	1	2	1	1	2	2	1	1	2	2	2	1	18
R02	1	2	1	1	2	2	1	1	2	2	2	1	18
R03	1	2	1	1	2	2	1	1	2	2	2	1	18
R04	1	1	1	1	2	1	1	1	2	2	2	1	16
R05	1	1	1	1	1	1	0	1	2	2	2	1	14
R06	1	1	1	1	2	1	0	2	2	2	2	1	16
MAIN RELIEF SEWER													
R07	1	2	1	1	2	1	0	1	2	2	2	1	16
R08	1	2	1	1	2	1	0	1	2	2	2	1	16
R09	1	2	1	1	2	1	0	1	2	2	2	1	16
R10	1	2	1	1	2	1	0	1	2	2	2	1	16
R11	1	2	1	1	1	1	0	1	2	2	2	1	15
R11A	1	2	1	1	1	1	0	1	1	2	2	1	14
R12	1	2	1	0	1	2	0	1	1	1	2	1	13
WAKLING RELIEF SEWER													
R13	1	3	1	1	1	1	0	1	1	2	2	1	15
R13A	0	0	0	1	1	1	0	1	1	1	2	1	
R14	1	2	1	1	1	1	0	1	1	1	2	1	13
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	1	2	1	1	2	1	0	1	0	2	2	1	14
OREGON AVE RELIEF SEWER													
R16	0	0	0	1	0	0	0	1	0	0	0	0	2
R17	0	0	0	0	0	0	0	1	1	0	0	0	2
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	1	1	1	1	1	1	0	0	1	1	2	1	11
32ND ST RELIEF SEWER													
R19	0	0	0	0	0	0	0	0	0	0	0	0	0
MAIN STREET RELIEF SEWER													
R20	1	1	1	1	1	1	0	0	1	1	2	1	11
SOMERSET SYSTEM DIVERSION CHAMBER													
R21													0
TEMPORARY REGULATOR CHAMBER													
R22													0
R23	0	0	0	0	0	0	0	0	0	0	0	0	0
ARCH ST RELIEF SEWER													
R24	1	1	1	1	2	1	0	0	1	1	2	1	12
16TH & SNYDER													
R25	1	1	1	1	2	1	0	0	1	1	2	1	12
GRANT & STATE RD. RELIEF													
R26	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	20	34	20	21	33	25	4	20	32	35	42	21	298
AVER	0.7	1.3	0.7	0.8	1.2	0.9	0.1	0.7	1.2	1.3	1.6	0.8	1.0

RELIEF SEWER MONTHLY DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R01													0
R02													0
R03													0
R04													0
R05													0
R06													0
MAIN RELIEF SEWER													
R07													0
R08													0
R09													0
R10													0
R11													0
R11A													0
R12													0
WAKLING RELIEF SEWER													
R13													0
R13A													
R14													0
ROCK RUN STORM FLOOD RELIEF SEWER													
R15													0
OREGON AVE RELIEF SEWER													
R16													0
R17													0
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18													0
32ND ST RELIEF SEWER													
R19													0
MAIN STREET RELIEF SEWER													
R20													0
SOMERSET SYSTEM DIVERSION CHAMBER													
R21													0
TEMPORARY REGULATOR CHAMBER													
R22													0
R23													0
ARCH ST RELIEF SEWER													
R24													0
16TH & SNYDER													
R25													0
GRANT & STATE RD. RELIEF													
R26													0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
UNITS	0	0	0	0	0	0	0	0	0	0	0	0	

RELIEF SEWER MONTHLY BLOCKS CLEARED

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R01													0
R02													0
R03													0
R04													0
R05													0
R06													0
MAIN RELIEF SEWER													
R07													0
R08			1										1
R09			1										1
R10													0
R11			1										1
R11A			1										1
R12			1										1
WAKLING RELIEF SEWER													
R13			1										1
R13A													
R14													0
ROCK RUN STORM FLOOD RELIEF SEWER													
R15													0
OREGON AVE RELIEF SEWER													
R16													0
R17													0
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18													0
32ND ST RELIEF SEWER													
R19													0
MAIN STREET RELIEF SEWER													
R20													0
SOMERSET SYSTEM DIVERSION CHAMBER													
R21													0
TEMPORARY REGULATOR CHAMBER													
R22													0
R23													0
ARCH ST RELIEF SEWER													
R24													0
16TH & SNYDER													
R25													0
GRANT & STATE RD. RELIEF													
R26													0
TOTAL	0	0	6	0	0	0	0	0	0	0	0	0	6
AVER	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MISCELLANEOUS SITE INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
P-090-02-PFD-01	SANDY RUN CREEK DIVERSION REGULATOR												
	6	5	5	6	3	6	7	4	5	4	4	7	62
T-088-01-CFD-01	PLYMOUTH ST. WEST OF PITTVILLE												
	4	2	1	2	1	2	3	1	1	2	2	2	23
T-088-01-CFD-02	PITTVILLE ST. SOUTH OF PLYMOUTH ST.												
	3	2	1	1	2	3	3	1	2	2	2	1	23
T-088-01-CFD-03	ELSTON ST. E. OF BOUVIER ST.												
	3	0	1	1	2	3	3	1	2	2	2	1	21
T-088-01-CFD-04	ASHLEY ST. W. OF BOUVIER ST.												
	3	2	1	2	1	3	3	1	2	2	2	2	24
T-088-01-CFD-05	CHELTENHAM AVE. E. OF 19TH ST.												
	2	2	2	4	2	4	2	1	2	2	2	3	28
T-088-01-CFD-06	VERBENA ST. S. OF CHELTENHAM AVE.												
	3	1	3	3	2	3	3	1	2	2	2	2	27
W-060-01-MFD-01	JANNETTE ST. WEST OF MONASTERY AVE.												
	3	1	1	2	1	2	2	1	2	2	2	2	21
W-060-01-MFD-02	GREEN LANE NORTH OF LAWNTON ST.												
	3	1	1	2	1	2	2	1	2	2	2	2	21
T-089-04-CFD-01	FRANKLIN & HASBROOK												
	5	5	5	6	3	7	9	4	5	4	4	6	63
T-088-01-CFD-07	CHELTENHAM E. OF 7 TH ST.												
	4	6	5	6	3	6	9	4	5	4	3	6	61
T-088-01-CFD-08	7 TH ST. S. OF CHELTENHAM												
	4	5	5	6	3	6	9	3	5	4	4	6	60
Totals	43	32	31	41	24	47	55	23	35	32	31	40	434

MISCELLANEOUS SITE DISCHARGES

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
P-090-02-PFD-01	SANDY RUN CREEK DIVERSION REGULATOR												
													0
T-088-01-CFD-01	PLYMOUTH ST. WEST OF PITTVILLE												
													0
T-088-01-CFD-02	PITTVILLE ST. SOUTH OF PLYMOUTH ST.												
													0
T-088-01-CFD-03	ELSTON ST. E. OF BOUVIER ST.												
													0
T-088-01-CFD-04	ASHLEY ST. W. OF BOUVIER ST.												
													0
T-088-01-CFD-05	CHELTENHAM AVE. E. OF 19TH ST.												
													0
T-088-01-CFD-06	VERBENA ST. S. OF CHELTENHAM AVE.												
													0
W-060-01-MFD-01	JANNETTE ST. WEST OF MONASTERY AVE.												
													0
W-060-01-MFD-02	GREEN LANE NORTH OF LAWNTON ST.												
													0
T-089-04-CFD-01	FRANKLIN & HASBROOK												
				1		1							2
T-088-01-CFD-07	CHELTENHAM E. OF 7 TH ST.												
													0
T-088-01-CFD-08	7 TH ST. S. OF CHELTENHAM												
													0
Totals	0	0	0	1	0	1	0	0	0	0	0	0	2

MISCELLANEOUS SITE BLOCKAGES CLEARED

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
P-090-02-PFD-01	SANDY RUN CREEK DIVERSION REGULATOR												
	1		1				1			1		1	5
T-088-01-CFD-01	PLYMOUTH ST. WEST OF PITTVILLE												
													0
T-088-01-CFD-02	PITTVILLE ST. SOUTH OF PLYMOUTH ST.												
													0
T-088-01-CFD-03	ELSTON ST. E. OF BOUVIER ST.												
									1			1	2
T-088-01-CFD-04	ASHLEY ST. W. OF BOUVIER ST.												
													0
T-088-01-CFD-05	CHELTENHAM AVE. E. OF 19TH ST.												
			1										1
T-088-01-CFD-06	VERBENA ST. S. OF CHELTENHAM AVE.												
													0
W-060-01-MFD-01	JANNETTE ST. WEST OF MONASTERY AVE.												
									1				1
W-060-01-MFD-02	GREEN LANE NORTH OF LAWNTON ST.												
									1				1
T-089-04-CFD-01	FRANKLIN & HASBROOK												
		1		1		1					1	1	5
T-088-01-CFD-07	CHELTENHAM E. OF 7 TH ST.												
			2		1				1	1		2	7
T-088-01-CFD-08	7 TH ST. S. OF CHELTENHAM												
						1			1				2
Totals	1	1	4	1	1	2	1	0	5	2	1	5	24

Annual Maintenance Fiscal Year End Report- July 2022 through June 202

SOMERSET GRIT D-25 CHAMBER, D-45 CHAMBER, D-37 CHAMBER & DWO CLEANINGS

DATE	TONS	SITE
7/30/2022	5.28	D-45
8/2/2022	5.83	D-25
8/4/2022	1.61	D-25
8/5/2022	0.89	D-25
8/6/2022	11.1	D-25
8/8/2022	1.16	D-25
8/27/2022	8.34	D-25
11/19/2022	9.58	D-45
1/14/2023	10.07	D-37
1/21/2023	9	D-45
3/4/2023	8.56	D-45
4/29/2023	9.56	D-45
7/1/2023	9.43	D-45
7/15/2023	9.00	D-45
7/22/2023	9.49	D-45

CSPS SIPHON GRIT POCKET CLEANINGS

DATE	CU. YARDS
GRIT CLEANING NOT DONE DUE TO EQUIPMENT AVAILABILITY	

CSO B&B REGULATOR MAINTENANCE

DATE	SITE	DATE	SITE
7/19/2022	S-4	2/25/2023	D-37
7/29/2022	S-50	2/25/2023	D-38
8/4/2022	S-50	3/18/2023	D-38
8/5/2022	S-50	3/18/2023	D-41
9/2/2022	S-50	3/18/2023	D-47
11/15/2022	S-50	3/18/2023	D-48
11/16/2022	S-50	5/3/2023	S-50
11/29/2022	S-50	5/15/2023	S-50
12/1/2022	D-37	5/18/2023	S-50
12/1/2022	D-38	5/19/2023	D-49
12/2/2022	D-37	5/19/2023	D-50
12/3/2022	S-1	5/19/2023	D-51
12/3/2022	S-2	5/23/2023	S-50
12/5/2022	D-38	6/1/2023	S-50
12/14/2022	S-50	6/10/2023	S-8
2/4/2023	S-6	6/10/2023	S-9
2/4/2023	S-7	6/10/2023	S-16
2/4/2023	S-5	6/10/2023	S-18
2/4/2023	D-4	6/13/2023	S-50
2/4/2023	D-18	6/14/2023	S-50
2/4/2023	F-14		

CSO TIDE GATE MAINTENANCE

DATE	SITE	DATE	SITE	DATE	SITE
7/14/2022	D-5	11/10/2022	D-9	2/3/2023	D-15
7/14/2022	D-7	11/10/2022	F-25	2/25/2023	D-37
7/18/2022	F-25	11/10/2022	D-9	3/3/2023	T-14
7/18/2022	D-15	11/14/2022	S-50	3/8/2023	T-14
7/18/2022	D-2	11/14/2022	S-50	3/9/2023	D-11
7/20/2022	D-11	11/15/2022	D-2	3/10/2023	D-2
7/20/2022	D-3	11/15/2022	D-2	3/10/2023	D-3
7/20/2022	D-9	11/16/2022	D-5	3/10/2023	D-5
7/21/2022	T-14	11/16/2022	D-5	3/10/2023	D-7
7/21/2022	Rock Run	11/17/2022	D-5	3/15/2023	D-9
7/28/2022	Fish Ladder	11/17/2022	D-15	3/16/2023	D-15
8/3/2022	D-5	11/17/2022	D-5	3/16/2023	F-25
8/3/2022	D-7	11/17/2022	D-15	3/16/2023	State Road
8/3/2022	D-11	11/21/2022	D-2	4/13/2023	T-14
8/3/2022	D-15	11/21/2022	D-3	4/13/2023	Rock Run
8/4/2022	D-2	11/21/2022	D-7	4/14/2023	D-2
8/4/2022	D-3	11/21/2022	D-11	4/14/2023	D-3
8/5/2022	F-25	11/21/2022	D-2	4/14/2023	D-11
8/5/2022	D-9	11/21/2022	D-3	4/14/2023	D-15
8/10/2022	Rock Run	11/21/2022	D-7	4/14/2023	F-25
8/11/2022	D-15	11/21/2022	D-11	4/18/2023	D-9
8/15/2022	T-14	11/28/2022	Rock Run	4/19/2023	D-5
8/25/2022	Fish Ladder	11/28/2022	Rock Run	4/19/2023	D-7
9/1/2022	D-15	11/28/2022	T-14	4/19/2023	T-14
9/2/2022	D-15	11/29/2022	S-50	4/25/2023	D-9
9/2/2022	S-50	12/3/2022	S-2	4/25/2023	D-5
9/12/2022	D-5	12/9/2022	S-50	4/25/2023	Fish Ladder
9/12/2022	D-7	12/9/2022	D-2	4/27/2023	T-14
9/20/2022	D-7	12/14/2022	D-3	4/27/2023	Rock Run
9/20/2022	Rock Run	12/19/2022	F-25	5/1/2023	T-14
9/20/2022	T-14	12/21/2022	D-15	5/3/2023	S-50
9/21/2022	D-2	12/22/2022	D-9	5/4/2023	D-2
9/21/2022	D-3	12/22/2022	D-11	5/5/2023	D-3
9/22/2022	T-14	12/22/2022	Rock Run	5/5/2023	D-15
9/26/2022	D-9	12/23/2022	D-5	5/8/2023	D-7
9/26/2022	Rock Run	12/23/2022	T-14	5/8/2023	D-9
9/28/2022	D-15	12/28/2022	D-7	5/10/2023	D-5
9/28/2022	F-25	12/28/2022	Fish Ladder	5/10/2023	D-11
9/28/2022	D-11	1/4/2023	D-2	5/11/2023	F-25
9/30/2022	Fish Ladder	1/4/2023	D-3	5/11/2023	Rock Run
10/6/2022	D-9	1/4/2023	D-5	5/15/2023	S-50
10/6/2022	D-11	1/5/2023	D-15	5/18/2023	S-50
10/12/2022	D-2	1/5/2023	F-25	5/18/2023	T-14
10/12/2022	D-3	1/6/2023	D-9	5/23/2023	S-50
10/12/2022	D-5	1/6/2023	D-11	5/25/2023	Fish Ladder
10/18/2022	F-25	1/6/2023	Rock Run	6/1/2023	D-2
10/24/2022	T-14	1/9/2023	D-7	6/1/2023	D-3
10/24/2022	Rock Run	1/9/2023	T-14	6/1/2023	S-50
10/26/2022	D-7	1/26/2023	D-9	6/2/2023	D-5
10/27/2022	D-11	1/27/2023	D-9	6/2/2023	D-7
10/27/2022	D-15	1/30/2023	D-9	6/3/2023	D-9
10/28/2022	Fish Ladder	2/2/2023	D-2	6/3/2023	D-15
11/9/2022	F-25	2/2/2023	D-3	6/13/2023	S-50
11/9/2022	S-50	2/2/2023	D-5	6/14/2023	D-15
11/9/2022	S-50	2/2/2023	D-9	6/14/2023	S-50
11/10/2022	F-25	2/3/2023	D-11	6/15/2023	T-14
				6/21/2023	F-25
				6/21/2023	Rock Run
				6/30/2023	T-14

COMPUTER CONTROL CHAMBER PREVENTATIVE MAINTENANCE

DATE	SITE	DATE	SITE	DATE	SITE
7/14/2022	D-5	10/28/2022	Fish Ladder	3/15/2023	D-9
7/14/2022	D-7	11/10/2022	F-25	3/16/2023	D-15
7/18/2022	F-25	11/10/2022	D-9	3/16/2023	F-25
7/18/2022	D-11	11/17/2022	D-5	3/16/2023	State Road
7/18/2022	D-2	11/17/2022	D-15	3/23/2023	Venice
7/20/2022	D-11	11/21/2022	D-2	4/13/2023	State Road
7/20/2022	D-3	11/21/2022	D-3	4/13/2023	Rock Run
7/20/2022	D-9	11/21/2022	D-7	4/13/2023	T-14
7/20/2022	Venice	11/21/2022	D-11	4/14/2023	D-2
7/21/2022	T-14	11/28/2022	Rock Run	4/14/2023	D-3
7/21/2022	Rock Run	11/28/2022	T-14	4/14/2023	D-11
7/27/2022	State Road	11/28/2022	State Road	4/14/2023	D-15
7/28/2022	Fish Ladder	11/30/2022	Venice	4/14/2023	F-25
8/3/2022	D-5	11/30/2022	Fish Ladder	4/17/2023	Venice
8/3/2022	D-7	12/9/2022	D-2	4/18/2023	D-9
8/3/2022	D-11	12/14/2022	D-3	4/19/2023	D-5
8/3/2022	D-15	12/19/2022	F-25	4/19/2023	D-7
8/4/2022	D-2	12/21/2022	D-15	4/19/2023	T-14
8/4/2022	D-3	12/21/2022	Venice	4/25/2023	Venice
8/5/2022	F-25	12/22/2022	D-9	4/25/2023	Fish Ladder
8/5/2022	D-9	12/22/2022	D-11	4/26/2023	Fish Ladder
8/8/2022	Venice	12/22/2022	Rock Run	4/27/2023	Rock Run
8/10/2022	Rock Run	12/23/2022	D-5	4/27/2023	T-14
8/15/2022	T-14	12/23/2022	T-14	5/1/2023	T-14
8/17/2022	State Road	12/28/2022	D-7	5/1/2023	Venice
8/25/2022	Fish Ladder	12/28/2022	Fish Ladder	5/4/2023	D-2
9/12/2022	D-5	12/28/2022	State Road	5/4/2023	D-3
9/12/2022	D-7	1/4/2023	D-2	5/5/2023	D-15
9/21/2022	D-2	1/4/2023	D-3	5/5/2023	D-7
9/21/2022	D-3	1/4/2023	D-5	5/8/2023	D-9
9/22/2022	T-14	1/5/2023	D-15	5/8/2023	D-5
9/26/2022	D-9	1/5/2023	F-25	5/10/2023	D-11
9/26/2022	Rock Run	1/5/2023	Venice	5/10/2023	F-25
9/26/2022	Venice	1/6/2023	D-9	5/11/2023	Rock Run
9/28/2022	D-15	1/6/2023	D-11	5/15/2023	Venice
9/28/2022	F-25	1/6/2023	Rock Run	5/18/2023	T-14
9/28/2022	D-11	1/9/2023	D-7	5/19/2023	Venice
9/29/2022	State Road	1/9/2023	T-14	5/22/2023	State Road
9/30/2022	Fish Ladder	1/9/2023	State Road	5/25/2023	Fish Ladder
10/6/2022	D-9	2/2/2023	D-2	6/1/2023	D-2
10/6/2022	D-11	2/2/2023	D-3	6/1/2023	D-3
10/12/2022	D-2	2/2/2023	D-5	6/2/2023	D-5
10/12/2022	D-3	2/2/2023	D-9	6/2/2023	D-7
10/12/2022	D-5	2/3/2023	D-11	6/3/2023	D-9
10/17/2022	Venice	2/3/2023	D-15	6/3/2023	D-15
10/18/2022	F-25	3/3/2023	T-14	6/15/2023	T-14
10/18/2022	State Road	3/8/2023	T-14	6/21/2023	Rock Run
10/24/2022	T-14	3/9/2023	D-11	6/21/2023	F-25
10/24/2022	Rock Run	3/10/2023	D-2	6/23/2023	Venice
10/26/2022	D-7	3/10/2023	D-3	6/30/2023	T-14
10/27/2022	D-11	3/10/2023	D-5		
10/27/2022	D-15	3/10/2023	D-7		

CSO OUTFALL - DEBRIS GRILL MAINTENANCE

DATE	SITE	DATE	SITE	DATE	SITE
7/13/2022	R-13/14	11/21/2022	D-3	3/3/2023	T-14
7/14/2022	D-5	11/21/2022	D-7	3/8/2023	T-14
7/14/2022	D-7	11/21/2022	D-11	3/9/2023	Rock Run
7/18/2022	F-25	11/28/2022	Rock Run	3/9/2023	D-11
7/18/2022	D-15	11/28/2022	T-14	3/15/2023	D-9
7/18/2022	D-2	11/30/2022	Fish Ladder	3/16/2023	D-15
7/20/2022	D-11	12/6/2022	D-15	3/16/2023	F-25
7/20/2022	D-3	12/9/2022	D-2	3/20/2023	Rock Run
7/20/2022	D-9	12/14/2022	D-3	3/20/2023	T-14
7/21/2022	T-14	12/19/2022	F-25	3/21/2023	Linden
7/21/2022	Rock Run	12/21/2022	D-15	3/21/2023	T-06
7/28/2022	Fish Ladder	12/22/2022	D-9	3/21/2023	T-08
8/3/2022	D-5	12/22/2022	D-11	3/21/2023	D-24
8/3/2022	D-7	12/22/2022	Rock Run	3/21/2023	D-25
8/3/2022	D-11	12/23/2022	D-5	3/31/2023	D-2
8/3/2022	D-15	12/23/2022	T-14	3/31/2023	D-3
8/4/2022	D-2	12/28/2022	D-7	3/31/2023	D-5
8/4/2022	D-3	12/28/2022	Fish Ladder	4/13/2023	Rock Run
8/5/2022	F-25	1/3/2023	D-2	4/13/2023	T-14
8/5/2022	D-9	1/3/2023	D-11	4/14/2023	D-2
8/10/2022	Rock Run	1/3/2023	D-15	4/14/2023	D-3
8/15/2022	T-14	1/4/2023	D-2	4/14/2023	D-11
8/24/2022	D-2	1/4/2023	D-3	4/14/2023	D-15
8/24/2022	D-3	1/4/2023	D-5	4/14/2023	F-25
8/24/2022	D-5	1/5/2023	D-15	4/18/2023	D-9
8/24/2022	D-7	1/5/2023	F-25	4/18/2023	D-2
8/24/2022	D-11	1/6/2023	D-9	4/18/2023	D-3
8/24/2022	D-15	1/6/2023	D-11	4/18/2023	D-5
8/24/2022	F-25	1/6/2023	Rock Run	4/18/2023	D-15
8/24/2022	Rock Run	1/9/2023	D-7	4/19/2023	D-5
8/24/2022	R-13/14	1/9/2023	T-14	4/19/2023	D-7
8/25/2022	Fish Ladder	1/17/2023	Rock Run	4/19/2023	T-14
9/12/2022	D-5	1/17/2023	T-14	4/25/2023	D-9
9/12/2022	D-7	1/24/2023	D-11	4/25/2023	D-5
9/21/2022	D-2	1/24/2023	D-15	4/25/2023	Fish Ladder
9/21/2022	D-3	1/26/2023	D-15	4/27/2023	T-14
9/22/2022	T-14	1/26/2023	Rock Run	4/27/2023	Rock Run
9/26/2022	D-9	1/27/2023	T-14	5/1/2023	T-14
9/26/2022	Rock Run	1/30/2023	D-2	5/4/2023	D-2
9/28/2022	D-15	1/30/2023	D-3	5/4/2023	D-3
9/28/2022	F-25	1/30/2023	D-5	5/5/2023	D-7
9/28/2022	D-11	1/30/2023	D-7	5/5/2023	D-15
9/30/2022	Fish Ladder	1/30/2023	D-9	5/8/2023	D-9
10/6/2022	D-9	1/30/2023	D-11	5/8/2023	D-5
10/6/2022	D-11	1/30/2023	D-15	5/10/2023	D-11
10/12/2022	D-2	1/30/2023	Rock Run	5/10/2023	F-25
10/12/2022	D-3	1/30/2023	T-14	5/11/2023	Rock Run
10/12/2022	D-5	2/2/2023	D-2	5/18/2023	T-14
10/18/2022	F-25	2/2/2023	D-3	5/25/2023	Fish Ladder
10/24/2022	T-14	2/2/2023	D-5	6/1/2023	D-2
10/24/2022	Rock Run	2/2/2023	D-9	6/1/2023	D-3
10/26/2022	D-7	2/3/2023	D-11	6/2/2023	D-5
10/28/2022	Fish Ladder	2/3/2023	D-15	6/2/2023	D-7
11/9/2022	F-25	2/7/2023	D-2	6/3/2023	D-9
11/10/2022	F-25	2/7/2023	D-3	6/3/2023	D-15
11/10/2022	D-9	2/7/2023	D-5	6/15/2023	T-14
11/15/2022	D-2	2/7/2023	D-7	6/21/2023	F-25
11/16/2022	T-14	2/7/2023	D-9	6/21/2023	Rock Run
11/17/2022	D-5	2/7/2023	D-11	6/30/2023	T-14
11/17/2022	D-15	2/7/2023	D-15		
11/21/2022	D-2	2/7/2023	F-25		

Sewer Assessment Program CCTV Sewer Inspection Report

Inspections	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	TOTAL
GSI CCTV Inspections	215	83	44	89	66	83	88	134	89	131	179	178	**1379**
Sewer CCTV Inspections	437	348	275	385	259	309	342	298	314	384	457	332	**4140**
Total CCTV Inspections	**652**	**431**	**319**	**474**	**325**	**392**	**430**	**432**	**403**	**515**	**636**	**510**	**5519**
Mileage													
Total GSI CCTV Mileage	1.86	0.75	0.31	0.79	0.52	0.56	0.69	0.64	0.78	0.92	1.53	1.73	**11.07**
Total Sewer CCTV Mileage	5.67	7.01	6.78	8.02	4.50	6.27	6.78	3.97	5.97	7.14	7.91	4.48	**74.49**
Total CCTV Inspection Mileage	**7.53**	**7.76**	**7.09**	**8.80**	**5.02**	**6.83**	**7.47**	**4.61**	**6.75**	**8.06**	**9.44**	**6.20**	**85.56**

Flow Control

FLOW CONTROL MISSION STATEMENT

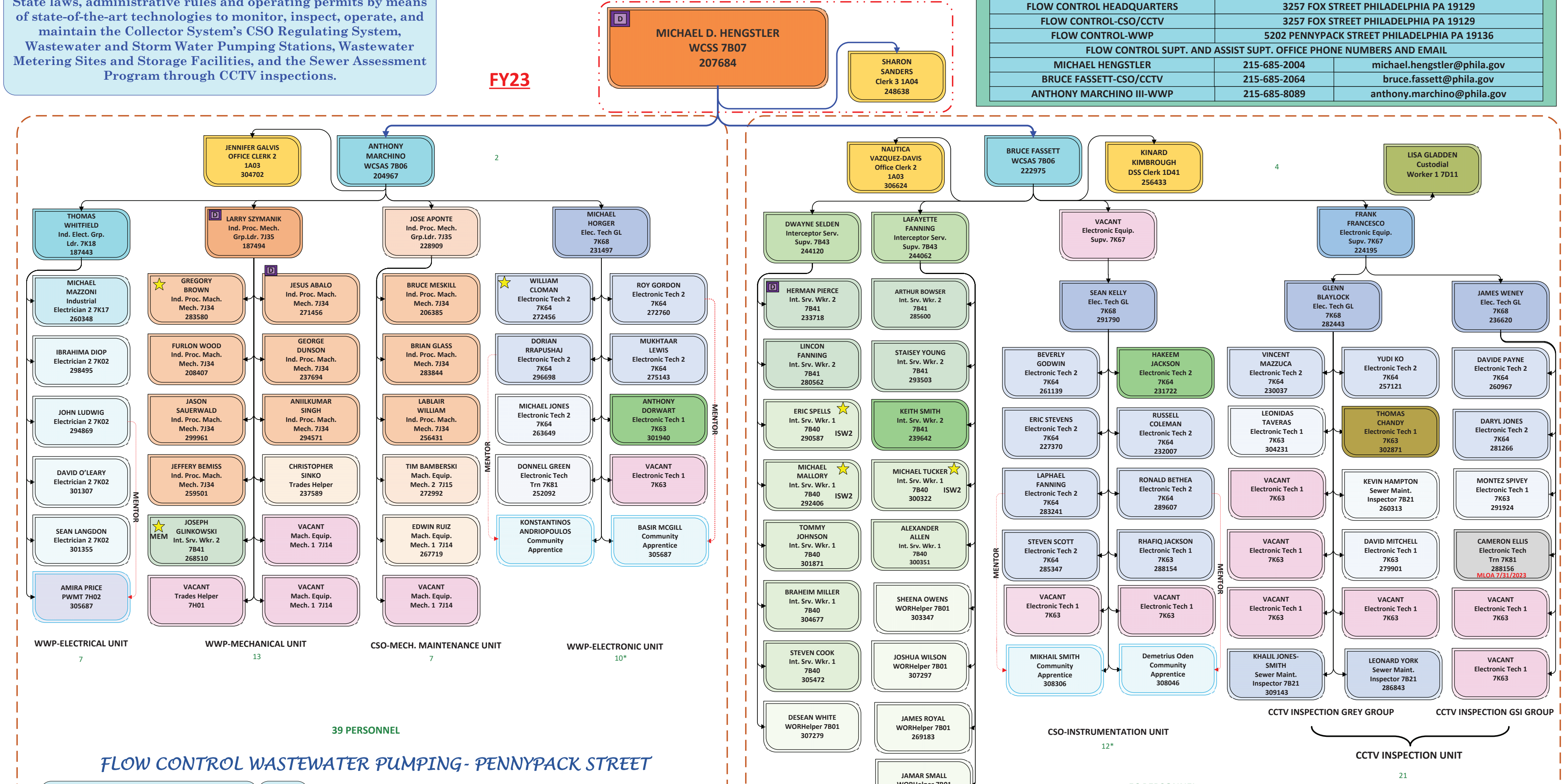
The mission of the Flow Control Unit is to ensure environmental stewardship and public wellbeing in accordance with Federal and State laws, administrative rules and operating permits by means of state-of-the-art technologies to monitor, inspect, operate, and maintain the Collector System's CSO Regulating System, Wastewater and Storm Water Pumping Stations, Wastewater Metering Sites and Storage Facilities, and the Sewer Assessment Program through CCTV inspections.

FY23

☆ Approved Out of Class

* Community Apprentices will fill vacant positions if they pass 6 month apprenticeship and become permanent Civil Service Employees

FLOW CONTROL ADDRESSES		
FLOW CONTROL HEADQUARTERS	3257 FOX STREET PHILADELPHIA PA 19129	
FLOW CONTROL-CSO/CCTV	3257 FOX STREET PHILADELPHIA PA 19129	
FLOW CONTROL-WWP	5202 PENNYPACK STREET PHILADELPHIA PA 19136	
FLOW CONTROL SUPT. AND ASSIST SUPT. OFFICE PHONE NUMBERS AND EMAIL		
MICHAEL HENGSTLER	215-685-2004	michael.hengstler@phila.gov
BRUCE FASSETT-CSO/CCTV	215-685-2064	bruce.fassett@phila.gov
ANTHONY MARCHINO III-WWP	215-685-8089	anthony.marchino@phila.gov



FLOW CONTROL HQ FOX STREET

2 PERSONNEL

D MICHAEL D. HENGSTLER
WCSS 7B07
207684

SHARON SANDERS
Clerk 3 1A04
248638

FLOW CONTROL WASTEWATER PUMPING- PENNYPACK STREET

JENNIFER GALVIS
OFFICE CLERK 2
1A03
304702

ANTHONY MARCHINO
WCSAS 7B06
204967

2

WWP-ELECTRICAL UNIT

7

THOMAS WHITFIELD
Ind. Elect. Grp. Ldr. 7K18
187443

- MICHAEL MAZZONI, Industrial Electrician 2 7K17, 260348
- IBRAHIMA DIOP, Electrician 2 7K02, 298495
- JOHN LUDWIG, Electrician 2 7K02, 294869
- DAVID O'LEARY, Electrician 2 7K02, 301307
- SEAN LANGDON, Electrician 2 7K02, 301355
- AMIRA PRICE, PWMT 7H02, 305687

MENTOR

WWP-MECHANICAL UNIT

13

D LARRY SZYMANIK
Ind. Proc. Mech. Grp.Ldr. 7J35
187494

- ☆ GREGORY BROWN, Ind. Proc. Mach. Mech. 7J34, 283580
- D JESUS ABALO, Ind. Proc. Mach. Mech. 7J34, 271456
- FURLON WOOD, Ind. Proc. Mach. Mech. 7J34, 208407
- GEORGE DUNSON, Ind. Proc. Mach. Mech. 7J34, 237694
- JASON SAUERWALD, Ind. Proc. Mach. Mech. 7J34, 299961
- ANIILKUMAR SINGH, Ind. Proc. Mach. Mech. 7J34, 294571
- JEFFERY BEMISS, Ind. Proc. Mach. Mech. 7J34, 259501
- CHRISTOPHER SINKO, Trades Helper, 237589
- ☆ MEM JOSEPH GLINKOWSKI, Int. Srv. Wkr. 2 7B41, 268510
- VACANT, Mach. Equip. Mech. 1 7J14
- VACANT, Trades Helper 7H01
- VACANT, Mach. Equip. Mech. 1 7J14

CSO-MECH. MAINTENANCE UNIT

7

JOSE APONTE
Ind. Proc. Mech. Grp.Ldr. 7J35
228909

- BRUCE MESKILL, Ind. Proc. Mach. Mech. 7J34, 206385
- BRIAN GLASS, Ind. Proc. Mach. Mech. 7J34, 283844
- LABLAIR WILLIAM, Ind. Proc. Mach. Mech. 7J34, 256431
- TIM BAMBERSKI, Mach. Equip. Mech. 2 7J15, 272992
- EDWIN RUIZ, Mach. Equip. Mech. 1 7J14, 267719
- VACANT, Mach. Equip. Mech. 1 7J14

WWP-ELECTRONIC UNIT

10*

MICHAEL HORGER
Elec. Tech GL 7K68
231497

- ☆ WILLIAM CLOMAN, Electronic Tech 2 7K64, 272456
- ROY GORDON, Electronic Tech 2 7K64, 272760
- DORIAN RRAPUSHAJ, Electronic Tech 2 7K64, 296698
- MUKHTAAR LEWIS, Electronic Tech 2 7K64, 275143
- MICHAEL JONES, Electronic Tech 2 7K64, 263649
- ANTHONY DORWART, Electronic Tech 1 7K63, 301940
- DONNELL GREEN, Electronic Tech Trn 7K81, 252092
- VACANT, Electronic Tech 1 7K63
- KONSTANTINOS ANDRIOPOULOS, Community Apprentice
- BASIR MCGILL, Community Apprentice, 305687

MENTOR

MENTOR

39 PERSONNEL

FLOW CONTROL CSO/CCTV GROUP-FOX STREET

NAUTICA VAZQUEZ-DAVIS
Office Clerk 2
1A03
306624

BRUCE FASSETT
WCSAS 7B06
222975

KINARD KIMBROUGH
DSS Clerk 1D41
256433

4

LISA GLADDEN
Custodial Worker 1 7D11

CSO-INTERCEPTOR UNIT

19

DWAYNE SELDEN
Interceptor Serv. Supv. 7B43
244120

- D HERMAN PIERCE, Int. Srv. Wkr. 2 7B41, 233718
- LINCON FANNING, Int. Srv. Wkr. 2 7B41, 280562
- ☆ ERIC SPELLS, Int. Srv. Wkr. 1 7B40, 290587, ISW2
- ☆ MICHAEL MALLORY, Int. Srv. Wkr. 1 7B40, 292406, ISW2
- TOMMY JOHNSON, Int. Srv. Wkr. 1 7B40, 301871
- BRAHEIM MILLER, Int. Srv. Wkr. 1 7B40, 304677
- STEVEN COOK, Int. Srv. Wkr. 1 7B40, 305472
- DESEAN WHITE, WORHelper 7B01, 307279

LAFAYETTE FANNING
Interceptor Serv. Supv. 7B43
244062

- ARTHUR BOWSER, Int. Srv. Wkr. 2 7B41, 285600
- STAISEY YOUNG, Int. Srv. Wkr. 2 7B41, 293503
- KEITH SMITH, Int. Srv. Wkr. 2 7B41, 239642
- ☆ MICHAEL TUCKER, Int. Srv. Wkr. 1 7B40, 300322, ISW2
- ALEXANDER ALLEN, Int. Srv. Wkr. 1 7B40, 300351
- SHEENA OWENS, WORHelper 7B01, 303347
- JOSHUA WILSON, WORHelper 7B01, 307297
- JAMES ROYAL, WORHelper 7B01, 269183
- JAMAR SMALL, WORHelper 7B01, 307412

CSO-INSTRUMENTATION UNIT

12*

VACANT
Electronic Equip. Supv. 7K67

SEAN KELLY
Elec. Tech GL 7K68
291790

- BEVERLY GODWIN, Electronic Tech 2 7K64, 261139
- HAKEEM JACKSON, Electronic Tech 2 7K64, 231722
- ERIC STEVENS, Electronic Tech 2 7K64, 227370
- RUSSELL COLEMAN, Electronic Tech 2 7K64, 232007
- LAPHAEL FANNING, Electronic Tech 2 7K64, 283241
- RONALD BETHEA, Electronic Tech 2 7K64, 289607
- STEVEN SCOTT, Electronic Tech 2 7K64, 285347
- RHAFIQ JACKSON, Electronic Tech 1 7K63, 288154
- VACANT, Electronic Tech 1 7K63
- VACANT, Electronic Tech 1 7K63
- MIKHAIL SMITH, Community Apprentice, 308306
- Demetrius Oden, Community Apprentice, 308046

MENTOR

MENTOR

CCTV INSPECTION UNIT

21

FRANK FRANCESCO
Electronic Equip. Supv. 7K67
224195

CCTV INSPECTION GREY GROUP

GLENN BLAYLOCK
Elec. Tech GL 7K68
282443

- VINCENT MAZZUCA, Electronic Tech 2 7K64, 230037
- YUDI KO, Electronic Tech 2 7K64, 257121
- LEONIDAS TAVERAS, Electronic Tech 1 7K63, 304231
- THOMAS CHANDY, Electronic Tech 1 7K63, 302871
- VACANT, Electronic Tech 1 7K63
- KEVIN HAMPTON, Sewer Maint. Inspector 7B21, 260313
- VACANT, Electronic Tech 1 7K63
- DAVID MITCHELL, Electronic Tech 1 7K63, 279901
- VACANT, Electronic Tech 1 7K63
- VACANT, Electronic Tech 1 7K63
- KHALIL JONES-SMITH, Sewer Maint. Inspector 7B21, 309143
- LEONARD YORK, Sewer Maint. Inspector 7B21, 286843

CCTV INSPECTION GSI GROUP

JAMES WENEY
Elec. Tech GL 7K68
236620

- DAVIDE PAYNE, Electronic Tech 2 7K64, 260967
- DARYL JONES, Electronic Tech 2 7K64, 281266
- MONTEZ SPIVEY, Electronic Tech 1 7K63, 291924
- CAMERON ELLIS, Electronic Tech Trn 7K81, 288156, MLOA 7/31/2023
- VACANT, Electronic Tech 1 7K63
- VACANT, Electronic Tech 1 7K63

56 PERSONNEL

FLOW CONTROL-APPROVED POSITIONS	97
FLOW CONTROL-FILLED POSITIONS	83
FLOW CONTROL-VACANT POSITIONS	14
FLOW CONTROL-FMLA/LOA/Other	1
FLOW CONTROL-IOD/Restrict	3
FLOW CONTROL-Active Employees	80
FLOW CONTROL-APPRENTICESHIP	4

VACANCY %	14.4%
ACTIVE %	81.4%
FILLED %	85.6%

Pending Hire
Pending Transfer
Restrictions/ Limited Duty IOD
Leave of Absence

D

Flow Control D.R.O.P. Employees

NAME	GROUP	DROP DATE
Larry Szymanik	WWP-IPMMGL	08/04/2023
Jesus Abalo	WWP-IPMM	08/16/2024
Herman Pierce	FOX-ISW2	08/15/2025
Michael Hengstler	WCSS	04/10/2027

OFFICE STAFF

FC PROCUREMENT CLERK/PAYROLL CLERK	SHARON SANDERS	sharon.c.sanders@phila.gov
FOX STREET PAYROLL CLERK/CSO-MECH DATA ENTRY	NAUTICA VAZQUEZ-DAVIS	nautica.davis@phila.gov
WWP PAYROLL CLERK/WWP DATA ENTRY	JENNIFER GALVIS	jennifer.galvis@phila.gov
CSE PAYROLL CLERK/CSO-INSTR DATA ENTRY	KINARD KIMBROUGH	kinard.kimbrough@phila.gov

PHILADELPHIA WATER DEPARTMENT

Appendix D – NPDES Annual CSO Report Status FY23

APPENDIX D –
NPDES ANNUAL CSO STATUS REPORT FY 2023

Page

Table 1 - Listing of all CSO permitted outfalls

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
NPDES Permit #0026689 - Northeast						
2	39d 58m 50s	75d 4m 58s	Castor Ave. and Balfour St.	Delaware River	Somerset	D_17
3	39d 58m 45s	75d 5m 6s	Venango St. NW of Casper St.	Delaware River	Somerset	D_18
4	39d 58m 41s	75d 5m 15s	Tioga St. NW of Casper St.	Delaware River	Somerset	D_19
5	39d 58m 43s	75d 5m 28s	Ontario St. NW of Casper St.	Delaware River	Somerset	D_20
6	39d 58m 44s	75d 5m 41s	Westmoreland St. NW of Balfour St.	Delaware River	Somerset	D_21
7	39d 58m 42s	75d 5m 53s	Allegheny Ave. SE of Bath St.	Delaware River	Somerset	D_22
8	39d 58m 38s	75d 6m 12s	Indiana Ave. SE of Allen St.	Delaware River	Somerset	D_23
10	39d 58m 38s	75d 6m 28s	Cambria St. E of Melvale St.	Delaware River	Somerset	D_25
11	40d 1m 18s	75d 1m 44s	Cottman St. SE of Milnor St.	Delaware River	Upper Delaware Low Level	D_02
12	40d 1m 14s	75d 2m 0s	Princeton Ave SE of Milnor St.	Delaware River	Upper Delaware Low Level	D_03
13	40d 1m 8s	75d 2m 13s	Disston St. SE of Wissinoming St.	Delaware River	Upper Delaware Low Level	D_04
14	40d 0m 58s	75d 2m 34s	Magee St. SE of Milnor St.	Delaware River	Upper Delaware Low Level	D_05
15	40d 0m 53s	75d 2m 46s	Levick St. SE of Milnor St.	Delaware River	Upper Delaware Low Level	D_06
16	40d 0m 44s	75d 3m 5s	Lardner St. SE of Milnor St.	Delaware River	Upper Delaware Low Level	D_07
17	40d 0m 38s	75d 3m 13s	Comly St. SE of Milnor St.	Delaware River	Upper Delaware Low Level	D_08
18	40d 0m 34s	75d 3m 18s	Dark Run La and Milnor St.	Delaware River	Upper Delaware Low Level	D_09
19	40d 0m 21s	75d 3m 28s	Sanger St. SE of Milnor St.	Delaware River	Upper Delaware Low Level	D_11
20	40d 0m 2s	75d 3m 43s	Bridge St. Se of Garden St.	Delaware River	Upper Delaware Low Level	D_12

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
21	39d 59m 53s	75d 3m 47s	Kirkbride St. and Delaware Ave.	Delaware River	Upper Delaware Low Level	D_13
22	39d 59m 24s	75d 4m 4s	Orthodox St. and Delaware Ave.	Delaware River	Upper Delaware Low Level	D_15
23	40d 2m 36s	75d 1m 15s	Frankford Avenue & Ashburner Street	Pennypack Creek	Pennypack	P_01
24	40d 2m 36s	75d 1m 16s	Frankford Avenue & Holmesburg St.	Pennypack Creek	Pennypack	P_02
25	40d 2m 13s	75d 1m 19s	Torresdale Ave. NW of Pennypack Ck.	Pennypack Creek	Pennypack	P_03
26	40d 2m 23s	75d 1m 21s	Cottage Avenue & Holmesburg Avenue	Pennypack Creek	Pennypack	P_04
27	40d 2m 2s	75d 1m 21s	Holmesburg Ave SE of Hegerman St	Pennypack Creek	Pennypack	P_05
28	40d 4m 34s	75d 9m 44s	Williams Avenue SE of Sedgewick	Tacony Creek	Frankford High Level	T_01
29	40d 2m 28s	75d 6m 56s	Complost Ave West of Tacony Creek	Tacony Creek	Frankford High Level	T_03
30	40d 2m 11s	75d 6m 48s	Rising Sun Ave East of Tacony Creek	Tacony Creek	Frankford High Level	T_04
31	40d 2m 9s	75d 6m 48s	Rising Sun Ave West of Tacony Creek	Tacony Creek	Frankford High Level	T_05
32	40d 2m 3s	75d 6m 41s	Bingham Street East of Tacony Creek	Tacony Creek	Frankford High Level	T_06
33	40d 1m 51s	75d 6m 43s	Tabor Road West of Tacony Creek	Tacony Creek	Frankford High Level	T_07
34	40d 1m 42s	75d 6m 47s	Ashdale Street West of Tacony Creek	Tacony Creek	Frankford High Level	T_08
35	40d 1m 37s	75d 6m 48s	Roosevelt Blvd. West of Tacony Creek	Tacony Creek	Frankford High Level	T_09
36	40d 1m 37s	75d 6m 47s	Roosevelt Blvd. East of Tacony Creek	Tacony Creek	Frankford High Level	T_10

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
37	40d 1m 29s	75d 6m 43s	Ruscomb Street East of Tacony Creek	Tacony Creek	Frankford High Level	T_11
38	40d 1m 23s	75d 6m 41s	Whitaker Avenue East of Tacony Creek	Tacony Creek	Frankford High Level	T_12
39	40d 1m 22s	75d 6m 42s	Whitaker Avenue West of Tacony Ck	Tacony Creek	Frankford High Level	T_13
40	40d 0m 59s	75d 6m 28s	I Street & Ramona Ave.	Tacony Creek	Frankford High Level	T_14
41	40d 0m 57s	75d 6m 20s	J Street & Juniata Park	Tacony Creek	Frankford High Level	T_15
42	40d 0m 57s	75d 5m 51s	Castor Avenue at Unity Street Circle	Frankford Creek	Upper Frankford Low Level	F_03
43	40d 0m 52s	75d 5m 42s	Wingohocking St East of Adams Ave	Frankford Creek	Upper Frankford Low Level	F_04
44	40d 0m 41s	75d 5m 41s	Bristol Street West of Adams Avenue	Frankford Creek	Upper Frankford Low Level	F_05
45	40d 0m 25s	75d 5m 33s	Worrel Street East of Frankford Creek	Frankford Creek	Upper Frankford Low Level	F_06
46	40d 0m 26s	75d 5m 34s	Worrel Street West of Frankford Creek	Frankford Creek	Upper Frankford Low Level	F_07
47	40d 0m 21s	75d 5m 36s	Torresdale Ave & Hunting Park Ave	Frankford Creek	Upper Frankford Low Level	F_08
48	40d 0m 19s	75d 5m 34s	Frankford Ave North of Frankford Ck	Frankford Creek	Upper Frankford Low Level	F_09
49	40d 0m 19s	75d 5m 35s	Frankford Ave South of Frankford Ck	Frankford Creek	Upper Frankford Low Level	F_10
50	40d 0m 15s	75d 5m 26s	Orchard Street South of Vandyke Creek	Frankford Creek	Upper Frankford Low Level	F_11
51	39d 59m 56s	75d 5m 14s	Sepviva Street North of Butler Street	Frankford Creek	Upper Frankford Low Level	F_12
52	39d 59m 49s	75d 5m 3s	Duncan Street Under Delaware Exp.	Frankford Creek	Lower Frankford Low Level	F_13

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
54	40d 0m 16s	75d 4m 15s	Wakeling Street NW of Creek Basin	Frankford Creek	Lower Frankford Low Level	F_21
55	40d 0m 19s	75d 4m 5s	Bridge Street NW of Creek Basin	Frankford Creek	Lower Frankford Low Level	F_23
56	40d 0m 18s	75d 4m 5s	Bridge Street SE of Creek Basin	Frankford Creek	Lower Frankford Low Level	F_24
57	40d 0m 15s	75d 4m 15s	Ash Street West of Creek Basin	Frankford Creek	Lower Frankford Low Level	F_25
58	40d 0m 30s	75d 3m 20s	Levick St. & Everett Ave.	Delaware River	Wakling Relief Sewer	D_FRW
59	40d 2m 16s	75d 6m 53s	Nedro Ave & 7th St.	Tacony Creek	Rock Run Flood Relief Sewer	T_FRRR
60	40d 0m 36s	75d 5m 44s	Castor Ave. & East Hunting Park Ave.	Frankford Creek	Frankford High Level Relief Sewer	F_FRFG
NPDES Permit # 0026662 – Southeast						
2	39d 58m 9s	75d 7m 19s	Dyott Street & Delaware Ave.	Delaware River	Lower Delaware Low Level	D_38
3	39d 58m 7s	75d 7m 23s	Susquehanna Ave. East of Beach Street	Delaware River	Lower Delaware Low Level	D_39
4	39d 58m 5s	75d 7m 26s	Berks Street East of Beach Street	Delaware River	Lower Delaware Low Level	D_40
5	39d 58m 3s	75d 7m 37s	Palmer Street East of Beach Street	Delaware River	Lower Delaware Low Level	D_41
6	39d 57m 54s	75d 7m 42s	Columbia Avenue East of Beach Street	Delaware River	Lower Delaware Low Level	D_42
7	39d 57m 56s	75d 7m 48s	Marlborough Street & Delaware Ave	Delaware River	Lower Delaware Low Level	D_43
8	39d 57m 53s	75d 7m 54s	Shackamaxon St East of Delaware Ave	Delaware River	Lower Delaware Low Level	D_44
9	39d 57m 48s	75d 8m 0s	Laurel Street & Delaware Avenue	Delaware River	Lower Delaware Low Level	D_45

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
10	39d 57m 41s	75d 8m 11s	Penn Street & Delaware Avenue	Delaware River	Lower Delaware Low Level	D_46
11	39d 57m 37s	75d 8m 9s	Fairmont Ave West of Delaware Ave	Delaware River	Lower Delaware Low Level	D_47
12	39d 57m 28s	75d 8m 13s	Willow Street West of Delaware Ave	Delaware River	Lower Delaware Low Level	D_48
13	39d 57m 24s	75d 8m 20s	Callowhill Street & Delaware Avenue	Delaware River	Lower Delaware Low Level	D_49
14	39d 57m 21s	75d 8m 13s	Delaware Avenue North of Vine Street	Delaware River	Lower Delaware Low Level	D_50
15	39d 57m 11s	75d 8m 17s	Race Street West of Delaware Avenue	Delaware River	Lower Delaware Low Level	D_51
16	39d 57m 7s	75d 8m 25s	Delaware Avenue & Arch Street	Delaware River	Lower Delaware Low Level	D_52
17	39d 56m 57s	75d 8m 23s	Market Street & Front Street	Delaware River	Lower Delaware Low Level	D_53
20	39d 56m 50s	75d 8m 24s	Front Street South of Chestnut Street	Delaware River	Lower Delaware Low Level	D_54
21	39d 56m 26s	75d 8m 32s	South Street & Delaware Avenue	Delaware River	Lower Delaware Low Level	D_58
22	39d 56m 12s	75d 8m 33s	Catharine Street East of Swanson Street	Delaware River	Lower Delaware Low Level	D_61
23	39d 56m 10s	75d 8m 32s	Queen Street East of Swanson Street	Delaware River	Lower Delaware Low Level	D_62
24	39d 56m 5s	75d 8m 33s	Christian St West of Delaware Avenue	Delaware River	Lower Delaware Low Level	D_63
25	39d 55m 59s	75d 8m 35s	Washington Ave East of Delaware Ave	Delaware River	Lower Delaware Low Level	D_64
26	39d 55m 45s	75d 8m 29s	Reed Street East of Delaware Avenue	Delaware River	Lower Delaware Low Level	D_65

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
27	39d 55m 37s	75d 8m 28s	Tasker Street East of Delaware Avenue	Delaware River	Lower Delaware Low Level	D_66
28	39d 55m 26s	75d 8m 21s	Moore Street East of Delaware Avenue	Delaware River	Lower Delaware Low Level	D_67
33	39d 54m 6s	75d 8m 12s	Pattison Avenue & Swanson Street	Delaware River	Lower Delaware Low Level	D_73
36	39d 58m 21s	75d 6m 58s	Cumberland St East of Richmond St	Delaware River	Lower Delaware Low Level	D_37
37	39d 57m 12s	75d 8m 24s	Race Street West of Delaware Avenue, North of D-51	Delaware River	Lower Delaware Low Level	D_51A
29	39d 55m 13s	75d 8m 20s	Snyder Avenue & Delaware Avenue	Delaware River	Oregon	D_68
30	39d 54m 60s	75d 8m 13s	Delaware Ave North of Porter Street	Delaware River	Oregon	D_69
31	39d 54m 44s	75d 8m 15s	Oregon Avenue & Delaware Avenue	Delaware River	Oregon	D_70
32	39d 54m 33s	75d 7m 59s	Bigler Street & Delaware Avenue	Delaware River	Oregon	D_71
34	39d 54m 24s	75d 8m 8s	Packer Avenue East of Delaware Ave	Delaware River	Oregon	D_72
NPDES Permit # 0026671 - Southwest						
2	39d 56m 17s	75d 12m 17s	Reed Street & Schuylkill Avenue	Schuylkill River	Lower Schuylkill East Side	S_31
3	39d 55m 54s	75d 12m 28s	35th St. and Mifflin St.	Schuylkill River	Lower Schuylkill East Side	S_36A
4	39d 55m 41s	75d 12m 38s	Vare Avenue & 29th Street	Schuylkill River	Lower Schuylkill East Side	S_37
5	39d 55m 12s	75d 12m 5s	Passyunk Avenue & 29th Street	Schuylkill River	Lower Schuylkill East Side	S_42
6	39d 55m 12s	75d 12m 5s	Passyunk Avenue & 28th Street	Schuylkill River	Lower Schuylkill East Side	S_42A

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
7	39d 54m 57s	75d 12m 16s	26th Street 700′ North of Hartranft St	Schuylkill River	Lower Schuylkill East Side	S_44
8	39d 53m 53s	75d 12m 39s	Penrose Avenue & 26th Street	Schuylkill River	Lower Schuylkill East Side	S_46
9	39d 57m 38s	75d 10m 50s	24th Street 155′ South of Parktown Pl	Schuylkill River	Central Schuylkill East Side	S_05
10	39d 57m 39s	75d 10m 49s	24th Street 350′ South of Parktown Pl	Schuylkill River	Central Schuylkill East Side	S_06
11	39d 57m 39s	75d 10m 50s	24th Street East of Schuylkill River	Schuylkill River	Central Schuylkill East Side	S_07
12	39d 57m 29s	75d 10m 43s	Race Street & Bonsall Street	Schuylkill River	Central Schuylkill East Side	S_08
13	39d 57m 30s	75d 10m 45s	Arch Street West of 23rd Street	Schuylkill River	Central Schuylkill East Side	S_09
14	39d 57m 16s	75d 10m 49s	Market Street 25′ East of 24th Street	Schuylkill River	Central Schuylkill East Side	S_10
15	39d 57m 11s	75d 10m 51s	24th St. N of Chestnut St. Bridge	Schuylkill River	Central Schuylkill East Side	S_12A
16	39d 57m 7s	75d 10m 52s	Sansom Street West of 24th Street	Schuylkill River	Central Schuylkill East Side	S_13
17	39d 57m 5s	75d 10m 53s	Walnut Street West of 24th Street	Schuylkill River	Central Schuylkill East Side	S_15
18	39d 57m 1s	75d 10m 56s	Locust Street & 25th Street	Schuylkill River	Central Schuylkill East Side	S_16
19	39d 56m 57s	75d 11m 0s	Spruce Street & 25th Street	Schuylkill River	Central Schuylkill East Side	S_17
20	39d 56m 52s	75d 11m 5s	Pine Street West of Taney Street	Schuylkill River	Central Schuylkill East Side	S_18
21	39d 56m 49s	75d 11m 9s	Lombard Street West of 27th Street	Schuylkill River	Central Schuylkill East Side	S_19

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
22	39d 56m 47s	75d 11m 12s	South Street East of 27th Street	Schuylkill River	Central Schuylkill East Side	S_21
23	39d 56m 44s	75d 11m 18s	Schuylkill Avenue & Bainbridge Street	Schuylkill River	Central Schuylkill East Side	S_23
24	39d 56m 34s	75d 11m 28s	Schuylkill Avenue & Christian Street	Schuylkill River	Central Schuylkill East Side	S_25
25	39d 56m 29s	75d 11m 35s	Ellsworth St West of Schuylkill Avenue	Schuylkill River	Central Schuylkill East Side	S_26
26	39d 58m 1s	75d 11m 17s	Mantua Avenue & West River Drive	Schuylkill River	Central Schuylkill West Side	S_01
27	39d 57m 54s	75d 11m 7s	Haverford Avenue & West River Drive	Schuylkill River	Central Schuylkill West Side	S_02
28	39d 57m 51s	75d 11m 4s	Spring Garden St W of Schuylkill Expy	Schuylkill River	Central Schuylkill West Side	S_03
29	39d 57m 53s	75d 11m 4s	Powelton Ave W of Schuylkill Expy	Schuylkill River	Central Schuylkill West Side	S_04
30	39d 57m 16s	75d 10m 53s	Market St West of Schuylkill Expy	Schuylkill River	Central Schuylkill West Side	S_11
31	39d 57m 5s	75d 10m 58s	Schuylkill Expressway & Walnut Street	Schuylkill River	Central Schuylkill West Side	S_14
32	39d 56m 51s	75d 11m 14s	440′ Northwest of South Street	Schuylkill River	Central Schuylkill West Side	S_20
33	39d 56m 46s	75d 11m 22s	660′ South of South St E of Pennfield	Schuylkill River	Central Schuylkill West Side	S_22
34	39d 56m 43s	75d 11m 26s	1060′ South of South St E of Pennfield	Schuylkill River	Central Schuylkill West Side	S_24
35	39d 56m 32s	75d 12m 27s	46th Street & Paschall Avenue	Schuylkill River	Southwest Main Gravity	S_30
36	39d 56m 36s	75d 12m 18s	43rd St. and Locust St.	Schuylkill River	Southwest Main Gravity	S_50

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
37	39d 56m 13s	75d 12m 23s	49th Street South of Botanic Street	Schuylkill River	Lower Schuylkill West Side	S_32
38	39d 56m 8s	75d 12m 24s	51st Street South of Botanic Street	Schuylkill River	Lower Schuylkill West Side	S_33
39	39d 55m 43s	75d 12m 45s	56th Street East of P&R Railroad	Schuylkill River	Lower Schuylkill West Side	S_38
40	39d 54m 39s	75d 12m 55s	64th St. and Buist Ave.	Schuylkill River	Lower Schuylkill West Side	S_45
41	39d 56m 10s	75d 14m 6s	60th Street & Cobbs Creek Parkway	Cobbs Creek	Cobbs Creek High Level	C_18
51	39d 58m 51s	75d 16m 4s	City Line Avenue & 73rd Street	Cobbs Creek	Cobbs Creek High Level	C_01
52	39d 58m 51s	75d 16m 1s	City Line Ave 100′ South Side of Creek	Cobbs Creek	Cobbs Creek High Level	C_02
54	39d 58m 30s	75d 15m 26s	Lebanon Ave Southwest of 73rd Street	Cobbs Creek	Cobbs Creek High Level	C_05
55	39d 58m 31s	75d 15m 25s	Lebanon Avenue & 68th Street	Cobbs Creek	Cobbs Creek High Level	C_06
56	39d 58m 26s	75d 15m 26s	Lansdowne Avenue & 69th Street	Cobbs Creek	Cobbs Creek High Level	C_07
57	39d 57m 51s	75d 14m 56s	54th Street & Cobbs Creek	Cobbs Creek	Cobbs Creek High Level	C_09
58	39d 57m 50s	75d 14m 53s	Gross Street & Cobbs Creek	Cobbs Creek	Cobbs Creek High Level	C_10
59	39d 57m 43s	75d 14m 53s	Cobbs Creek Pky South of Market St	Cobbs Creek	Cobbs Creek High Level	C_11
60	39d 57m 27s	75d 14m 60s	Spruce Street & Cobbs Creek	Cobbs Creek	Cobbs Creek High Level	C_12
61	39d 56m 45s	75d 14m 58s	62nd Street & Cobbs Creek	Cobbs Creek	Cobbs Creek High Level	C_13
62	39d 56m 36s	75d 14m 50s	Baltimore Avenue & Cobbs Creek	Cobbs Creek	Cobbs Creek High Level	C_14

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
63	39d 56m 31s	75d 14m 26s	59th Street & Cobbs Creek Parkway	Cobbs Creek	Cobbs Creek High Level	C_15
64	39d 56m 26s	75d 14m 23s	Thomas Avenue & Cobbs Creek	Cobbs Creek	Cobbs Creek High Level	C_16
65	39d 56m 13s	75d 14m 6s	Beaumont Street & Cobbs Creek	Cobbs Creek	Cobbs Creek High Level	C_17
66	39d 58m 29s	75d 16m 48s	Cobbs Creek Pky S of City Line Ave	Cobbs Creek	Cobbs Creek High Level	C_31
67	39d 58m 12s	75d 15m 56s	Brockton Road & Farrington Road	Cobbs Creek	Cobbs Creek High Level	C_33
68	39d 58m 40s	75d 15m 44s	Woodcrest Avenue & Morris Park	Cobbs Creek	Cobbs Creek High Level	C_34
69	39d 58m 47s	75d 15m 54s	Morris Park West of 72nd Street & Sherwood Road	Cobbs Creek	Cobbs Creek High Level	C_35
70	39d 58m 49s	75d 15m 35s	Woodbine Ave South of Brentwood Rd	Cobbs Creek	Cobbs Creek High Level	C_36
71	39d 57m 55s	75d 15m 15s	Cobbs Creek Parkway South of 67th & Callowhill Streets	Cobbs Creek	Cobbs Creek High Level	C_37
72	39d 58m 22s	75d 16m 11s	Cobbs Creek Parkway & 77th Street	Cobbs Creek	Cobbs Creek High Level	C_32
82	39d 58m 38s	75d 15m 28s	Malvern Ave. and 68th St.	Cobbs Creek	Cobbs Creek High Level	C_04A
42	39d 55m 57s	75d 14m 19s	Mount Moriah Cemetary & 62nd Street	Cobbs Creek	Cobbs Creek Low Level	C_19
43	39d 55m 46s	75d 14m 39s	65th Street & Cobbs Creek Parkway	Cobbs Creek	Cobbs Creek Low Level	C_20
44	39d 55m 37s	75d 14m 40s	68th Street & Cobbs Creek Parkway	Cobbs Creek	Cobbs Creek Low Level	C_21
45	39d 55m 27s	75d 14m 46s	70th Street & Cobbs Creek Parkway	Cobbs Creek	Cobbs Creek Low Level	C_22
46	39d 55m 15s	75d 14m 52s	Upland Street & Cobbs Creek Parkway	Cobbs Creek	Cobbs Creek Low Level	C_23

Point Source #	Outfall Latitude	Outfall Longitude	Regulator Location	Discharges to:	Interceptor	Outfall Name
47	39d 55m 1s	75d 14m 49s	Woodland Avenue East of Island Ave.	Cobbs Creek	Cobbs Creek Low Level	C_25
49	39d 54m 44s	75d 14m 56s	Claymont Street & Grays Avenue	Cobbs Creek	Cobbs Creek Low Level	C_29
50	39d 54m 34s	75d 15m 1s	77th Street West of Elmwood Avenue	Cobbs Creek	Cobbs Creek Low Level	C_30
78	39d 54m 49s	75d 14m 50s	Island Ave. Southeast of Glenmore Ave	Cobbs Creek	Cobbs Creek Low Level	C_28A
75	39d 57m 59s	75d 11m 3s	16th St. & Clearfield St.	Schuylkill River	Main Relief Sewer	S_FRM
83	39d 56m 31s	75d 14m 25s	56th St. & Locust	Cobbs Creek	Thomas Run Relief Sewer	C_FRTR
84	39d 57m 49s	75d 14m 53s	Arch Street & Cobbs Creek	Cobbs Creek	Arch Street Relief Sewer	C_FRA

Table 2 - Overflow Summary for 7/1/2022 – 6/30/2023

District	Permitted Outfall	Frequency	Duration (hours)	Volume (ft^3)
Northeast	D_FRW	49	158.75	46,355,706
Northeast	D02	26	61.25	11,035,045
Northeast	D03	28	51.75	3,153,138
Northeast	D04	22	31.5	601,648
Northeast	D05	14	25.75	13,557,799
Northeast	D06	18	16.75	767,760
Northeast	D07	52	173.5	36,151,354
Northeast	D08	18	18.25	427,528
Northeast	D09	11	8.5	492,383
Northeast	D11	21	33.25	5,214,828
Northeast	D12	42	82	300,317
Northeast	D13	12	14	593,099
Northeast	D15	17	27.75	1,409,617
Northeast	D17	46	152.25	11,850,726
Northeast	D18	40	103.5	6,089,237
Northeast	D19	47	178	6,437,798
Northeast	D20	27	56.5	3,173,425
Northeast	D21	42	132.25	9,332,982
Northeast	D22	62	342.25	29,791,491
Northeast	D23	38	55.25	238,260
Northeast	D25	53	278.25	88,665,126
Northeast	F_FRFG	0	0	0
Northeast	F03	30	48.5	2,767,894
Northeast	F04	52	181	8,277,790
Northeast	F05	52	156.75	1,162,751
Northeast	F06	25	29.5	1,318,922
Northeast	F07	35	81.75	3,131,119
Northeast	F08	35	74.5	2,432,879
Northeast	F09	59	207	1,665,123
Northeast	F10	25	53.75	2,264,991
Northeast	F11	60	277.75	16,688,551
Northeast	F12	29	38.5	702,523
Northeast	F13	46	110.5	1,945,362
Northeast	F21	60	373.25	130,452,196
Northeast	F23	48	128.25	2,175,467

District	Permitted Outfall	Frequency	Duration (hours)	Volume (ft^3)
Northeast	F24	45	93	921,139
Northeast	F25	13	17.25	3,477,041
Northeast	P01	21	25.25	1,044,403
Northeast	P02	49	120.75	3,793,266
Northeast	P03	29	46	759,871
Northeast	P04	20	52.25	2,294,737
Northeast	P05	31	104.5	7,931,718
Northeast	T_FRRR	35	196.5	32,626,790
Northeast	T01	54	294.5	9,377,413
Northeast	T03	50	150	3,905,434
Northeast	T04	48	173.25	3,793,722
Northeast	T05	37	73.75	1,623,087
Northeast	T06	35	86.25	11,036,690
Northeast	T07	15	12.5	203,091
Northeast	T08	51	188.5	39,875,257
Northeast	T09	34	43.75	783,315
Northeast	T10	53	213.75	3,788,553
Northeast	T11	42	91	899,673
Northeast	T12	6	4.5	35,964
Northeast	T13	39	119.75	3,502,065
Northeast	T14	34	153.25	182,260,710
Northeast	T15	47	131	6,698,441
Southeast	D37	67	222.25	15,408,215
Southeast	D38	60	134.25	15,729,715
Southeast	D39	65	182.5	25,760,248
Southeast	D40	71	194	1,221,762
Southeast	D41	62	108	1,175,355
Southeast	D42	56	7.5	47,904
Southeast	D43	57	13.25	62,129
Southeast	D44	51	36.5	2,088,873
Southeast	D45	63	107.75	45,789,825
Southeast	D46	66	35	452,246
Southeast	D47	75	196	5,626,921
Southeast	D48	66	62.25	7,747,777
Southeast	D49	74	1.25	6,173
Southeast	D50	72	4.25	27,707
Southeast	D51	74	132.5	945,193

District	Permitted Outfall	Frequency	Duration (hours)	Volume (ft^3)
Southeast	D51A	74	96.25	603,767
Southeast	D52	69	26.25	220,964
Southeast	D53	60	11	833,217
Southeast	D54	65	24	5,082,267
Southeast	D58	68	22.25	500,772
Southeast	D61	81	60	354,153
Southeast	D62	65	19.25	94,413
Southeast	D63	66	36.75	4,824,590
Southeast	D64	70	56	252,859
Southeast	D65	70	73.5	7,374,039
Southeast	D66	71	158	9,802,304
Southeast	D67	55	133.25	4,640,586
Southeast	D68	69	140	17,662,217
Southeast	D69	58	49.5	4,441,446
Southeast	D70	216	35.5	5,688,215
Southeast	D71	61	35.5	2,738,118
Southeast	D72	66	19	1,709,665
Southeast	D73	73	204.5	22,628,094
Southwest	C_FRA	14	13	1,268,959
Southwest	C_FRTR	70	412	21,381,273
Southwest	C01	21	21.5	372,777
Southwest	C02	4	2.75	3,702
Southwest	C04A	21	28	866,501
Southwest	C05	3	4.25	58,620
Southwest	C06	42	102	3,491,683
Southwest	C07	28	36.25	702,959
Southwest	C09	35	72.75	1,768,963
Southwest	C10	31	76.5	521,045
Southwest	C11	43	135.25	14,510,060
Southwest	C12	36	112.25	1,605,670
Southwest	C13	30	62	822,264
Southwest	C14	30	70.25	1,631,799
Southwest	C15	6	5.5	20,545
Southwest	C16	0	0	0
Southwest	C17	47	151.25	17,704,220
Southwest	C18	27	42.75	943,137
Southwest	C19	12	9.5	129,746

District	Permitted Outfall	Frequency	Duration (hours)	Volume (ft^3)
Southwest	C20	12	11.5	95,124
Southwest	C21	4	4	33,266
Southwest	C22	32	58.5	763,724
Southwest	C23	10	18.25	93,569
Southwest	C25	20	47.5	902,824
Southwest	C28A	38	54.5	174,522
Southwest	C29	26	104.5	1,586,976
Southwest	C30	23	78.5	368,939
Southwest	C31	40	89.25	1,101,947
Southwest	C32	41	80.75	1,397,286
Southwest	C33	23	26.75	443,805
Southwest	C34	13	13.25	268,271
Southwest	C35	6	6.75	42,433
Southwest	C36	5	5.75	48,798
Southwest	C37	18	17.25	107,977
Southwest	S_FRM	27	60.25	9,977,225
Southwest	S01	40	132	8,937,745
Southwest	S01T	35	58.75	1,915,063
Southwest	S02	47	120.25	674,681
Southwest	S03	0	0	0
Southwest	S04	54	190	1,341,617
Southwest	S05	67	341.5	29,175,870
Southwest	S06	50	172.25	9,404,710
Southwest	S07	29	62.5	1,653,405
Southwest	S08	38	55.75	124,032
Southwest	S09	42	92.75	5,884,467
Southwest	S10	52	195	2,186,609
Southwest	S11	56	189.25	1,050,724
Southwest	S12A	47	97.75	784,542
Southwest	S13	16	14.25	126,389
Southwest	S14	55	223	1,805,734
Southwest	S15	25	30	162,568
Southwest	S16	51	132.5	695,148
Southwest	S17	25	32.5	295,715
Southwest	S18	47	150	4,295,384
Southwest	S19	27	33	145,663
Southwest	S20	62	285	14,578,875

District	Permitted Outfall	Frequency	Duration (hours)	Volume (ft^3)
Southwest	S21	25	34.25	82,438
Southwest	S22	43	100.75	1,571,716
Southwest	S23	54	182	1,347,413
Southwest	S24	29	45.25	169,215
Southwest	S25	45	98.75	1,181,415
Southwest	S26	57	233.5	9,164,379
Southwest	S30	5	3.25	15,300
Southwest	S31	40	88.75	1,053,736
Southwest	S32	10	7.25	45,136
Southwest	S33	56	282.25	10,614,038
Southwest	S36A	64	246.75	4,218,837
Southwest	S37	57	189	1,575,511
Southwest	S38	24	33	1,265,563
Southwest	S42	49	165.75	9,263,272
Southwest	S42A	58	324.5	12,429,837
Southwest	S44	38	122.25	5,397,723
Southwest	S45	25	49	8,275,198
Southwest	S46	26	66.25	1,021,435
Southwest	S50	57	332.25	132,558,649

Table 3 - Overflow Summary for Typical Year Precipitation (based on Year-5 EAP submission)

District	Permitted Outfall	Frequency	SWO Duration (hrs)	Overflow Volume (MG)
Northeast	D_FRW	44	117.75	96.0
Northeast	D02	26	0	45.3
Northeast	D03	26	61.75	13.3
Northeast	D04	10	21.75	1.7
Northeast	D05	49	251	360.7
Northeast	D06	9	11	1.3
Northeast	D07	54	204.75	135.9
Northeast	D08	40	92.5	3.3
Northeast	D09	5	3.5	0.5
Northeast	D11	21	56.75	24.6
Northeast	D12	46	114.5	1.6
Northeast	D13	9	12.25	1.3
Northeast	D15	15	30	8.0
Northeast	D17	45	169	64.8
Northeast	D18	52	180.25	53.6
Northeast	D19	53	223.75	48.0
Northeast	D20	36	114.5	28.7
Northeast	D21	45	184.75	65.9
Northeast	D22	71	512	251.7
Northeast	D23	42	72	1.6
Northeast	D25	66	422.75	963.3
Northeast	F_FRFG	5	2.5	0.3
Northeast	F03	33	55.75	18.8
Northeast	F04	63	239.25	63.5
Northeast	F05	69	272	8.1
Northeast	F06	20	36.75	5.5
Northeast	F07	40	94.75	20.4
Northeast	F08	39	76.25	11.0
Northeast	F09	59	231	9.2
Northeast	F10	63	322.25	26.5
Northeast	F11	71	431.75	133.7
Northeast	F12	31	53.25	5.8
Northeast	F13	46	130.25	14.0
Northeast	F21	67	385.5	800.2
Northeast	F23	44	113.75	11.6
Northeast	F24	47	99.75	5.1
Northeast	F25	15	32	28.5
Northeast	P01	15	16.25	3.2
Northeast	P02	49	115.75	14.9
Northeast	P03	20	26.25	2.0

District	Permitted Outfall	Frequency	SWO Duration (hrs)	Overflow Volume (MG)
Northeast	P04	9	30.25	11.5
Northeast	P05	27	56.75	22.3
Northeast	T_FRRR	37	274.5	281.9
Northeast	T01	64	262.5	45.1
Northeast	T03	61	158	22.8
Northeast	T04	59	154.25	15.9
Northeast	T05	42	64.25	7.6
Northeast	T06	39	72	55.3
Northeast	T07	9	8.5	1.0
Northeast	T08	62	234.75	257.0
Northeast	T09	44	68.25	5.7
Northeast	T10	63	258.5	22.3
Northeast	T11	59	165.75	10.1
Northeast	T12	8	7	0.2
Northeast	T13	63	191.75	31.4
Northeast	T14	37	356.5	1546.5
Northeast	T15	54	158	42.1
Southeast	D37	54	282	184.0
Southeast	D38	43	169.75	178.9
Southeast	D39	54	270.75	276.7
Southeast	D40	57	282	14.4
Southeast	D41	42	153.75	17.7
Southeast	D42	18	22	1.5
Southeast	D43	19	31.75	1.3
Southeast	D44	23	55	23.8
Southeast	D45	36	121	357.6
Southeast	D46	19	30.75	3.9
Southeast	D47	56	215	46.3
Southeast	D48	40	94.25	112.3
Southeast	D49	6	4.5	0.4
Southeast	D50	14	12.5	1.5
Southeast	D51	56	372	11.4
Southeast	D51A	49	174	12.5
Southeast	D52	22	31	2.7
Southeast	D53	7	7.5	9.6
Southeast	D54	19	30	48.3
Southeast	D58	18	26.5	5.1
Southeast	D61	46	94.75	6.2
Southeast	D62	20	23.25	1.8
Southeast	D63	31	65.25	73.9
Southeast	D64	27	41.75	1.5
Southeast	D65	29	66.25	52.4

District	Permitted Outfall	Frequency	SWO Duration (hrs)	Overflow Volume (MG)
Southeast	D66	37	105.75	58.8
Southeast	D67	31	80.75	28.0
Southeast	D68	41	183.75	156.0
Southeast	D69	24	70.75	47.2
Southeast	D70	20	45.5	48.3
Southeast	D71	24	63	45.5
Southeast	D72	18	34.75	29.2
Southeast	D73	51	236	159.2
Southwest	C_FRA	11	9.5	5.2
Southwest	C_FRTR	83	500.5	161.8
Southwest	C01	15	15.25	1.7
Southwest	C02	6	4.25	0.2
Southwest	C04A	19	28	12.6
Southwest	C05	2	2.75	0.4
Southwest	C06	61	195.75	40.1
Southwest	C07	19	39.25	10.2
Southwest	C09	33	65	13.6
Southwest	C10	16	36.5	1.6
Southwest	C11	42	122.75	97.1
Southwest	C12	39	100	16.7
Southwest	C13	30	68.25	11.0
Southwest	C14	30	80.5	22.1
Southwest	C15	18	40.75	2.7
Southwest	C16	5	4.75	0.2
Southwest	C17	55	266.5	294.4
Southwest	C18	29	64.75	21.0
Southwest	C19	18	21.75	4.6
Southwest	C20	14	22	2.5
Southwest	C21	15	26.25	3.5
Southwest	C22	37	78.75	14.5
Southwest	C23	12	25	1.7
Southwest	C25	22	61	19.5
Southwest	C28A	36	58.5	2.1
Southwest	C29	48	189.25	16.2
Southwest	C30	30	118.5	8.4
Southwest	C31	40	90.25	10.3
Southwest	C32	31	56.25	9.8
Southwest	C33	20	24.25	3.1
Southwest	C34	13	11.75	1.7
Southwest	C35	10	11.25	0.7
Southwest	C36	10	9.25	0.6
Southwest	C37	15	17.5	0.9

District	Permitted Outfall	Frequency	SWO Duration (hrs)	Overflow Volume (MG)
Southwest	S_FRM	8	10.75	41.9
Southwest	S01	41	122	86.4
Southwest	S02	49	142	7.4
Southwest	S03	11	8	0.6
Southwest	S04	72	385.5	19.8
Southwest	S05	71	338.25	236.5
Southwest	S06	65	281.5	98.6
Southwest	S07	16	22.75	9.1
Southwest	S08	36	64.25	1.3
Southwest	S09	39	78	42.8
Southwest	S10	56	185.25	18.9
Southwest	S11	53	153	4.9
Southwest	S12A	44	80.5	4.9
Southwest	S13	17	12.75	2.0
Southwest	S14	62	263.5	16.4
Southwest	S15	22	27.75	1.7
Southwest	S16	67	238.75	9.1
Southwest	S17	25	32.75	3.8
Southwest	S18	51	188.25	45.1
Southwest	S19	29	33.5	1.8
Southwest	S20	78	517.5	145.6
Southwest	S21	22	22	1.0
Southwest	S22	40	85	15.5
Southwest	S23	59	182.25	10.7
Southwest	S24	41	81.25	5.3
Southwest	S25	45	113.5	12.6
Southwest	S26	69	376.25	133.5
Southwest	S30	7	5.5	0.4
Southwest	S31	57	175	32.4
Southwest	S32	14	14	1.3
Southwest	S33	70	349.75	132.0
Southwest	S36A	66	323	59.8
Southwest	S37	60	239	24.1
Southwest	S38	28	48.75	30.1
Southwest	S42	50	185.25	97.9
Southwest	S42A	74	530.25	177.8
Southwest	S44	43	125	59.4
Southwest	S45	41	104.25	139.0
Southwest	S46	25	48	13.5
Southwest	S50	61	326.75	1067.6

Table 4 - July 2022 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
7/1/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/2/2022	0.065	0.14	0	0	0.03	0.009	0.001	0	0.006	0	0	0.02	0	0.01	0	0.12	0	0.05
7/3/2022	0.029	0.02	0.04	0.02	0.103	0.031	0.056	0.06	0.03	0.05	0.06	0.12	0.06	0.03	0.03	0.05	0.04	0.06
7/4/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/5/2022	0.143	0.12	0	0	0.115	0.005	0.002	0	0.005	0	0	0.12	0	0.03	0.01	0.03	0	0
7/6/2022	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/7/2022	1.058	0.88	0.15	0.24	0.79	0.576	0.287	0.28	0.649	0.13	0.23	0.8	0.2	0.44	0.3	0.64	0.31	0.38
7/8/2022	0	0	0.09	0.04	0	0	0.022	0.02	0	0.17	0.01	0	0.04	0	0	0	0.05	0
7/9/2022	0.066	0.05	0.04	0.02	0.053	0.15	0.047	0.05	0.15	0.05	0.05	0.05	0.04	0.04	0.02	0.06	0.03	0.1
7/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/11/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/12/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/13/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/14/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/15/2022	0	0	0	0.14	0.001	0.012	0.001	0	0	0.002	0	0	0	0	0.03	0	0	0.02
7/16/2022	0.051	0.09	0.03	0.03	0.156	0.063	0.05	0.09	0.06	0.062	0.09	0.15	0.03	0.09	0.09	0.28	0.04	0.1
7/17/2022	0.026	0.01	0.04	0.02	0.007	0.009	0.02	0.02	0.01	0.038	0.03	0	0.04	0.01	0	0	0.02	0.01
7/18/2022	0.033	0.04	0.03	0.01	0.048	0.034	0.04	0.04	0.04	0.022	0.02	0.04	0.035	0.04	0.03	0.11	0.05	0.01
7/19/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/20/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/21/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/22/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/23/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/24/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/25/2022	0.001	0	0.21	0.29	0.011	0.3	0.74	0.67	0.03	0.227	0.61	0	0.32	0.16	0	0.03	0.53	0.65
7/26/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/27/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/28/2022	0.288	0.64	0.57	0.83	0.341	0.24	0.49	0.85	0.43	0.611	0.98	0.35	0.67	0.15	0.12	0.48	0.79	0.29
7/29/2022	0.086	0.02	0	0.02	0.077	0	0	0	0.01	0.002	0	0.08	0	0	0	0.01	0.02	0
7/30/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/31/2022	0.118	0.12	0.06	0.08	0.065	0.12	0.07	0.07	0.08	0.057	0.06	0.06	0.06	0.08	0.04	0.1	0.08	0.09

Table 5 - July 2022 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
7/1/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/2/2022	0	0	0	0	0.05	0.03	0.064	0.014	0	0.01	0.14	0.004	0.06	0	0.24	0.082	0	0.014	0.03
7/3/2022	0.02	0.03	0.01	0.03	0.03	0.01	0.061	0.035	0.04	0.06	0.06	0.052	0.01	0	0.01	0.025	0.04	0.037	0.07
7/4/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/5/2022	0	0.03	0	0	0.15	0	0.118	0.011	0	0	0	0	0	0	0.14	0.052	0	0.001	0.18
7/6/2022	0	0	0	0	0.01	0	0.001	0	0	0	0	0	0	0	0	0	0	0	0
7/7/2022	0.2	0.09	0.35	0.66	1.11	0.04	0.837	0.342	0.12	0.05	0.1	0.225	0.07	0.02	0.74	0.624	0.32	0.347	0.97
7/8/2022	0	0.29	0	0	0	0.42	0	0.002	0.21	0.4	0.05	0.05	0.43	0.18	0	0.002	0	0.001	0
7/9/2022	0.08	0.02	0.1	0.16	0.07	0.04	0.062	0.036	0.03	0.03	0.08	0.052	0.05	0.03	0.09	0.124	0.18	0.13	0.07
7/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/11/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/12/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/13/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/14/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/15/2022	0.02	0.03	0.02	0	0	0	0.001	0.024	0.05	0.01	0	0.002	0	0	0	0.018	0.1	0.13	0
7/16/2022	0.06	0.06	0.04	0.07	0.03	0.07	0.12	0.096	0.03	0.07	0.11	0.082	0.16	0.16	0.09	0.075	0.03	0.07	0.26
7/17/2022	0.02	0.04	0.02	0	0.03	0.08	0.03	0.005	0.03	0.06	0.04	0.027	0.04	0.07	0.07	0.024	0.01	0.01	0
7/18/2022	0.01	0.02	0.03	0.01	0.03	0	0.05	0.036	0.03	0.01	0.06	0.025	0	0.02	0.06	0.032	0.021	0.01	0.06
7/19/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/20/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/21/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/22/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/23/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/24/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/25/2022	0.41	0.12	0.29	0.01	0	0	0.023	0.201	0.16	0.05	0.01	0.534	0	0	0	0.179	0.78	0.75	0
7/26/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/27/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/28/2022	0.88	0.35	0.93	0.55	0.21	0.46	0.365	0.14	0.64	0.53	0.48	0.825	0.52	0.55	0.77	0.519	0.3	0.43	0.21
7/29/2022	0	0.06	0	0	0.1	0	0.07	0	0.02	0	0.01	0.001	0	0	0.05	0.014	0	0	0.14
7/30/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/31/2022	0.08	0.06	0.07	0.1	0.12	0.03	0.086	0.06	0.06	0.06	0.07	0.064	0.05	0.05	0.16	0.11	0.08	0.1	0.07

Table 6 – August 2022 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
8/1/2022	0.255	0.23	0.39	0.32	0.192	0.36	0.35	0.36	0.32	0.381	0.38	0.18	0.39	0.24	0.14	0.27	0.29	0.31
8/2/2022	0.006	0.03	0	0	0.002	0	0	0.02	0.01	0.004	0.02	0	0.01	0	0	0	0.01	0.06
8/3/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/4/2022	0.122	0.33	0	0	0.12	0.02	0.01	0.02	0.02	0.006	0.01	0.14	0.01	0.11	0.03	0.05	0.01	0.01
8/5/2022	0	0	0.43	0	0	0.02	0	0	0	0.002	0	0	0.12	0	0	0	0	0
8/6/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/7/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/8/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0.08	0	0	0	0
8/9/2022	0.206	0.15	0	0.17	0.209	0.29	0.08	0	0.11	0.03	0	0.31	0	0.01	0.01	0.06	0.03	0.03
8/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/11/2022	1.46	0.72	0.68	0.54	1.188	0.7	0.72	0.64	0.63	0.75	0.64	1.42	0.92	0.58	0.29	0.61	0.86	0.61
8/12/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/13/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/14/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/15/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/16/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/20/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/21/2022	0.036	0.04	0.15	0.01	0.062	0.03	0.41	0.36	0.04	0.31	0.29	0.06	0.198	0.17	0.07	0.02	0.18	0.13
8/22/2022	0.241	0.5	2.3	1.38	0.277	0.88	1.03	2.11	0.95	2.68	2.21	0.2	2.18	0.49	0.24	0.86	1.72	1.26
8/23/2022	0	0	0	0	0	0	0	0	0	0.01	0.01	0	0.003	0	0	0	0	0
8/24/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/25/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/26/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/27/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/28/2022	0	0	0	0.01	0.001	0	0.02	0	0	0	0	0	0.014	0.48	0	0	0.07	0
8/29/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/30/2022	0.392	0.07	0.25	1.17	0.391	0.17	0.32	0.21	0.15	0.25	0.22	0.53	0.27	1.01	0.26	0.23	0.36	0.12
8/31/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 7 - August 2022 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
8/1/2022	0.43	0.28	0.29	0.32	0.26	0.48	0.23	0.29	0.33	0.4	0.36	0.37	0.36	0.39	0.31	0.321	0.36	0.44	0.2
8/2/2022	0.01	0	0.01	0.01	0	0	0.008	0	0	0	0	0.016	0	0.06	0.02	0.017	0.01	0.14	0.01
8/3/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/4/2022	0	0	0.02	0.05	0.08	0	0.109	0.04	0	0	0.01	0.011	0.01	0	0.15	0.069	0.01	0.01	0.07
8/5/2022	0	0.05	0.01	0	0	0	0	0	0.12	0.06	0	0.019	0.04	0.57	0	0.015	0.11	0.01	0
8/6/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/7/2022	0	0	0	0	0	0.04	0	0	0	0	0	0.002	0.05	0	0	0	0	0	0
8/8/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/9/2022	0	0.01	0	0.16	0.23	0.03	0.06	0.09	0	0.02	0.14	0.013	0.1	0	0.22	0.149	0.01	0	0.12
8/10/2022	0	0	0	0.01	0	0	0	0	0	0.01	0	0	0	0	0	0.003	0	0	0
8/11/2022	0.72	0.5	0.4	0.77	1.68	0.55	0.91	0.38	0.51	0.52	1	0.683	0.74	0.4	0.62	0.677	0.55	0.46	1.19
8/12/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/13/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/14/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/15/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/16/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/20/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/21/2022	0.14	0	0.06	0.05	0.03	0.03	0.02	0.18	0	0.021	0.04	0.275	0.17	0	0.06	0.05	0.03	0.01	0.21
8/22/2022	1.67	0.96	0.81	1.24	0.17	2.49	0.26	0.92	1.63	1.614	1.88	2.054	2.03	2.57	0.92	0.964	0.65	1.08	0.24
8/23/2022	0.01	0	0	0	0	0	0	0	0	0	0	0.006	0.01	0.01	0	0	0	0	0
8/24/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/25/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/26/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/27/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/28/2022	0	0	0	0	0	0	0	0	0	0	0	0.005	0	0.01	0	0.001	0	0	0
8/29/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/30/2022	0.21	0.65	0.08	0.17	0.48	0.22	0.02	0.15	0.33	0.459	0.08	0.227	0.261	0.18	0.07	0.141	0.1	0.13	0.67
8/31/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 8 – September 2022 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
9/1/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/2/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/3/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/4/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/5/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/6/2022	1.397	1.95	1.95	1.73	1.269	3.39	1.72	2.41	3.02	2.34	2.25	1.18	1.979	1.21	0.71	1.87	1.55	3.11
9/7/2022	0.12	0.08	0.01	0.02	0.057	0.03	0.01	0.01	0.02	0.03	0.02	0.06	0.012	0.03	0.01	0.03	0	0.01
9/8/2022	0	0	0	0	0	0	0	0	0	0.01	0	0	0.001	0	0	0	0	0
9/9/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/11/2022	0.494	0.45	0.48	0.63	0.432	0.36	0.49	0.4	0.29	0.44	0.36	0.43	0.451	0.53	0.31	0.51	0.47	0.32
9/12/2022	0.05	0.04	0.04	0.06	0.075	0.07	0.09	0.04	0.08	0.073	0.03	0.08	0.04	0.04	0.02	0.07	0.04	0.03
9/13/2022	0.005	0.01	0.23	0.01	0.012	0.48	0.27	0.42	0.34	0.3	0.29	0	0.231	0.15	0.12	0.01	0.16	0.45
9/14/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/15/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/16/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/17/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/18/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/19/2022	0	0	0.04	0.01	0	0	0	0.01	0	0.019	0.02	0	0	0	0	0	0.03	0
9/20/2022	0	0	0	0	0	0	0	0	0	0.002	0	0	0.01	0	0	0	0	0
9/21/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/22/2022	0.055	0.07	0.06	0.09	0.056	0.04	0.04	0.06	0.04	0.05	0.06	0.05	0.04	0.09	0.04	0.07	0.06	0.03
9/23/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/24/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/25/2022	0.169	0.35	0.36	0.41	0.159	0.4	0.29	0.35	0.2	0.338	0.33	0.13	0.34	0.32	0.11	0.38	0.44	0.28
9/26/2022	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0
9/27/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/28/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/29/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/30/2022	0.021	0.02	0.01	0.01	0.008	0.02	0.01	0.02	0.02	0.015	0.02	0	0.01	0.01	0	0.02	0.01	0.02

Table 9 - September 2022 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
9/1/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/2/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/3/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/4/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/5/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/6/2022	3.75	1.49	3.47	2.96	1.26	2.08	1.575	1.67	1.81	1.779	3.89	2.391	2.293	2.71	2.23	2.856	3.62	3.75	1.22
9/7/2022	0.01	0	0.06	0.02	0.13	0.01	0.065	0.01	0	0.003	0.02	0.016	0.022	0.02	0.09	0.047	0.07	0.02	0.08
9/8/2022	0	0	0	0	0	0	0	0	0	0	0	0.001	0.006	0	0	0	0	0	0
9/9/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/11/2022	0.35	0.45	0.48	0.31	0.51	0.37	0.45	0.46	0.49	0.433	0.55	0.393	0.435	0.52	0.32	0.352	0.44	0.36	0.45
9/12/2022	0.04	0.02	0.02	0.03	0.05	0.05	0.067	0.12	0.04	0.05	0.05	0.041	0.16	0.48	0.04	0.044	0.02	0.06	0.08
9/13/2022	0.47	0.03	0.54	0.28	0	0.25	0.034	0.2	0.03	0.118	0.58	0.341	0.49	0.37	0.02	0.265	0.37	0.59	0
9/14/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/15/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/16/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/17/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/18/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/19/2022	0.02	0.02	0.01	0	0	0	0	0.01	0.03	0	0.01	0.016	0.01	0.04	0	0.001	0	0	0
9/20/2022	0	0	0	0	0	0	0	0	0.01	0	0	0.001	0	0	0	0	0	0	0
9/21/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/22/2022	0.05	0.1	0.05	0.03	0.05	0.04	0.06	0.05	0.05	0.04	0.05	0.056	0.05	0.07	0.02	0.039	0.08	0.04	0.08
9/23/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/24/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/25/2022	0.36	0.3	0.38	0.21	0.13	0.28	0.17	0.01	0.31	0.3	0.35	0.334	0.31	0.32	0.288	0.295	0.5	0.29	0.149
9/26/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0.01	0
9/27/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/28/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/29/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/30/2022	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.006	0.01	0.02	0.02	0.017	0.03	0.02	0.02	0.019	0.02	0.02	0.02

Table 10 - October 2022 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
10/1/2022	0.809	1.14	1.06	1.53	0.734	1.28	1	0.99	1.26	1.112	0.98	0.64	1.11	0.93	0.58	0.98	0.91	0.95
10/2/2022	1.832	2.12	1.68	2.53	1.808	1.73	1.78	1.71	1.84	1.71	1.68	1.68	1.83	1.622	1.18	2.15	1.75	1.35
10/3/2022	0.392	0.44	0.58	0.82	0.423	0.56	0.62	0.57	0.57	0.567	0.52	0.38	0.59	0.518	0.33	0.59	0.55	0.44
10/4/2022	0.528	0.69	0.65	0.72	0.421	0.47	0.53	0.49	0.49	0.65	0.58	0.34	0.66	0.449	0.16	0.52	0.6	0.32
10/5/2022	0.012	0.02	0.02	0.03	0.008	0.07	0.01	0.04	0.04	0.025	0.05	0.01	0.02	0.015	0.01	0.01	0.01	0.01
10/6/2022	0	0	0	0	0	0	0.01	0	0	0.002	0	0	0	0.004	0	0	0	0
10/7/2022	0.003	0.01	0	0	0.021	0	0	0	0	0	0	0.03	0	0	0	0	0	0
10/8/2022	0.02	0.02	0.03	0.03	0.025	0	0.02	0.03	0.03	0.034	0.03	0.03	0.04	0.019	0.01	0.01	0.02	0.01
10/9/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/11/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/12/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/13/2022	0.577	0.48	1.06	0.99	0.826	0.66	0.75	0.66	0.44	0.972	0.67	0.89	1.1	0.75	0.53	0.94	1.04	0.59
10/14/2022	0.002	0.01	0.01	0.03	0	0.01	0.01	0	0	0.005	0	0	0	0.005	0	0	0	0
10/15/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/16/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/17/2022	0.396	0.75	0.48	0.61	0.46	0.2	0.41	0.5	0.34	0.497	0.47	0.5	0.57	0.37	0.3	0.42	0.52	0.29
10/18/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/19/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/20/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/21/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/22/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/23/2022	0.069	0.06	0.16	0.08	0.091	0.05	0.11	0.1	0.06	0.143	0.12	0.1	0.18	0.08	0.07	0.1	0.17	0.05
10/24/2022	0.576	0.69	0.2	0.57	0.197	0.31	0.39	0.41	0.29	0.335	0.55	0.16	0.4	0.17	0.15	0.18	0.47	0.21
10/25/2022	0.031	0.04	0.1	0.05	0.022	0.03	0.09	0.09	0.03	0.082	0.07	0.02	0.08	0.07	0.03	0.04	0.06	0.04
10/26/2022	0.007	0	0.01	0.02	0.001	0.01	0	0.02	0	0.018	0.02	0	0.02	0	0	0	0	0.02
10/27/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/28/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/29/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/30/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/31/2022	0.106	0.14	0.23	0.16	0.087	0.18	0.2	0.22	0.18	0.248	0.21	0.08	0.25	0.06	0.06	0.14	0.21	0.195

Table 11 - October 2022 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
10/1/2022	1.22	1.09	1.23	1.23	0.73	1.02	0.82	0.756	1.11	1.32	1.32	1.031	1.29	1.24	1.133	1.22	1.33	1.41	0.87
10/2/2022	1.59	1.53	1.89	1.8	1.75	1.59	1.93	1.405	1.57	1.72	1.67	1.698	1.64	1.41	1.987	1.843	2.09	1.8	2.21
10/3/2022	0.5	0.56	0.5	0.53	0.37	0.6	0.47	0.416	0.53	0.66	0.46	0.541	0.53	0.66	0.472	0.524	0.52	0.478	0.46
10/4/2022	0.55	0.41	0.63	0.58	0.49	0.57	0.58	0.286	0.4	0.72	0.68	0.563	0.74	0.91	0.623	0.538	0.55	0.441	0.52
10/5/2022	0.02	0.01	0.05	0.03	0.01	0.03	0	0.011	0.02	0.04	0.05	0.035	0.03	0.08	0.024	0.036	0.05	0.03	0.01
10/6/2022	0	0	0	0	0	0	0	0.001	0	0	0.01	0	0.01	0.01	0	0	0	0	0
10/7/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.006	0.001	0	0	0.04
10/8/2022	0.03	0.03	0.03	0.01	0.02	0.02	0.02	0.013	0.03	0.03	0.07	0.029	0.04	0.04	0.018	0.016	0.03	0.01	0.02
10/9/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/11/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/12/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/13/2022	0.57	0.74	0.76	0.67	0.58	1.04	0.68	0.612	0.94	0.92	0.8	0.722	0.77	0.88	0.552	0.636	0.63	0.73	0.88
10/14/2022	0	0.04	0.01	0.01	0	0.02	0	0.001	0.02	0.03	0.01	0	0	0.01	0.008	0.007	0.01	0.01	0
10/15/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/16/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/17/2022	0.34	0.44	0.44	0.3	0.32	0.35	0.4	0.338	0.42	0.38	0.65	0.47	0.48	0.54	0.559	0.331	0.32	0.27	0.43
10/18/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/19/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/20/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/21/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/22/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/23/2022	0.04	0.03	0.04	0.04	0.07	0.06	0.07	0.11	0.06	0.05	0.06	0.111	0.15	0.07	0.08	0.056	0.04	0.04	0.1
10/24/2022	0.25	0.41	0.27	0.43	0.59	0.45	0.23	0.27	0.34	0.45	0.27	0.441	0.4	0.62	0.47	0.395	0.38	0.3	0.29
10/25/2022	0.03	0.01	0.04	0.05	0.03	0.05	0.02	0.03	0.04	0.02	0.05	0.067	0.09	0.06	0.06	0.041	0.04	0.04	0.02
10/26/2022	0.01	0.03	0.01	0	0.01	0.03	0	0.01	0.02	0.02	0.01	0.017	0.03	0.03	0	0.002	0.01	0	0.01
10/27/2022	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0
10/28/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/29/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/30/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/31/2022	0.25	0.25	0.29	0.17	0.1	0.26	0.08	0.17	0.24	0.26	0.28	0.221	0.31	0.26	0.16	0.186	0.31	0.19	0.093

Table 12 - November 2022 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
11/1/2022	0.114	0.04	0.04	0.19	0.126	0.03	0.05	0.05	0.04	0.043	0.04	0.13	0.06	0.03	0.07	0.08	0.05	0.038
11/2/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/3/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/4/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/5/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/6/2022	0.004	0.02	0	0	0	0.03	0	0.01	0.03	0.008	0.01	0	0.01	0	0	0	0	0.018
11/7/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/8/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/9/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/11/2022	0.436	0.48	0.52	0.63	0.51	0.54	0.47	0.42	0.49	0.49	0.43	0.53	0.49	0.08	0.28	0.49	0.46	0.511
11/12/2022	0.062	0.12	0.04	0.01	0.02	0.12	0.03	0.06	0.09	0.05	0.05	0.03	0.05	0.01	0.02	0.07	0.03	0.098
11/13/2022	0.052	0.06	0.06	0.03	0.02	0.05	0.05	0.07	0.05	0.05	0.06	0.04	0.05	0.059	0.03	0.07	0.06	0.045
11/14/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/15/2022	1.007	1.19	1.03	1.25	1.04	1.16	1	1.03	1.15	1.11	1.05	0.81	1.13	0.937	0.59	1.16	1.02	1.11
11/16/2022	0.203	0.22	0.21	0.28	0.22	0.2	0.21	0.22	0.21	0.28	0.23	0.11	0.26	0.195	0.12	0.24	0.18	0.244
11/17/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/18/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/19/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/20/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/21/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/22/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/23/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/24/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/25/2022	0.037	0.03	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.02	0.02	0.01	0.02	0.01	0.016
11/26/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/27/2022	0.414	0.36	0.381	0.41	0.38	0.35	0.34	0.37	0.39	0.41	0.36	0.39	0.38	0.15	0.26	0.42	0.35	0.367
11/28/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/29/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/30/2022	0.531	0.58	0.648	0.57	0.49	0.5	0.61	0.65	0.65	0.67	0.64	0.47	0.644	0.21	0.34	0.64	0.66	0.562

Table 13 - November 2022 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
11/1/2022	0.02	0.06	0.02	0.04	0.13	0.05	0.14	0.04	0.05	0.04	0.02	0.041	0.03	0.03	0.03	0.038	0.03	0.04	0.14
11/2/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/3/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/4/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/5/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/6/2022	0.02	0	0.03	0.03	0	0.02	0	0	0	0.01	0.01	0.01	0.02	0.02	0.03	0.026	0.02	0.03	0
11/7/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/8/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/9/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/11/2022	0.47	0.61	0.83	0.59	0.42	0.5	0.4	0.41	0.72	0.75	0.68	0.452	0.51	0.48	0.64	0.605	0.88	0.57	0.61
11/12/2022	0.08	0.01	0.16	0.13	0.05	0.04	0.05	0.05	0.03	0.03	0.17	0.056	0.07	0.04	0.12	0.119	0.16	0.15	0.04
11/13/2022	0.04	0.04	0.06	0.04	0.05	0.02	0.06	0.06	0.07	0.06	0.06	0.058	0.06	0.07	0.05	0.046	0.05	0.03	0.05
11/14/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/15/2022	1.07	1.05	1.2	1.16	0.97	0.96	0.93	1.08	0.97	1.1	1.15	1.061	1.09	1.05	1.06	1.131	1.18	1.19	1.07
11/16/2022	0.28	0.245	0.24	0.22	0.2	0.24	0.19	0.26	0.22	0.26	0.27	0.239	0.28	0.9	0.17	0.203	0.21	0.25	0.2
11/17/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/18/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/19/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/20/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/21/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/22/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/23/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/24/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/25/2022	0.01	0.024	0.02	0.02	0.04	0.02	0.03	0.02	0.02	0.03	0.02	0.018	0.03	0.03	0.03	0.021	0.02	0.01	0.04
11/26/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/27/2022	0.31	0.353	0.39	0.4	0.43	0.33	0.38	0.34	0.34	0.36	0.4	0.363	0.38	0.35	0.34	0.374	0.38	0.42	0.43
11/28/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/29/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/30/2022	0.46	0.635	0.54	0.66	0.52	0.57	0.48	0.61	0.65	0.64	0.5	0.623	0.57	0.56	0.59	0.592	0.55	0.59	0.51

Table 14 – December 2022 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
12/1/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/2/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/3/2022	0.602	0.63	0.543	0.55	0.53	0.35	0.49	0.52	0.5	0.55	0.53	0.54	0.526	0.46	0.32	0.72	0.51	0.481
12/4/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/5/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/6/2022	0.629	0.67	0.499	0.39	0.501	0.722	0.52	0.54	0.77	0.55	0.479	0.47	0.483	0.468	0.31	0.66	0.429	0.654
12/7/2022	0.125	0.13	0.11	0.15	0.12	0.08	0.11	0.12	0.11	0.13	0.12	0.13	0.119	0.113	0.09	0.16	0.14	0.11
12/8/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/9/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/11/2022	0.096	0.12	0.07	0.12	0.07	0.11	0.08	0.08	0.12	0.09	0.08	0.08	0.09	0.077	0.05	0.13	0.07	0.09
12/12/2022	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0
12/13/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/14/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/15/2022	1.653	1.69	1.57	2.06	1.82	1.77	1.54	1.61	1.84	1.55	1.57	1.23	1.76	1.478	1	1.98	1.55	1.28
12/16/2022	0.146	0.2	0.312	0.41	0.28	0.37	0.25	0.34	0.29	0.44	0.34	0.04	0.37	0.282	0.15	0.32	0.25	0.2
12/17/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/18/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/19/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/20/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/21/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/22/2022	0.607	0.64	0.806	0.76	0.67	0.7	0.65	0.72	0.67	0.8	0.73	0.5	0.84	0.617	0.38	0.74	0.68	0.49
12/23/2022	0.588	0.61	0.45	0.3	0.31	0.74	0.36	0.47	0.73	0.49	0.45	0.34	0.45	0.35	0.19	0.43	0.37	0.44
12/24/2022	0	0	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/25/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/26/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/27/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/28/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/29/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/30/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/31/2022	0.319	0.32	0.344	0.33	0.29	0.29	0.33	0.33	0.3	0.34	0.33	0.32	0.35	0.283	0.15	0.35	0.31	0.31

Table 15 - December 2022 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
12/1/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/2/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/3/2022	0.43	0.531	0.56	0.57	0.6	0.39	0.62	0.47	0.58	0.5	0.59	0.518	0.55	0.51	0.59	0.533	0.51	0.49	0.62
12/4/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/5/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/6/2022	0.608	0.452	0.869	0.87	0.63	0.45	0.517	0.54	0.43	0.462	0.775	0.521	0.59	0.52	0.83	0.784	0.779	0.77	0.55
12/7/2022	0.09	0.136	0.09	0.11	0.13	0.14	0.12	0.12	0.15	0.13	0.1	0.117	0.11	0.13	0.11	0.103	0.11	0.09	0.12
12/8/2022	0.01	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0	0	0	0	0.01
12/9/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/10/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/11/2022	0.08	0.114	0.11	0.13	0.09	0.1	0.09	0.11	0.1	0.13	0.11	0.083	0.11	0.14	0.13	0.118	0.12	0.11	0.1
12/12/2022	0	0	0	0	0	0	0	0	0	0	0.01	0	0.01	0	0	0.001	0	0	0
12/13/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/14/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/15/2022	1.61	1.627	1.67	1.93	1.64	1.47	1.59	1.82	1.58	1.63	1.58	1.59	1.59	1.54	1.73	1.783	1.72	1.74	1.89
12/16/2022	0.39	0.325	0.4	0.31	0.13	0.32	0.16	0.58	0.32	0.32	0.36	0.345	0.41	0.33	0.19	0.288	0.38	0.34	0.22
12/17/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/18/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/19/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/20/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/21/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/22/2022	0.73	0.702	0.83	0.68	0.59	0.72	0.59	0.75	0.64	0.74	0.83	0.738	0.86	0.75	0.62	0.684	0.81	0.72	0.72
12/23/2022	0.54	0.412	0.96	0.78	0.61	0.44	0.3	0.43	0.41	0.42	0.88	0.47	0.61	0.61	0.67	0.714	0.8	0.719	0.35
12/24/2022	0	0.004	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0
12/25/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/26/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/27/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/28/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/29/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/30/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/31/2022	0.3	0.352	0.31	0.33	0.32	0.35	0.3	0.32	0.35	0.36	0.33	0.327	0.36	0.32	0.31	0.31	0.32	0.307	0.34

Table 16 - January 2023 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
1/1/2023	0.009	0.01	0.009	0.01	0	0	0	0.01	0.01	0.01	0	0	0.01	0.01	0	0	0.01	0
1/2/2023	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0
1/3/2023	0.077	0.1	0.156	0.11	0.07	0.15	0.12	0.14	0.13	0.19	0.13	0.07	0.15	0.03	0.06	0.11	0.13	0.14
1/4/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/5/2023	0.158	0.15	0.101	0.08	0.16	0.15	0.08	0.1	0.14	0.12	0.1	0.15	0.1	0.13	0.07	0.13	0.08	0.13
1/6/2023	0.042	0.01	0.043	0.07	0.05	0.05	0.05	0.05	0.03	0.05	0.04	0.07	0.04	0.05	0.02	0.03	0.06	0.04
1/7/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/8/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/9/2023	0.071	0.04	0.029	0.02	0.06	0.02	0.03	0.02	0.03	0.03	0.02	0.07	0.03	0.02	0.01	0.03	0.02	0.02
1/10/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/11/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/12/2023	0.069	0.09	0.106	0.13	0.09	0.07	0.1	0.08	0.09	0.1	0.08	0.1	0.11	0.12	0.06	0.11	0.1	0.09
1/13/2023	0.024	0.04	0.025	0.03	0.021	0.04	0.02	0.04	0.04	0.04	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.03
1/14/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/15/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/16/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/17/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/18/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/19/2023	1.009	0.98	1.012	1.12	0.9	0.97	0.97	0.94	0.93	0.99	0.9	0.9	1.03	1.09	0.946	1.08	0.9	0.85
1/20/2023	0	0	0.002	0	0	0.01	0	0	0	0.01	0	0	0	0	0	0	0	0
1/21/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/22/2023	0.592	0.56	0.651	0.71	0.54	0.61	0.58	0.577	0.56	0.7	0.56	0.42	0.66	0.59	0.627	0.66	0.56	0.49
1/23/2023	0.211	0.21	0.308	0.34	0.2	0.32	0.24	0.254	0.31	0.39	0.28	0.2	0.29	0.23	0.278	0.25	0.25	0.21
1/24/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/25/2023	0.725	0.92	1.133	0.69	0.58	1.35	0.98	1.027	1.3	1.31	1.09	0.56	1.13	0.7	0.924	0.95	0.93	1.23
1/26/2023	0.282	0.2	0.365	0.26	0.29	0.2	0.23	0.284	0.24	0.39	0.36	0.31	0.38	0.25	0.243	0.24	0.24	0.23
1/27/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/28/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/29/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/30/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/31/2023	0.04	0.04	0.042	0.05	0.01	0.04	0.03	0.01	0.03	0.05	0.03	0.04	0.04	0.03	0.043	0.05	0.03	0.03

Table 17 - January 2023 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
1/1/2023	0.01	0.001	0.01	0	0.01	0	0.01	0	0	0	0	0.005	0	0	0.01	0.003	0	0.002	0
1/2/2023	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0.001	0	0.002	0.01
1/3/2023	0.15	0.159	0.17	0.13	0.07	0.17	0.1	0.1	0.14	0.18	0.21	0.142	0.18	0.22	0.1	0.127	0.17	0.157	0.07
1/4/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/5/2023	0.1	0.096	0.07	0.14	0.16	0.11	0.13	0.08	0.08	0.11	0.09	0.101	0.11	0.07	0.15	0.131	0.07	0.103	0.2
1/6/2023	0.09	0.055	0.09	0.05	0.05	0.05	0.03	0.04	0.05	0.06	0.09	0.048	0.06	0.1	0.02	0.045	0.1	0.072	0.07
1/7/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/8/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/9/2023	0.03	0.03	0.04	0.02	0.08	0.03	0.07	0.02	0.03	0.03	0.02	0.022	0.03	0.04	0.04	0.03	0.04	0.03	0.06
1/10/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/11/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/12/2023	0.08	0.101	0.1	0.08	0.06	0.09	0.103	0.09	0.11	0.09	0.13	0.087	0.11	0.07	0.1	0.088	0.1	0.089	0.11
1/13/2023	0.05	0.033	0.05	0.05	0.02	0.02	0.027	0.03	0.03	0.04	0.05	0.033	0.04	0.04	0.05	0.044	0.05	0.041	0.03
1/14/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/15/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/16/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/17/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/18/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/19/2023	0.94	0.992	1.08	0.98	1.02	1	0.967	0.99	0.91	1.04	1.06	0.94	1.06	1.21	0.88	0.949	0.93	0.952	1.06
1/20/2023	0	0.009	0	0.01	0	0.01	0	0	0.01	0.01	0	0.001	0	0	0.01	0.006	0	0.002	0
1/21/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/22/2023	0.61	0.567	0.7	0.61	0.6	0.58	0.563	0.64	0.53	0.57	0.71	0.596	0.63	0.63	0.53	0.593	0.66	0.617	0.62
1/23/2023	0.32	0.302	0.38	0.32	0.21	0.32	0.218	0.3	0.29	0.3	0.38	0.295	0.38	0.37	0.27	0.302	0.35	0.318	0.22
1/24/2023	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0
1/25/2023	1.22	1.027	1.16	1.44	0.68	1.12	0.701	0.95	0.93	1.13	1.01	1.125	1.36	1.07	1.08	1.242	1.29	1.255	0.64
1/26/2023	0.23	0.32	0.26	0.22	0.3	0.38	0.275	0.24	0.25	0.38	0.24	0.334	0.35	0.34	0.23	0.227	0.24	0.234	0.29
1/27/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/28/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/29/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/30/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1/31/2023	0.04	0.041	0.05	0.03	0.04	0.04	0.031	0.05	0.03	0.05	0.07	0.03	0.06	0.07	0.04	0.033	0.04	0.036	0.05

Table 18 – February 2023 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
2/1/2023	0.018	0.01	0.009	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0	0.01	0.01	0.01	0.02
2/2/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/3/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/4/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/5/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/6/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/7/2023	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0
2/8/2023	0	0	0.007	0.01	0	0	0	0	0	0	0.01	0	0.01	0	0	0	0	0
2/9/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/12/2023	0.122	0.12	0.175	0.16	0.13	0.09	0.15	0.09	0.1	0.18	0.15	0.14	0.18	0.17	0.157	0.16	0.16	0.13
2/13/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/14/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/15/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/16/2023	0.182	0.24	0.193	0.17	0.15	0.19	0.19	0.13	0.2	0.18	0.2	0.2	0.2	0.15	0.2	0.22	0.19	0.2
2/17/2023	0.844	0.82	0.865	0.97	0.88	0.955	0.9	0.23	1.05	0.63	0.89	0.66	0.95	0.885	0.881	1	0.95	0.85
2/18/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/19/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/20/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/21/2023	0.145	0.16	0.128	0.12	0.12	0.105	0.1	0.09	0.11	0.14	0.1	0.08	0.13	0.099	0.115	0.13	0.09	0.08
2/22/2023	0.028	0.03	0.023	0.03	0.01	0.018	0.02	0.01	0.02	0.03	0.02	0.03	0.02	0.018	0.015	0.01	0.02	0.02
2/23/2023	0.001	0	0.001	0	0	0	0.01	0.01	0	0	0	0	0	0.006	0.003	0	0	0
2/24/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/25/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/26/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/27/2023	0.235	0.24	0.29	0.29	0.18	0.308	0.23	0.22	0.3	0.23	0.28	0.18	0.31	0.211	0.12	0.25	0.25	0.27
2/28/2023	0.136	0.14	0.207	0.24	0.13	0.14	0.16	0.12	0.14	0.29	0.19	0.11	0.19	0.148	0.1	0.17	0.16	0.13

Table 19 - February 2023 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
2/1/2023	0.01	0.007	0.01	0	0.02	0	0.016	0.01	0	0.01	0.01	0.01	0	0.01	0.01	0.009	0.02	0.016	0.02
2/2/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/3/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/4/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/5/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/6/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/7/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0
2/8/2023	0	0.001	0.01	0	0	0	0	0	0	0	0.002	0.005	0	0.01	0	0	0	0	0
2/9/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/10/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/11/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/12/2023	0.14	0.145	0.09	0.07	0.12	0.18	0.145	0.16	0.14	0.14	0.128	0.141	0.16	0.19	0.07	0.084	0.08	0.1	0.2
2/13/2023	0	0	0	0	0	0	0	0	0	0	0.001	0	0.01	0	0	0	0	0	0
2/14/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/15/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/16/2023	0.17	0.17	0.18	0.2	0.17	0.15	0.17	0.21	0.17	0.17	0.175	0.177	0.15	0.14	0.19	0.194	0.18	0.17	0.19
2/17/2023	0.55	0.671	0.6	1.12	0.823	0.53	0.95	0.837	0.75	0.57	0.627	0.694	0.58	0.577	0.914	0.931	0.66	0.78	0.68
2/18/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/19/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/20/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/21/2023	0.13	0.132	0.15	0.09	0.124	0.12	0.14	0.102	0.1	0.16	0.126	0.104	0.16	0.131	0.135	0.104	0.1	0.09	0.09
2/22/2023	0.02	0.04	0.02	0.01	0.029	0.04	0.02	0.016	0.03	0.05	0.021	0.019	0.03	0.038	0.023	0.016	0.02	0.01	0.04
2/23/2023	0	0.004	0	0	0.003	0	0	0.004	0.01	0	0	0.002	0	0	0	0	0	0	0.01
2/24/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/25/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/26/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/27/2023	0.33	0.285	0.38	0.32	0.231	0.3	0.22	0.171	0.28	0.29	0.32	0.266	0.3	0.292	0.259	0.315	0.36	0.36	0.23
2/28/2023	0.15	0.199	0.16	0.14	0.135	0.18	0.13	0.119	0.19	0.2	0.161	0.178	0.25	0.194	0.138	0.142	0.14	0.15	0.14

Table 20 – March 2023 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
3/1/2023	0.001	0	0.009	0.01	0	0.007	0.01	0.01	0.01	0.01	0	0	0.01	0.005	0	0	0	0
3/2/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/3/2023	0.455	0.52	0.604	0.59	0.33	0.581	0.48	0.41	0.57	0.59	0.54	0.37	0.63	0.427	0.25	0.53	0.48	0.51
3/4/2023	0.326	0.33	0.439	0.49	0.27	0.365	0.36	0.24	0.35	0.47	0.37	0.36	0.43	0.311	0.17	0.37	0.37	0.32
3/5/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/6/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/7/2023	0	0	0.007	0.02	0	0.008	0.01	0.01	0.01	0	0	0	0.01	0.009	0.01	0.02	0.01	0
3/8/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/9/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/10/2023	0.246	0.21	0.362	0.33	0.24	0.231	0.33	0.318	0.23	0.35	0.3	0.26	0.37	0.284	0.16	0.28	0.35	0.27
3/11/2023	0.032	0.03	0.074	0.09	0.05	0.063	0.05	0.02	0.06	0.08	0.06	0.03	0.07	0.051	0.04	0.03	0.08	0.03
3/12/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/13/2023	0.102	0.11	0.148	0.23	0.07	0.115	0.11	0.11	0.12	0.17	0.13	0.09	0.14	0.099	0.05	0.12	0.12	0.1
3/14/2023	0.002	0.01	0.001	0	0	0	0.01	0.01	0	0	0	0	0	0.005	0	0	0	0
3/15/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/16/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/17/2023	0.018	0.01	0.02	0.02	0	0.018	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.013	0.01	0.02	0.02	0.02
3/18/2023	0.003	0.01	0.01	0.02	0.01	0.002	0.01	0.01	0	0.01	0.01	0.02	0.01	0.007	0	0.01	0.01	0
3/19/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/20/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/21/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/22/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/23/2023	0.378	0.47	0.32	0.32	0.34	0.461	0.46	0.359	0.47	0.34	0.37	0.36	0.44	0.428	0.468	0.55	0.41	0.43
3/24/2023	0.16	0.2	0.15	0.22	0.15	0.217	0.19	0.17	0.22	0.19	0.18	0.15	0.21	0.186	0.193	0.22	0.19	0.16
3/25/2023	0.194	0.23	0.24	0.24	0.15	0.216	0.2	0.25	0.22	0.24	0.23	0.22	0.26	0.21	0.213	0.23	0.21	0.24
3/26/2023	0.008	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0.001	0	0	0
3/27/2023	0.142	0.12	0.13	0.15	0.09	0.1	0.16	0.15	0.1	0.16	0.16	0.13	0.16	0.16	0.122	0.1	0.18	0.15
3/28/2023	0.002	0.01	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0
3/29/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/30/2023	0	0	0.01	0.004	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/31/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 21 - March 2023 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
3/1/2023	0	0.001	0.01	0	0.003	0	0	0.001	0	0	0.002	0.004	0	0	0.001	0.003	0.01	0	0.01
3/2/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/3/2023	0.68	0.578	0.69	0.61	0.45	0.59	0.34	0.346	0.54	0.6	0.633	0.532	0.62	0.59	0.53	0.598	0.68	0.63	0.36
3/4/2023	0.42	0.475	0.45	0.4	0.33	0.48	0.27	0.239	0.47	0.48	0.417	0.361	0.55	0.481	0.346	0.386	0.41	0.44	0.32
3/5/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/6/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/7/2023	0.01	0.007	0.01	0	0	0	0.01	0.01	0	0.01	0.008	0.004	0.01	0.003	0.001	0.007	0.02	0.01	0.01
3/8/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/9/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/10/2023	0.24	0.365	0.26	0.22	0.25	0.34	0.25	0.21	0.37	0.37	0.264	0.31	0.33	0.346	0.219	0.231	0.24	0.25	0.28
3/11/2023	0.08	0.093	0.08	0.08	0.03	0.06	0.04	0.041	0.08	0.11	0.073	0.056	0.09	0.074	0.044	0.069	0.09	0.07	0.05
3/12/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/13/2023	0.11	0.199	0.14	0.11	0.1	0.16	0.09	0.07	0.17	0.22	0.12	0.126	0.17	0.167	0.109	0.113	0.11	0.09	0.11
3/14/2023	0.01	0.009	0	0	0	0	0	0.001	0.01	0.01	0.005	0.003	0.01	0.003	0.006	0.001	0	0	0
3/15/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/16/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/17/2023	0.01	0.02	0.01	0.01	0.02	0.02	0.01	0.012	0.019	0.02	0.013	0.018	0.02	0.019	0.01	0.011	0.01	0.012	0.02
3/18/2023	0	0.011	0.01	0.01	0	0.01	0.02	0.003	0.012	0.01	0.005	0.008	0.01	0.009	0.008	0.008	0.01	0.006	0.02
3/19/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/20/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/21/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/22/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/23/2023	0.34	0.385	0.43	0.4	0.35	0.36	0.42	0.443	0.345	0.4	0.385	0.379	0.39	0.373	0.445	0.437	0.54	0.471	0.39
3/24/2023	0.16	0.169	0.15	0.22	0.15	0.17	0.17	0.184	0.183	0.16	0.167	0.18	0.21	0.175	0.199	0.203	0.19	0.176	0.17
3/25/2023	0.21	0.237	0.23	0.2	0.19	0.21	0.16	0.218	0.238	0.24	0.221	0.233	0.21	0.22	0.218	0.207	0.21	0.221	0.22
3/26/2023	0	0.007	0.01	0	0.01	0	0.01	0	0.001	0.01	0.002	0	0	0.002	0.001	0	0	0.002	0.01
3/27/2023	0.1	0.149	0.13	0.1	0.15	0.15	0.12	0.14	0.145	0.15	0.125	0.153	0.19	0.154	0.116	0.108	0.11	0.123	0.18
3/28/2023	0	0	0	0	0	0	0	0	0.001	0	0.001	0.001	0.01	0.001	0.006	0.001	0	0	0.01
3/29/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/30/2023	0	0	0	0	0	0	0	0	0.005	0	0	0	0	0	0	0	0	0	0
3/31/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 22 - April 2023 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
4/1/2023	0.591	0.69	1.09	1.008	0.59	0.63	0.69	0.85	0.77	1.39	0.89	0.47	1.14	0.772	0.717	0.74	0.83	0.61
4/2/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/3/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/4/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/5/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/6/2023	0.226	0.22	0.26	0.31	0.18	0.33	0.39	0.46	0.22	0.29	0.35	0.21	0.35	0.386	0.282	0.24	0.44	0.36
4/7/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/8/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/9/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/10/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/11/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/12/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/13/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/14/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/15/2023	0.01	0.06	0.19	0.133	0	0	0	0	0.06	0.06	0	0	0.1	0.01	0.017	0.03	0	0.01
4/16/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/17/2023	0.139	0.15	0.11	0.132	0.07	0.07	0.16	0.18	0.12	0.16	0.19	0.04	0.12	0.143	0.135	0.15	0.1	0.12
4/18/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/19/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/20/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/21/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/22/2023	0.646	0.74	0.74	0.731	0.64	0.65	0.5	0.5	0.69	0.92	0.54	0.55	0.8	0.584	0.579	0.58	0.75	0.58
4/23/2023	0.168	0.17	0.19	0.18	0.14	0.19	0.17	0.18	0.18	0.21	0.17	0.14	0.18	0.171	0.168	0.18	0.16	0.15
4/24/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/25/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/26/2023	0.083	0.2	0.23	0.216	0.12	0.27	0.18	0.22	0.2	0.17	0.19	0.11	0.29	0.14	0.15	0.28	0.21	0.15
4/27/2023	0.116	0.15	0.28	0.24	0.14	0.12	0.13	0.2	0.11	0.28	0.21	0.08	0.31	0.08	0.05	0.14	0.14	0.13
4/28/2023	1.135	1.22	1.14	1.141	1.28	1.29	1.08	1.07	1.3	1.11	1.06	0.66	1.29	1.09	0.67	1.43	1.04	0.8
4/29/2023	0.553	0.63	0.68	0.697	0.65	0.73	0.69	0.69	0.76	0.78	0.7	0.39	0.76	0.67	0.39	0.79	0.63	0.54
4/30/2023	1.635	1.66	1.79	1.676	1.44	1.57	1.464	1.45	1.7	1.81	1.52	1.38	1.67	1.48	0.78	1.5	1.62	1.38

Table 23 – April 2023 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
4/1/2023	1.03	0.837	1.22	0.731	0.57	0.81	0.61	0.721	1.018	0.81	1.004	0.942	0.87	0.857	0.686	0.773	0.93	0.857	0.53
4/2/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/3/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/4/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/5/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/6/2023	0.33	0.225	0.34	0.249	0.23	0.16	0.17	0.348	0.262	0.22	0.324	0.361	0.18	0.197	0.227	0.297	0.36	0.342	0.28
4/7/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/8/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/9/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/10/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/11/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/12/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/13/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/14/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/15/2023	0	0.527	0	0.043	0	0	0	0.011	0.208	0.63	0.039	0.03	0.4	0	0.047	0.022	0.01	0.007	0
4/16/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/17/2023	0.122	0.228	0.07	0.109	0.14	0.196	0.11	0.144	0.142	0.24	0.109	0.17	0.154	0.198	0.137	0.091	0.06	0.082	0.08
4/18/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/19/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/20/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/21/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/22/2023	0.59	0.646	0.63	0.678	0.64	0.74	0.48	0.558	0.735	0.63	0.645	0.604	0.69	0.96	0.706	0.64	0.58	0.608	0.62
4/23/2023	0.169	0.172	0.19	0.183	0.17	0.184	0.16	0.168	0.186	0.17	0.184	0.177	0.18	0.2	0.17	0.18	0.19	0.181	0.16
4/24/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/25/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/26/2023	0.215	0.121	0.4	0.217	0.05	0.14	0.16	0.169	0.202	0.11	0.265	0.204	0.18	0.07	0.189	0.223	0.2	0.24	0.08
4/27/2023	0.167	0.278	0.23	0.114	0.11	0.309	0.13	0.085	0.273	0.28	0.202	0.216	0.28	0.51	0.138	0.134	0.14	0.149	0.08
4/28/2023	1.032	1.222	1.21	1.288	1.11	1.178	1.16	1.35	1.158	1.23	1.17	1.085	1.122	1.13	1.212	1.224	1.19	1.138	1.27
4/29/2023	0.655	0.742	0.71	0.745	0.53	0.747	0.61	0.83	0.704	0.75	0.76	0.705	0.755	0.78	0.636	0.695	0.7	0.677	0.63
4/30/2023	1.494	1.542	1.21	1.658	1.66	1.648	1.29	1.51	1.711	1.52	2.05	1.558	1.74	1.68	1.629	1.601	1.77	1.536	1.4

Table 24 – May 2023 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
5/1/2023	0.032	0.04	0.02	0.021	0.02	0.06	0.01	0.03	0.06	0.04	0.03	0.02	0.02	0.03	0.01	0.03	0.02	0.05
5/2/2023	0.002	0.01	0.01	0.015	0	0	0.02	0.01	0	0.02	0.01	0	0.02	0	0	0	0.01	0.01
5/3/2023	0.026	0.02	0.01	0.012	0.01	0	0.01	0.04	0.02	0.01	0.01	0.02	0	0.02	0.04	0.03	0	0.01
5/4/2023	0.001	0	0.04	0.025	0	0	0	0	0	0.06	0.02	0.01	0.02	0	0	0	0.01	0
5/5/2023	0.002	0.01	0.06	0.024	0	0	0.01	0.02	0	0.04	0.02	0	0.01	0.04	0.03	0	0.01	0
5/6/2023	0	0	0	0	0	0	0	0.01	0	0	0.01	0	0	0	0	0	0	0
5/7/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/8/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/9/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/10/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/11/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/12/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/13/2023	0.037	0.03	0	0.006	0.01	0.03	0.02	0.03	0.03	0.01	0.02	0.02	0.01	0.03	0.01	0.02	0.02	0.02
5/14/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/15/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/16/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/17/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/18/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/19/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/20/2023	0.138	0.14	0.41	0.371	0.28	0.12	0.288	0.28	0.14	0.3	0.28	0.3	0.4	0.41	0.19	0.21	0.35	0.2
5/21/2023	0.008	0	0.01	0.009	0.01	0	0.01	0.01	0	0.01	0.01	0.01	0	0.01	0	0.01	0.01	0.002
5/22/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/23/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/24/2023	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	0	0.01	0	0
5/25/2023	0	0	0	0.001	0.01	0.01	0	0	0.01	0.01	0	0	0	0	0	0	0	0
5/26/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/27/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/28/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/29/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/30/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/31/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 25 - May 2023 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
5/1/2023	0.04	0.012	0.02	0.058	0.03	0.02	0.02	0.03	0.02	0.01	0.03	0.029	0.03	0.01	0.04	0.047	0.031	0.044	0.03
5/2/2023	0.01	0.044	0	0	0	0.03	0.01	0	0.02	0.05	0	0.011	0.02	0.05	0.007	0.003	0	0.004	0
5/3/2023	0	0	0.02	0.014	0.03	0.08	0.02	0.03	0.016	0.06	0.02	0.013	0.01	0	0.01	0.012	0.02	0.014	0.02
5/4/2023	0	0.027	0	0	0	0.03	0.01	0.01	0.033	0.07	0	0.017	0.06	0.02	0	0	0	0	0
5/5/2023	0	0	0	0	0	0	0	0	0.021	0	0	0.018	0	0	0	0.001	0	0	0
5/6/2023	0	0	0	0	0	0	0	0	0.001	0.01	0	0.006	0	0.01	0	0	0	0	0
5/7/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/8/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/9/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/10/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/11/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/12/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/13/2023	0.01	0	0	0.029	0.04	0	0.03	0.03	0.001	0	0	0.018	0.01	0	0.03	0.027	0.03	0.022	0.04
5/14/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/15/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/16/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/17/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/18/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/19/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/20/2023	0.17	0.43	0.1	0.13	0.13	0.36	0.242	0.24	0.39	0.45	0.13	0.285	0.3	0.3	0.09	0.124	0.12	0.126	0.26
5/21/2023	0	0.025	0	0	0.01	0	0.007	0	0.011	0.03	0	0.008	0.01	0.01	0.01	0.005	0.01	0.004	0
5/22/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/23/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/24/2023	0.01	0	0.01	0.002	0	0	0	0	0	0	0.01	0.001	0	0	0	0.002	0	0.004	0
5/25/2023	0	0	0	0.009	0	0	0	0	0.001	0	0	0.001	0.02	0	0	0.003	0	0.002	0
5/26/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/27/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/28/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/29/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/30/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/31/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 26 - June 2023 PWD Rain Gage Records

Date/RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18
6/1/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/2/2023	0	0	0.01	0.096	0	0.11	0.05	0.05	0.07	0	0.11	0.001	0.14	0.22	0.04	0.05	0.35	0.05
6/3/2023	0	0	0	0	0	0	0	0	0	0	0	0.009	0	0	0	0	0	0
6/4/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/5/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/6/2023	0	0	0	0	0	0.03	0	0	0.01	0	0	0.009	0	0	0.008	0.01	0	0
6/7/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/8/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/9/2023	0	0	0	0.011	0	0	0	0	0	0.02	0	0	0.01	0	0	0	0	0
6/10/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/11/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/12/2023	0.65	0.87	1.18	1.099	0.65	1.76	1.009	0.98	1.24	1.29	1.1	0.615	1.18	1.04	0.974	0.93	1.07	1.19
6/13/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/14/2023	0.142	0.09	0.08	0.074	0.1	0.14	0.124	0.1	0.33	0.07	0.09	0.144	0.08	0.31	0.262	0.25	0.14	0.11
6/15/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/16/2023	1.167	1.33	1.51	1.319	0.95	0.78	1.197	1.06	0.94	1.36	1.42	0.988	1.53	1.38	1.185	1.18	1.99	0.7
6/17/2023	0	0	0	0.011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/18/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/19/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/20/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2023	0.173	0.19	0.01	0.013	0.15	0.11	0.044	0.04	0.13	0.01	0.04	0.18	0.05	0.05	0.075	0.12	0.04	0.05
6/22/2023	0	0	0.02	0.014	0	0	0.008	0.01	0.01	0.01	0	0.004	0.01	0	0	0	0.01	0
6/23/2023	0.668	1.05	1.91	1.377	0.7	1.89	1.047	0.96	1.27	0.93	1.11	0.663	1.62	1.56	0.629	0.74	1.67	0.68
6/24/2023	0.08	0.38	0.06	0.067	0.02	0.59	0.202	0.21	1.13	0.05	0.14	0.027	0.12	0.06	0.176	0.2	0.3	0.38
6/25/2023	0.076	0.04	3.17	1.555	0.71	0.31	1.547	1.44	1.14	2.7	1.74	0.5	2.6	0.62	0.42	0.72	3.78	0.18
6/26/2023	0.739	1.07	1.54	1.34	0.58	1.28	0.87	0.88	1.24	2.57	1.02	0.57	1.12	0.54	0.721	0.8	0.81	0.9
6/27/2023	1.095	1.34	1.86	1.736	1.07	1.11	1.274	1.16	1.43	1.91	1.24	1.095	1.517	1.91	1.509	1.79	1.52	1.67
6/28/2023	0.002	0.01	0	0.007	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0
6/29/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/30/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 27 - June 2023 PWD Rain Gage Records

Date/RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
6/1/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/2/2023	0	0.07	0.16	0.02	0	0	0.012	0.05	0.058	0.13	0.01	0.078	0	0	0.03	0.052	0.11	0.096	0
6/3/2023	0	0	0	0	0	0	0.004	0	0	0	0	0	0	0	0	0	0	0	0.02
6/4/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/5/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/6/2023	0.01	0	0.01	0	0	0	0.006	0.01	0	0	0	0.001	0	0	0	0.026	0.2	0.07	0.02
6/7/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/8/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/9/2023	0.01	0.02	0	0	0	0.03	0	0	0.018	0.06	0.02	0.005	0.05	0.12	0	0	0	0	0
6/10/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/11/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/12/2023	1.33	0.92	1.821	1.359	0.6	1.27	0.711	0.97	1.079	1	1.38	1.12	1.257	1.21	0.929	1.469	1.97	1.618	0.55
6/13/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/14/2023	0.08	0.05	0.106	0.32	0.15	0.04	0.152	0.28	0.061	0.07	0.09	0.092	0.071	0.09	0.162	0.226	0.1	0.13	0.2
6/15/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/16/2023	0.51	0.94	0.579	0.98	1.14	1.01	1.045	1.18	1.27	1.1	0.41	1.257	1.295	1.085	1.182	0.9	0.54	0.684	1.02
6/17/2023	0	0	0	0	0	0.01	0	0	0.02	0	0	0	0.002	0.006	0	0	0	0	0
6/18/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/19/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/20/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/21/2023	0.02	0	0.064	0.12	0.17	0	0.161	0.07	0.01	0	0.02	0.035	0.012	0.004	0.161	0.116	0.07	0.073	0.22
6/22/2023	0	0	0.008	0	0	0	0.002	0	0.02	0	0.01	0.004	0.009	0.001	0.001	0.002	0.01	0.005	0.01
6/23/2023	0.82	1.01	1.552	1.91	0.58	1.66	0.771	0.43	1.27	1.7	1.74	1.119	1.165	1.574	1.247	1.627	1.68	1.395	0.666
6/24/2023	0.05	0.03	0.143	1.3	0.01	0.03	0.115	0.18	0.04	0.04	0.08	0.144	0.061	0.044	0.59	0.796	0.09	0.346	0.014
6/25/2023	0.14	0.4	0.178	1.13	0.07	1.33	0.516	0.25	1.03	0.7	0.84	1.729	2.341	1.29	0.377	0.712	0.08	0.274	0.184
6/26/2023	0.94	1.27	1.203	1.36	0.67	2.29	0.684	0.71	1.35	1.51	1.69	1.143	2.214	1.941	1.112	1.239	1.23	1.139	0.543
6/27/2023	1.25	1.9	0.824	1.51	1.04	2.16	1.218	1.44	1.7	2.42	1.42	1.34	1.869	2.109	1.355	1.283	0.65	1.117	1.11
6/28/2023	0	0.01	0	0	0	0	0.001	0	0.01	0	0	0	0	0	0.006	0.003	0	0.002	0
6/29/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/30/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 28 - Rain Gage records by year and month for FY23

Date/ RG	RG1	RG2	RG3	RG4	RG5	RG6	RG7	RG8	RG9	RG10	RG11	RG12	RG13	RG14	RG15	RG16	RG17	RG18	
Jul22	1.97	2.13	1.26	1.74	1.80	1.55	1.83	2.15	1.50	1.42	2.14	1.79	1.50	1.08	0.67	1.91	1.96	1.76	
Aug22	2.72	2.07	4.20	3.60	2.44	2.47	2.94	3.72	2.23	4.42	3.78	2.84	4.12	3.17	1.04	2.10	3.53	2.53	
Sep22	2.31	2.97	3.18	2.98	2.07	4.79	2.92	3.72	4.01	3.62	3.38	1.93	3.11	2.39	1.32	2.96	2.76	4.25	
Oct22	5.36	6.61	6.27	8.17	5.12	5.56	5.93	5.83	5.57	6.40	5.95	4.86	6.85	5.06	3.41	6.08	6.31	4.48	
Nov22	2.86	3.10	2.95	3.38	2.83	3.00	2.78	2.90	3.12	3.13	2.89	2.55	3.09	1.69	1.72	3.19	2.82	3.01	
Dec22	4.77	5.01	4.71	5.07	4.59	5.14	4.33	4.73	5.33	4.94	4.63	3.65	4.99	4.13	2.64	5.49	4.31	4.06	
Jan23	3.31	3.35	3.98	3.62	2.97	3.99	3.43	3.53	3.84	4.38	3.62	2.91	3.99	3.28	3.30	3.67	3.33	3.49	
Feb23	1.71	1.76	1.90	2.01	1.62	1.83	1.77	0.91	1.94	1.69	1.85	1.41	2.00	1.69	1.60	1.95	1.83	1.70	
Mar23	2.07	2.26	2.52	2.73	1.71	2.38	2.39	2.09	2.38	2.63	2.37	2.01	2.76	2.20	1.69	2.48	2.43	2.23	
Apr23	5.30	5.89	6.70	6.46	5.25	5.85	5.45	5.80	6.11	7.18	5.82	4.03	7.01	5.53	3.94	6.06	5.92	4.83	
May23	0.25	0.25	0.56	0.48	0.34	0.23	0.38	0.43	0.26	0.50	0.41	0.38	0.48	0.54	0.28	0.31	0.43	0.29	
Jun23	4.79	6.37	11.35	8.72	4.93	8.12	7.37	6.89	8.94	10.92	8.01	4.81	9.98	7.69	6.00	6.79	11.68	5.91	
Total	**37.42**	**41.77**	**49.58**	**48.97**	**35.67**	**44.91**	**41.52**	**42.70**	**45.23**	**51.23**	**44.85**	**33.17**	**49.87**	**38.44**	**27.61**	**42.99**	**47.31**	**38.53**	

Date/ RG	RG19	RG20	RG21	RG22	RG23	RG24	RG25	RG26	RG27	RG28	RG29	RG30	RG31	RG32	RG33	RG34	RG35	RG36	RG37
Jul22	1.78	1.20	1.86	1.59	1.94	1.18	1.89	1.00	1.42	1.34	1.21	1.94	1.39	1.08	2.42	1.88	1.86	2.03	2.06
Aug22	3.19	2.45	1.68	2.78	2.93	3.84	1.62	2.05	2.92	3.10	3.51	3.68	3.77	4.19	2.37	2.41	1.83	2.28	2.71
Sep22	5.06	2.42	5.03	3.86	2.15	3.10	2.44	2.54	2.78	2.74	5.52	3.61	3.81	4.56	3.03	3.92	5.12	5.14	2.08
Oct22	5.40	5.58	6.19	5.85	5.07	6.09	5.30	4.43	5.75	6.62	6.39	5.95	6.51	6.82	6.15	5.83	6.31	5.75	5.95
Nov22	2.76	3.03	3.49	3.29	2.81	2.75	2.66	2.87	3.07	3.28	3.28	2.92	3.04	3.53	3.06	3.16	3.48	3.28	3.09
Dec22	4.79	4.66	5.80	5.71	4.74	4.38	4.29	5.14	4.57	4.69	5.57	4.71	5.20	4.85	5.18	5.32	5.55	5.29	4.92
Jan23	3.87	3.73	4.16	4.08	3.30	3.93	3.23	3.53	3.39	3.99	4.07	3.76	4.37	4.23	3.51	3.82	4.04	3.91	3.43
Feb23	1.50	1.65	1.60	1.95	1.66	1.50	1.79	1.63	1.67	1.59	1.57	1.60	1.64	1.58	1.74	1.80	1.56	1.68	1.60
Mar23	2.37	2.71	2.61	2.36	2.03	2.55	1.91	1.92	2.59	2.79	2.44	2.37	2.82	2.62	2.26	2.38	2.63	2.50	2.16
Apr23	5.80	6.54	6.21	6.02	5.21	6.11	4.88	5.89	6.60	6.59	6.75	6.05	6.55	6.58	5.78	5.88	6.13	5.82	5.13
May23	0.24	0.54	0.15	0.24	0.24	0.52	0.34	0.34	0.51	0.68	0.19	0.41	0.46	0.40	0.19	0.22	0.21	0.22	0.35
Jun23	5.16	6.62	6.65	10.01	4.43	9.83	5.40	5.57	7.94	8.73	7.71	8.07	10.35	9.47	7.15	8.45	6.73	6.95	4.56
Total	**41.92**	**41.12**	**45.43**	**47.74**	**36.51**	**45.78**	**35.74**	**36.91**	**43.21**	**46.15**	**48.21**	**45.06**	**49.90**	**49.92**	**42.83**	**45.07**	**45.45**	**44.84**	**38.04**

Table 29 - SSO Statistics for Period July 1 2022 – June 30 2023

Main & Shurs

Event No.	Start of Overflow Date Time	End of Overflow Date Time	Event Duration (hours:mins)	Flow Volume (ft^3)	Flow Volume (Millions of gallons)
0			0	0	0

PC-30

Event No.	Start of Overflow Date	End of Overflow Date	Event Duration (hours:mins)	Flow Volume (ft^3)	Flow Volume (Millions of gallons)
0			**0**	**0**	**0**

Appendix E – PCB PMP 16th Annual Report

PHILADELPHIA
WATER
DEPARTMENT

PCB
Pollutant Minimization Plan

Sixteenth Annual Report
Calendar Year 2022

Table of Contents

1 PMP Achievement Executive Summary

The Philadelphia Water Department (PWD) submitted its PCB Pollutant Minimization Plan (PCB PMP) on September 30, 2005 and was issued a Completeness Determination letter on January 12, 2006. PWD initiated the actions called for in its PCB PMP on March 4, 2006.

PWD's PCB PMP set out the following approaches to achieving PCB minimization:

- Sample three Water Pollution Control Plants' effluent every two years and analyze using Method 1668A.
- Visit and inspect three hundred ninety-nine (399) sites listed by either EPA or other agencies as housing PCB-containing devices and report the number of devices that have been removed from each site, both prior to our inspection and subsequent to it.
- Visit and inspect thirty-one (31) sites listed by the Philadelphia Department of Public Health as having previously undergone some type of PCB remediation activity and report the number of sites removed from the list as posing no threat of PCB discharge to PWD's sewer system.
- Report any reductions in PCB concentrations in the wastestreams from our three Water Treatment Plants by measuring PCBs in the ferric chloride used in the treatment process as well as reductions of PCBs in the source water (Delaware River or Schuylkill River).
- Continue the sewershed PCB trackdown sampling program for each of our three Water Pollution Control Plants.

Revisions to the original PMP have been made over the years. Refer to the First through the Fifteenth Annual Reports for specific information on PMP efforts during Years 1 - 15. No changes to the PMP were made in Year 16 (2022). Year 16 efforts are detailed in the attached report.

During the sixteenth year of PWD's PCB PMP, the following tasks were performed:

- ❖ Wet-weather PCB sampling and analysis of the three Water Pollution Control Plants' (WPCPs') effluent was performed as required by PWD's NPDES permits. See Section 7, "Tabular Summary", for data.
- ❖ PWD inspected one hundred thirteen (113) of the three hundred thirty-seven (337) sites remaining on the list by EPA or other agencies as housing PCB-containing devices. This exceeds the goal of 70 site inspections per year. These inspections identified locations where a total of 7 transformers and 3 capacitors had been removed from their sites. Historical information for these sites will be retained, but they will be removed from the schedule for future inspection.
- ❖ PWD wet weather and dry weather WPCP effluent data have been entered into the DRBC PCB database.
- ❖ Significant reductions in WPCP effluent PCB loadings were seen over the course of the PMP (see "Tabular Summary"). However, there was an unusually high concentrations found at SWWPCP in September and December 2022.

Additionally, the following initiatives were undertaken:

- ❖ PWD's PCB database was developed in 2017 and is now being populated. The database was utilized to track and report the 2022 inspections. Currently, the database allows PWD to track "active" sites (where Liquid Cooled Electrical Equipment (LCEE) devices are still located on site) versus "inactive" sites (where LCEE devices were previously located but have been removed). Each location has been given a unique ID and has been geocoded in PWD's GIS database.
- ❖ In 2022, PWD continued to monitor outlying township connection points for PCBs using EPA Method 680. 16 township connections, 13 in Bensalem, Bucks County and 3 in Springfield Township were sampled and the results were all below the method detection limits.

- In 2022, PWD received 27 groundwater discharge permit applications, 26 new permits were issued, and one application was denied due to PCBs detection above the method detection limit. In addition, one of the permittees reported the detection of PCB above the method detection limit, and PWD initiated enforcement actions for a return to compliance with this permittee.

2 *Facility and Contact Information*

Facility Name and Address:	Philadelphia Water Department 1101 Market Street Philadelphia, PA 19107
Water Pollution Control Plants:	Northeast WPCP 3899 Richmond St. Philadelphia, PA 19137 Southeast WPCP 25 Pattison Ave. Philadelphia, PA 19148 Southwest WPCP 8200 Enterprise Ave. Philadelphia, PA 19153
Contact Person:	Jennifer L. Moore Manager Industrial Waste & Backflow Compliance 1101 Market St., 6th Floor Philadelphia, PA 19107 Phone: 215-685-6085 Fax: 215-685-6232 Email: jennifer.l.moore@phila.gov
Date of Submittal of PMP:	September 30, 2005
Date of Completeness Determination:	January 12, 2006
Date of Initiation of PMP:	March 4, 2006
Reporting Period:	Year 16 (Calendar Year 2022)

3 Revisions to PMP

During Year 16, no revisions were made to the PMP.

4 Material and Process Modifications

During Year 16 of the PMP, there were no material or process modifications made relevant to PCB minimization.

5 Measures to Address Known, Probable and Potential Sources

5.1 Known and Probable Sources

Two known sources of PCBs were identified in PWD's PCB PMP. These were the source water for PWD's Water Treatment Plants (Delaware and Schuylkill Rivers) and the ferric chloride supplied to PWD by DuPont and used in the water treatment process. A change of ferric chloride supplier in Year 5 resulted in a 95% reduction in PCB content of the product used by PWD in its water treatment process.

A probable source of PCBs identified in PWD's PCB PMP is sludge stored in lagoons at both NEWPCP and SWWPCP. Trackdown efforts conducted in the sewersheds of both NEWPCP and SWWPCP included sampling of the lagoons. The data are available in Attachment B of the Year 5 report.

5.2 Potential Sources

5.2.1 Historical Potential Sources:

Numerous potential sources of PCBs were identified in PWD's PCB PMP. These were identified from databases supplied by EPA, the Philadelphia Fire Department, the Philadelphia Department of Public Health, and others. The thirty-one (31) potential sources supplied by the Philadelphia Department of Public Health were identified as sites at which some form of prior PCB remediation had taken place. All thirty-one (31) of these sites were inspected during Year 1 of the PMP.

The remaining potential sources of PCBs, taken from information supplied by EPA and others, were identified as sites on which PCB devices were believed to be present. These sites were separated into three groups by sewershed (NEWPCP, SEWPCP or SWWPCP). Approximately one hundred sixty-seven (167), seventy-three (73) and one hundred fifty-seven (157) sites were listed for NEWPCP, SEWPCP and SWWPCP, respectively. During 2022 (Year 16 of the PMP), PWD's Industrial Waste group inspected forty-eight (48) of the NEWPCP-related sites, fifteen (15) of the SEWPCP-related sites and fifty (50) of the SWWPCP-related sites. Details of these inspections are summarized in the Tables, “Inspections of Potential Source Sites” in Attachment B of this report.

Inspections confirmed that 7 transformers and 3 capacitors have been removed from the sites. Historical information for these sites will be retained, but the sites will be removed from the schedule for future inspection.

5.2.2 New Construction and Groundwater Remediation Sites:

In an effort to minimize the volume of PCBs entering the City’s sewer system, PWD requires PCB monitoring in all Groundwater Discharge Permits. These permits are used to regulate specific pollutants of concern from groundwater discharges to the City’s sewer system. Generally, these permits are for remediation sites with groundwater contaminated with petroleum products, such as former gasoline stations. However, all temporary discharges from construction activities are permitted under the Groundwater Discharge Permit Program. The Groundwater Discharge Permits require all contractors and/or subcontractors to monitor their discharges monthly for PCBs via sampling and to report their activities and results. All Groundwater Discharge Permits include PWD’s regulatory PCB limit of “non-detectable by EPA Method 608” limitation. All PCB detections require additional monitoring by the contractor or subcontractor to show compliance with the permit limitation.

- ❖ In 2022, 26 new groundwater discharge permits were issued. All permittees except one reported non-detectable for PCBs. One of the permittees reported a detection of Arochlor 1260 above the method detection limit in groundwater and/ or accumulated stormwater discharged to the City’s sewer system during May 2022. The permittee resampled a few days later, and the results were compliant.

- ❖ In addition, initial sampling results, collected in March 2022, for one of the discharge permit applications detected Arochlor 1248, Arochlor 1254, & Arochlor 1260. A resampling event conducted in April 2022 confirmed the detection of Arochlor 1260. The permit application was denied, and the client was prohibited from discharging groundwater and/ or accumulated stormwater from the associated site to the City’s sewer system.

5.2.3 Township Connections

PWD has agreements with the surrounding townships to convey and treat township wastewater, which is ultimately discharged at NEWPCP, SEWPCP and SWWPCP. Part of the agreement includes sampling the respective township's wastewater at the connection to the City's sewer system (i.e., near Philadelphia border).

In 2022, PWD sampled sixteen (16) township connections, thirteen (13) in Bensalem, Bucks County and three (3) in Springfield Township, respectively. The township samples were analyzed using EPA Method 680 to determine if there are PCB loadings entering the City through the surrounding township connections. Results of these sampling events, presented in Attachment C, were all below the detection limits. PWD is preparing to monitor additional township connections in 2023.

5.2.4 Manholes

Utilities may obtain a manhole pumpout permit for permission to discharge wastewater from the underground infrastructure to the City's sanitary and combined sewers. The Manhole Permits require all utilities or subcontractors to monitor their discharges monthly for PCBs via sampling and to report their activities and results. All Manhole Permits include PWD's regulatory PCB limit of "non-detectable by EPA Method 608" limitation. All PCB detections require additional monitoring by the contractor or subcontractor to show compliance with the permit limitation.

- In 2022, eight (8) manhole pumpout permits were active. All discharging permittees reported non-detectable PCBs results.

6 Incremental and Cumulative Changes from the Baseline Loading

6.1 Loading Baseline

PWD’s PCB PMP provides the following baseline loadings (see Section 7, “Tabular Summary):

WPCP	Baseline Loading (mg/day)
NEWPCP	11,510
SEWPCP	7,559
SWWPCP	10,970

These loadings differ from those found in the TMDL. This is because the data are from different sampling events, the PMP baseline loadings are weighted by wet versus dry weather results, the analyses are for different numbers of congeners and there is a difference in analytical methods.

6.2 Baseline Loading Reduction – Direct Measurement

During Year 16, wet-weather effluent sampling for PCBs was performed at each of PWD’s three Water Pollution Control Plants (WPCPs), as required by PWD’s NPDES permits. See Section 7 (“Tabular Summary”) for data. The numerical data sets are presented in Section 7, Tables 7.1 through 7.4. This data is presented in graphical form in Appendix A, Figures A1 through A3.

Loadings for the NEWPCP for 2022 were generally comparable to those calculated in Year 7 (2013), Year 8 (2014), Year 9 (2015) and Year 10 (2016). Results of the 2022 sampling for NEWPCP show substantial reductions of 80-86% from the baseline PCB loading levels.

Loadings for the SEWPCP for 2022 were generally comparable to those calculated in Year 4 (2010), Year 5 (2011) and Year 10 (2016). Results of the 2022 sampling for SEWPCP show substantial reductions of 72-80% from the baseline PCB loadings.

Loadings for the SWWPCP for 2022 were not comparable to those calculated in previous years. Wet weather sample results in September 2022 at SWWPCP were unusually higher than any results previously reported. The September 2022 sample showed very high tri-, tetra-, penta-, hexa- and hepta- homologs. Resampling was conducted in December 2022 and the result was higher than any other PCB result reported since the PMP was implemented in 2005. The December 2022 sample showed very high di-, tri-, tetra-, penta-, hexa- and hepta- homologs. PWD has taken steps to investigate the correlation between elevated total PCB concentration, errors in calculations, laboratory errors, and solids interference in the WPCP discharges as well as other potential sources that may have contributed to the high results. The September's rinsate blanks broke on the way to the contract lab. Investigations into the accuracy of the results are still under review at the time of this report. Results of the November 2022 sampling for SWWPCP show reductions of 47% from the baseline PCB loading levels.

PWD explored the PCB homolog contribution for wet and dry weather samples and the wet weather homolog contribution from 2011-2022 for all three plants are presented in Figure A4 through A6. The average percent contribution by homolog for both dry and wet weather samples collected between 2011 and 2022 was compared to that in 2022 for each plant. These homolog percentages are presented in Attachment A, Figures A7 through A9. For 2022, Northeast tends to have high contributions from tri-, tetra-, hexa-, and hepta-, homologs. Northeast also has increased contributions from nona- and deca- homologs. Southwest and Southeast tends to have increased contributions from tri-, tetra-, penta-, and hexa- homologs. Northeast and Southwest also tend to have similar patterns in wet and dry weather, whereas at the Southeast plant, the data showed consistency between samples. PWD plans to continue to explore these types of patterns in the 2023 data to see if the trends continue or if others emerge.

6.3 Baseline Loading Reduction – Other Measures of Progress

See Attachment B (“Potential Sources and Inspection Findings”). A report with results from 2022 inspections is shown in this section. This report was developed from the PCB database. PWD will continue to update and refine this report with the annual drainage maps associated with the inspections conducted in future reports.

Thirteen outlying township connections in Bensalem, Bucks County and three outlying township connections in Springfield Township were sampled in 2022, using EPA Method 680 and all results were below the method detection limits. Bensalem, Bucks County drain to the NEWPCP and Springfield Township drains to the NEWPCP and SEWPCP, and results have been provided in Table C1. In 2023, additional outlying township connections sampling is planned.

7 Tabular Summary

The subsequent pages provide a summary of the PCB loading calculations for NEWPCP, SEWPCP and SWWPCP, along with the total and penta-PCB concentration results for each of the treatment plant effluents in 2022. Also, included are the annual range and median concentrations for dry weather monitoring at the respective plants.

Table 7.1
Summary of PCB Loadings
Northeast Water Pollution Control Plant
NPDES # PA0026689

Year 2005 Baseline Loading (mg/day): 11,510

Date	Calculated Loading (mg/day)	Estimated Reduction From Baseline (mg/day)	Cumulative Reduction From Baseline (%)
12/3/07	8,594	2,916	25.3
3/27/09	5,846	5,664	49.2
10/16/09	6,571	4,939	42.9
4/21/10	5,490	6,020	52.3
12/13/10	4,615	6,895	59.9
9/6/11	6,224	5,286	45.9
11/17/11	3,745	7,765	67.5
6/13/12	11,189	321	2.8
10/16/12	2,542	8,968	77.9
4/20/13	2,849	8,661	75.2
10/8/13	2,349	9,161	79.6
4/16/14	2,315	9,195	79.9
9/25/14	1,552	9,958	86.5
5/28/15	3,157	8,353	72.6
10/10/15	2,291	9,219	80.1
5/14/16	1,755	9,755	84.8
10/23/16	1,479	10,031	87.1
5/6/17	1,749	9,761	84.8
10/9/17	972	10,538	91.6
3/2/18	17,293	-5,783	-50.2
10/12/18	4,219	7,291	63.3
5/6/19	2,856	8,654	75.2
10/17/19	3,067	8,443	73.4
4/13/2020	3,114	8,396	72.9
10/30/2020	5,570	5,940	51.6
3/19/2021	9,636	1,874	16.3
10/26/2021	52,351	-40,841	-354.8
9/6/2022	1,574	9,936	86.3
10/14/2022	2,223	9,287	80.7

Measure	**Date Initiated**	**Date Completed**
NEWPCP Phase 1 Trackdown	November 3, 2010	November 4, 2010
NEWPCP Phase 2 Trackdown	January 26, 2012	January 27, 2012

Table 7.2
Summary of PCB Loadings
Southeast Water Pollution Control Plant
NPDES # PA0026662

Year 2005 Baseline Loading (mg/day): 7,559

Date	Calculated Loading (mg/day)	Estimated Reduction From Baseline (mg/day)	Cumulative Reduction From Baseline (%)
12/3/07	4,595	2,964	39.2
3/27/09	3,435	4,124	54.6
10/16/09	4,287	3,272	43.3
4/21/10	2,155	5,404	71.5
12/2/10	2,736	4,823	63.8
9/6/11	4,135	3,424	45.3
11/17/11	1,368	6,191	81.9
6/13/12	5,659	1,900	25.1
10/16/12	1,296	6,263	82.9
4/20/13	2,803	4,756	62.9
11/27/13	2,599	4,960	65.6
4/16/14	6,370	1,189	15.7
9/25/14	1,827	5,732	75.8
5/28/15	2,744	4,815	63.7
10/10/15	2,795	4,764	63.0
5/14/16	1,525	6,034	79.8
10/28/16	1,058	6,501	86.0
5/6/17	2,762	4,797	63.5
10/9/17	1,212	6,347	84.0
4/16/18	21,681	-14,122	-186.8
10/12/18	9,543	-1,984	-26.2
4/6/19	828	6,731	89.0
10/28/19	2,386	5,173	68.4
5/1/2020	2,728	4,831	63.9
11/12/2020	6,059	1,500	19.8
3/19/2021*	7,219	340	4.5
7/2/2021	3,611	3,948	52.2
10/26/2021	1,811	5,748	76.0
9/6/2022	2,111	5,448	72.1
10/14/2022	1,481	6,078	80.4

Measure	**Date Initiated**	**Date Completed**
SEWPCP Phase 2 Trackdown	October 17, 2006	October 20, 2006

*Error in sample collected on 3/19/2021. Resampled on 7/2/2021

Table 7.3
Summary of PCB Loadings
Southwest Water Pollution Control Plant
NPDES # PA0026671

Year 2005 Baseline Loading (mg/day): 10,970

Date	Calculated Loading (mg/day)	Estimated Reduction From Baseline (mg/day)	Cumulative Reduction From Baseline (%)
12/3/07	6,369	4,601	41.9
3/27/09	7,334	3,636	33.1
10/16/09	5,690	5,280	48.1
4/21/10	2,948	8,022	73.1
12/2/10	5,027	5,943	54.2
9/6/11	10,270	700	6.4
11/17/11	4,280	6,690	61.0
6/13/12	5,766	5,204	47.4
10/16/12	2,663	8,307	75.7
4/20/13	3,673	7,297	66.5
10/8/13	3,040	7,930	72.3
4/16/14	2,939	8,031	73.2
9/25/14	2,882	8,088	73.7
8/12/15	4,265	6,705	61.1
10/10/15	3,610	7,360	67.1
5/14/16	3,662	7,308	66.6
10/23/16	1,416	9,554	87.1
5/6/17	3,273	7,697	70.2
10/9/17	3,294	7,676	70.0
3/2/18	6,015	4,955	45.2
4/16/18	7,183	3,787	34.5
10/12/18	4,870	6,100	55.6
4/6/19	2,596	8,374	76.3
10/17/19	26,869	-15,899	-144.9
5/1/2020	2,975	7,995	72.9
10/30/2020	3,474	7,496	68.3
3/19/2021	4,950	6,020	54.9
10/26/2021	3,674	7,296	66.5
9/6/2022	80,678	-69,708	-635.4
11/12/2022	5,769	5,201	47.4
12/7/2022	636,593	-625,623	-5703.0

Measure	**Date Initiated**	**Date Completed**
SWWPCP Phase 1 Trackdown	October 12, 2011	October 13, 2011
SWWPCP Phase 2 Trackdown	February 23, 2012	February 24, 2012

Table 7.4
Summary of Water Pollution Control Plant Effluent PCB Concentration (pg/L)

NEWPCP			SEWPCP			SWWPCP		
Date	Total PCBs (pg/L)	Penta-PCBs (pg/L)	Date	Total PCBs (pg/L)	Penta-PCBs (pg/L)	Date	Total PCBs (pg/L)	Penta-PCBs (pg/L)
12/3/07	13,709	2340	12/3/07	13,580	2233	12/3/07	7,362	1,314
3/27/09	4,047	850	3/27/09	1,593	373	3/27/09	8,866	1,474
10/16/09	5,924	1,238	10/16/09	3,797	711	10/16/09	4,612	886
4/21/10	6,746	1,629	4/21/10	5,322	1,114	4/21/10	3,623	729
12/13/10	5,671	1,379	12/2/10	6,755	1,348	12/2/10	6,177	1,110
9/6/11	7,646	1,624	9/6/11	10,206	1,723	9/6/11	12,385	1,911
11/17/11	4,600	1,159	11/17/11	3,376	635	11/17/11	5,162	997
6/13/12	13,745	2,057	6/13/12	13,988	2,954	6/13/12	6,954	1,331
10/16/12	3,123	791	10/16/12	3,198	595	10/16/12	3,211	558
4/20/13	3,500	806	4/20/13	6,918	1,566	4/20/13	4,429	932
10/8/13	2,886	669	11/27/13	6,414	1,204	10/8/13	3,666	757
4/16/14	2,844	622	4/16/14	15,722	3,182	4/26/14	3,544	737
9/26/14	1,907	458	9/25/14	4,510	912	9/25/14	3,476	745
8/12/15	3,878	963	8/12/15	6,774	1,411	5/28/15	5,143	1,338
10/10/15	2,814	584	10/10/15	6,898	1,516	10/10/15	4,354	790
5/14/16	2,156	488	5/14/16	3,765	847	5/14/16	4,416	979
10/23/16	1,817	377	10/28/16	2,612	452	10/23/16	1,708	307
5/6/17	2,149	455	5/6/17	6,817	1,044	5/6/17	3,948	634
10/9/17	1,194	263	10/9/17	2,993	257	10/9/17	3,972	681
3/2/18	21,243	4,786	--	--	--	3/2/18	5,873	1,044
--	--	--	4/16/18	53,514	10,678	4/16/18	8,662	1,810
10/12/18	5,183	1,059	10/12/18	23,555	3,176	10/12/18	7,254	1,155
--	--	--	4/6/19	2,044	283	4/6/19	3,131	603
5/6/19	3508	857	--	--	--	--	--	--
10/17/19	3768	1113	--	--	--	10/17/19	32,404	7,997
--	--	--	10/28/19	5,889	1,146	--	--	--
4/13/20	3826	909	--	--	--	--	--	--
--	--	--	5/1/20	6,733	1,216	5/1/20	3,587	653
10/30/20	6,843	1,911	--	--	--	10/30/20	4189	714
--	--	--	11/12/20	14955	2927	--	--	--
3/19/21	11,837	2,936	3/19/2021*	17,818	3,842	3/19/21	5,970	1,134
--	--	--	7/2/21	8,913	1,586	--	--	--
10/26/21	64,308	6,048	10/26/21	4,470	816	10/26/21	4,431	664
9/6/22	1,934	481	9/6/22	5,211	1,045	9/6/2022**	97,294	24,869
10/14/22	2,731	537	10/14/22	3,656	1,131	--	--	--
--	--	--	--	--	--	11/12/22	6,958	1,363
--	--	--	--	--	--	12/7/2022**	767,708	148,867

*Error in sample collected on 3/19/2021. Resampled on 7/2/2021;

**Rinsate Blank broke during transport from contract lab with 9/6/22 sample. Resampled on 12/7/2022.

Table 7.5
Range and Median PCB Concentration (pg/L)

Year	NE WPCP	SE WPCP	SW WPCP
2009	2,994-7,280 (4561)	1,364-9,375 (3667)	2,994-10,696 (7587)
2010	1,769-109,201 (6528)	1,399-6,755 (3474)	1,399-6,177 (4197)
2011	1,790-7,646 (3319)	1,493-10,206 (2672)	3,363-12,385 (4621)
2012	1,708-13,745 (2479)	1,493-13,988 (3369)	2,850-6,954 (3801)
2013	1,440-3,500 (2165)	2,229-6,918 (4741)	3,582-4,429 (3674)
2014	1,387-15,722 (1657)	1,392-4,510 (1752)	2,801-3,544 (3223)
2015	2,814-3,878 (2968)	2,103-6,898 (4472)	3,328-5,143 (4080)
2016	1,108-2,498 (1817)	1,390-3,765 (2103)	1,708-4,422 (3538)
2017	1,173-2,149 (1421)	1,065-6,817 (2414)	2,784-3,972 (3854)
2018	1,073-21,243 (5268)	3,836-53,514 (12934)	4,943-8,662 (5705)
2019	1,460-3,768 (2667)	2,044-6429 (4341)	3,131-32,404 (3191)
2020	1,469-3,760 (2615)	1,825-2,320 (2073)	2,100-2,438 (2269)
2021	807-48,630 (24718)	2,607-1,612 (2110)	2,992-5,727 (4359)
2022	1579-2078 (1828)	1719-6379 (4049)	3429-3837 (3633)
Note: Annual median is presented in parentheses.			

Attachment A

Data Graphs

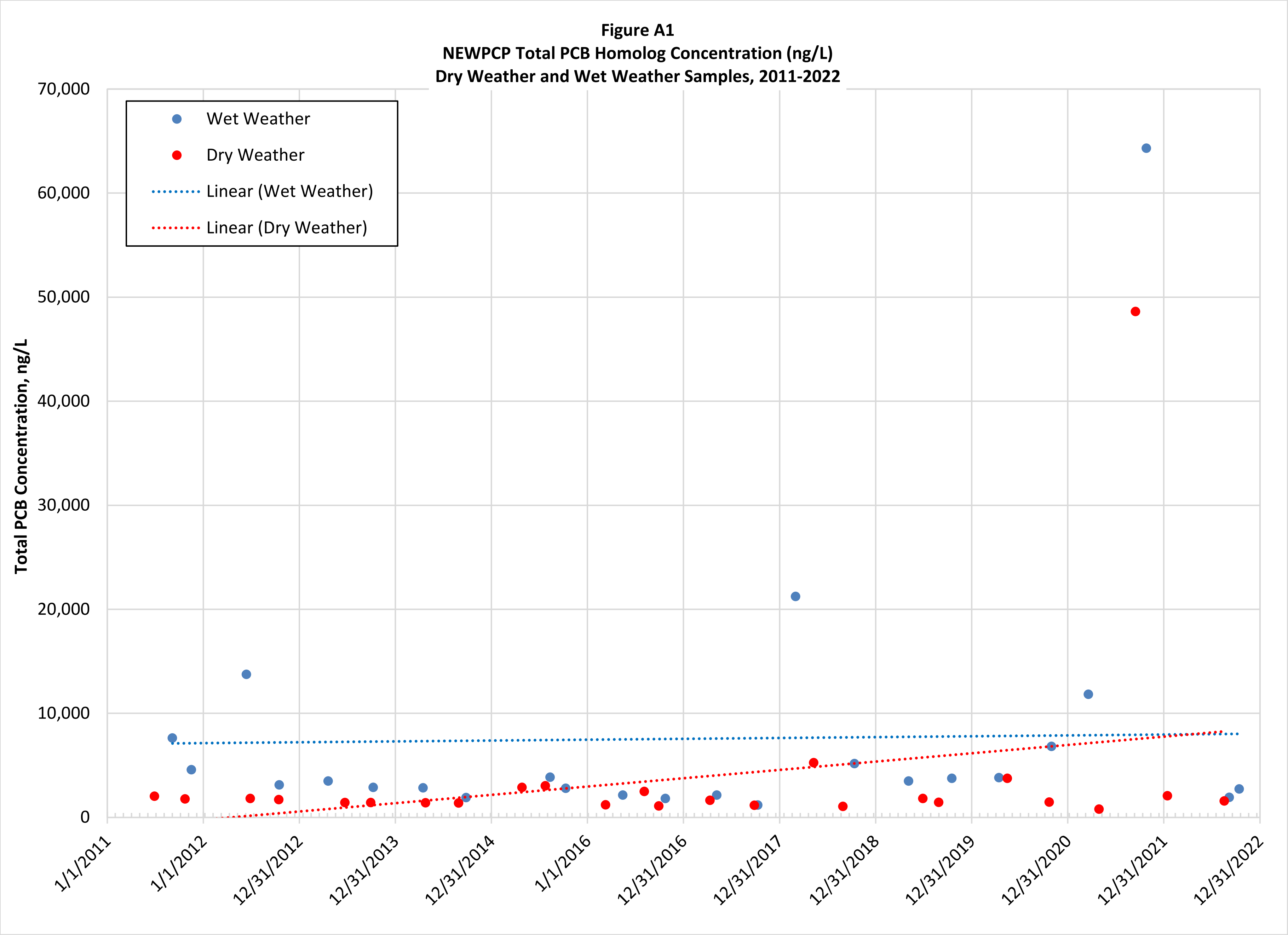


Figure A1
NEWPCP Total PCB Homolog Concentration (ng/L)
Dry Weather and Wet Weather Samples, 2011-2022

Figure A2
SEWPCP Total PCB Homolog Concentration (pg/L)
Dry Weather and Wet Weather Samples, 2011-2022

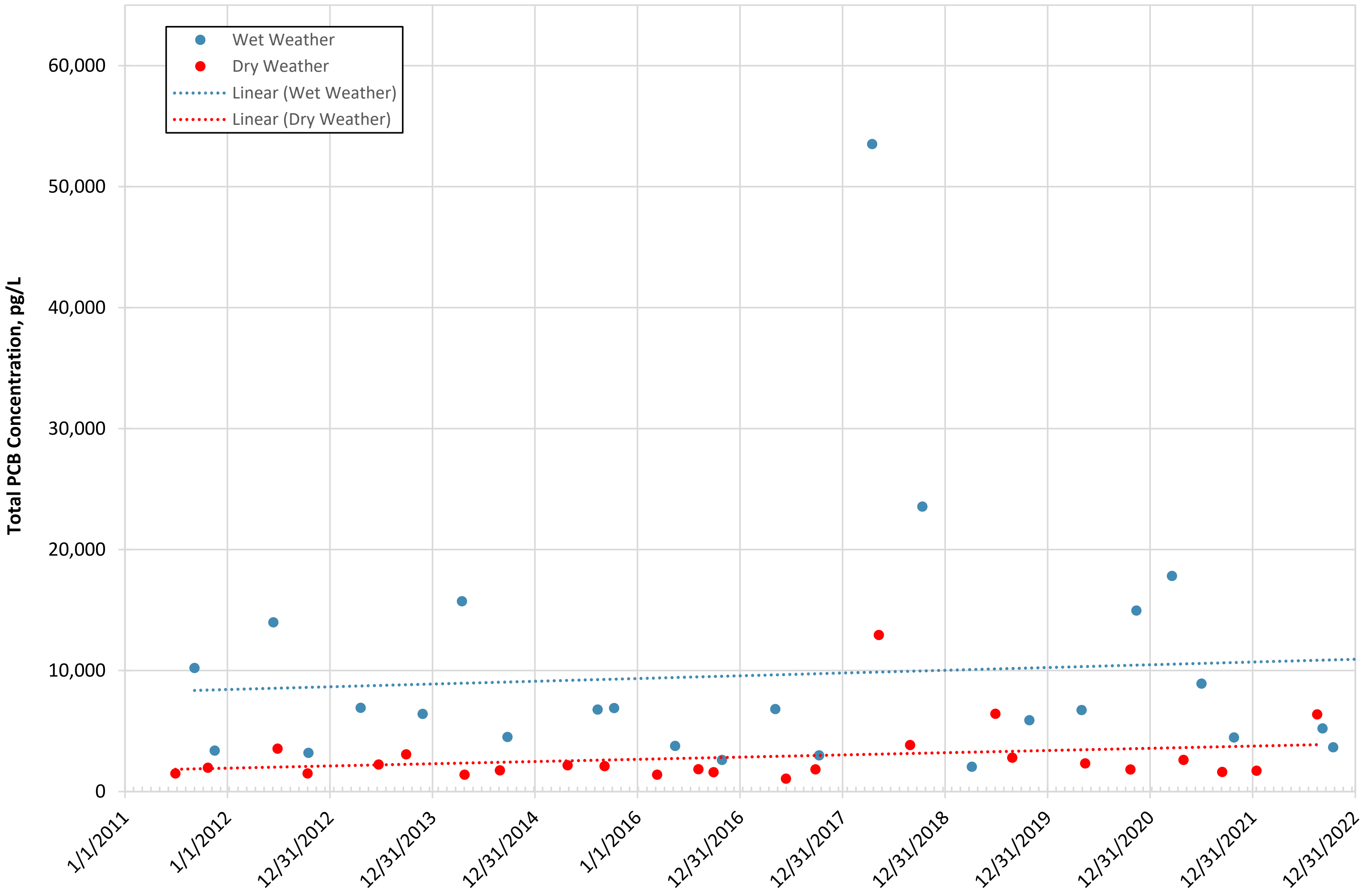
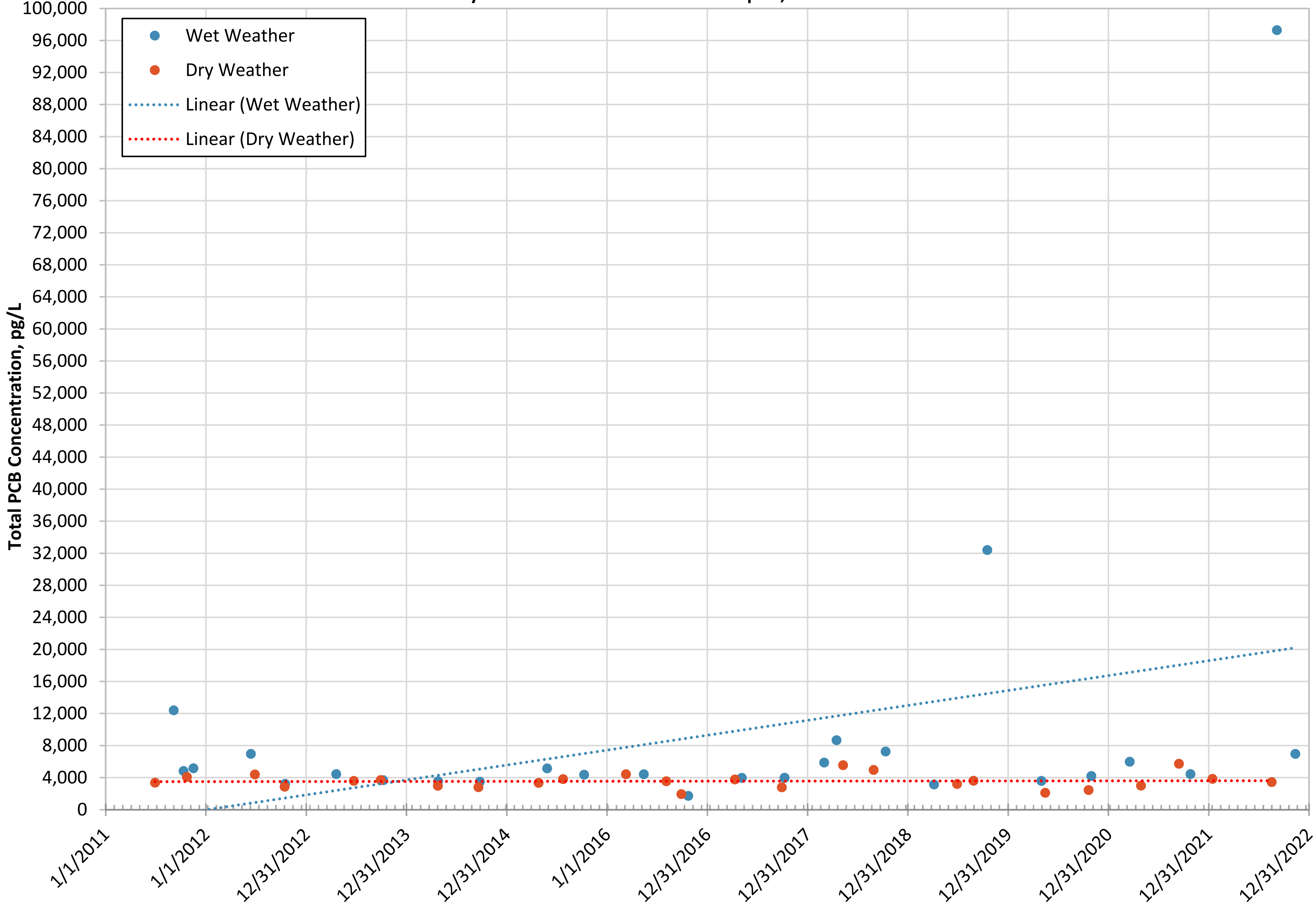


Figure A3
SWWPCP Total PCB Homolog Concentration (pg/L)
Dry Weather and Wet Weather Samples, 2011-2022



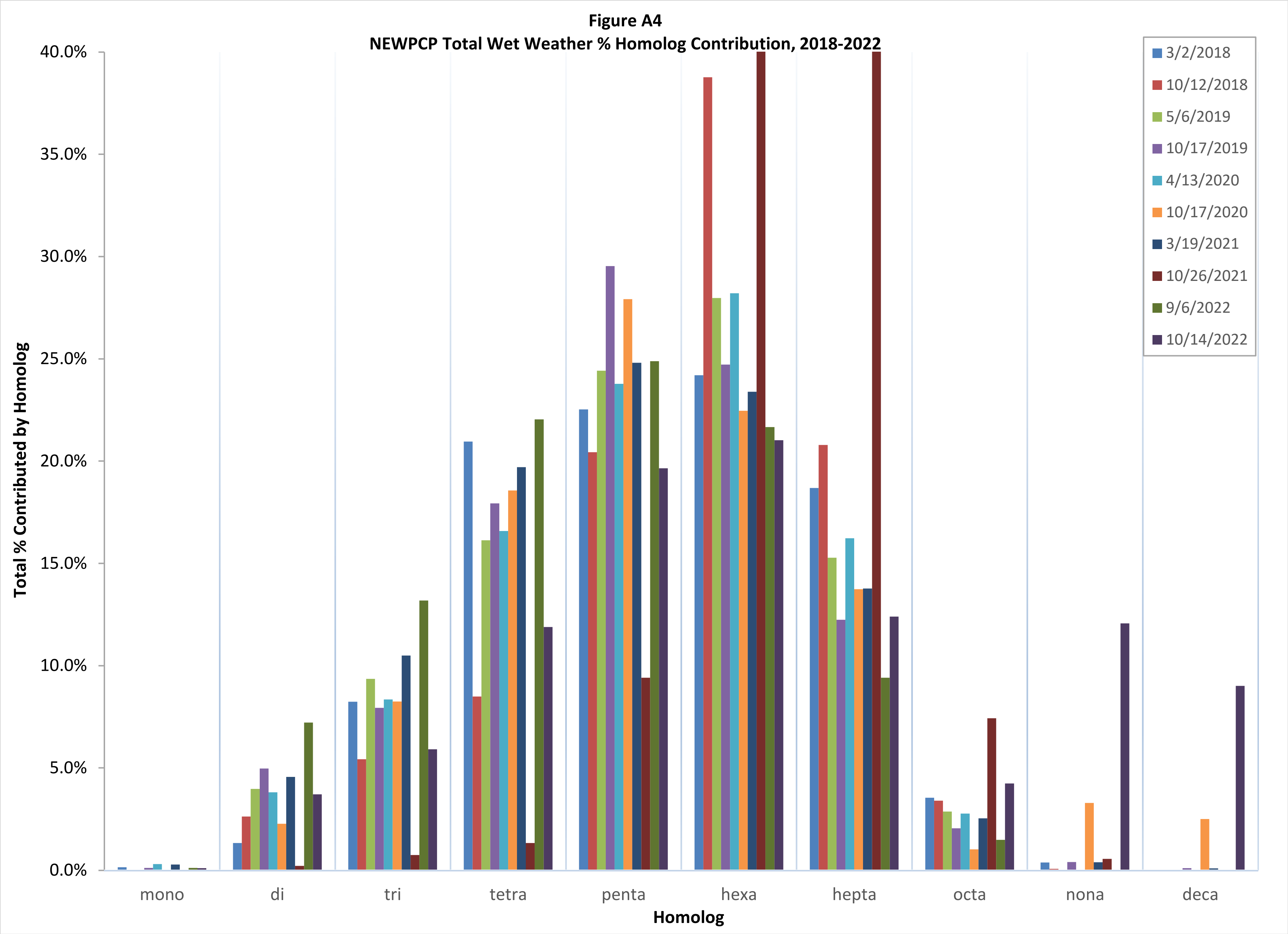


Figure A4
NEWPCP Total Wet Weather % Homolog Contribution, 2018-2022

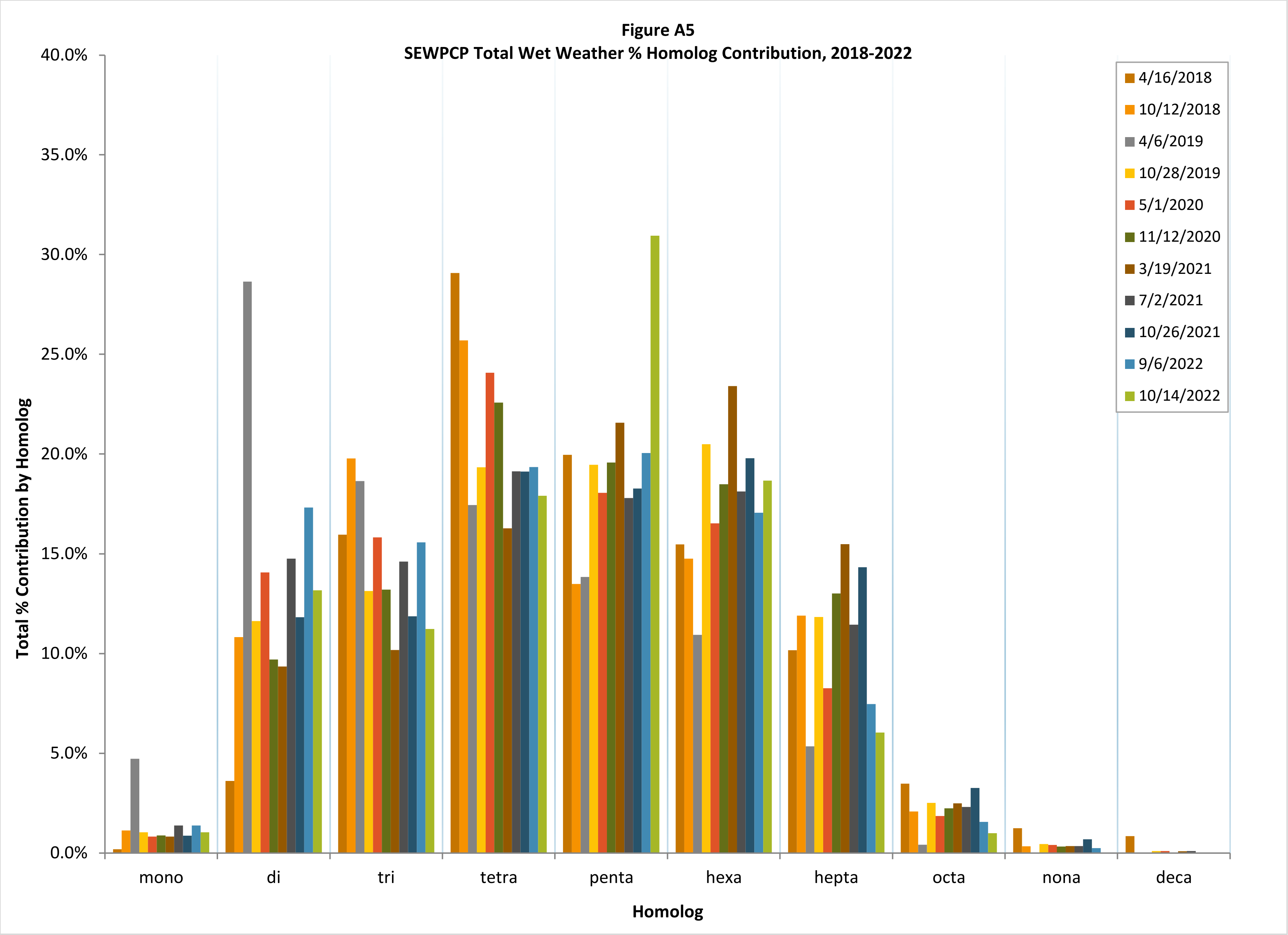


Figure A5
SEWPCP Total Wet Weather % Homolog Contribution, 2018-2022
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
Total % Contribution by Homolog
mono
di
tri
tetra
penta
hexa
hepta
octa
nona
deca
Homolog
4/16/2018
10/12/2018
4/6/2019
10/28/2019
5/1/2020
11/12/2020
3/19/2021
7/2/2021
10/26/2021
9/6/2022
10/14/2022

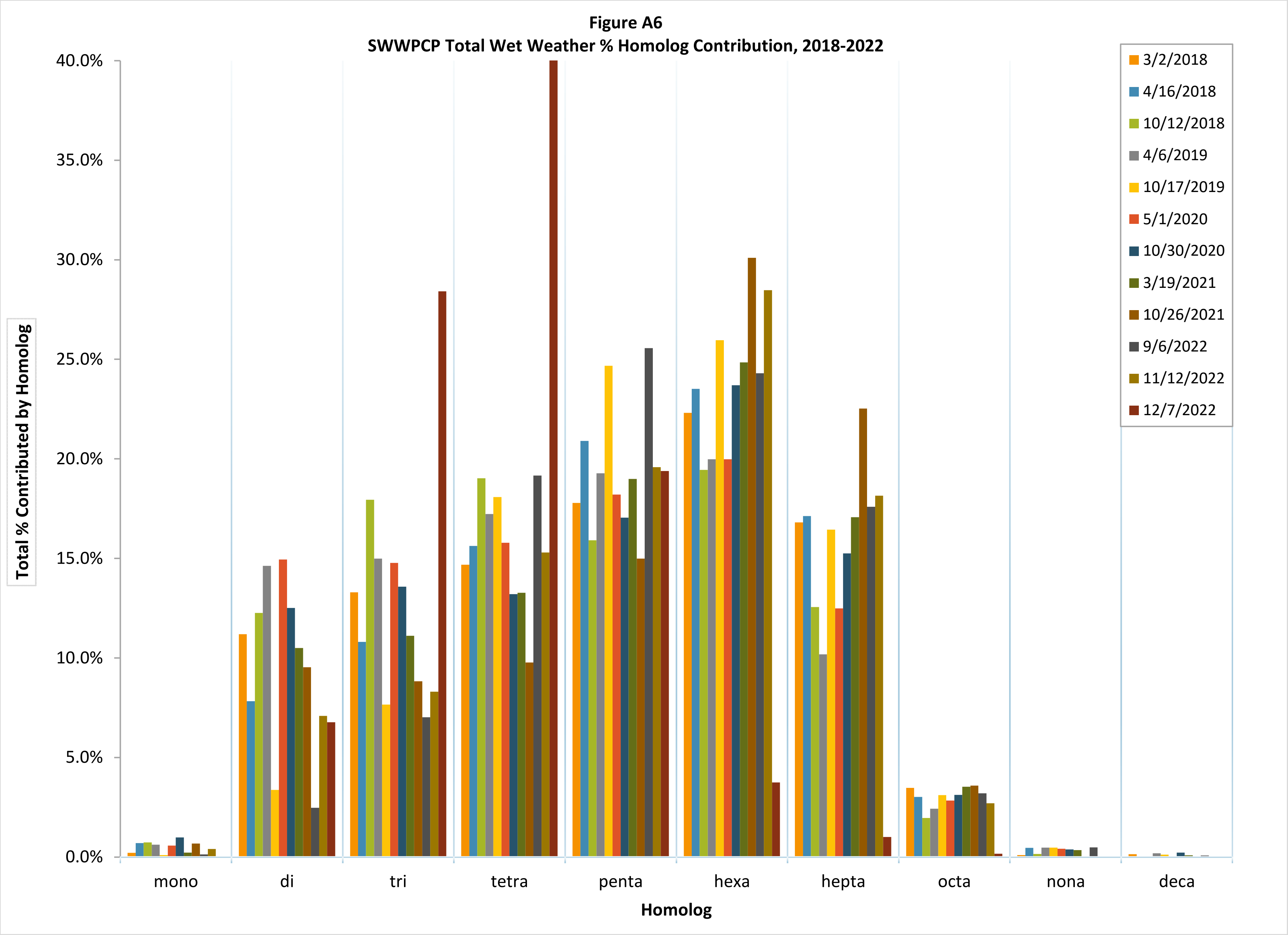


Figure A6
SWWPCP Total Wet Weather % Homolog Contribution, 2018-2022
Total % Contributed by Homolog
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
mono
di
tri
tetra
penta
hexa
hepta
octa
nona
deca
Homolog
3/2/2018
4/16/2018
10/12/2018
4/6/2019
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11/12/2022
12/7/2022

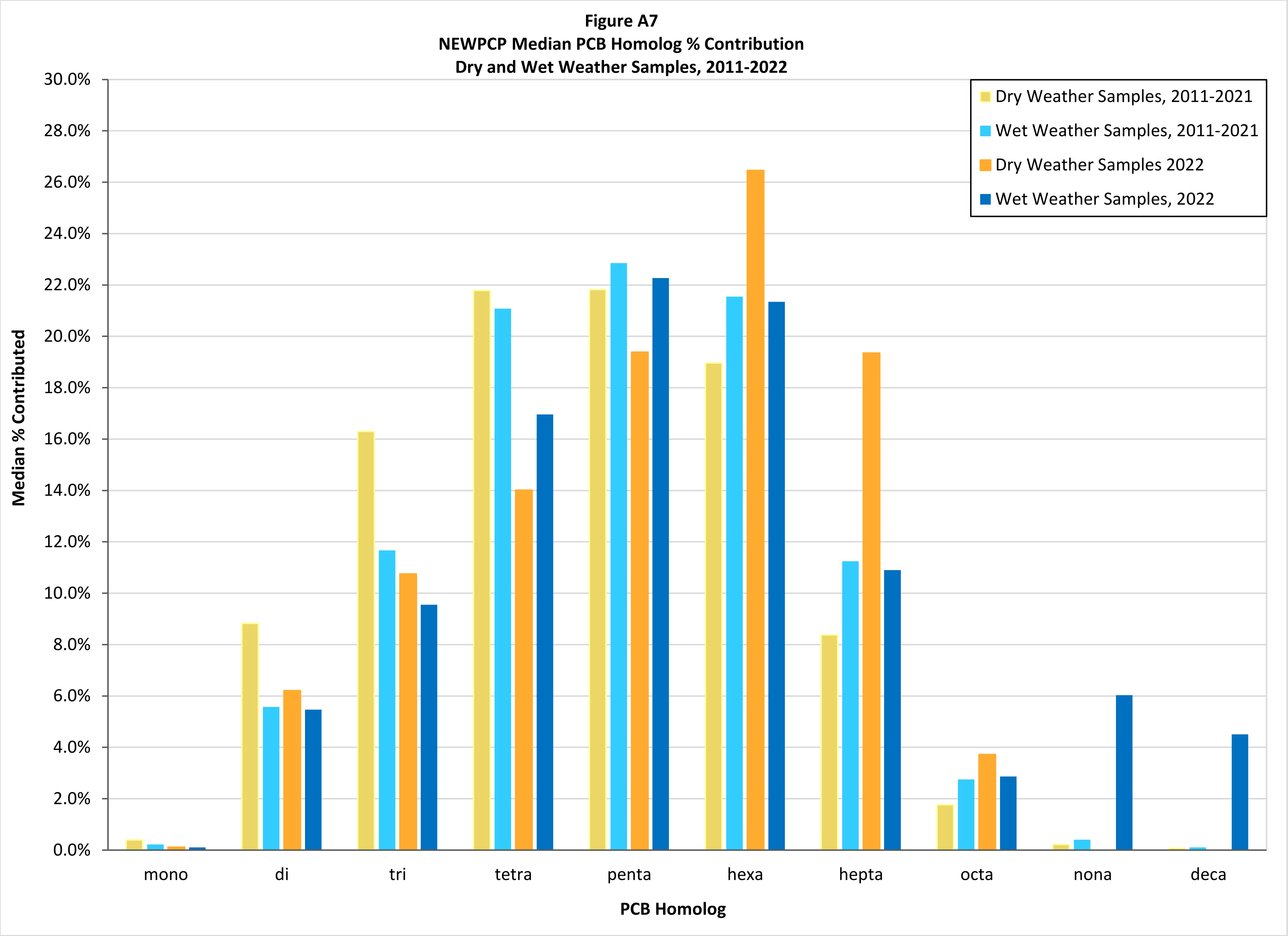


Figure A7
NEWPCP Median PCB Homolog % Contribution
Dry and Wet Weather Samples, 2011-2022
Median % Contributed
30.0%
28.0%
26.0%
24.0%
22.0%
20.0%
18.0%
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
mono
di
tri
tetra
penta
hexa
hepta
octa
nona
deca
PCB Homolog
Dry Weather Samples, 2011-2021
Wet Weather Samples, 2011-2021
Dry Weather Samples 2022
Wet Weather Samples, 2022

Figure A8
SEWPCP Median PCB Homolog % Contribution
Dry and Wet Weather Samples, 2011-2022

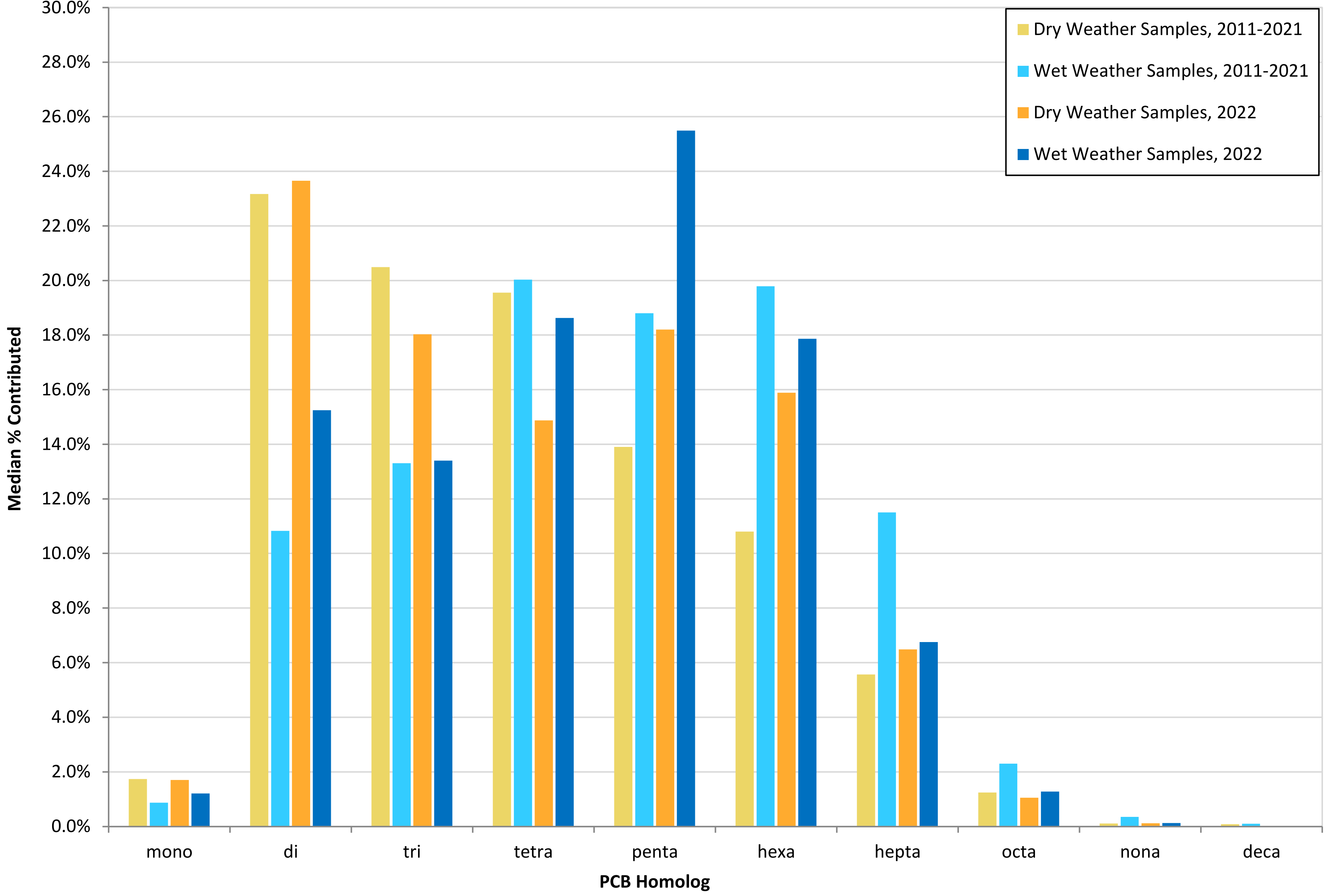
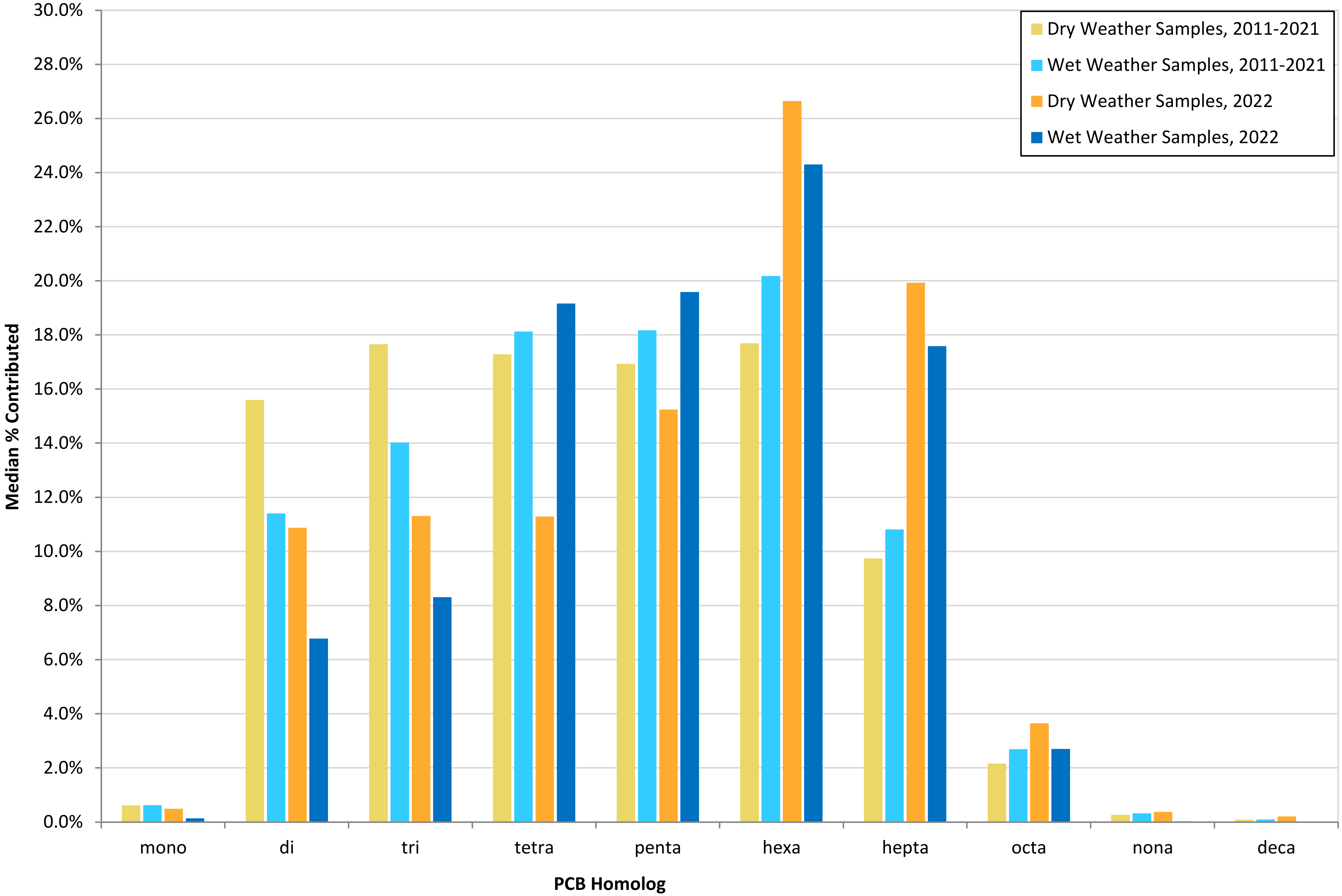


Figure A9
SWWPCP Median PCB Homolog % Contribution
Dry and Wet Weather Samples, 2011-2022



Attachment B

Potential Sources and Inspection Findings

Table B1 - Known, Probable and Potential Sources and Measures to Address Sources

Source	**Source Type**			**Measure to Address Source**
	Known	*Probable*	*Potential*	
Water Supply (Delaware and Schuylkill Rivers)	X			PCB PMP and action by others
Ferric Chloride used in Water Treatment	X			Switched ferric chloride suppliers
Sludge Lagoons (NEWPCP and SWWPCP)		X		Trackdown for each WPCP calls for sampling and analysis
PCB Device sites in sewershed of each WPCP (see Attachment B, "Inspections of Potential Source Sites")			X	Site inspections, evaluation and followup
Significant Industrial Users			X	Modify permits as warranted
Electric Company (PECO) customers			X	Undetermined. PECO will not share customer information.
Township Connections			X	Sample points of connections for PCBs
Groundwater Discharges			X	Require PCB monitoring
Utility Manhole Pumpouts			X	Require PCB monitoring

Table B2

Philadelphia Water Department

Inspections by Treatment Plant

01/1/2022 - 12/31/2022

Receiving Plant: NEWPCP

LocID	NAME:	ADDRESS:	LOCATION	CONTACT	EQUIPMENT	NUMBER	CONC (PPM)	GALLONS	LEAKS?	INSP DATE	STATUS
PCB-NE071	Fairmount Park	4101 Old York Rd 19140	Bandstand	John Molinari	Transformer	1	N/A	34	No	12/07/22	In Use
PCB-NE112	School District of Philadelphia	100 W Duncannon St 19120	Olney High School	Stephen Link	Transformer	2	N/A	N/A	Staining	08/01/22	In Use
PCB-NE207	Domestic Uniform Rental	4100 Frankford Ave 19124	Transformer rm	Dennis Glancy	Transformer	1	N/A	N/A	No	07/28/22	In Use
PCB-NE221	Abbey Color, Inc	400 E Tioga St 19134	Transformer vault	Roger Nielson	Transformer	2	0	102	No	10/19/22	In Use
PCB-NE226	Domestic Uniform Rental	4100 Frankford Ave 19124	Outside	Jerry Tannian	Transformer	1	N/A	N/A	No	07/28/22	In Use
PCB-NE260	Michel's Bakery, Inc	5698 Rising Sun Ave 19120	Electrical rm	Anthony Battle	Transformer	1	N/A	637	Staining	04/13/22	In Use
PCB-NE260a	Wayne Mills Corp	130 W Berkley St 19144	Basement	Doug Wiegand	Transformer	3	N/A	N/A	No	04/06/22	In Use
PCB-NE261	Dietz & Watson, Inc	5701 Tacony St 19135	Boiler rm	Wes Sweany	Transformer	3	N/A	N/A	No	09/30/22	In Use
PCB-NE262	Dietz & Watson, Inc	5701 Tacony St 19135	Electrical rm	Wes Sweany	Capacitor	10	N/A	N/A	No	09/30/22	In Use
PCB-NE269	Hillock Anodizing, Inc	5101 Comly St 19135	Outside	John Hillock	Transformer	1	N/A	N/A	No	11/29/22	In Use
PCB-NE270	Hillock Anodizing, Inc	7363A Tulip St 19136	Elec rm	John Hillock	Transformer	3	N/A	68	No	11/29/22	In Use
PCB-NE290	Newman & Company, Inc	6101 Tacony St 19135	Between bld L & I	Michael Ferman	Transformer	2	<50	638	No	12/08/22	In Use
PCB-NE291	Newman & Company, Inc	6101 Tacony St 19135	Outside URSI	Michael Ferman	Transformer	1	<50	325	No	12/08/22	In Use
PCB-NE292	Newman & Company, Inc	6101 Tacony St 19135	Skid yard NE corner	Michael Ferman	Transformer	1	N/A	774	No	12/08/22	In Use
PCB-NE300	Original Philly Holdings - Hunting Park	520 E Hunting Park Ave 19124	Outside by grease trap	Tyler Muckle	Capacitor & Transformer	3	<1	308	No	03/23/22	In Use
PCB-NE303	Philadelphia Gas Works-Richmond	3100 E Venango St 19134	Outside	Eric Henderson	Transformer	9	<2	765	No	04/05/22	In Use
PCB-NE304	Philadelphia Gas Works-Richmond	3100 E Venango St 19134	Inside	Eric Henderson	Transformer	2	<2.0	765	No	04/05/22	In Use
PCB-NE305	Philadelphia Gas Works-Richmond	3100 E Venango St 19134	Inside	Eric Henderson	Transformer	2	<2.0	252	No	04/05/22	In Use
PCB-NE311	Dietz & Watson, Inc	5701 Tacony St 19135	Truck Wash Area	Wes Sweany	Transformer	1	N/A	N/A	No	09/30/22	In Use

Receiving Plant: NEWPCP

Drainage Area: Combined **Total Number of Inspections completed: 19**

Table B2

Receiving Plant: NEWPCP

LocID	NAME:	ADDRESS:	LOCATION	CONTACT	EQUIPMENT	NUMBER	CONC (PPM)	GALLONS	LEAKS?	INSP DATE	STATUS
PCB-NE053	School District of Philadelphia	11061 Knights Rd 19154	Fitzpatrick School	Steph Link	Transformer	2	N/A	N/A	No	07/18/22	In Use
PCB-NE054	School District of Philadelphia	8901 Alicia St 19115	Greenberg School	Steph Link	Transformer	3	N/A	N/A	No	07/18/22	In Use
PCB-NE208	HP Hood, LLC	10975 Dutton Rd 19154	Outside cage	Facility Manager	Transformer	1	N/A	N/A	No	06/14/22	In Use
PCB-NE211	Delavau, LLC	10101 Roosevelt Blvd 19154	Bld rear	Keith Crawford	Transformer	2	<50 ppm	N/A	No	07/07/22	In Use
PCB-NE224	Pepsi Beverages Co	11701 Roosevelt Blvd 19154	Boiler rm	Gary Ralph	Transformer	2	<50	465	No	06/02/22	In Use
PCB-NE267	Medical Products Laboratories	9990 Global Rd 19115	Electrical rm	Shashi Raju	Transformer	1	N/A	N/A	No	04/26/22	In Use
PCB-NE268	Medical Products Laboratories	490 Red Lion Rd 19115	Large parking lot in cage	Shashi Raju	Capacitor	0	N/A	N/A	No	04/26/22	Removed From Site
PCB-NE271	I. Rice	11500D Roosevelt Blvd 19116	E side of building	Ashly Marchese	Transformer	1	N/A	N/A	No	02/01/22	In Use
PCB-NE274	Stockwell Elastomerics, Inc	4749 Tolbut St 19136	Bld 749	Bob Walsh	Capacitor	7	N/A	4	No	03/10/22	In Use
PCB-NE275	Premier Medical	10090 Sandmeyer Ln 19116	Bld rear	Carlos Quintero	Transformer	1	N/A	N/A	No	03/23/22	In Use
PCB-NE277	Computer Components	2751 Southampton Rd 19154	Loading dock	Frank Cettina	Transformer	1	<50	N/A	No	05/03/22	In Use
PCB-NE280	Agusta	3050-3076 Red Lion Rd 19114	IFO bld 3050	Laurence Smith	Transformer	1	N/A	315	No	05/18/22	In Use
PCB-NE281	Agusta	3076 Red Lion Rd 19114	IFO bld 3076	Laurence Smith	Transformer	2	N/A	375	No	05/18/22	In Use
PCB-NE283	Custom Powder Coating	8451 Hegerman St 19136	Behind admin bld	William O'Sullivan	Transformer	1	N/A	N/A	No	06/24/22	In Use
PCB-NE288	Tastepoint	10801 Decatur Rd 19154	Boiler room	Stacey Demarco	Transformer	3	0	363	No	05/23/22	In Use
PCB-NE294	Agusta	3050-3076 Red Lion Rd 19114	Outside Training Bld	Laurence Smith	Transformer	1	N/A	386	No	05/18/22	In Use
PCB-NE302	Kinder Morgan Liquid Terminals	3300 N Delaware Ave 19134	Hurst boiler room	Pamela Vu	Capacitor	2	>500	2.1	No	03/01/22	In Use
PCB-NE306	Agusta	3070 Red Lion Road 19114	3070 New Hangar	Laurence Smith	Transformer	1	N/A	N/A	No	05/18/22	In Use
PCB-NE307	II VI Aerospace & Defense	2710 Commerce Way 19154	Outside by cooling towers	John Kerelo	Transformer	2	N/A	N/A	No	05/05/22	In Use

Receiving Plant: NEWPCP

Drainage Area: MS4 **Total Number of Inspections completed: 19**

Table B2

LocID	NAME:	ADDRESS:	LOCATION	CONTACT	EQUIPMENT	NUMBER	CONC (PPM)	GALLONS	LEAKS?	INSP DATE	STATUS
Receiving Plant: NEWPCP											
PCB-NE209	C. Lever Colors, Inc	736 Dunks Ferry Rd 19020	Outside	Scott Lever	Transformer	1	N/A	N/A	No	03/29/22	In Use
PCB-NE282	Gill	1384 Byberry Rd 19020	Telephone pole in parking lot	Kelli Gill	Transformer	1	N/A	N/A	No	12/14/22	In Use
PCB-NE289	Qualawash	1000 Imperial Rd 19020	Outside bld rear	Dan Bright	Transformer	1	N/A	N/A	No	04/07/22	In Use
PCB-NE295	Sigma Pharm Laboratories, LLC	3375 Progress Dr 19020	Loading docks	Nimin Kurien	Transformer	1	N/A	N/A	No	03/25/22	In Use
PCB-NE296	Sigma Pharm Laboratories, LLC	3375 Progress Dr 19020	Along Progress Dr	Nimin Kurien	Transformer	1	N/A	N/A	No	03/25/22	In Use
PCB-NE297	Sigma Pharm Laboratories, LLC	3399 Progress Dr 19020	Along Progress Dr	Nimin Kurien	Transformer	1	<50	N/A	No	03/25/22	In Use
PCB-NE301	Sigma Pharm Laboratories, LLC	3375 Progress Dr 19020	By loading docks	Nimin Kurien	Transformer	2	N/A	N/A	No	03/25/22	Out of Use
PCB-NE308	KVK Tech	100 Campus Dr 18940	Cooling tower area	Vinay Yadav	Transformer	4	N/A	673	No	08/11/22	In Use
PCB-NE309	KVK Tech	100 Campus Dr 18940	Patriot Center	Vinay Yadav	Transformer	2	N/A	223	No	08/11/22	In Use
PCB-NE310	KVK Tech	100 Campus Dr 18940	PTB bld	Vinay Yadav	Transformer	12	N/A	15576	No	08/11/22	In Use

Receiving Plant: NEWPCP

Drainage Area: Township **Total Number of Inspections completed: 10**

Receiving Plant: NEWPCP **Total Number of Inspections completed: 48**

Table B2

Receiving Plant: SEWPCP

LocID	NAME:	ADDRESS:	LOCATION	CONTACT	EQUIPMENT	NUMBER	CONC (PPM)	GALLONS	LEAKS?	INSP DATE	STATUS
PCB-SE015	School District of Philadelphia	243 E Alleghney Ave 19134	Stenton	Stephen Link	Transformer	1	N/A	208	No	07/29/22	In Use
PCB-SE034	PGW	1800-62 N 9th St 19122	Basement	Rich Zeo	Transformer	4	<1 ppm	N/A	No	07/27/22	In Use
PCB-SE202	PECO Energy, Oregon Ave Shop	2610 S Christopher Columbus Blvd 19148	Parking lot	George Horvat	Transformer	32	N/A	N/A	No	07/26/22	Out of Use
PCB-SE203	Simons Brothers Co.	2438 Sergeant St 19125	By front door	Nelson Kaiser	Capacitor	1	NA	N/A	No	05/12/22	In Use
PCB-SE205	Ashland Chemical Company	2801 Christopher Columbus Blvd 19148	By Nitrogen	Jill Kuestner	Transformer	1	N/A	N/A	No	09/15/22	In Use
PCB-SE206	Ashland Chemical Company	2801 Christopher Columbus Blvd 19148	Front gate	Eric Weisbrod	Transformer	1	N/A	N/A	No	09/15/22	In Use
PCB-SE207	Ashland Chemical Company	2801 Christopher Columbus Blvd 19148	Roof of bld 10	Eric Weisbrod	Transformer	1	N/A	N/A	No	09/15/22	In Use
PCB-SE243	National Chemical Laboratories, Inc	401 N 10th St 19123	Transformer rm	Harry Pollack	Transformer	4	<50	410	No	04/20/22	In Use

Receiving Plant: SEWPCP

Drainage Area: Combined **Total Number of Inspections completed: 8**

PCB-SE246	PSNY (NFPC)	4747 S Broad St 19112	S Building 20	Allison Starr	Transformer	4	<50	N/A	No	11/30/22	In Use
PCB-SE247	PSNY (NFPC)	4747 S Broad St 19112	SW Building 20	Allison Starr	Transformer	5	<50	N/A	No	11/30/22	In Use
PCB-SE250	Tasty Baking	4300 S 26th St 19112	Building rear	Pat West	Transformer	2	N/A	N/A	No	05/19/22	In Use
PCB-SE318	WuXi AppTec Incorporated	4751 League Island Blvd 19112	Loading dock	Larry Gagner	Transformer	2	N/A	N/A	No	12/21/22	In Use
PCB-SE319	WuXi AppTec	400 Rouse Blvd 19112	Rear of facility	Shanna Grace	Transformer	2	N/A	N/A	No	12/21/22	In Use
PCB-SE-320	WuXi AppTec	4701 League Island Blvd 19112	Rear of bld	Shanna Grace	Transformer	3	N/A	N/A	No	12/21/22	In Use
PCB-SE-321	WuXi Apptec	4000 S 26th St 19112	Rear of bld	Shanna Grace	Transformer	3	N/A	N/A	No	12/21/22	In Use

Receiving Plant: SEWPCP

Drainage Area: MS4 **Total Number of Inspections completed: 7**

Receiving Plant: SEWPCP **Total Number of Inspections completed: 15**

Table B2

Receiving Plant: SWWPCP

LocID	NAME:	ADDRESS:	LOCATION	CONTACT	EQUIPMENT	NUMBER	CONC (PPM)	GALLONS	LEAKS?	INSP DATE	STATUS
PCB-SW040	Drexel University	3300 Market St 19104	Bldg 5 ground floor	William Taylor	Transformer	0	N/A	N/A	No	12/06/22	Removed From Site
PCB-SW041	Drexel University	3300 Market St 19104	Bldg 5 ground floor	William Taylor	Transformer	0	N/A	N/A	No	12/06/22	Removed From Site
PCB-SW077	Crowne Plaza	1800 Market St 19103	HPT-IHG Property trust	Bill Brame	Capacitor	2	N/A	50	No	07/25/22	In Use
PCB-SW115	Methodist Hospital	2301 S Broad St 19148	D&T building basement	John Cassidy	Transformer	0	N/A	N/A	No	12/09/22	Removed From Site
PCB-SW116	Methodist Hospital	2301 S Broad St 19148	B building second basement.	John Cassidy	Transformer	2	N/A	N/A	No	12/09/22	In Use
PCB-SW202	Cintas Corporation	4700 W Jefferson St 19131	By loading dock	Sam Anderson	Transformer	1	N/A	N/A	No	05/19/22	In Use
PCB-SW245	National Railroad Passenger Corp	30th & Race Sts Amtrak Race St./Penn Coach Yard 19104	Overhead substation	MichaelPanhuise	Transformer	7	N/A	800	No	11/09/22	In Use
PCB-SW246	National Railroad Passenger Corp	30th & Race Sts Amtrak Race St./Penn Coach Yard 19104	Near generator with day tank	Michael Panhuise	Transformer	1	N/A	800	No	11/09/22	In Use
PCB-SW247	National Railroad Passenger Corp	30th & Race Sts Amtrak Race St./Penn Coach Yard 19104	Car repair shop	Michael Panhuise	Transformer	1	<1ppm	800	No	11/09/22	In Use
PCB-SW248	National Railroad Passenger Corp	30th & Race Sts Amtrak Race St./Penn Coach Yard 19104	N of o/w separator	Michael Panhuise	Transformer	1	<50	280	No	11/09/22	In Use
PCB-SW249	National Railroad Passenger Corp	30th & Race Sts Amtrak Race St./Penn Coach Yard 19104	Further north of o/w separatpr	Michael Panhuise	Transformer	1	<50	280	No	11/09/22	In Use
PCB-SW250	National Railroad Passenger Corp	30th & Race Sts Amtrak Race St./Penn Coach Yard 19104	SE of bld #42	Machael Panhuise	Transformer	1	N/A	280	No	11/09/22	In Use
PCB-SW251	National Railroad Passenger Corp	30th & Race Streets Amtrak Race St./Penn Coach Yard 19104	Engineering bld #43	Michael Panhuise	Transformer	1	N/A	260	No	11/09/22	In Use
PCB-SW254	Veolia Energy Philadelphia	2600 Christian St 19146	Schuylkill River side of plant	Jessica Hartley	Transformer	4	4	2125	Staining	06/23/22	In Use
PCB-SW255	Veolia Energy Philadelphia	2600 Christian St 19146	Middle of plant	Jessica Hartley	Transformer	2	25	2338	No	06/23/22	In Use
PCB-SW256	Veolia Energy Philadelphia	2600 Christian St 19146	Christian St entrance	Jessica Hartley	Transformer	4	1.6	15120	No	06/23/22	In Use

Receiving Plant: SWWPCP

Drainage Area: Combined **Total Number of Inspections completed: 16**

Table B2

LocID	NAME:	ADDRESS:	LOCATION	CONTACT	EQUIPMENT	NUMBER	CONC (PPM)	GALLONS	LEAKS?	INSP DATE	STATUS
Receiving Plant: SWWPCP											
PCB-SW158	Sun Chemical	3301 Hunting Park Ave 19132	Bld 1 Boiler vault	Frank Zappavign	Capacitor & Transformer	8	N/A	N/A	No	06/23/22	In Use
PCB-SW203	LSG Sky Chefs	8401 Escort Ave 19153	Adminstration bld	Jackline Kirimi	Transformer	1	<50	N/A	No	06/08/22	In Use
PCB-SW212	G.J. Littlewood & Son, Inc	4045 Main St 19127	Vault	Robert Littlewood	Transformer	5	<50	N/A	No	02/09/22	In Use
PCB-SW231	Penn Fishing Tackle Mfg Co	3028 W Hunting Park Ave 19132	Anodizing room	David Shanks	Capacitor	2	<50	1.23	No	07/11/22	In Use
PCB-SW232	Penn Fishing Tackle Mfg Co	3028 W Hunting Park Ave 19132	Waste treatment area	David Shanks	Capacitor	1	<50	1.3	No	07/11/22	In Use
PCB-SW233	Penn Fishing Tackle Mfg Co	3028 W Hunting Park Ave 19132	Receiving/mail room	David Shanks	Capacitor	1	<50	1.03	No	07/11/22	In Use
PCB-SW234	Penn Fishing Tackle Mfg Co	3028 W Hunting Park Ave 19132	Light machine area	David Shanks	Capacitor	1	<50	1.39	No	07/11/22	In Use
PCB-SW235	Penn Fishing Tackle Mfg Co	3028 W Hunting Park Ave 19132	Basement electrical	David Shanks	Capacitor & Transformer	4	<50	70	No	07/11/22	In Use
PCB-SW236	Penn Fishing Tackle Mfg Co	3028 W Hunting Park Ave 19132	Outside fenced area	David Shanks	Transformer	3	<50	291	No	07/11/22	In Use
PCB-SW237	Penn Fishing Tackle Mfg Co	3028 W Hunting Park Ave 19132	First floor transformer cage	David Shanks	Capacitor & Transformer	2	<50	64	No	07/11/22	In Use
PCB-SW238	Penn Fishing Tackle Mfg Co	3028 W Hunting Park Ave 19132	Basement electrical	David Shanks	Transformer	1	<50	64	No	07/11/22	In Use
PCB-SW265	LSG Sky Chefs	8401 Escort St 19153	Escort Ave	Jackline Kirimi	Transformer	1	N/A	N/A	No	06/08/22	In Use
PCB-SW266	Amtrak Arsenal Substation	University Ave & River Fields Dr 19104	Substation 1B	Michael Panhuise	Transformer	2	N/A	N/A	Yes	06/30/22	In Use
PCB-SW267	PBF Logistics Products Terminals	3400 S. 67th St 19153	South by pumps	John Grisi	Transformer	2	N/A	470	No	10/20/22	In Use
PCB-SW268	PBF Logistics Products Terminals	3400 S. 67th St 19153	Near additive tanks	John Grisi	Transformer	1	<50	N/A	No	10/20/22	In Use
PCB-SW269	PBF Logistics Products Terminals	3400 S. 67th St 19153	North switch gate	John Grisi	Transformer	1	N/A	465	No	10/20/22	In Use
PCB-SW270	PBF Logistics Products Terminals	3400 S. 67th St 19153	Old north	John Grisi	Transformer	2	N/A	0	No	10/20/22	Out of Use
PCB-SW271	Philadelphia Gas Work-Passyunk	3100 Passyunk Ave 19145	Outside by sample point	Chin So	Transformer	16	<50ppm	267	No	10/27/22	In Use

Receiving Plant: SWWPCP

Drainage Area: MS4 **Total Number of Inspections completed: 18**

Table B2

LocID	NAME:	ADDRESS:	LOCATION	CONTACT	EQUIPMENT	NUMBER	CONC (PPM)	GALLONS	LEAKS?	INSP DATE	STATUS
Receiving Plant: SWWPCP											
PCB-SW217	Philadelphia Zoo	3400 W Girard Ave 19104	W.S. Cumby -- Hamilton Family Children's Zoo	Matt Corcoran	Transformer	1	N/A	100	No	04/28/22	In Use
PCB-SW218	Philadelphia Zoo	3400 W Girard Ave 19104	Picnic grove	Matt Corcoran	Transformer	1	N/A	100	No	04/28/22	In Use
PCB-SW219	Philadelphia Zoo	3400 W Girard Ave 19104	African Plains 2	Matt Corcoran	Transformer	1	N/A	N/A	No	04/28/22	In Use
PCB-SW220	Philadelphia Zoo	3400 W Girard Ave 19104	Reptile House	Matt Corcoran	Transformer	1	N/A	100	No	04/28/22	In Use
PCB-SW221	Philadelphia Zoo	3400 W Girard Ave 19104	Shelly Bld	Matt Corcoran	Transformer	1	N/A	100	No	04/28/22	In Use
PCB-SW222	Philadelphia Zoo	3400 W Girard Ave 19104	Solitude	Matt Corcoran	Transformer	1	N/A	N/A	No	04/28/22	In Use

Receiving Plant: SWWPCP

Drainage Area: Non-Contributing **Total Number of Inspections completed: 6**

LocID	NAME:	ADDRESS:	LOCATION	CONTACT	EQUIPMENT	NUMBER	CONC (PPM)	GALLONS	LEAKS?	INSP DATE	STATUS
PCB-SW206	Johnson & Johnson Consumer Inc	7050 Camp Hill Rd 19034	Fire pump	Scott Kessler	Transformer	1	16	125	No	11/16/22	In Use
PCB-SW207	Johnson & Johnson Consumer Inc	7050 Camp Hill Rd 19034	By child care center	Scott Kessler	Transformer	1	N/A	221	No	11/16/22	In Use
PCB-SW208	Johnson & Johnson Consumer Inc	7050 Camp Hill Rd 19034	WWTP	Scott Kessler	Transformer	1	N/A	135	No	11/16/22	In Use
PCB-SW209	Johnson & Johnson Consumer Inc	7050 Camp Hill Rd 19034	Adminstration B	Scott Kessler	Transformer	1	17	165	No	11/16/22	In Use
PCB-SW210	Johnson & Johnson Consumer Inc	7050 Camp Hill Rd 19034	WTP	Scott Kessler	Transformer	1	N/A	1373	No	11/16/22	In Use
PCB-SW211	Johnson & Johnson Consumer Inc	7050 Camp Hill Rd 19034	Main B	Scott Kessler	Transformer	1	N/A	1373	No	11/16/22	In Use
PCB-SW213	Astra Foods, Inc	6430 Market St 19082	Boiler rm T1	Demitri Poulmentous	Transformer	1	N/A	N/A	No	11/22/22	In Use
PCB-SW214	Astra Foods, Inc	6430 Market St 19082	S bld T4	Demitri Poulmentous	Transformer	1	N/A	N/A	No	11/22/22	In Use
PCB-SW215	Astra Foods, Inc	6430 Market St 19082	E bld T5	Demitri Poulmentous	Transformer	1	N/A	N/A	No	11/22/22	In Use
PCB-SW216	Astra Foods, Inc	6430 Market St 19082	Centrifudge bld west of T4	Demitri Poulmentous	Transformer	1	N/A	N/A	No	11/22/22	In Use

Receiving Plant: SWWPCP

Drainage Area: Township **Total Number of Inspections completed: 10**

Receiving Plant: SWWPCP **Total Number of Inspections completed: 50**

Total Inspections: 113

Attachment C

Township Connection PCB Summary

Table C1: 2022 Township PCB Summary

PCB Homolog Concentration (µg/L)

Township Location ID	Sample Date	Parameter	Method	"< >"	Data Value	Units	Collection Method	Permittee
BEECHWOOD	11/21/2022	Decachlorobiphenyls	EPA 680	<	0.21	ug/L	Composite -24hr	Bensalem
BEECHWOOD	11/21/2022	Dichlorobiphenyls	EPA 680	<	0.021	ug/L	Composite -24hr	Bensalem
BEECHWOOD	11/21/2022	Heptachlorobiphenyls	EPA 680	<	0.041	ug/L	Composite -24hr	Bensalem
BEECHWOOD	11/21/2022	Hexachlorobiphenyls	EPA 680	<	0.031	ug/L	Composite -24hr	Bensalem
BEECHWOOD	11/21/2022	Monochlorobiphenyls	EPA 680	<	0.021	ug/L	Composite -24hr	Bensalem
BEECHWOOD	11/21/2022	Nonachlorobiphenyls	EPA 680	<	0.21	ug/L	Composite -24hr	Bensalem
BEECHWOOD	11/21/2022	Octachlorobiphenyls	EPA 680	<	0.052	ug/L	Composite -24hr	Bensalem
BEECHWOOD	11/21/2022	Pentachlorobiphenyls	EPA 680	<	0.031	ug/L	Composite -24hr	Bensalem
BEECHWOOD	11/21/2022	Tetrachlorobiphenyls	EPA 680	<	0.031	ug/L	Composite -24hr	Bensalem
BEECHWOOD	11/21/2022	Trichlorobiphenyls	EPA 680	<	0.021	ug/L	Composite -24hr	Bensalem
BENSHOP	10/20/2022	Decachlorobiphenyls	EPA 680	<	0.49	ug/L	Composite -24hr	Bensalem
BENSHOP	10/20/2022	Dichlorobiphenyls	EPA 680	<	0.099	ug/L	Composite -24hr	Bensalem
BENSHOP	10/20/2022	Heptachlorobiphenyls	EPA 680	<	0.3	ug/L	Composite -24hr	Bensalem
BENSHOP	10/20/2022	Hexachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
BENSHOP	10/20/2022	Monochlorobiphenyls	EPA 680	<	0.099	ug/L	Composite -24hr	Bensalem
BENSHOP	10/20/2022	Nonachlorobiphenyls	EPA 680	<	0.49	ug/L	Composite -24hr	Bensalem
BENSHOP	10/20/2022	Octachlorobiphenyls	EPA 680	<	0.3	ug/L	Composite -24hr	Bensalem
BENSHOP	10/20/2022	Pentachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
BENSHOP	10/20/2022	Tetrachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
BENSHOP	10/20/2022	Trichlorobiphenyls	EPA 680	<	0.099	ug/L	Composite -24hr	Bensalem
BETZ	11/21/2022	Decachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
BETZ	11/21/2022	Dichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Bensalem
BETZ	11/21/2022	Heptachlorobiphenyls	EPA 680	<	0.04	ug/L	Composite -24hr	Bensalem
BETZ	11/21/2022	Hexachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Bensalem
BETZ	11/21/2022	Monochlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Bensalem
BETZ	11/21/2022	Nonachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
BETZ	11/21/2022	Octachlorobiphenyls	EPA 680	<	0.05	ug/L	Composite -24hr	Bensalem
BETZ	11/21/2022	Pentachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Bensalem
BETZ	11/21/2022	Tetrachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Bensalem
BETZ	11/21/2022	Trichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Bensalem
COLONIAL	10/5/2022	Decachlorobiphenyls	EPA 680	<	10	ug/L	Composite -24hr	Bensalem
COLONIAL	10/5/2022	Dichlorobiphenyls	EPA 680	<	2	ug/L	Composite -24hr	Bensalem
COLONIAL	10/5/2022	Heptachlorobiphenyls	EPA 680	<	6	ug/L	Composite -24hr	Bensalem
COLONIAL	10/5/2022	Hexachlorobiphenyls	EPA 680	<	4	ug/L	Composite -24hr	Bensalem
COLONIAL	10/5/2022	Monochlorobiphenyls	EPA 680	<	2	ug/L	Composite -24hr	Bensalem
COLONIAL	10/5/2022	Nonachlorobiphenyls	EPA 680	<	10	ug/L	Composite -24hr	Bensalem
COLONIAL	10/5/2022	Octachlorobiphenyls	EPA 680	<	6	ug/L	Composite -24hr	Bensalem

Table C1: 2022 Township PCB Summary

PCB Homolog Concentration (µg/L)

COLONIAL	10/5/2022	Pentachlorobiphenyls	EPA 680	<	4	ug/L	Composite -24hr	Bensalem
COLONIAL	10/5/2022	Tetrachlorobiphenyls	EPA 680	<	4	ug/L	Composite -24hr	Bensalem
COLONIAL	10/5/2022	Trichlorobiphenyls	EPA 680	<	2	ug/L	Composite -24hr	Bensalem
DORALAPT (MBE16)	10/23/2022	Decachlorobiphenyls	EPA 680	<	10	ug/L	Composite -24hr	Bensalem
DORALAPT (MBE16)	10/23/2022	Dichlorobiphenyls	EPA 680	<	2	ug/L	Composite -24hr	Bensalem
DORALAPT (MBE16)	10/23/2022	Heptachlorobiphenyls	EPA 680	<	6	ug/L	Composite -24hr	Bensalem
DORALAPT (MBE16)	10/23/2022	Hexachlorobiphenyls	EPA 680	<	4	ug/L	Composite -24hr	Bensalem
DORALAPT (MBE16)	10/23/2022	Monochlorobiphenyls	EPA 680	<	2	ug/L	Composite -24hr	Bensalem
DORALAPT (MBE16)	10/23/2022	Nonachlorobiphenyls	EPA 680	<	10	ug/L	Composite -24hr	Bensalem
DORALAPT (MBE16)	10/23/2022	Octachlorobiphenyls	EPA 680	<	6	ug/L	Composite -24hr	Bensalem
DORALAPT (MBE16)	10/23/2022	Pentachlorobiphenyls	EPA 680	<	4	ug/L	Composite -24hr	Bensalem
DORALAPT (MBE16)	10/23/2022	Tetrachlorobiphenyls	EPA 680	<	4	ug/L	Composite -24hr	Bensalem
DORALAPT (MBE16)	10/23/2022	Trichlorobiphenyls	EPA 680	<	2	ug/L	Composite -24hr	Bensalem
DUNKS	11/3/2022	Decachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
DUNKS	11/3/2022	Dichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Bensalem
DUNKS	11/3/2022	Heptachlorobiphenyls	EPA 680	<	0.04	ug/L	Composite -24hr	Bensalem
DUNKS	11/3/2022	Hexachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Bensalem
DUNKS	11/3/2022	Monochlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Bensalem
DUNKS	11/3/2022	Nonachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
DUNKS	11/3/2022	Octachlorobiphenyls	EPA 680	<	0.049	ug/L	Composite -24hr	Bensalem
DUNKS	11/3/2022	Pentachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Bensalem
DUNKS	11/3/2022	Tetrachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Bensalem
DUNKS	11/3/2022	Trichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Bensalem
EANDE	9/30/2022	Decachlorobiphenyls	EPA 680	<	0.19	ug/L	Composite -24hr	Bensalem
EANDE	9/30/2022	Dichlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
EANDE	9/30/2022	Heptachlorobiphenyls	EPA 680	<	0.038	ug/L	Composite -24hr	Bensalem
EANDE	9/30/2022	Hexachlorobiphenyls	EPA 680	<	0.029	ug/L	Composite -24hr	Bensalem
EANDE	9/30/2022	Monochlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
EANDE	9/30/2022	Nonachlorobiphenyls	EPA 680	<	0.19	ug/L	Composite -24hr	Bensalem
EANDE	9/30/2022	Octachlorobiphenyls	EPA 680	<	0.048	ug/L	Composite -24hr	Bensalem
EANDE	9/30/2022	Pentachlorobiphenyls	EPA 680	<	0.029	ug/L	Composite -24hr	Bensalem
EANDE	9/30/2022	Tetrachlorobiphenyls	EPA 680	<	0.029	ug/L	Composite -24hr	Bensalem
EANDE	9/30/2022	Trichlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
ELMWOOD	11/3/2022	Decachlorobiphenyls	EPA 680	<	0.19	ug/L	Composite -24hr	Bensalem
ELMWOOD	11/3/2022	Dichlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
ELMWOOD	11/3/2022	Heptachlorobiphenyls	EPA 680	<	0.038	ug/L	Composite -24hr	Bensalem
ELMWOOD	11/3/2022	Hexachlorobiphenyls	EPA 680	<	0.028	ug/L	Composite -24hr	Bensalem
ELMWOOD	11/3/2022	Monochlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem

Table C1: 2022 Township PCB Summary
PCB Homolog Concentration (µg/L)

ELMWOOD	11/3/2022	Nonachlorobiphenyls	EPA 680	<	0.19	ug/L	Composite -24hr	Bensalem
ELMWOOD	11/3/2022	Octachlorobiphenyls	EPA 680	<	0.047	ug/L	Composite -24hr	Bensalem
ELMWOOD	11/3/2022	Pentachlorobiphenyls	EPA 680	<	0.028	ug/L	Composite -24hr	Bensalem
ELMWOOD	11/3/2022	Tetrachlorobiphenyls	EPA 680	<	0.028	ug/L	Composite -24hr	Bensalem
ELMWOOD	11/3/2022	Trichlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
ERD.II	12/6/2022	Decachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Springfield
ERD.II	12/6/2022	Dichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Springfield
ERD.II	12/6/2022	Heptachlorobiphenyls	EPA 680	<	0.04	ug/L	Composite -24hr	Springfield
ERD.II	12/6/2022	Hexachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Springfield
ERD.II	12/6/2022	Monochlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Springfield
ERD.II	12/6/2022	Nonachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Springfield
ERD.II	12/6/2022	Octachlorobiphenyls	EPA 680	<	0.05	ug/L	Composite -24hr	Springfield
ERD.II	12/6/2022	Pentachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Springfield
ERD.II	12/6/2022	Tetrachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Springfield
ERD.II	12/6/2022	Trichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Springfield
GRAVELPK	10/21/2022	Decachlorobiphenyls	EPA 680	<	0.51	ug/L	Composite -24hr	Bensalem
GRAVELPK	10/21/2022	Dichlorobiphenyls	EPA 680	<	0.1	ug/L	Composite -24hr	Bensalem
GRAVELPK	10/21/2022	Heptachlorobiphenyls	EPA 680	<	0.31	ug/L	Composite -24hr	Bensalem
GRAVELPK	10/21/2022	Hexachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
GRAVELPK	10/21/2022	Monochlorobiphenyls	EPA 680	<	0.1	ug/L	Composite -24hr	Bensalem
GRAVELPK	10/21/2022	Nonachlorobiphenyls	EPA 680	<	0.51	ug/L	Composite -24hr	Bensalem
GRAVELPK	10/21/2022	Octachlorobiphenyls	EPA 680	<	0.31	ug/L	Composite -24hr	Bensalem
GRAVELPK	10/21/2022	Pentachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
GRAVELPK	10/21/2022	Tetrachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
GRAVELPK	10/21/2022	Trichlorobiphenyls	EPA 680	<	0.1	ug/L	Composite -24hr	Bensalem
KAY	11/21/2022	Decachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
KAY	11/21/2022	Dichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Bensalem
KAY	11/21/2022	Heptachlorobiphenyls	EPA 680	<	0.04	ug/L	Composite -24hr	Bensalem
KAY	11/21/2022	Hexachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Bensalem
KAY	11/21/2022	Monochlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Bensalem
KAY	11/21/2022	Nonachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Bensalem
KAY	11/21/2022	Octachlorobiphenyls	EPA 680	<	0.05	ug/L	Composite -24hr	Bensalem
KAY	11/21/2022	Pentachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Bensalem
KAY	11/21/2022	Tetrachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Bensalem
KAY	11/21/2022	Trichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Bensalem
KNIGHTS	9/30/2022	Decachlorobiphenyls	EPA 680	<	0.19	ug/L	Composite -24hr	Bensalem
KNIGHTS	9/30/2022	Dichlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
KNIGHTS	9/30/2022	Heptachlorobiphenyls	EPA 680	<	0.039	ug/L	Composite -24hr	Bensalem

Table C1: 2022 Township PCB Summary

PCB Homolog Concentration (µg/L)

KNIGHTS	9/30/2022	Hexachlorobiphenyls	EPA 680	<	0.029	ug/L	Composite -24hr	Bensalem
KNIGHTS	9/30/2022	Monochlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
KNIGHTS	9/30/2022	Nonachlorobiphenyls	EPA 680	<	0.19	ug/L	Composite -24hr	Bensalem
KNIGHTS	9/30/2022	Octachlorobiphenyls	EPA 680	<	0.048	ug/L	Composite -24hr	Bensalem
KNIGHTS	9/30/2022	Pentachlorobiphenyls	EPA 680	<	0.029	ug/L	Composite -24hr	Bensalem
KNIGHTS	9/30/2022	Tetrachlorobiphenyls	EPA 680	<	0.029	ug/L	Composite -24hr	Bensalem
KNIGHTS	9/30/2022	Trichlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
RIDGE	12/6/2022	Decachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Springfield
RIDGE	12/6/2022	Dichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Springfield
RIDGE	12/6/2022	Heptachlorobiphenyls	EPA 680	<	0.039	ug/L	Composite -24hr	Springfield
RIDGE	12/6/2022	Hexachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Springfield
RIDGE	12/6/2022	Monochlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Springfield
RIDGE	12/6/2022	Nonachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Springfield
RIDGE	12/6/2022	Octachlorobiphenyls	EPA 680	<	0.049	ug/L	Composite -24hr	Springfield
RIDGE	12/6/2022	Pentachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Springfield
RIDGE	12/6/2022	Tetrachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Springfield
RIDGE	12/6/2022	Trichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Springfield
THOMAS	12/6/2022	Decachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Springfield
THOMAS	12/6/2022	Dichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Springfield
THOMAS	12/6/2022	Heptachlorobiphenyls	EPA 680	<	0.04	ug/L	Composite -24hr	Springfield
THOMAS	12/6/2022	Hexachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Springfield
THOMAS	12/6/2022	Monochlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Springfield
THOMAS	12/6/2022	Nonachlorobiphenyls	EPA 680	<	0.2	ug/L	Composite -24hr	Springfield
THOMAS	12/6/2022	Octachlorobiphenyls	EPA 680	<	0.05	ug/L	Composite -24hr	Springfield
THOMAS	12/6/2022	Pentachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Springfield
THOMAS	12/6/2022	Tetrachlorobiphenyls	EPA 680	<	0.03	ug/L	Composite -24hr	Springfield
THOMAS	12/6/2022	Trichlorobiphenyls	EPA 680	<	0.02	ug/L	Composite -24hr	Springfield
TOWNSEND	11/3/2022	Decachlorobiphenyls	EPA 680	<	0.19	ug/L	Composite -24hr	Bensalem
TOWNSEND	11/3/2022	Dichlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
TOWNSEND	11/3/2022	Heptachlorobiphenyls	EPA 680	<	0.038	ug/L	Composite -24hr	Bensalem
TOWNSEND	11/3/2022	Hexachlorobiphenyls	EPA 680	<	0.029	ug/L	Composite -24hr	Bensalem
TOWNSEND	11/3/2022	Monochlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
TOWNSEND	11/3/2022	Nonachlorobiphenyls	EPA 680	<	0.19	ug/L	Composite -24hr	Bensalem
TOWNSEND	11/3/2022	Octachlorobiphenyls	EPA 680	<	0.048	ug/L	Composite -24hr	Bensalem
TOWNSEND	11/3/2022	Pentachlorobiphenyls	EPA 680	<	0.029	ug/L	Composite -24hr	Bensalem
TOWNSEND	11/3/2022	Tetrachlorobiphenyls	EPA 680	<	0.029	ug/L	Composite -24hr	Bensalem
TOWNSEND	11/3/2022	Trichlorobiphenyls	EPA 680	<	0.019	ug/L	Composite -24hr	Bensalem
TREVRD	11/21/2022	Decachlorobiphenyls	EPA 680	<	0.21	ug/L	Composite -24hr	Bensalem

Table C1: 2022 Township PCB Summary

PCB Homolog Concentration (µg/L)

TREVRD	11/21/2022	Dichlorobiphenyls	EPA 680	<	0.021	ug/L	Composite -24hr	Bensalem
TREVRD	11/21/2022	Heptachlorobiphenyls	EPA 680	<	0.041	ug/L	Composite -24hr	Bensalem
TREVRD	11/21/2022	Hexachlorobiphenyls	EPA 680	<	0.031	ug/L	Composite -24hr	Bensalem
TREVRD	11/21/2022	Monochlorobiphenyls	EPA 680	<	0.021	ug/L	Composite -24hr	Bensalem
TREVRD	11/21/2022	Nonachlorobiphenyls	EPA 680	<	0.21	ug/L	Composite -24hr	Bensalem
TREVRD	11/21/2022	Octachlorobiphenyls	EPA 680	<	0.052	ug/L	Composite -24hr	Bensalem
TREVRD	11/21/2022	Pentachlorobiphenyls	EPA 680	<	0.031	ug/L	Composite -24hr	Bensalem
TREVRD	11/21/2022	Tetrachlorobiphenyls	EPA 680	<	0.031	ug/L	Composite -24hr	Bensalem
TREVRD	11/21/2022	Trichlorobiphenyls	EPA 680	<	0.021	ug/L	Composite -24hr	Bensalem

Appendix F – PWD Quarterly Dry Weather Water Quality Monitoring Program

Background

In 2009, the Philadelphia Water Department (PWD) initiated a dry weather water quality sampling program designed to work in tandem with the continuous data collection efforts of the PWD/USGS Cooperative Continuous Water Quality Monitoring Program. Grab samples are collected from 10 sites covering all six of Philadelphia County's watersheds on a quarterly basis by the staff of PWD's Bureau of Laboratory Services (BLS). Data collected through this program are most pertinent to Target A (Dry Weather Water Quality & Aesthetics) of PWD's Integrated Watershed Management Plan (IWMP) Strategy, as outlined in the following section.

The IWMP Target Strategy

IWMPs are designed to meet the goals and objectives of numerous water resources-related regulations and programs. Each IWMP results in a series of implementation recommendations that utilize adaptive management approaches to achieve measurable, watershed-wide benefits. By working with stakeholder groups to prioritize goals and evaluate options, PWD has learned that stakeholder priorities can at times differ from those identified by the data-driven problem identification process. This can present challenges in development and approval of a management alternative for watershed implementation. PWD has developed an approach that addresses what often emerges as a set of high-priority stakeholder concerns while simultaneously addressing the scientifically defined priorities.

By defining three distinct targets to meet the overall plan objectives, priorities identified by stakeholders can be addressed simultaneously with those identified through scientific data. Two of the targets were defined so they could be fully met through implementation of a limited set of options, while the third target would be best addressed through an adaptive management approach. In addition to the three targets, a fourth category has been developed to capture the more programmatic implementation options related to planning, outreach, reporting and continuation of the Watershed Partnership.

Targets are defined here as groups of objectives that each focus on a different problem related to the urban stream system. They can be thought of as different parts of the ultimate goal of fishable and swimmable waters through improved water quality, more natural flow patterns and restored aquatic and riparian habitat. Targets are specifically designed to help focus plan implementation. By defining these targets and designing alternatives and an implementation plan to address the targets simultaneously, the plan will have a greater likelihood of success. It also achieves some of the objectives within a relatively short time frame, providing incentives to the communities and agencies involved in the restoration, as

3 Targets of the IWMP

- Aesthetically appealing, accessible streams during dry weather
- Improved stream habitat for fish and macroinvertebrates
- Wet weather water quality that meets fishable and swimmable criteria

well as immediate benefits to the people living in the watershed. PWD's IWMP planning targets are defined below:

Program Support

A number of implementation options deemed appropriate for a given watershed are "programmatic" in nature. While these options may support achievement of Targets A, B, and/or C, implementation of these options alone would not result in achievement of a particular target. These "Program Support" associated options include items such as monitoring, reporting, feasibility studies, outreach/education, and continuation of the Watershed Partnership.

Target A: Dry Weather Water Quality and Aesthetics

Streams should be aesthetically appealing (look and smell good), accessible to the public, and an amenity to the community. Target A was defined with a focus on eliminating sources of sewage discharge and other pollution during dry weather, along with trash removal and litter prevention. Access and interaction with the stream during dry weather has the highest priority, because dry weather flows occur about 60-65% of the time during the course of a year. These are also times when the public is most likely to be near or in contact with the stream. In dry weather, stream water quality should be similar to background concentrations in groundwater, particularly with respect to bacteria.

Target B: Healthy Living Resources

Improvements to the number, health, and diversity of benthic macroinvertebrate and fish species need to focus on habitat improvement and the creation of refuges for organisms to avoid high velocities during storms. Fluvial geomorphological studies, wetland and streambank restoration/creation projects, and stream modeling should be combined with continued biological monitoring to ensure that correct procedures are implemented to increase habitat heterogeneity within the aquatic ecosystem.

Figure 1. Eroded stream bank at Poquessing Creek

Improving the ability of an urban stream to support viable habitat and fish populations focuses primarily on the elimination or remediation of the more obvious impacts of urbanization on the stream. These include loss of riparian habitat, eroding and undercut banks, scoured streambed or excessive sediment deposits, channelized and armored stream sections, trash buildup, and invasive species. Thus, the primary tool to accomplish Target B is stream restoration.

Target C: Wet Weather Water Quality and Quantity

The third target is to restore water quality to meet fishable and swimmable criteria during wet weather. Improving water quality and flow conditions during and after storms is the most difficult target to meet in the urban environment. During wet weather, extreme increases in streamflow are common, accompanied by short-term changes in water quality. Where water quality and quantity problems exist, options may be identified that address both. Any stormwater management practice that increases infiltration or detains flow will help decrease the frequency of damaging floods; however, the size of such structures may need to be increased in areas where flooding is a major concern. (Reductions in the frequency of erosive flows and velocities will also help protect the investment in stream restoration made as part of Target B.)

Target C must be approached somewhat differently from Targets A and B. Full achievement of this target means meeting all water quality standards during wet weather, as well as elimination of flood-related issues. Meeting these goals will be difficult. It will be expensive and requires a long-term effort. A rational approach to achieve this target includes stepped implementation with interim goals for reducing wet weather pollutant loads and stormwater flows, along with monitoring for the efficacy of control measures.

Monitoring Locations

Water quality samples are taken at 10 USGS gage sites in the USGS/PWD Cooperative Monitoring Program (Figure 2). Site identification codes used by PWD's Bureau of Laboratory Services (BLS) and rivermile-based site ID codes are presented alongside USGS gage station numbers in Table 1. USGS stream gaging stations are ideal monitoring points as they allow discrete sample data to be coupled with continuous discharge data being collected year-round at these sites for loading estimate purposes. Furthermore, grab sample results and field meter readings taken at the time of grab sampling may be invaluable when evaluating continuous water quality data from these USGS gages.

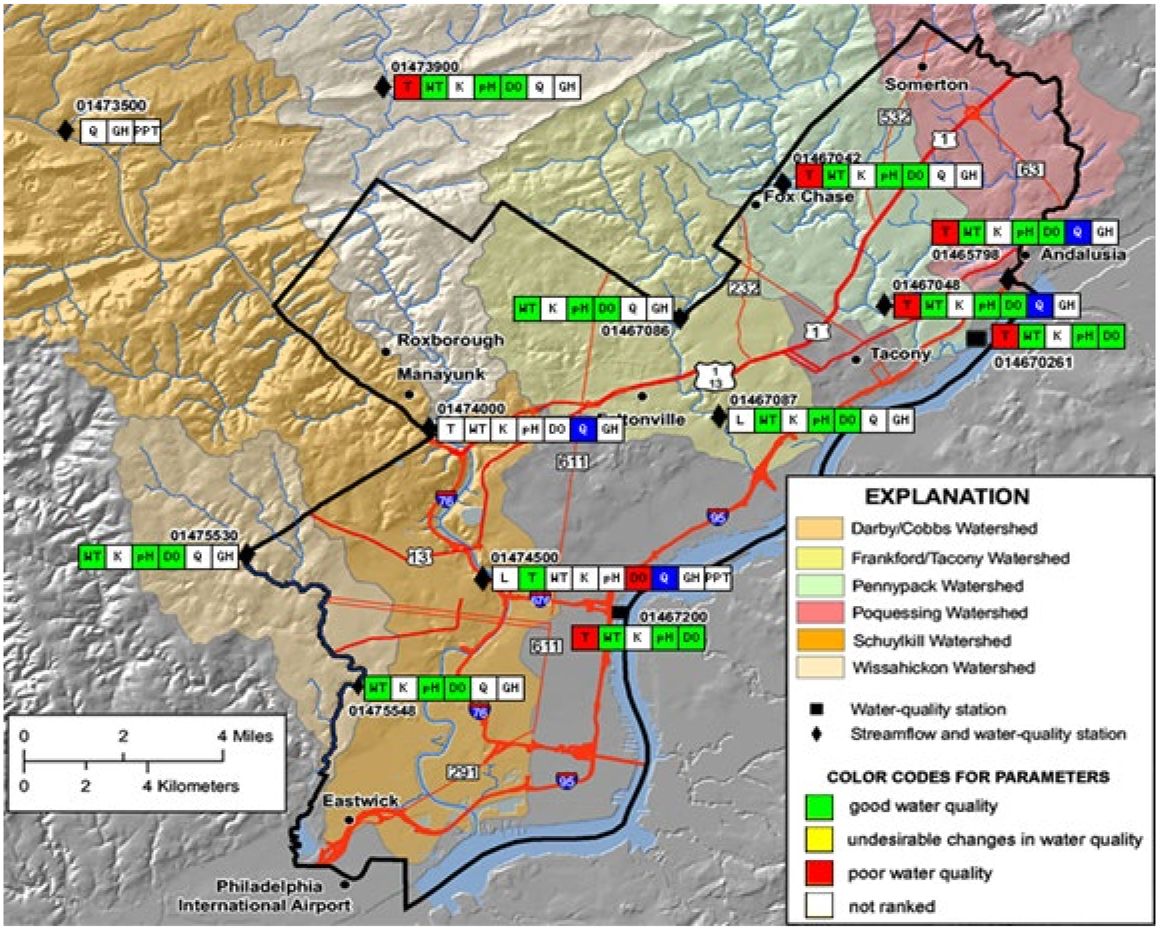


Figure 2. Philadelphia Water Quality Gage Stations as Viewed on Cooperative USGS-PWD Website (https://www.usgs.gov/centers/pa-water/science/philadelphia-water-resources-monitoring-program)

PWD is implementing a City-wide approach to dry weather water quality monitoring, rather than focusing on an individual watershed. Because a number of Green Stormwater Infrastructure (GSI) and other stormwater management projects are in the early stages of implementation, water quality benefits will only be observable over a period of several years.

Table 1. Monitoring Locations in the PWD/USGS Cooperative Program with Location IDs used by

PWD Bureau of Laboratory Services and River Mile-Based Site IDs

Description	USGS Gage #	BLS Location ID	Site ID
Cobbs Creek at US Rte. 1 (City Line Ave.)	01475530	COBB700	DCC770
Cobbs Creek at Mt. Moriah Cemetery	01475548	COBB355	DCC251
Schuylkill River at Fairmount Dam	01474500	SCHU154	SC825
Wissahickon Creek at Ft Washington (Rte. 73)	01473900	WISS500	WS1075
Wissahickon Creek at Ridge Ave.	01474000	WISS130	WS076
Tacony Creek at Castor Ave.	01467087	TACO250	TF280
Tacony Creek at Adams Ave.	01467086	TACO435	TF597
Pennypack Creek at Pine Rd.	01467042	PENN407	PP993
Pennypack Creek at Rhawn St.	01467048	PENN175	PP340
Poquessing Creek at Grant Ave.	01465798	POQU150	PQ050

Gauging the success of such projects on a more immediate scale is best accomplished solely by hydrological analysis. Therefore, the strategic value of the widespread sampling approach is that as more GSI projects are completed over the coming years, the water quality data should gradually begin to reflect their positive environmental impacts.

Quarterly Dry Weather Monitoring July 2009 – June 2023

Sample Collection Dates

This report summarizes cumulative results from 55 sets of quarterly grab samples that were collected from June 2009 through June 2023. Samples were categorized by season (winter, spring, summer, fall) as well as according to PA DEP seasonal recreational use water quality criteria for interpretation of microbial sample results (Non-Swimming season or Swimming season) (Table 2).

Table 2. Quarterly Dry Weather Grab Sample Dates

Sample Date	Season	Recreational Use Season	Sample Date	Season	Recreational Use Season
30-Jun-09	summer	Swimming	12-Jul-16	summer	Swimming
02-Oct-09	fall	Non-Swimming	22-Sep-16	fall	Swimming
17-Dec-09	winter	Non-Swimming	10-Jan-17	winter	Non-Swimming
11-Mar-10	spring	Non-Swimming	20-Apr-17	spring	Non-Swimming
22-Jun-10	summer	Swimming	11-Jul-17	summer	Swimming
15-Sep-10	fall	Swimming	13/22-Sep-17	fall	Swimming
20-Dec-10	winter	Non-Swimming	28-Feb-18	winter	Non-Swimming
29-Mar-11	spring	Non-Swimming	02-May-18	spring	Swimming
27-Jun-11	summer	Swimming	10-Jul-18	summer	Swimming
15-Sep-11	fall	Swimming	24-Oct-18	fall	Non-Swimming
13-Dec-11	winter	Non-Swimming	17-Jan-19	winter	Non-Swimming
20-Mar-12	spring	Non-Swimming	20-Mar-19	spring	Non-Swimming
18-Jun-12	spring	Swimming	31-Jul-19	summer	Swimming
26-Sep-12	fall	Swimming	2-Oct-19	fall	Non-Swimming
02-Jan-13	winter	Non-Swimming	29-Jan-20	winter	Non-Swimming
04-Apr-13	spring	Non-Swimming	17-Jun-20	summer	Swimming
17-Jul-13	summer	Swimming	5-Oct-20	fall	Non-Swimming
26-Sep-13	fall	Swimming	10-Dec-20	winter	Non-Swimming
17-Jan-14	winter	Non-Swimming	29-Apr-21	spring	Non-Swimming
26-Mar-14	spring	Non-Swimming	28-Jul-21	summer	Swimming
17-Jun-14	spring	Swimming	4-Nov-21	fall	Non-Swimming
23-Sep-14	fall	Swimming	16-Dec-21	winter	Non-Swimming
19-Dec-14	winter	Non-Swimming	25-Apr-22	spring	Non-Swimming
18-Mar-15	spring	Non-Swimming	14- Jul_22	summer	Swimming
23-Jun-15	summer	Swimming	2-Feb-23	winter	Non-Swimming
6-Oct-15	fall	Non-Swimming	4-Apr-23	spring	Non-Swimming
6-Jan-16	winter	Non-Swimming	20-Jun-23	spring	Swimming
20-Apr-16	spring	Non-Swimming			

Nutrient Analysis

The macronutrients phosphorus and nitrogen are essential to the growth and overall survival of all plants. However, when occurring in surplus they can be extremely detrimental to aquatic ecosystems, and in turn to the human population that utilizes these water bodies for drinking water and recreational activities such as fishing, boating, and swimming. Elevated nutrient concentrations in rivers and streams can most often be attributed to anthropogenic pollution sources. In these situations, the most common sources of both nutrients are runoff from fertilized lawns/farmland and wastewater discharge.

The most immediate result of excessive nutrient concentrations in any natural water body is excessive plant growth, seen in a variety of growth forms from suspended algae to aquatic macrophytes. As the first step in the process of eutrophication, this unnatural acceleration of aquatic plant growth can start a chain reaction leading to highly adverse effects to that ecosystem. For example, in small shallow streams, unnaturally high densities of algal periphyton can cause pronounced fluctuations in dissolved oxygen and pH and also adversely affect aquatic habitat by forming thick mats of filamentous algae or algal scums on stream substrates. Moreover, alteration of the algal community structure can lead to the proliferation of nuisance taxa, taste and odor problems in the drinking water supply, increased water treatment costs and, in rare cases, production of toxins (*e.g.*, from cyanobacteria blooms). As a result of these direct and indirect responses, streams and rivers can suffer severe impacts to both aquatic biodiversity and human recreational use.

It should be noted that several phosphorus-containing compounds, known as polyphosphates, can be found in the region’s waterways, but they are naturally occurring and are present due to the geologic composition of the area. Furthermore, these polyphosphates pose little ecological threat as they are not present in a biologically available form. Only over long periods of time can these compounds be broken down into orthophosphates, which plants and algae can absorb and utilize for growth. Therefore, aside from the relatively minor contributions of the region’s geology, the most significant source of orthophosphates in rivers and streams is human-generated pollution. It is for this reason that orthophosphates, along with nitrates, are included as components of this water quality monitoring program. These forms of N and P are readily available to stream producers.

Ammonia, present in surface waters as un-ionized ammonia gas (NH_3) or as ammonium ion (NH_4^+), is produced by deamination of organic nitrogen-containing compounds such as proteins, and also by hydrolysis of urea. In the presence of oxygen, ammonia is converted to nitrate (NO_3^-) by a pair of bacteria-mediated reactions, together known as the process of nitrification. Nitrification occurs quickly in oxygenated waters with sufficient densities of nitrifying bacteria, effectively reducing ammonia concentration, although at the expense of increased NO_3^- concentration. Ammonia is a primary form of nitrogen produced from excretory waste products and other organic material in sewage. Thus, presence of ammonia can be an indicator of sewage pollution. As ammonia is converted to nitrate in oxygenated streams, ammonia is a non-conservative pollution indicator that tends to decrease in concentration with increasing distance from the source of pollution. PA DEP water quality criteria for NH_3 reflect the relationship between stream pH, temperature, and ammonia dissociation. Ammonia toxicity is inversely related to hydrogen ion [H^+] concentration (*e.g.*, an increase in pH from 7 to 8 increases NH_3 toxicity by approximately an order of magnitude). At pH 9.5 and above, even background concentrations of NH_3 may be considered potentially toxic.

Ammonia may be introduced to streams through fertilizers, breakdown of natural organic material, stables and livestock operations, stormwater runoff, and in some cases from more serious anthropogenic sources of untreated sewage such as defective laterals, crossed/illicit connections, and sanitary sewer overflows (SSOs). PWD has established intensive field infrastructure trackdown, infrared photography, sewer camera monitoring, and dye testing programs to identify and correct these problems where and when they occur.

Nutrient Results

Nutrient data collected thus far at each of the sites are generally consistent with the data collected for Comprehensive Characterization Reports (CCRs) prepared for each of the respective watersheds. Five of 10 sites are not affected by treated wastewater discharges and usually had orthophosphate concentration less than the reporting limit. The reporting limit for the majority of samples was 0.028 mg/L, but limits of 0.1 mg/L, 0.05 mg/L, and 0.09 mg/L were also in effect at various times during the quarterly grab sampling program (Table 3). Conversely, Pennypack and Wissahickon creeks had multiple instances of elevated orthophosphate concentration, which is likely attributable to point source discharge of treated wastewater. Dilution effects were seen between upstream and downstream gages, particularly in the cases of Pennypack and Wissahickon creeks.

Though the Schuylkill River sampling station is downstream from several discharges of treated wastewater, nutrient concentrations are generally smaller than those observed from the Pennypack and Wissahickon creeks, perhaps reflecting the Schuylkill station’s much larger overall watershed size and dilution capacity.

Table 3. Orthophosphate Summary Statistics and Assessments. (Concentrations in mg/L)

Gage	Mean	Median	Std. dev.	Min.	Max.	n	n, non-detects	Exceedances	Possible Exceedances	Assessment
01465798	0.053	0.05	0.03	0.013	0.164	55	40	9	39	Needs more evaluation
01467042	0.319	0.245	0.201	0.099	0.953	53	0	48	0	Non-attaining
01467048	0.225	0.176	0.153	0.053	0.852	55	0	51	0	Non-attaining
01467086	0.055	0.05	0.051	0	0.363	54	38	10	37	Needs more evaluation
01467087	0.059	0.05	0.035	0.011	0.201	55	33	14	33	Needs more evaluation
01473900	0.297	0.271	0.131	0.05	0.723	55	1	51	1	Non-attaining
01474000	0.172	0.16	0.069	0.05	0.457	55	3	48	3	Non-attaining
01474500	0.155	0.121	0.092	0.05	0.477	55	5	47	5	Non-attaining
01475530	0.052	0.05	0.031	0.013	0.165	55	39	8	39	Needs more evaluation
01475548	0.055	0.05	0.034	0	0.188	54	40	10	34	Needs more evaluation

Summary statistics for the orthophosphate samples, including results from the application of the PA DEP Chemistry Statistical Assessments protocol (PA DEP, 2007), are shown in Table 3. Exceedances were evaluated relative to the US EPA (2000) Subecoregion 64 guideline for orthophosphate of 0.02625 mg/L, *i.e.*, the median of the 25th percentile seasonal concentrations. Since the detection limit in past analyses has often been greater than the guideline, all non-detected samples were considered "possible exceedances." The nonparametric statistical assessment results show that the locations at Pennypack and Wissahickon creeks, and the Schuylkill River, failed to attain water quality consistent with this guideline. The other locations are classified as needing further evaluation due to the predominance of samples below the detection limit that are all possible exceedances. Figures 3-4 show the variability of orthophosphate results at each site.

Similar examples of wastewater discharge impacts and upstream/downstream dilution have also begun to emerge with regard to the nitrate data that have been collected. The data seem to indicate a trend toward decreased nitrate concentrations during warmer months, which would correspond to the increased uptake of nutrients by plant life during those growing seasons. The only exceptions are the Pennypack and Wissahickon Creek gage sites, which as previously stated are directly impacted by treated wastewater discharge.

Summary statistics for the nitrate samples, including results from application of the PA DEP Chemistry Statistical Assessment protocol (PA DEP, 2007), are shown in Table 4 and Figures 5-6. Exceedances were evaluated relative to a) the PA DEP water quality standard for nitrite and nitrate of 10 mg/L, and b) the US EPA (2000) subecoregion 64 guideline for nitrite and nitrate of 0.995 mg/L, *i.e.*, the median of the 25th percentile seasonal concentrations. The nonparametric statistical assessment results show that with respect to the PA DEP standard, all locations were in attainment except the upstream Wissahickon gage. Two exceedances have been observed at that site, and more data is needed to make an evaluation. All sites failed to attain water quality consistent with the US EPA subecoregion-based guideline.

Quarterly dry-weather analysis of ammonia began in the fall of 2011. PWD laboratory reporting limits for ammonia fluctuated based on the performance of lab analytical equipment with spiked and blank samples. Ammonia concentration detection limits were 0.5 mg/L for the fall 2011 sample set, and the subsequent sample set results usually had detection limits of 0.1 mg/L or 0.167 mg/L. The downstream Tacony site (01467087) most often exceeded the detection limit, where a maximum concentration of 0.4 mg/L was observed in both fall 2014 and summer 2015. Results are shown in Table 5 and Figures 7-8.

There were no observed violations of ammonia water quality criteria at any site during this period of dry-weather monitoring. With a majority of the sample results characterized as non-detects due to laboratory reporting limits, ammonia criteria were calculated with corresponding temperature and pH values to determine if possible exceedances existed (i.e., the criteria fell below the detection limit). None of the non-detect samples had the potential to violate water quality criteria.

Table 4. Nitrate Summary Statistics and Assessments. Concentrations are in mg/L.

Gage	Mean	Median	Std. dev.	Min.	Max.	n	n, non-detects	Exceedances, PADEP	Exceedances, Subecoregion	PADEP Assessment	EPA Subecoregion Assessment
01465798	1.74	1.68	0.52	0.80	3.75	53	0	0	52	Attaining	Non-attaining
01467042	4.48	4.18	0.92	3.14	7.94	51	0	0	51	Attaining	Non-attaining
01467048	3.63	3.50	0.97	1.21	6.33	53	0	0	53	Attaining	Non-attaining
01467086	2.49	2.31	1.12	1.51	9.74	52	0	0	52	Attaining	Non-attaining
01467087	1.83	1.81	0.67	0.51	3.37	54	0	0	54	Attaining	Non-attaining
01473900	6.03	5.64	1.99	2.69	12.04	52	0	2	52	Needs more evaluation	Non-attaining
01474000	4.02	4.01	0.92	1.29	6.18	54	0	0	54	Attaining	Non-attaining
01474500	2.97	2.91	0.46	2.14	4.16	54	0	0	54	Attaining	Non-attaining
01475530	2.98	2.99	0.41	2.12	4.45	54	0	0	54	Attaining	Non-attaining
01475548	2.50	2.44	0.52	1.40	3.50	53	0	0	53	Attaining	Non-attaining

Table 5. Ammonia Summary Statistics and Assessments. Concentrations are in mg/L.

Gage	Mean	Median	Std. dev.	Min.	Max.	n	n, non-detects	Exceedances
01465798	0.13	0.1	0.09	0.025	0.5	46	35	0
01467042	0.132	0.1	0.094	0.022	0.5	46	38	0
01467048	0.132	0.1	0.094	0.022	0.5	46	37	0
01467086	0.127	0.1	0.09	0.02	0.5	46	39	0
01467087	0.169	0.164	0.108	0.028	0.5	46	26	0
01473900	0.131	0.1	0.094	0.023	0.5	46	39	0
01474000	0.127	0.1	0.09	0.024	0.5	46	40	0
01474500	0.138	0.1	0.088	0.026	0.5	46	33	0
01475530	0.126	0.1	0.091	0.023	0.5	46	40	0
01475548	0.126	0.1	0.091	0.022	0.5	45	36	0

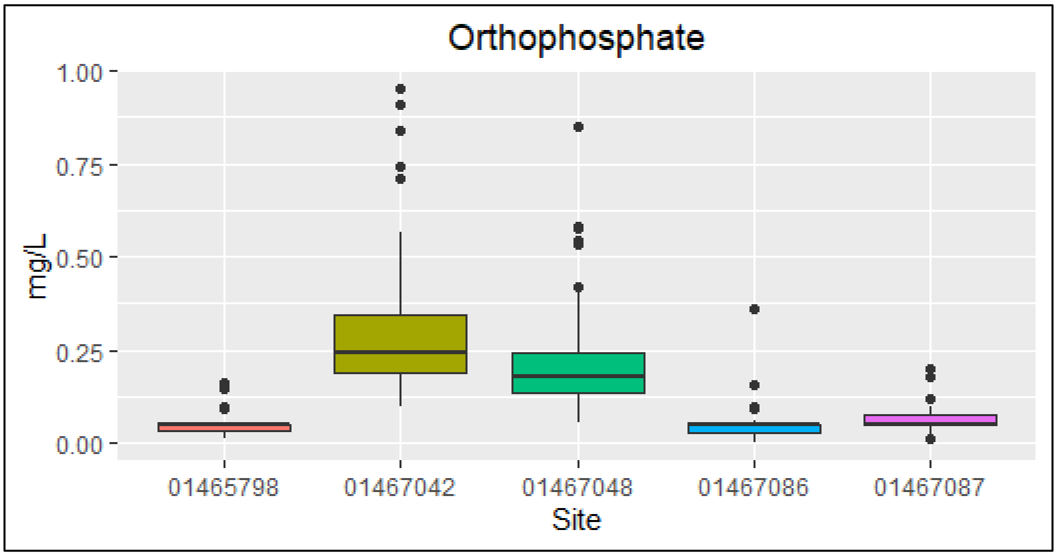


Figure 1. Orthophosphate concentration at 5 USGS gage stations, July 2009-June 2023

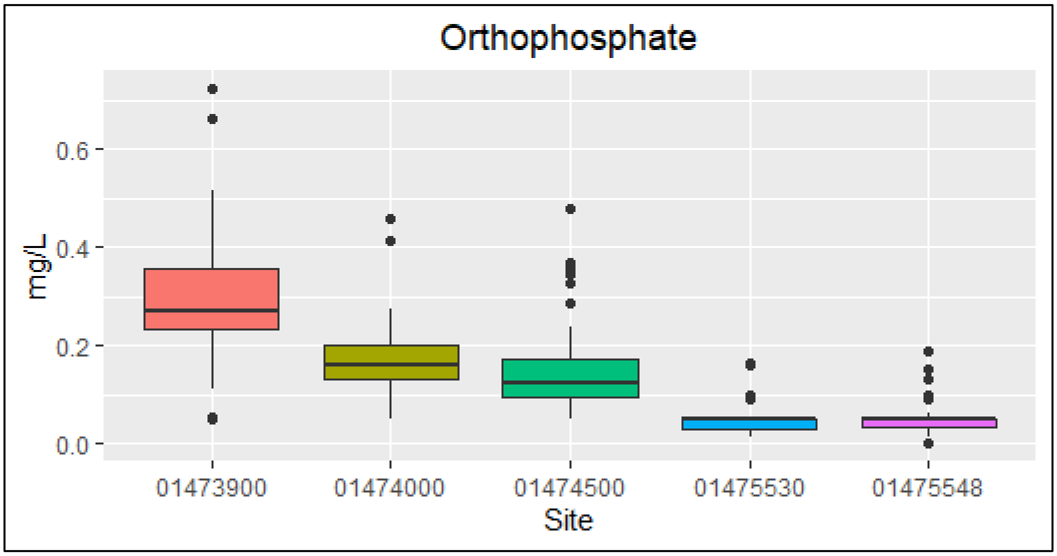


Figure 4. Orthophosphate concentration at 5 USGS gage stations, July 2009-June 2023

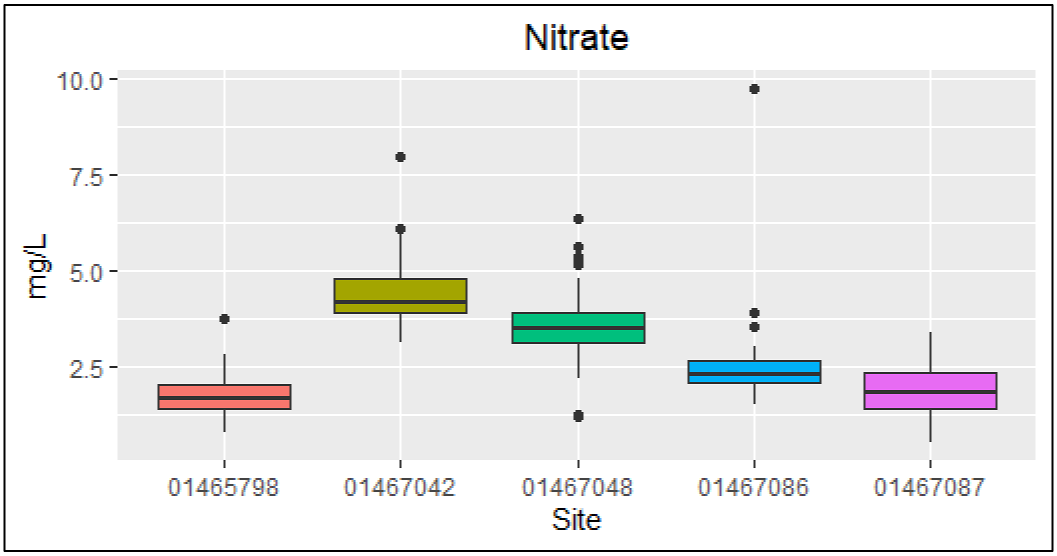


Figure 5. Nitrate concentration at 5 USGS gage stations, July 2009-June 2023

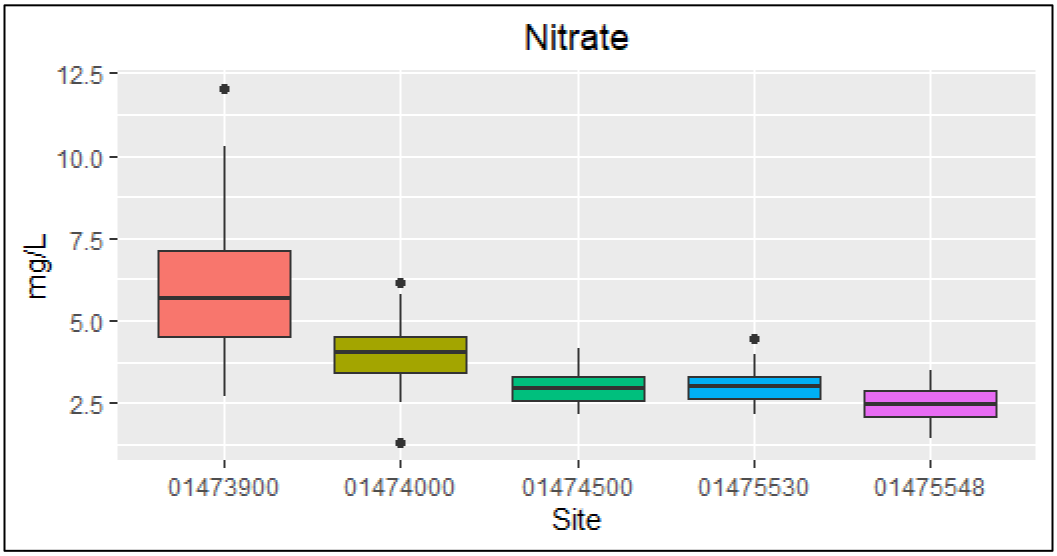


Figure 6. Nitrate concentration at 5 USGS gage stations, July 2009-June 2023

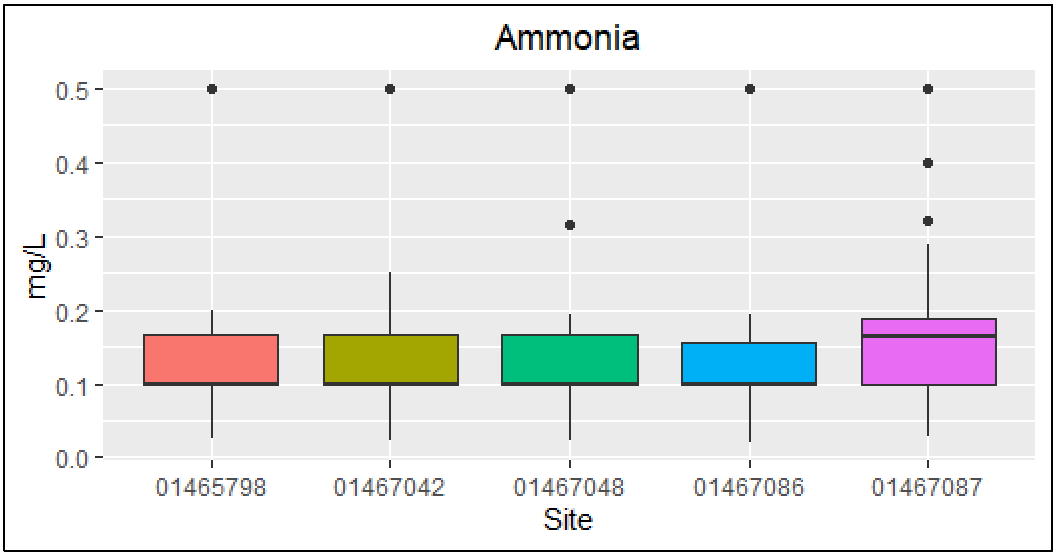


Figure 7. Ammonia concentration at 5 USGS gage stations, September 2011-June 2023

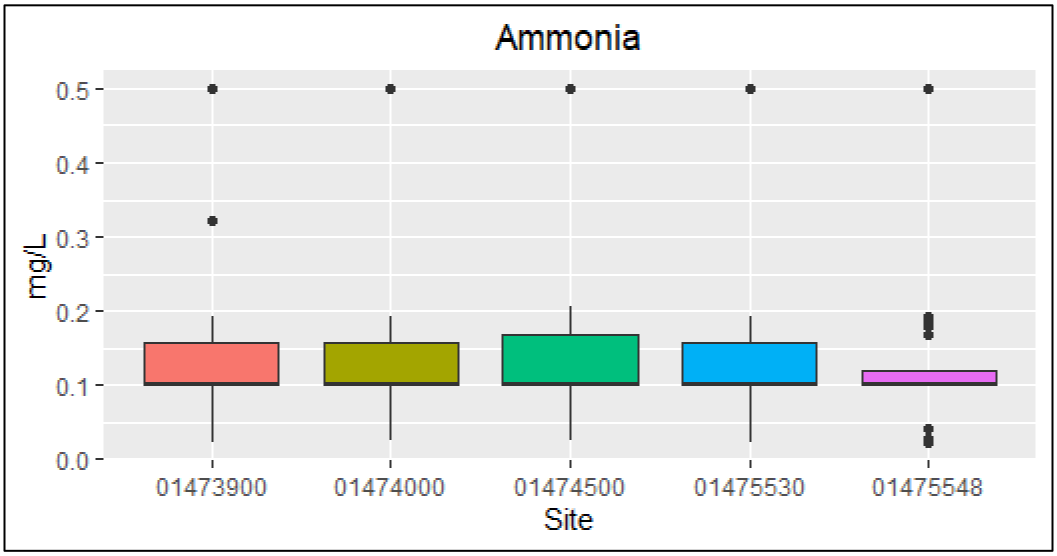


Figure 8. Ammonia concentration at 5 USGS gage stations, September 2011-June 2023

Microbial Analysis

Fecal indicator bacteria, found naturally in the gut of warm-blooded animals, can be used in the detection of human or animal waste contamination in a body of water. While these bacteria themselves are generally harmless to humans, they are considered to be very reliable indicators of the presence of other, more serious fecal-borne pathogens such as viruses, protozoa and other bacteria. The extent to which a water body is contaminated with fecal indicator bacteria can indicate the likelihood that the water has been contaminated by human or animal wastes. In urban environments, the most likely dry weather pollution sources are domestic animals, wildlife and untreated sewage from improperly connected or leaking sanitary sewers.

PWD performs fecal indicator bacteria tests for fecal coliform and *E. coli*. The fecal coliform test covers a relatively wide subgroup of fecal-specific bacteria; however, it does include some species that are not necessarily fecal in origin. *E. coli*, on the other hand, is a single coliform species that is noteworthy due to the fact that it occurs only in the fecal matter of humans and other warm-blooded animals. This qualifies *E. coli* as an excellent indicator of human waste.

Microbial Analysis Results

PA DEP has established seasonal bacteria water quality criteria that are more stringent in warmer months, or the "swimming season." For the period May 1 through September 30, water quality standards require that the geometric mean of a group of at least five samples collected on non-consecutive days over a 30-day period not exceed 126 *E. coli* CFU (colony forming unit) per 100mL. In addition, there should not be greater than a 10% excursion frequency of 410 CFU per 100 mL for the samples collected in the same 30-day interval. Although PWD does not typically collect five or more *E. coli* samples at USGS gage sites within a 30-day period, Table 6 calculates a geometric mean of quarterly grab samples for the swimming and non-swimming seasons. Results of microbial analyses from the swimming season samples generally indicate *E. coli* geometric means greater than 126 CFU/100mL (Table 6). The only exceptions were the downstream Wissahickon Creek and Schuylkill River gage sites, which each had *E. coli* geometric means less than 126 CFU/100mL. Figures 9-10 show the variability of *E. coli* results at each site.

During the non-swimming season, water quality criteria for fecal coliform apply. The maximum fecal coliform level during the non-swimming season is a geometric mean of 2,000 CFU per 100 mL. All sites achieved the less stringent standard for fecal coliform during the non-swimming season (Table 7). Figures 11-12 show the variability of fecal coliform results at each site.

Table 6. *E. coli* Geometric Mean Results and PA DEP Water Quality Recreational Use Criteria Achievement Status During Swimming Season

Gage	n	n, non-detects	Geometric mean (CFU/100 mL)	Season	Attaining Standard
01465798	32	1	212	non-swimming	NA
01465798	22	0	502	swimming	No
01467042	32	1	68	non-swimming	NA
01467042	22	0	350	swimming	No
01467048	32	0	363	non-swimming	NA
01467048	22	0	884	swimming	No
01467086	32	0	249	non-swimming	NA
01467086	22	0	767	swimming	No
01467087	31	0	393	non-swimming	NA
01467087	22	0	509	swimming	No
01473900	32	0	92	non-swimming	NA
01473900	22	0	310	swimming	No
01474000	32	1	53	non-swimming	NA
01474000	22	0	103	swimming	Yes
01474500	32	2	37	non-swimming	NA
01474500	22	2	43	swimming	Yes
01475530	32	1	87	non-swimming	NA
01475530	22	0	285	swimming	No
01475548	32	1	204	non-swimming	NA
01475548	21	0	622	swimming	No

Table 7. Fecal Coliform Geometric Mean Results and PA DEP Water Quality Recreational Use Criteria Achievement Status During Non-Swimming Season

Gage	n	n, non-detects	Geometric mean (CFU/100 mL)	Season	Attaining Standard
01465798	32	1	151	non-swimming	Yes
01465798	22	0	499	swimming	NA
01467042	32	1	59	non-swimming	Yes
01467042	22	0	337	swimming	NA
01467048	32	0	283	non-swimming	Yes
01467048	22	1	938	swimming	NA
01467086	32	0	196	non-swimming	Yes
01467086	22	0	1031	swimming	NA
01467087	31	0	350	non-swimming	Yes
01467087	22	0	590	swimming	NA
01473900	32	0	77	non-swimming	Yes
01473900	22	0	273	swimming	NA
01474000	32	1	47	non-swimming	Yes
01474000	22	0	118	swimming	NA
01474500	32	1	31	non-swimming	Yes
01474500	22	2	42	swimming	NA
01475530	32	1	80	non-swimming	Yes
01475530	22	0	301	swimming	NA
01475548	32	0	169	non-swimming	Yes
01475548	21	0	810	swimming	NA

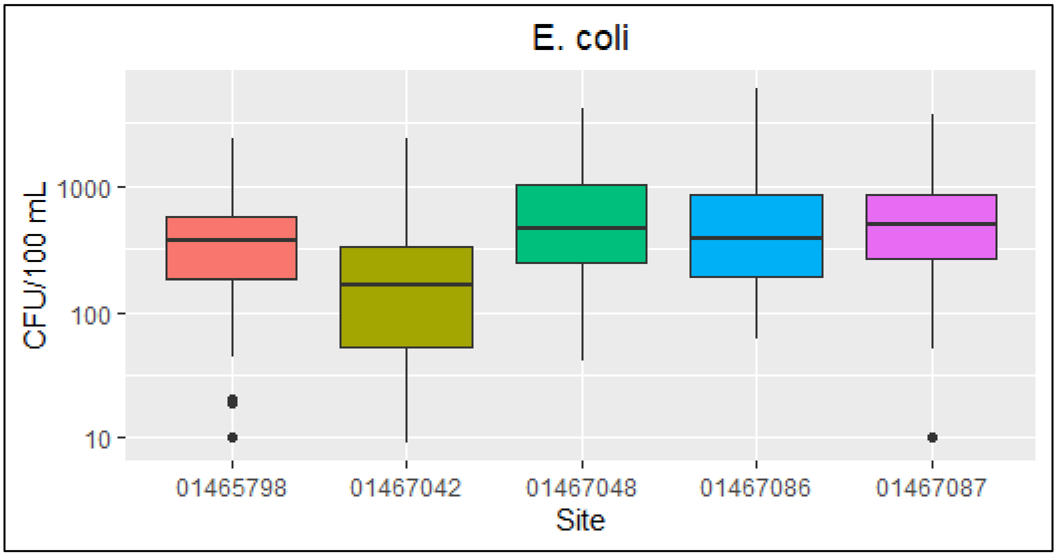


Figure 9. E. coli results at 5 USGS gage stations, July 2009-June 2023

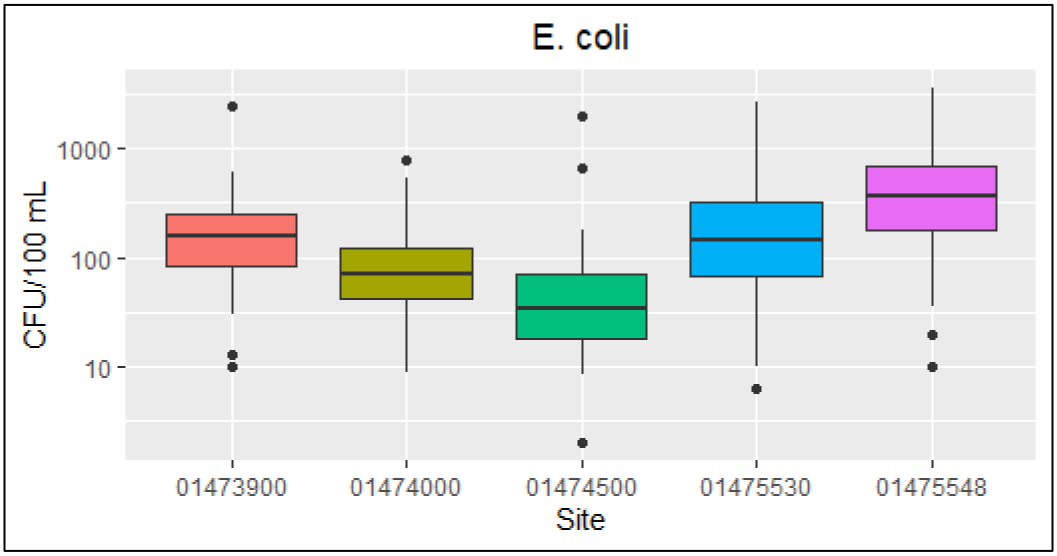


Figure 10. E. coli results at 5 USGS gage stations, July 2009-June 2023

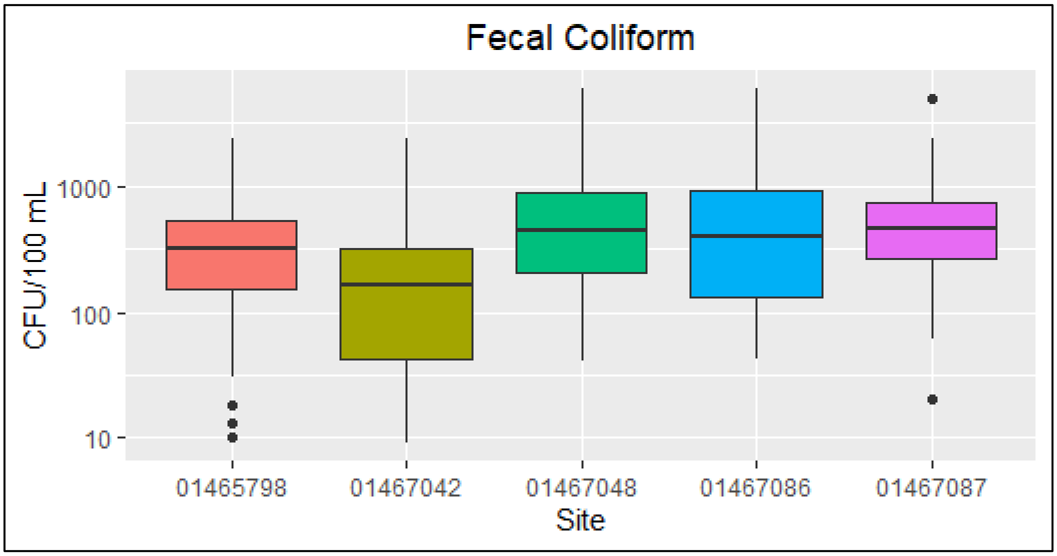


Figure 11. Fecal Coliform results at 5 USGS gage stations, July 2009-June 2023

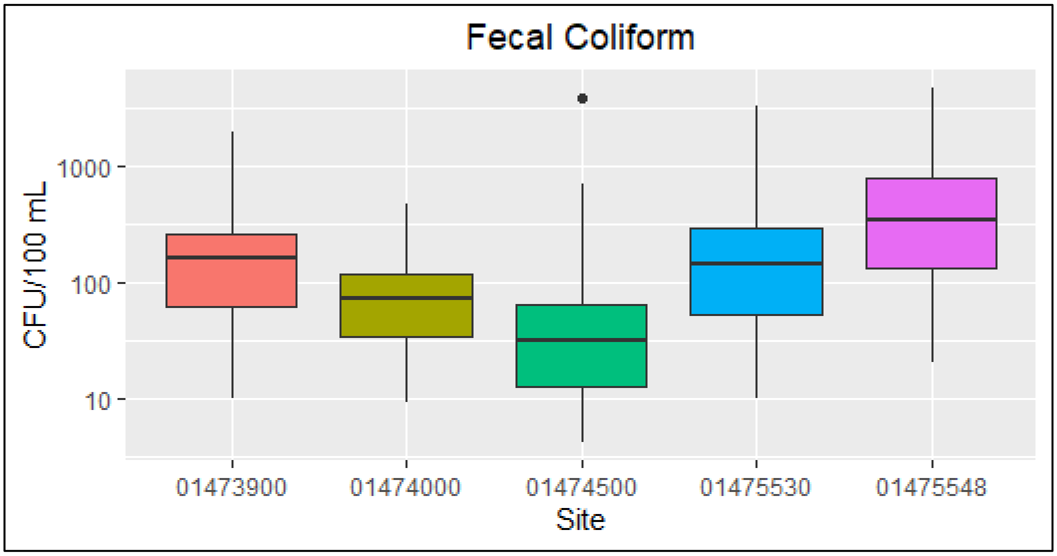


Figure 12. Fecal Coliform results at 5 USGS gage stations, July 2009-June 2023

Physicochemical Analysis

In addition to nutrient and microbial analyses, a basic set of physicochemical parameters were also monitored as part of the discrete quarterly sampling program. These parameters (dissolved oxygen, pH, temperature, and specific conductance) were specifically chosen to coincide with those being measured by the USGS continuous water quality monitoring gages. These data can then be utilized as valuable field checks when analyzing continuous water quality data from USGS gages. The physicochemical data are summarized by parameter in Figures 13-20.

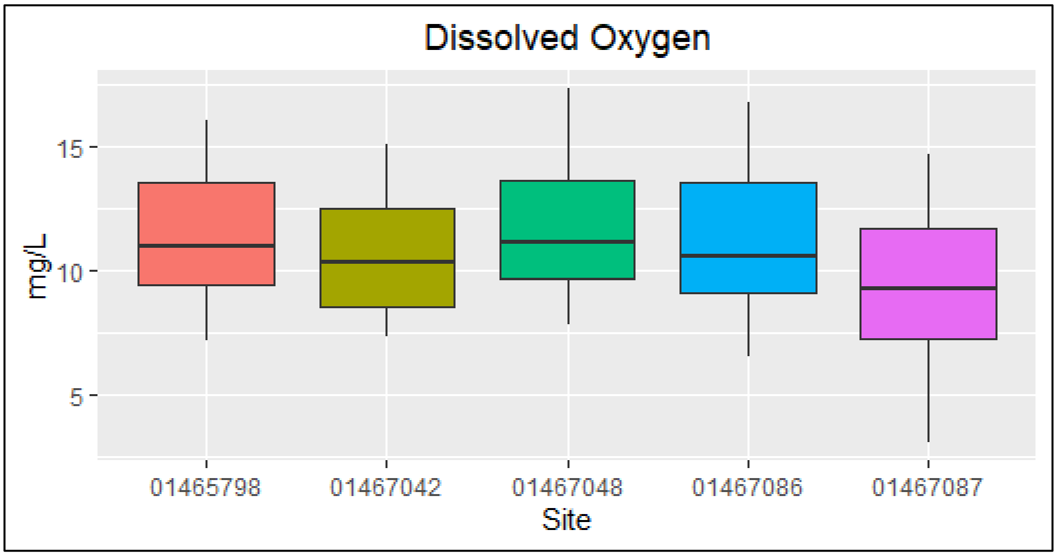


Figure 13. Dissolved oxygen results at 5 USGS gage stations, July 2009-June 2023

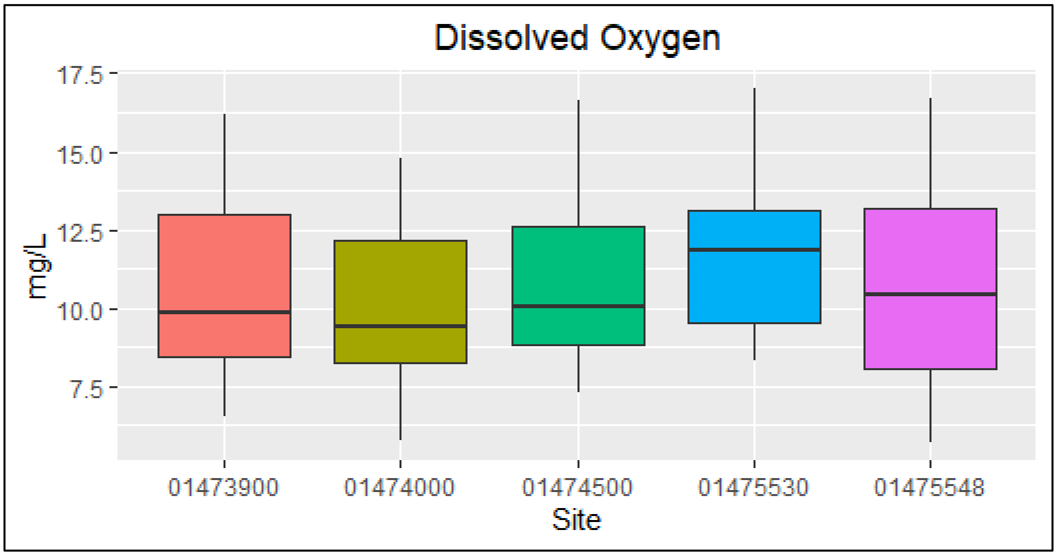


Figure 14. Dissolved oxygen results at 5 USGS gage stations, July 2009-June 2023

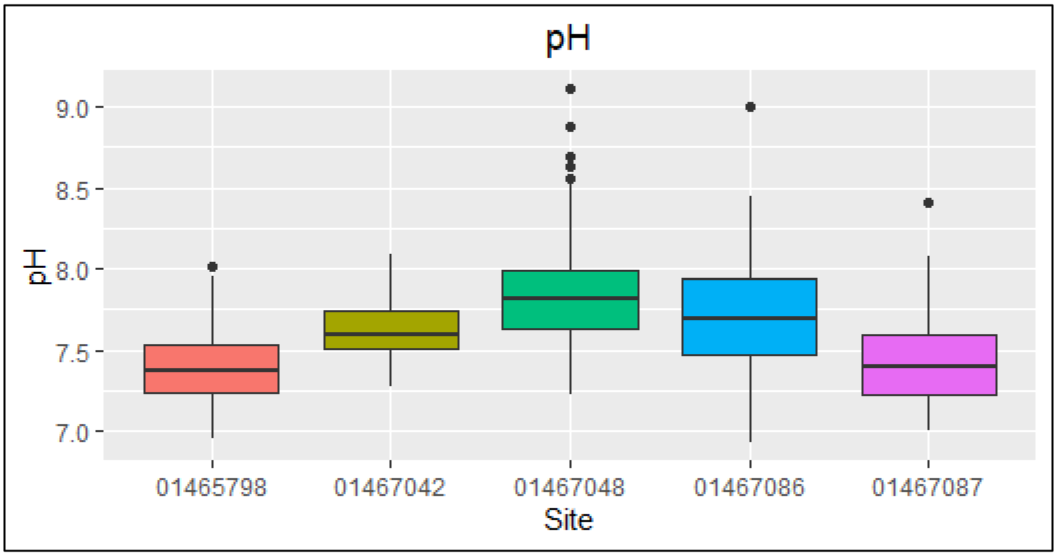


Figure 15. pH results at 5 USGS gage stations, July 2009-June 2023

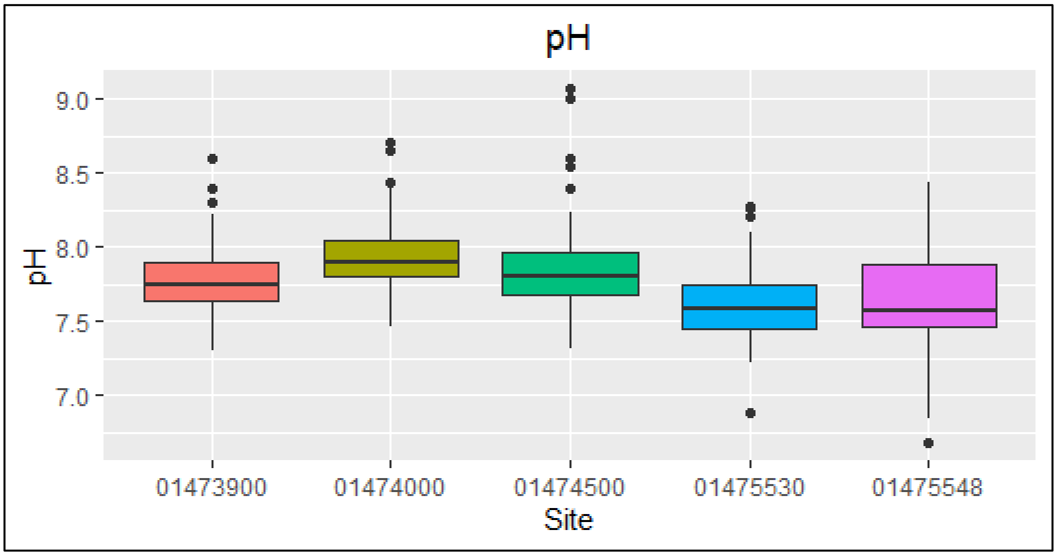


Figure 16. pH results at 5 USGS gage stations, July 2009-June 2023

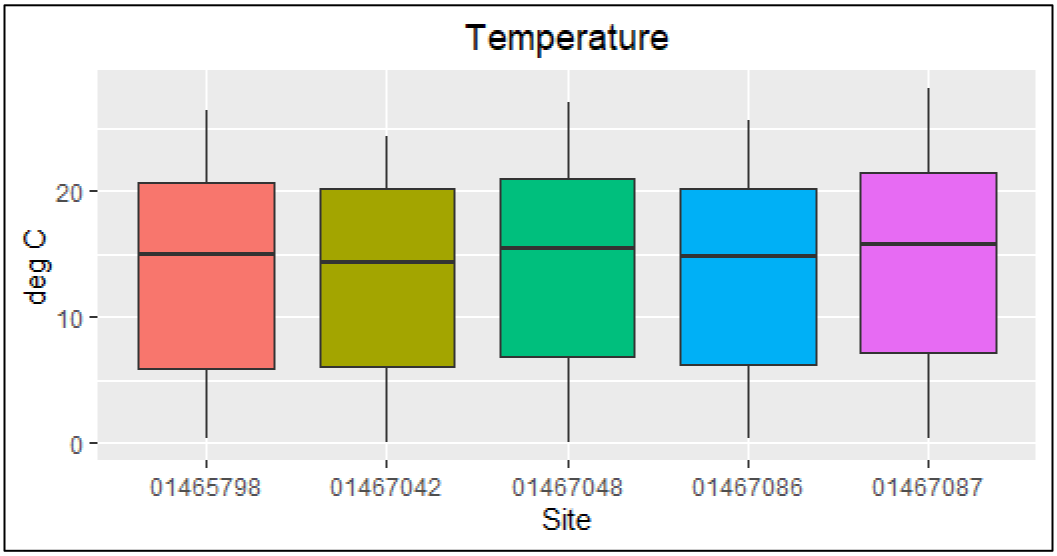


Figure 17. Temperature results at 5 USGS gage stations, July 2009-June 2023

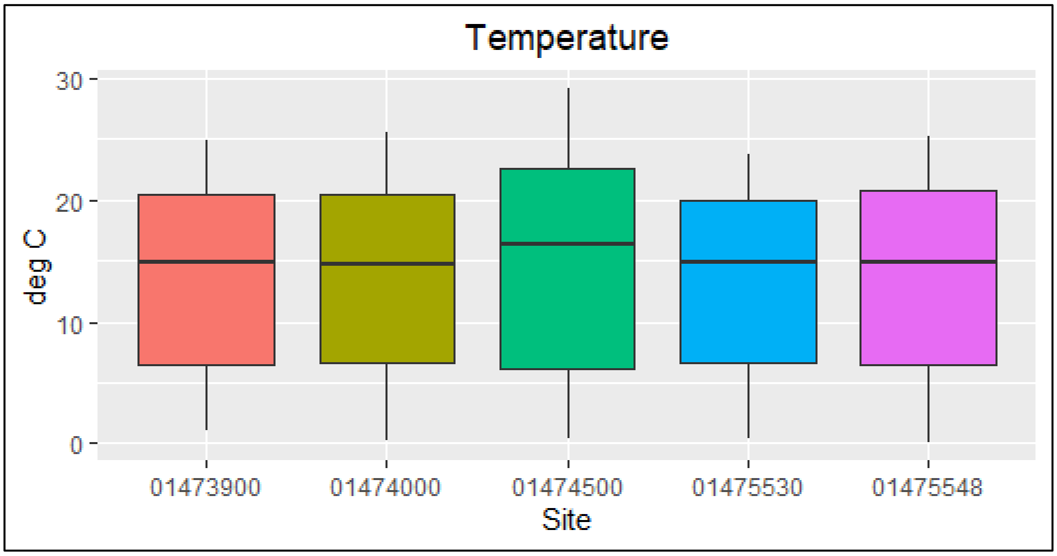


Figure 18. Temperature results at 5 USGS gage stations, July 2009-June 2023

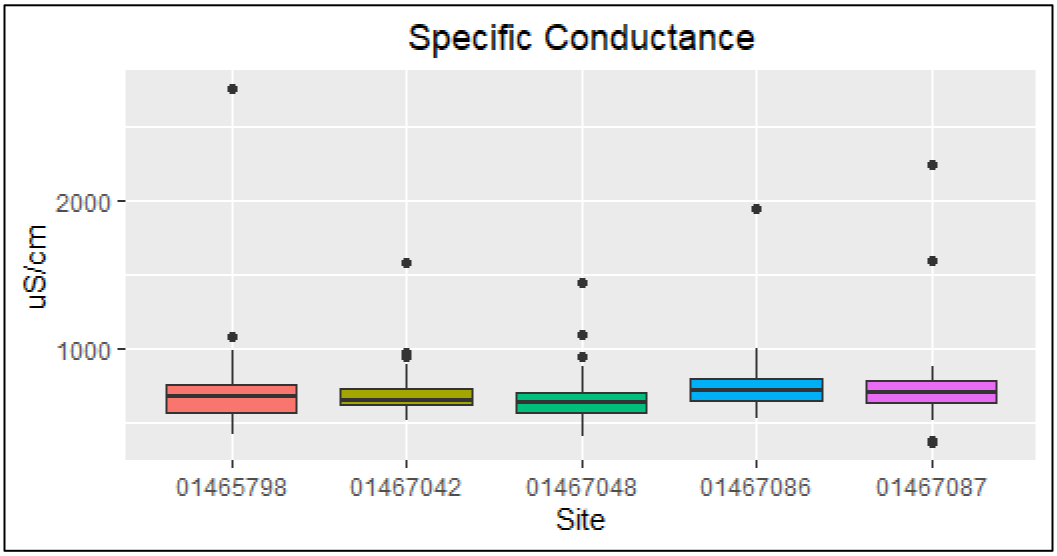


Figure 19. Specific conductance results at 5 USGS gage stations July 2009-June 2023

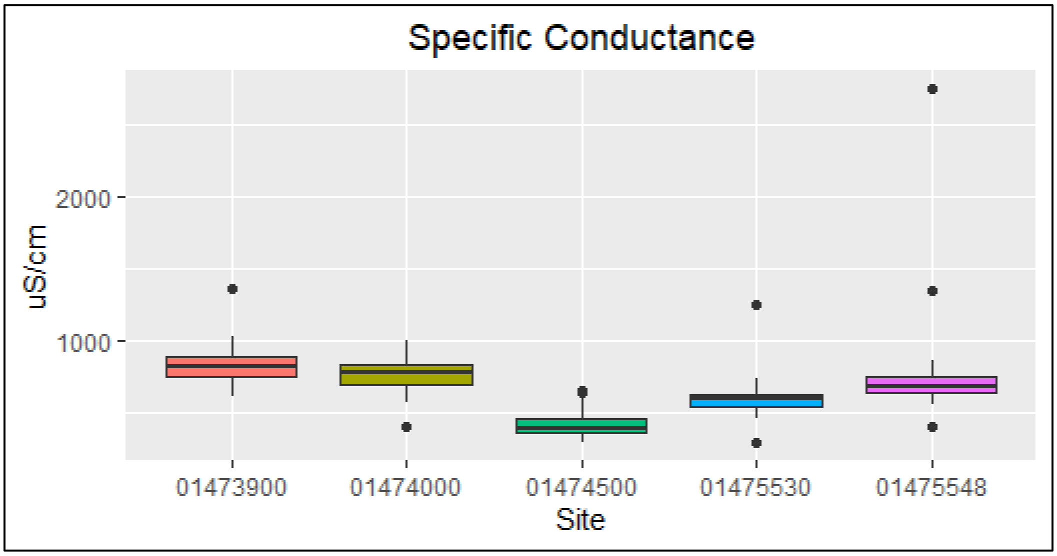


Figure 20. Specific conductance results at 5 USGS gage stations July 2009-June 2023

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Appendix G – PWD-USGS Cooperative Water Quality Monitoring Program Annual Summary

Background

PWD and the United States Geological Survey (USGS) have constructed and/or refurbished gaging stations in 10 locations throughout Philadelphia's watersheds. USGS staff is responsible for construction and maintenance of the gage structure, stream stage monitoring instruments, data communications, maintaining and verifying stage-discharge rating curves and pumping apparatus. PWD staff is responsible for installation and maintenance of continuous water quality instrumentation. Data collected through the PWD/USGS cooperative water quality monitoring program are disseminated through the USGS National Water Information System (NWIS) Web Interface (https://pa.water.usgs.gov/apps/pwd/), as well as a website specifically dedicated to Philadelphia's watersheds (Figure 1).

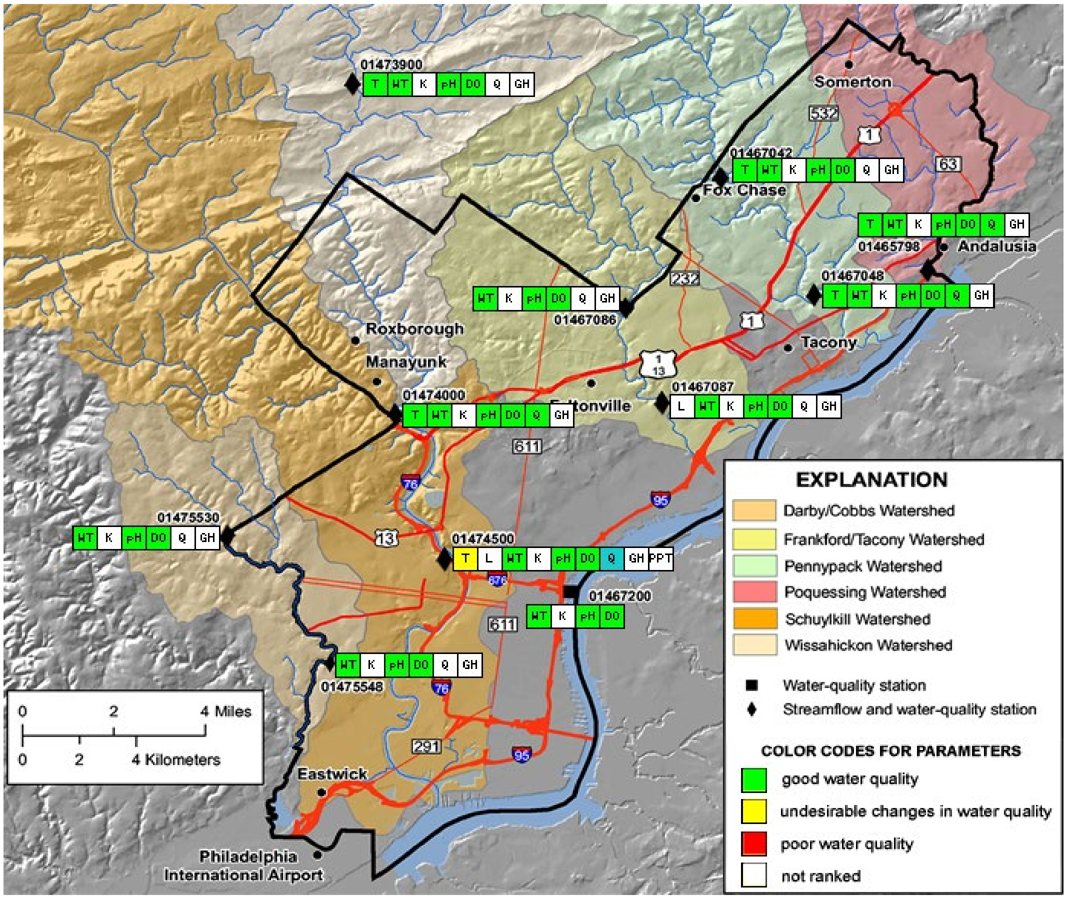


Figure 1. Philadelphia Water Quality Gauge Stations as Viewed on Cooperative USGS-PWD Website (https://usgs.gov/centers/pa-water/science/philadelphia-water-resources-monitoring-program).

Monitoring Locations

The PWD/USGS Cooperative Monitoring Program builds upon the widespread network of USGS gages that were formerly operated throughout Philadelphia. These gages are logically situated and/or have a continuous period of record, making them ideal for water quality monitoring purposes. Within a given watershed, downstream-most historic stations were chosen to represent water quality, as these streams flow through Philadelphia into the receiving waters (*i.e.*, the Schuylkill and Delaware rivers).

Regarding upstream stations, three gages (Pennypack Creek at Pine Rd, Tacony Creek at Adams Ave, and Cobbs Creek at US Rte. 1) are strategically located to monitor water quality of the streams as they enter Philadelphia (Figure 1). The upstream Wissahickon Creek monitoring station is located at Rte. 73 in Fort Washington, which is approximately 3.7 river miles upstream of the City. This location was chosen due to its extensive period of record (Table 1). Upstream water quality is not measured in the Poquessing-Byberry Creek Watershed. The Schuylkill River gage is in an ideal location to provide data related to the Schuylkill River Fairmount Dam Fish Ladder Renovation Project and was equipped with water quality monitoring instrumentation upon project completion in early 2009. In December 2020, the Delaware River gage at the Ben Franklin Bridge was relocated to a nearby downstream site at Penn's Landing.

This annual report summarizes water quality data from July 1, 2022 – June 30, 2023, excluding the period of December 2022 through February 2023, during which time monitoring probes were not deployed in order to protect the equipment from cold temperatures. Water quality data at the Delaware River gages 01467200 and 014670261 were collected year-round. Due to routine maintenance such as cleaning and calibration, gages are periodically taken offline, usually for no more than the span of two hours, and do not collect data. Significant gaps in data collection due to gage malfunction, repair, vandalism, etc. are noted in the Monthly Results section.

In order to summarize hydrologic conditions during the monitoring period, daily mean discharge was plotted along with the median of all daily flows for USGS gage 01474000 (Wissahickon Creek at Mouth.). The period of record for this gage is 58 years; approved daily mean discharge data for this gage was only available through February 7, 2023 at the time of this writing. The influence of storms can be observed as peaks in streamflow in Figure 2.

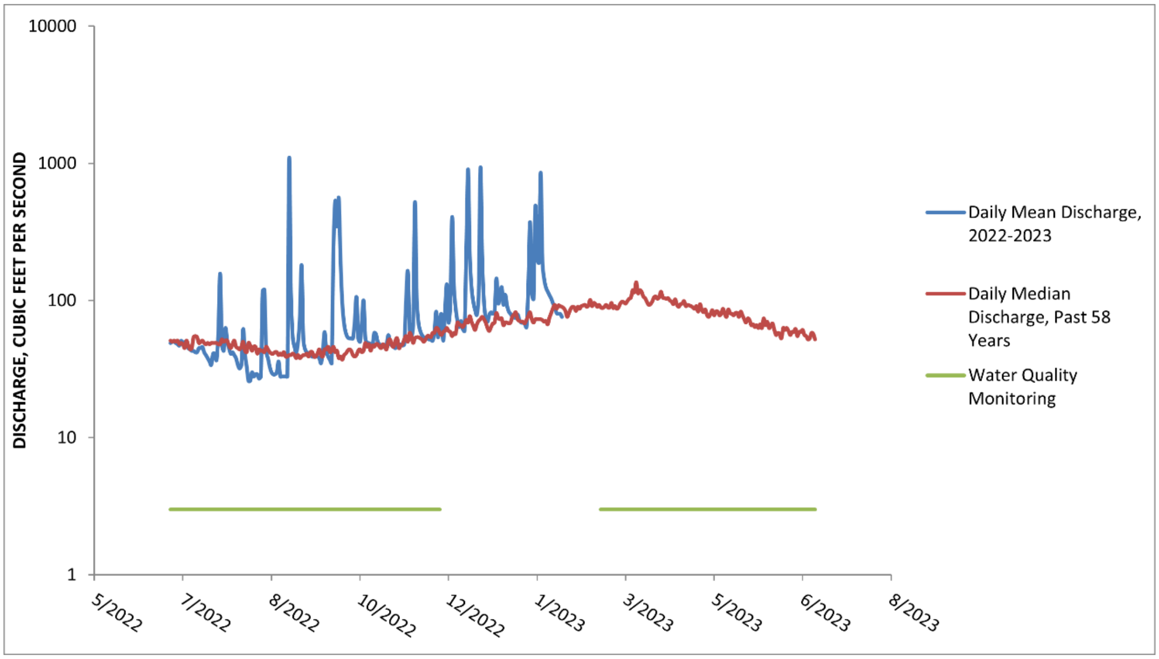


Figure 2. Daily mean flow July 1, 2022 – February 7, 2023 and daily median flow for 58 years of record at USGS gage 01474000 (Wissahickon Creek at Mouth.).

Table 1. PWD/USGS Cooperative Water Quality Monitoring Program Gages

Gage Number	Gage name	Flow Data Record
01465798	Poquessing Creek at Grant Avenue, Philadelphia, PA	July 1965 to Present
01467042	Pennypack Creek at Pine Road, Philadelphia, PA	August 1964 to September 1974; September 2007 to Present
01467048	Pennypack Creek at Lower Rhawn St Br., Philadelphia, PA	June 1965 to Present
01467086	Tacony Creek at County Line, Philadelphia, PA	October 1965 to September 1986; September 2005 to Present
01467087	Frankford Creek at Castor Ave, Philadelphia, PA	July 1982 to Present
014670261	Delaware River near Pennypack Woods, PA	February 2011 to Present
01467200*	Delaware River at Ben Franklin Bridge/Penn's Landing, Philadelphia, PA	August 1949 to Present
01473900**	Wissahickon Creek at Ft. Washington, PA	September 1961 to September 1968; June 2000 to Present
01474000	Wissahickon Creek at Mouth, Philadelphia, PA	June 1897 to September 1903; January 1905 to July 1906; October 1965 to Present
01474500	Schuylkill River at Philadelphia, PA	October 1931 to Present
01475530	Cobbs Creek at U.S. Highway No. 1, Philadelphia, PA	October 1964 to September 1981; September 2004 to Present
01475548	Cobbs Creek at Mt. Moriah Cemetery, Philadelphia, PA	October 2005 to Present

*Funding for the operation of this gage is provided by USGS and the Delaware River Basin Commission (DRBC)

**Funding for the operation of this gage is provided by DRBC

USGS Gage Data Processing & Analysis Procedures

With 10 USGS gages collecting data for multiple water quality parameters at half-hour or 15-minute intervals, a large amount of data are produced. PWD Office of Watersheds (OOW) staff have developed procedures for the processing and analysis of these data using Microsoft Excel and Access software, as well as R, a free software environment for statistical computing and graphics. Most aspects of the data processing and analysis have been automated with custom Visual Basic and R code.

OOW independently maintains databases of water quality and streamflow via automated regular retrievals of these data from USGS NWIS. On a monthly basis, the databases are queried and results for each gage are imported into MS Excel workbooks. If available, any field data collected during that period (*e.g.*, hand meter readings from field maintenance checks, water quality grab samples, etc.) are also imported. Once all required data have been entered, separate plots are produced for each parameter (dissolved oxygen, turbidity, pH, specific conductance, and temperature) to enable a subjective review of data quality.

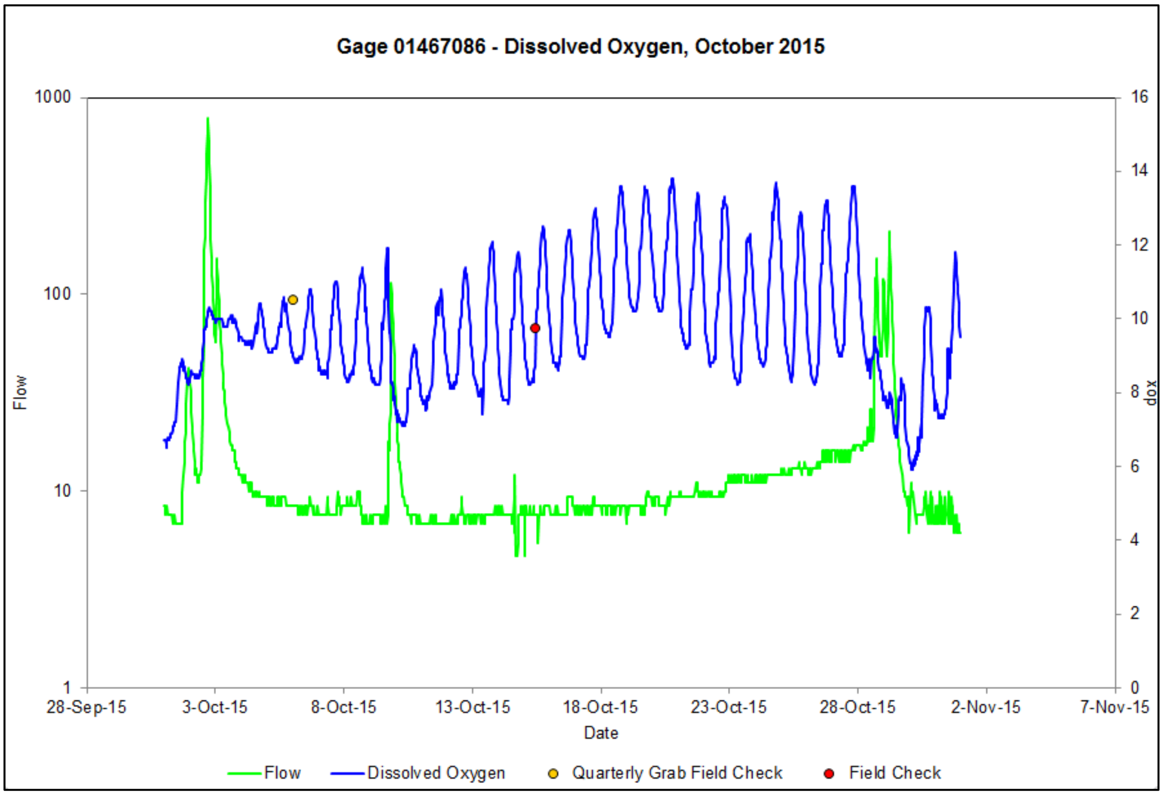


Figure 3. Example of an Excel-generated data processing/analysis plot; Gage 01467086, Dissolved Oxygen, October 2015.

These plots are examined and are the primary basis for the selection of good vs. questionable data for a given month. Intervals of questionable data are located and added to a table of "flagged" data for that particular parameter, which is then used to update the water quality database. Logs of field meter readings taken by PWD staff inform the flagging process, along with email records containing field notes and observations whenever water quality instrumentation is cleaned, calibrated, or otherwise maintained.

The final step of the procedure utilizes R, a statistical programming language and software environment. The R software code developed by OOW staff analyzes all water quality data contained within a database, as well as good and questionable data flags, and generates statistical and graphic results in a variety of forms. These include monthly plots for all data parameters for each site, showing accepted and questionable data, water quality criteria, grab sample data, and streamflow (Figure 4); assorted statistics including accepted and questionable data comparisons, monthly attainment percentages, and comparisons of wet and dry weather periods; and additional plots, including average dissolved oxygen (DO), percent DO saturation, and pH/percent DO saturation.

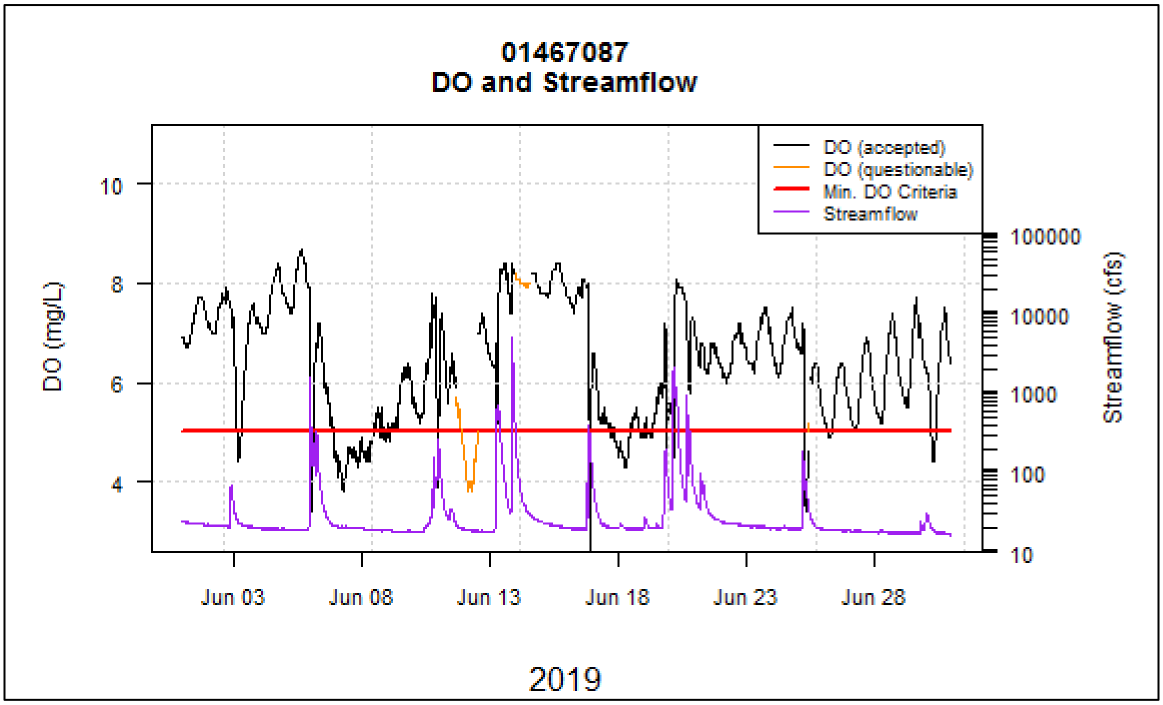


Figure 4. Example of an R-generated plot showing accepted and questionable data, and minimum water quality criteria; Gage 01467087, Dissolved Oxygen, June 2019.

Continuous Water Quality Monitoring Results Annual Summary, July 2022 - June 2023

Dissolved Oxygen

Background

Dissolved oxygen concentrations are a concern in several of Philadelphia's watersheds. Dissolved oxygen concentration is suppressed by high temperatures, respiratory activity of stream organisms, and nitrification and other oxidation reactions. Streams generally develop problems with dissolved oxygen due to water column BOD, sediment oxygen demand (SOD) and eutrophication due to increased nutrient concentration. These processes are inter-related, and physical conditions can also affect dissolved oxygen concentrations.

Designated Uses

Streams in the Philadelphia region are affected by ambient temperatures, which can be quite warm in the spring and summer months. For this reason, these streams cannot support natural self-sustaining populations of cold water fish. Different water quality criteria for dissolved oxygen and temperature are applied to different stream segments. Of the sites that were instrumented for water quality, the Wissahickon and Pennypack Creek gages (*i.e.*, 01473900, 01474000, 01467042, and 01467048) are each designated as a Trout Stocking Fishery (TSF) with conditions appropriate for maintenance of stocked trout over the period February 15 to July 31. Water quality criteria for dissolved oxygen are more stringent for these sites, with a daily instantaneous minimum criterion of 5 mg/L and a 7-day average of 6 mg/L from February 15 to July 31 and 5.5 mg/L the remainder of the year. Dissolved oxygen criteria for Warm Water Fisheries (WWF) are an instantaneous minimum of 5 mg/L and a 7-day average of 5.5 mg/L.

The 7-day average criteria were introduced in 2014 by PA DEP. Prior to 2014, DEP specified daily average criteria for dissolved oxygen (5.0 mg/L for WWF waters; 6.0 mg/L for TSF waters from February 15 to July 31, 5.0 mg/L the remainder of the year). It is also noted that the instantaneous minimum DO criterion for WWF waters became more stringent in 2014; it was previously 4.0 mg/L.

The Delaware River gage 01467200 dissolved oxygen criteria are defined by the Delaware River Basin Commission (DRBC) criteria for Zone 3 (DRBC, 2007) with a daily mean of 3.5 mg/L and a seasonal mean (April 1 to June 15, and September 16 to December 31) of 6.5 mg/L. The same seasonal criteria apply to Delaware River gage 014670261 (Zone 2), but there is a more stringent daily mean guideline of 5.0 mg/L (Table 2).

Table 2. PADEP Dissolved Oxygen Water Quality Criteria

Gage number	Designated Use	Minimum Criterion	7-Day Average Criterion	Daily Average Criterion
01465798	WWF	5.0 mg/L	5.5 mg/L	None
014670261	DRBC**	None	None	5.0 mg/L
01467042	TSF*	5.0 mg/L	6.0 mg/L	None
01467048	TSF*	5.0 mg/L	6.0 mg/L	None
01467086	WWF	5.0 mg/L	5.5 mg/L	None
01467087	WWF	5.0 mg/L	5.5 mg/L	None
01467200	DRBC**	None	None	3.5 mg/L
01473900	TSF*	5.0 mg/L	6.0 mg/L	None
01474000	TSF*	5.0 mg/L	6.0 mg/L	None
01474500	WWF	5.0 mg/L	5.5 mg/L	None
01475530	WWF	5.0 mg/L	5.5 mg/L	None
01475548	WWF	5.0 mg/L	5.5 mg/L	None

*TSF criteria for DO only apply from February 15 - July 31. WWF criteria are applicable from August 1 – January 31.

**A seasonal mean criterion of 6.5 mg/L also applies from April 1 - June 15 and September 16 - December 31.

Results

Results were processed as follows for Table 3. The “percent accepted data” are the total number of observations that were not flagged. The remainder of the table lists the percent of data that was flagged, and the percentages of accepted data that attained or failed to attain water quality standards were calculated.

Results were processed as follows for Tables 4 and 5. If more than 25% of the data in the 7-day window was flagged as questionable, the data point was considered questionable. The 7-day average was calculated as a two-sided moving average. During data processing and analysis, output files are split by calendar year; thus, statistics for 2022 and 2023 appear in separate tables.

Water quality at the downstream Tacony Creek site (gage 01467087) was most likely to exceed DO minimum and 7-day average criteria. A more in-depth discussion of potential causes of DO problems at gage 01467087 is presented in the Monthly Results section. A notable portion of flagged data at 01467087 and other sites is related to the fouling of sonde pipes due to sediment and debris that inhibit data collection. The DO probes are particularly susceptible to the effects of trapped sediment; when routine cleaning of the sonde pipes show that low DO readings were affected by fouling, the questionable data prior to cleaning is flagged.

Table 3. USGS Gage July 2022 - June 2023 Dissolved Oxygen Minimum Criterion Summary Results

Gage number	Designated Use	Observations, n	% accepted data	% flagged data	% non-attaining	% attaining
01465798	WWF	27954	97.2	2.8	1.2	98.8
014670261*	DRBC	34415	100	0	NA	NA
01467042	TSF	29781	100	0	0.5	99.5
01467048	TSF	29774	99.9	0.1	0.1	99.9
01467086	WWF	12918	99.5	0.5	4	96
01467087	WWF	29369	98.7	1.3	16.3	83.7
01467200*	DRBC	100292	100	0	NA	NA
01473900	TSF	11928	100	0	2.8	97.2
01474000	TSF	13267	100	0	0	100
01474500	WWF	17246	100	0	0	100
01475530	WWF	25585	100	0	0	100
01475548	WWF	26615	99.7	0.3	2.2	97.8

*No minimum DO criterion applies at gages 01467200 and 014670261

Table 4. USGS Gage July 2022 - November 2022 Dissolved Oxygen 7-Day Average Criterion Summary Results

Gage number	Designated Use	Total hours accepted data	% hours flagged data	% hours non-attaining	% hours attaining
01465798	WWF	3289.5	6.1	0	100
014670261	DRBC	NA	NA	NA	NA
01467042	TSF	3504.5	0	0	100
01467048	TSF	3504.5	0	0	100
01467086	WWF	3504.5	0	1.5	98.5
01467087	WWF	3504.5	0	33.4	66.6
01467200	DRBC	NA	NA	NA	NA
01473900	TSF	1370	61	0	100
01474000	TSF	3504.5	0	0	100
01474500	WWF	3360.5	4.1	0	100
01475530	WWF	3504.5	0	0	100
01475548	WWF	3504.5	0	0	100

Table 5. USGS Gage March 2023 - June 2023 Dissolved Oxygen 7-Day Average Criterion Summary Results

Gage number	Designated Use	Total hours accepted data	% hours flagged data	% hours non-attaining	% hours attaining
01465798	WWF	2760.5	0	0	100
014670261	DRBC	NA	NA	NA	NA
01467042	TSF	2760.5	0	0	100
01467048	TSF	2595.5	6.0	0	100
01467086	WWF	2644.5	4.2	0	100
01467087	WWF	1792.5	35.1	6.9	93.1
01467200	DRBC	NA	NA	NA	NA
01473900	TSF	2437	11.7	0	100
01474000	TSF	2498	9.5	0	100
01474500	WWF	2760.5	0	0	100
01475530	WWF	2129.5	22.9	0	100
01475548	WWF	2571.5	6.8	0	100

Table 6. USGS Gage 01467200 and 014670261 Dissolved Oxygen Seasonal Mean Criterion Summary Result

Gage number	Designated Use	Days, n	Minimum Daily Average	Maximum Daily Average	Seasonal mean	Attaining Standard?
01467200	DRBC	77	5.3	11.2	8.6	Yes
014670261	DRBC	77	6.4	11.6	8.7	Yes

pH

Background

pH has been identified as a parameter of potential concern for some of Philadelphia's watersheds, primarily because of algal effects on the dissolved inorganic carbon (DIC) composition of stream water. Algae take up CO_2 during photosynthesis and shift the composition of DIC toward the alkaline carbonates, resulting in occasional failure to attain maximum pH criteria at some sites (Table 7). pH fluctuations are typically observed concomitant with pronounced dissolved oxygen fluctuations, as detailed in the Monthly Results section.

At gages 01467200 and 014670261, pH criteria (regulated by DRBC) are bounded by 6.5 and 8.5. At all other gages, pH criteria are bounded by daily minima and maxima of 6.0 and 9.0, respectively, as defined by PA DEP water quality standards.

Results

Results were processed as follows for Table 7. The “percent accepted data” are the percentage of observations that were not flagged. The remainder of the table lists the percentage of data that was flagged, the percentages of accepted observations that attained or failed to attain criteria, and the percentages of daily minima and maxima that attained or failed to attain criteria.

Minimum pH criteria were attained at all gages for the reporting time frame. Algal blooms may be responsible for daily maximum pH criterion exceedance at several sites during March and April.

Table 7. USGS Gage July 2022 - June 2023 pH Criteria Summary Results

Gage number	Observations, n	% accepted data	% flagged data	% min. non-attaining	% max. non-attaining	% min. attaining	% max. attaining	% attaining
01465798	27956	99.8	0.2	0	0.1	100	99.9	99.9
014670261	34402	100	0	0	0.0	100	100.0	100.0
01467042	29778	100	0	0	0.0	100	100.0	100.0
01467048	29758	100	0	0	0.1	100	99.9	99.9
01467086	12915	100	0	0	0.0	100	100.0	100.0
01467087	29423	99.8	0.2	0	0.0	100	100.0	100.0
01467200	94014	100	0	0	0.0	100	100.0	100.0
01473900	12138	93.7	6.3	0	1.4	100	98.6	98.6
01474000	13317	100	0	0	0.6	100	99.4	99.4
01474500	17246	99.5	0.5	0	0.2	100	99.8	99.8
01475530	25586	100	0	0	0.0	100	100.0	100.0
01475548	26375	99.9	0.1	0	1.2	100	98.8	98.8

Turbidity

Background

Turbidity in Philadelphia's streams increases with increased flow as inorganic sediment and additional constituents of stormwater runoff are introduced to the stream or scoured/eroded from the stream channel. There are no numeric PA DEP water quality criteria for turbidity, so PWD watershed management plans used a reference value for turbidity that was derived from EPA Guidance document EPA 822-B-00-023 (*i.e.*, 2.825 NTU). This value is surpassed more often in wet weather than in dry weather (Tables 71-72). Turbidity data has also been used to help investigate sediment loading and transport in the Wissahickon Creek Watershed for the Wissahickon Creek Sediment TMDL.

Results

Results were processed as follows for Table 8. The "percent accepted data" are the percentage of observations that were not flagged. The remainder of the table lists the percentage of observations that were flagged, and the percentages of accepted data that either surpassed or fell below the maximum guideline.

Among the tributary sites, the maximum guideline was most frequently surpassed at the Schuylkill gage, and least frequently surpassed at the downstream Wissahickon Creek gage.

Table 8. USGS Gage July 2022 - June 2023 Turbidity Summary Results

Gage number	Observations, n	% accepted data	% flagged data	% hrs. above max. guideline	% hrs. below max. guideline
01465798	27919	99.3	0.7	28.5	71.5
014670261	34431	100.0	0.0	95.0	5.0
01467042	29772	99.9	0.1	14.9	85.1
01467048	29772	100.0	0.0	28.2	71.8
01467086*	0	NA	NA	NA	NA
01467087*	0	NA	NA	NA	NA
01467200	93569	100.0	0.0	98.8	1.2
01473900	12011	100.0	0.0	45.8	54.2
01474000	14713	100.0	0.0	12.3	87.7
01474500	17191	98.6	1.4	47.8	52.2
01475530*	0	NA	NA	NA	NA
01475548*	0	NA	NA	NA	NA

*Turbidity is not continuously monitored at these locations

Specific Conductance

Background

Specific conductance is a measure of the ability of water to conduct electricity over a given distance, expressed as microsiemens/cm (corrected to 25ºC). Conductivity in Philadelphia streams is extremely sensitive to changes in flow, as stormwater (diluent) usually contains smaller concentrations of dissolved ions than stream baseflow. Stormwater runoff typically lowers conductivity in streams; an exception sometimes occurs in winter and early spring, when road salt applied prior to snowstorms enters the stream in runoff or during snowmelt. Data collected in the report timeframe were generally consistent with earlier observations. When significant changes in conductivity are observed during dry weather, it can be an indicator of anthropogenic influence or pollution in the stream; stations receiving inputs of treated wastewater generally had greater conductivity.

Results

There is no water quality standard for specific conductance. Table 9 merely illustrates the number of observations that were not flagged and considered “accepted” and the percentage of observations that were flagged. More detailed results at each site are described in the Monthly Results section.

Table 9. USGS Gage July 2022 - June 2023 Specific Conductance Summary Results

Gage number	Observations, n	% accepted data	% flagged data
01465798	27941	99.7	0.3
014670261	34424	100.0	0.0
01467042	29764	100.0	0.0
01467048	29734	100.0	0.0
01467086	12907	100.0	0.0
01467087	29356	100.0	0.0
01467200	100297	100.0	0.0
01473900	11937	100.0	0.0
01474000	13330	100.0	0.0
01474500	17239	100.0	0.0
01475530	25465	96.5	3.5
01475548	26614	100.0	0.0

Temperature

Background

Streams in the Philadelphia region are designated Warm Water Fisheries (WWF) or Trout Stocking Fisheries (TSF), with separate corresponding temperature criteria (Table 10). These criteria are "stepped" (remaining constant for 15- or 30-day intervals), while streams tend to warm up and cool down more gradually due primarily to changes in ambient temperature. (Gages 01467200 and 014670261 are the exceptions and are subject to a DRBC criterion of 30°C maximum). Stream temperatures were observed to exceed these criteria, somewhat frequently in springtime. These exceedances are generally natural, as there are no major sources of heated wastes. It is possible that baseflow diminution is partially responsible for a lack of buffering against temperature increases.

Table 10. PA DEP Temperature Water Quality Criteria

Date range start	Date range end	WWF maximum (°C)	WWF maximum (°F)	TSF maximum (°C)	TSF maximum (°F)
1/1	1/31	4	40	4	40
2/1	2/29	4	40	4	40
3/1	3/31	8	46	8	46
4/1	4/15	11	52	11	52
4/16	4/30	14	58	14	58
5/1	5/15	18	64	18	64
5/16	5/31	22	72	20	68
6/1	6/15	27	80	21	70
6/16	6/30	29	84	22	72
7/1	7/31	31	87	23	74
8/1	8/15	31	87	27	80
8/16	8/30	31	87	31	87
9/1	9/15	29	84	29	84
9/16	9/30	26	78	26	78
10/1	10/15	22	72	22	72
10/16	10/31	19	66	19	66
11/1	11/15	14	58	14	58
11/16	11/30	10	50	10	50
12/1	12/31	6	42	6	42

Results

Results were processed in the same manner as the parameters described above. The highest exceedance rate occurred at the upstream Wissahickon Creek gage. The six gages designated as WWF have less stringent criteria.

Table 11. USGS Gage July 2022 - June 2023 Temperature Maximum Criteria Summary Results

Gage number	Designated Use	Observations, n	% accepted data	% flagged data	% exceedance	% attaining
01465798	WWF	27958	100.0	0.0	13.8	86.2
014670261	DRBC	34388	100.0	0.0	0.0	100.0
01467042	TSF	29780	100.0	0.0	13.3	86.7
01467048	TSF	29704	100.0	0.0	14.2	85.8
01467086	WWF	12919	100.0	0.0	14.4	85.6
01467087	WWF	29433	100.0	0.0	14.4	85.6
01467200	DRBC	100208	100.0	0.0	0.0	100.0
01473900	TSF	11545	100.0	0.0	15.5	84.5
01474000	TSF	13251	100.0	0.0	13.6	86.4
01474500	WWF	17248	100.0	0.0	13.7	86.3
01475530	WWF	25587	100.0	0.0	12.1	87.9
01475548	WWF	26617	100.0	0.0	13.9	86.1

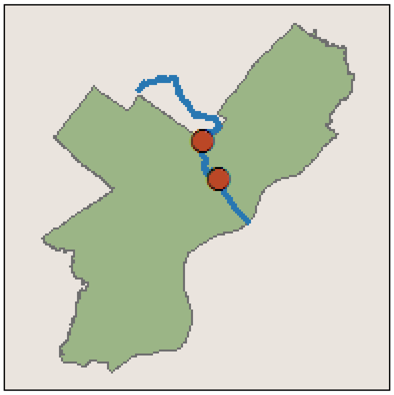
Monthly Results, July 2022 - June 2023

This section summarizes results at the monthly time scale. Results were processed in the same manner as in the previous section. Gages are grouped according to the type of sewer system that impacts water quality at the site.

Gages in Combined Sewer System Watersheds

The combined sewer system serves more than three-quarters of Philadelphia's residents and covers the oldest and densest parts of the city. Combined sewer outfalls affect the Tookany/Tacony-Frankford and Darby-Cobbs watersheds. (The Delaware and Schuylkill rivers also contain combined sewer outfalls but are detailed in a later section focused on large watersheds.) The gages in this section are subject to the deleterious effects of periodic combined sewer overflows during wet weather and snowmelt.

Tookany/Tacony-Frankford Creek (Gages 01467086 and 01467087)



Dissolved oxygen and pH

Dissolved oxygen concentrations were markedly worse between the upstream and downstream Tacony Creek gages. The monthly minima, percentage of observations the minimum criterion was not attained, and exceedance of the 7-day average guideline were typically much worse at the downstream gage (Tables 12-13, Figures 5-8). For example, DO was poor at the downstream Tacony Creek gage during July 2022 (Figure 9). However, the minimum criterion was almost always attained at gage 01467086 during that same month (Figure 10). This difference likely reflects the additional stormwater runoff and sewage overflows that entered the creek between the two gages.

The lowest DO concentrations are typically seen in the period after storm events, reflecting both the immediate and lingering, oxygen-depleting effects of stormwater runoff and biochemical oxygen demand (BOD) entering the stream. Diel DO fluctuations are suppressed for a few days following a storm event because the event either scours away algae or temporarily inhibits their growth. As dry weather continues, the algae recover and diel DO and pH fluctuations typically increase, sometimes resulting in higher daily peaks in pH, as observed at the upstream gage in March 2023 (Figure 11). Percent DO saturation of more than 150% in daylight were also observed at gage 01467086 in March 2023, indicating high levels of algal activity (Figure 12; PAR is defined as photosynthetically active radiation). Diel DO fluctuations tended to increase with prolonged periods of sunlight, further indicating high levels of algal activity.

A lower monthly mean pH was usually observed at gage 01467087, along with generally less pronounced diel pH fluctuations, probably due to an increased buffering capacity at the downstream gage and a lesser degree of algal growth (Tables 14-15). In June 2023, the sonde cable at 01467087 was vandalized, resulting in the loss of data for that month.

Table 12. Gage 01467086 Dissolved Oxygen Minimum Criterion Summary Results by Month

Month	Des. Use	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	WWF	1483	1.3	12.1	6.5	100	0	26.2	73.8
Aug-22	WWF	1485	3.8	12.2	7.2	99.9	0.1	6.4	93.6
Sep-22	WWF	1426	5.2	13.2	8.6	100	0	0	100
Oct-22	WWF	1484	6.4	13.3	9.5	100	0	0	100
Nov-22	WWF	1440	5.5	15.3	10.4	100	0	0	100
Mar-23	WWF	1170	8.2	17	11.9	100	0	0	100
Apr-23	WWF	1436	4.6	15.2	9.2	99.9	0.1	0.3	99.7
May-23	WWF	1419	6.4	14.4	9.4	95.7	4.3	0	100
Jun-23	WWF	1434	3.8	12.8	7.4	100	0	2	98

Table 13. Gage 01467087 Dissolved Oxygen Minimum Criterion Summary Results by Month

Month	Des. Use	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	WWF	2808	1.2	12.3	5	94.6	5.4	60.6	39.4
Aug-22	WWF	2965	0.4	9.2	4.7	99.8	0.2	53.9	46.1
Sep-22	WWF	2808	1.2	9.8	6.1	99.9	0.1	27.5	72.5
Oct-22	WWF	2943	4.7	10.1	8.2	99	1	0.1	99.9
Nov-22	WWF	2770	0.8	13	8.8	96.3	3.7	3	97
Mar-23	WWF	2431	4.2	12.6	10.4	100	0	0.5	99.5
Apr-23	WWF	2665	0.5	11.5	6.7	98	2	18.3	81.7
May-23	WWF	2152	1.1	10.4	8.6	98.7	1.3	1.5	98.5
Jun-23	WWF	NA	NA	NA	NA	NA	NA	NA	NA

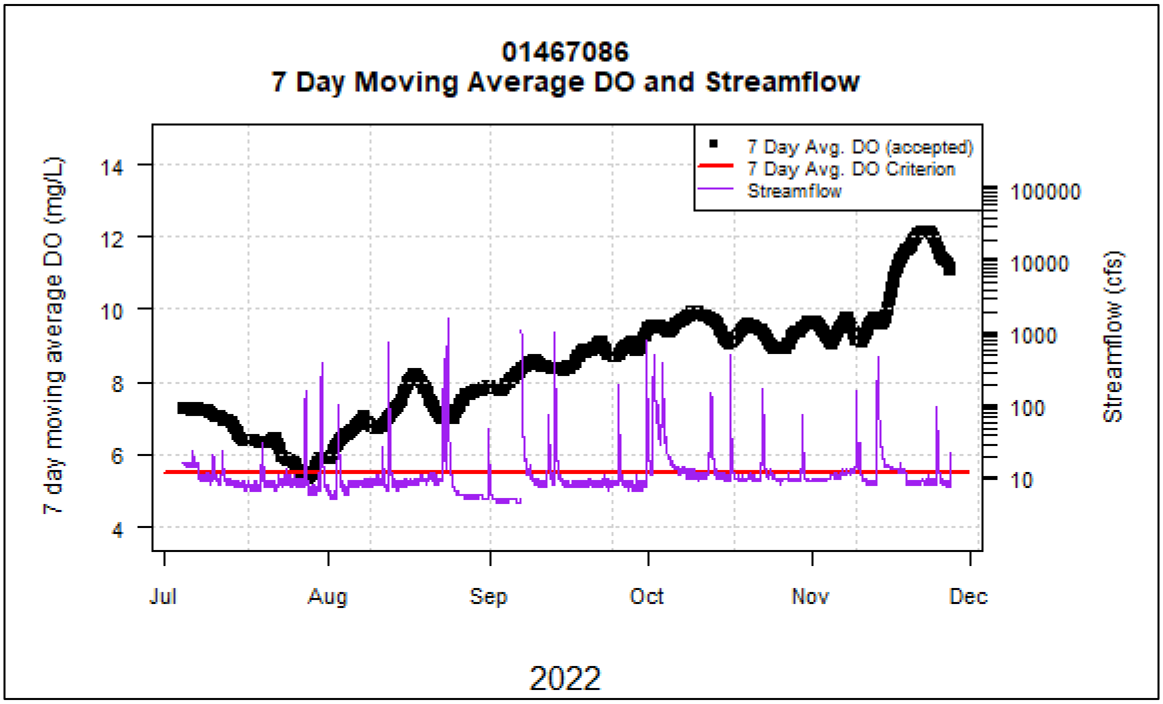


Figure 5. Gage 01467086, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Nov 2022.

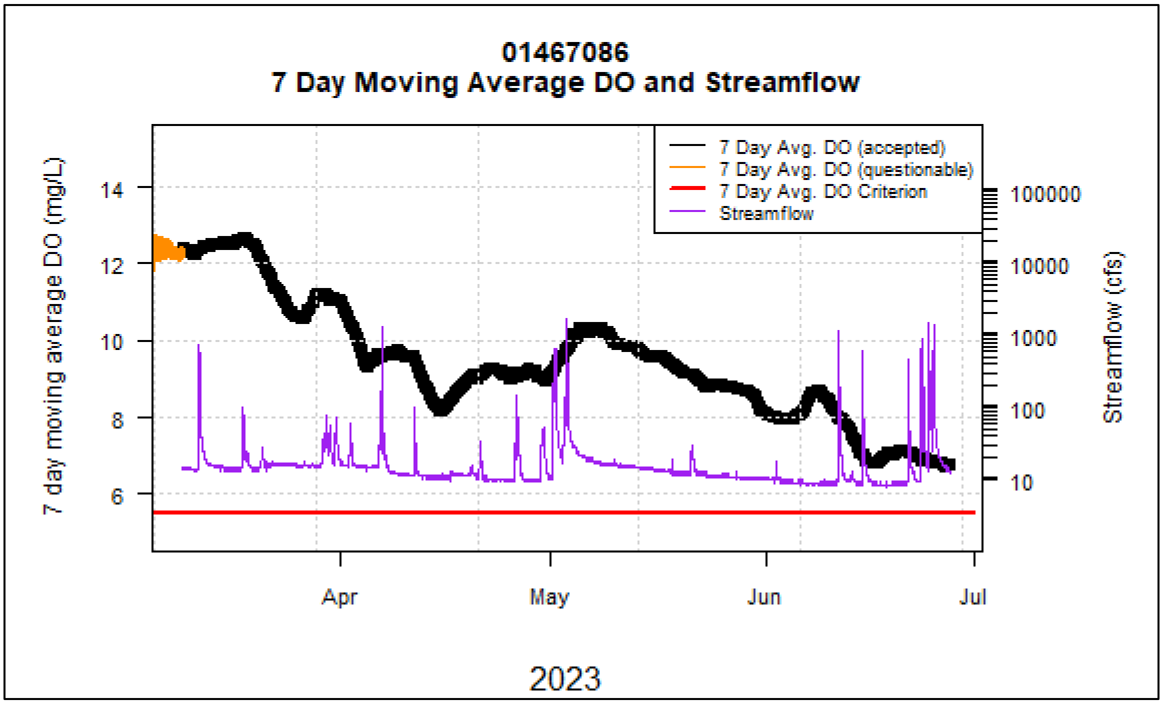


Figure 6. Gage 01467086, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2023.

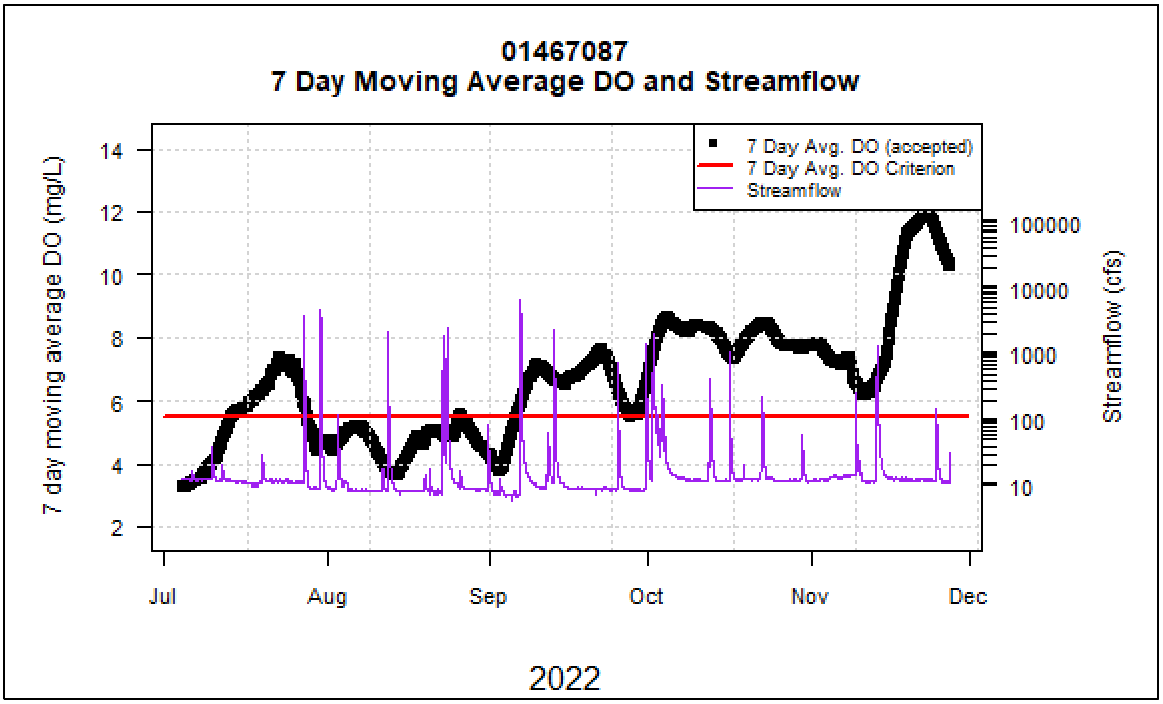


Figure 7. Gage 01467087, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Nov 2022.

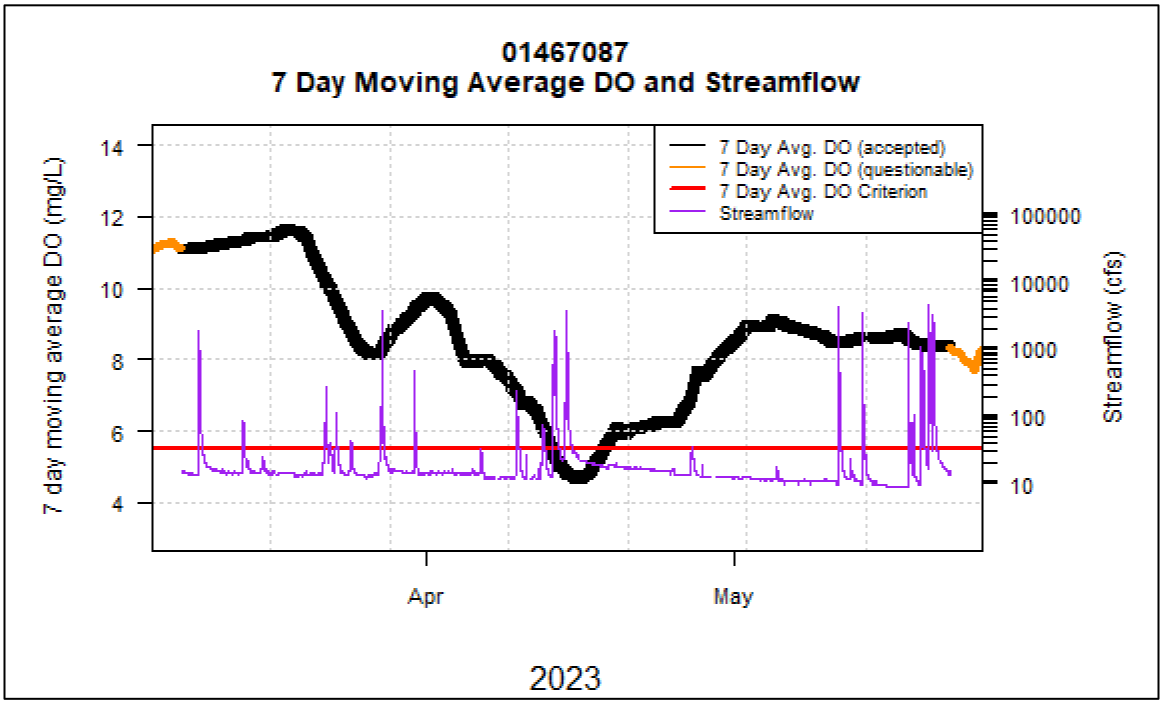


Figure 8. Gage 01467087, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2023.

Table 14. Gage 01467086 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	1481	6.8	8.4	7.6	99.9	0.1	0	0	100	100
Aug-22	1483	7	8.6	7.6	99.9	0.1	0	0	100	100
Sep-22	1426	7.1	8.7	7.7	100	0	0	0	100	100
Oct-22	1483	7.2	8.5	7.6	100	0	0	0	100	100
Nov-22	1437	7.1	8.5	7.5	99.9	0.1	0	0	100	100
Mar-23	76	7.1	7.6	7.3	100	0	0	0	100	100
Apr-23	1170	7.1	8.9	7.8	100	0	0	0	100	100
May-23	1438	7	8.7	7.5	100	0	0	0	100	100
Jun-23	1483	7	8.7	7.7	99.9	0.1	0	0	100	100

Table 15. Gage 01467087 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	2963	6.2	8.7	7.2	99.9	0.1	0	0	100	100
Aug-22	2961	6.1	7.6	7.1	99.9	0.1	0	0	100	100
Sep-22	2871	6.3	7.8	7.2	99.9	0.1	0	0	100	100
Oct-22	2968	6.8	7.7	7.3	99.9	0.1	0	0	100	100
Nov-22	2875	7	7.8	7.4	100	0	0	0	100	100
Mar-23	2316	6.8	7.5	7.3	100	0	0	0	100	100
Apr-23	2966	6.5	7.6	7.4	100	0	0	0	100	100
May-23	2159	6.8	7.8	7.6	100	0	0	0	100	100
Jun-23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

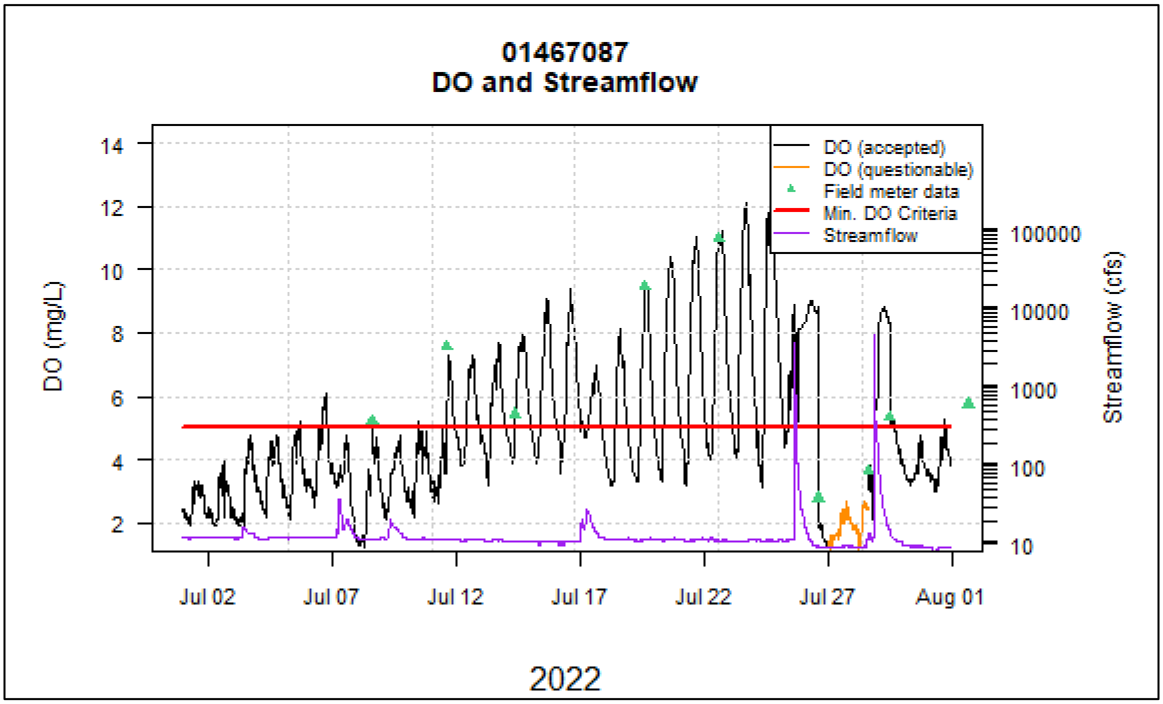


Figure 9. Gage 01467087, Dissolved Oxygen and Streamflow, July 2022.

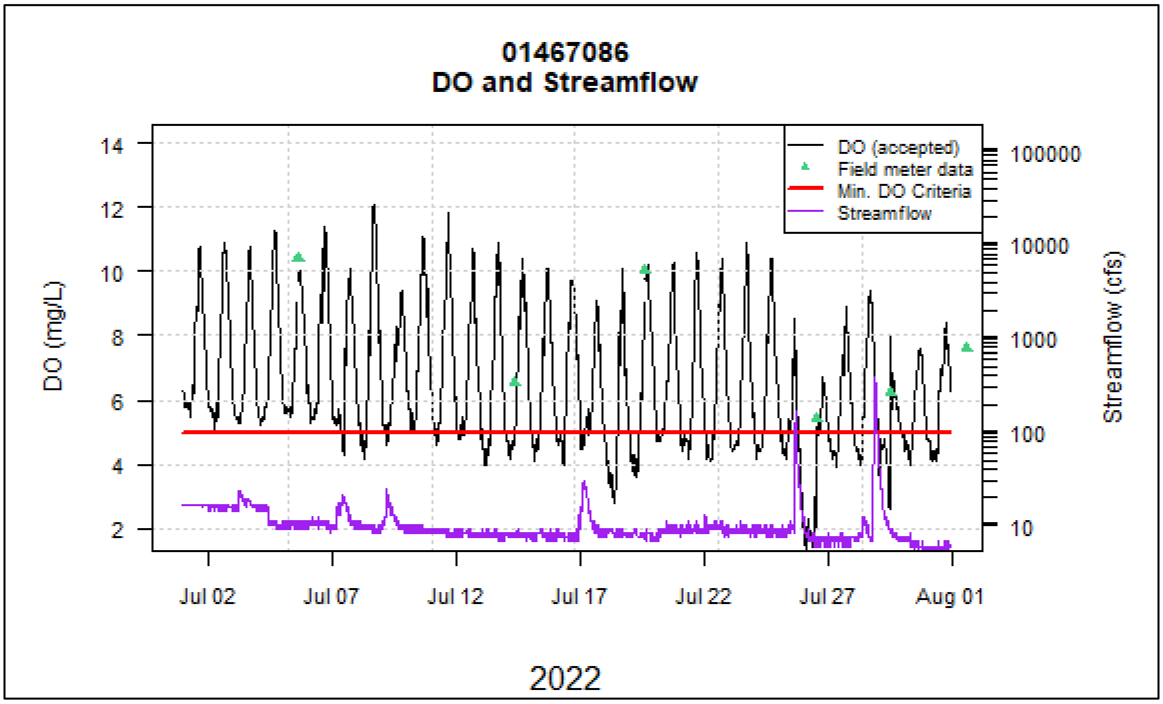


Figure 10. Gage 01467086, Dissolved Oxygen and Streamflow, July 2022.

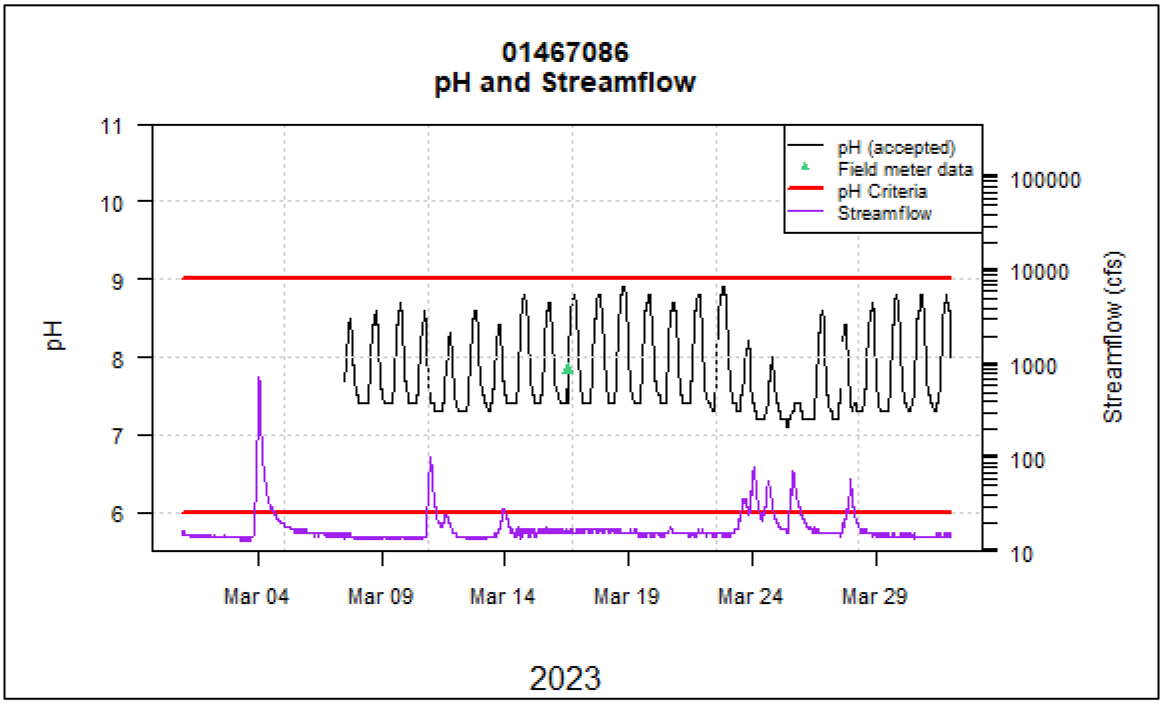


Figure 11. Gage 01467086, pH and Streamflow, March 2023.

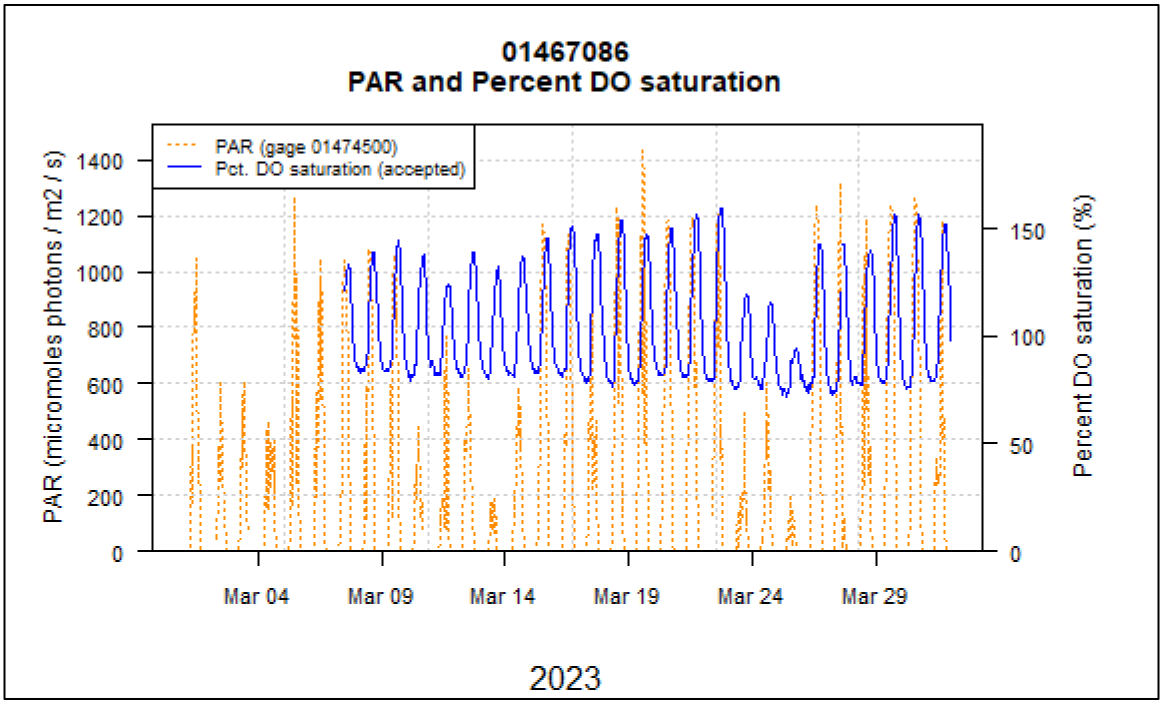


Figure 12. Gage 01467086, PAR and Percent Dissolved Oxygen Saturation, March 2023.

Figure 13. Gage 01467086, Tacony Creek at Adams Ave.

Figure 14. Gage 01467087, Frankford Creek at Castor Ave., looking downstream

Specific Conductance

Specific conductance observations were usually consistent between the two gage sites (Tables 16-17). Elevated levels of specific conductance observed in late fall and early spring months are likely due to the effects of road salt entering the stream.

Table 16. Gage 01467086 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	1481	142	799	698.9	100	0
Aug-22	1484	69	829	638.8	100	0
Sep-22	1426	78	785	638.8	100	0
Oct-22	1481	81	759	564.6	100	0
Nov-22	1434	113	762	634.3	100	0
Mar-23	1170	409	709	637.7	100	0
Apr-23	1438	89	768	585	100	0
May-23	1483	66	732	660.7	100	0
Jun-23	1434	87	731	559.9	100	0

Table 17. Gage 01467087 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	2965	24	801	661.1	100	0
Aug-22	2926	46	798	552.5	100	0
Sep-22	2866	55	783	563.9	100	0
Oct-22	2965	102	760	496	100	0
Nov-22	2874	126	772	612.3	100	0
Mar-23	2430	356	721	634	100	0
Apr-23	2717	72	847	581.5	100	0
May-23	2177	14	708	633.5	100	0
Jun-23	NA	NA	NA	NA	NA	NA

Temperature

Monthly mean temperatures observed at the downstream gage were usually higher than at the upstream gage. Consequently, a higher rate of temperature criteria exceedance was typically observed at the downstream gage (Tables 18-19).

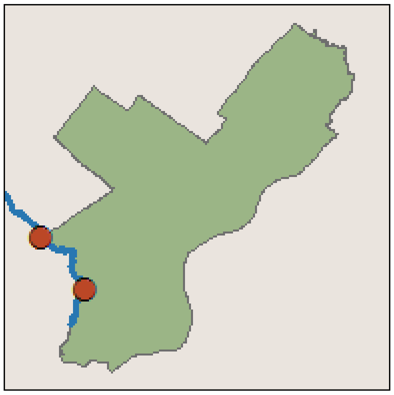
Table 18. Gage 01467086 Temperature Summary Results by Maximum Criteria Period

Designated Use	Date range start	Date range end	% exceedance	% attaining	% flagged data	% accepted data	Min	Max	Mean
WWF	1-Jul	31-Jul	0	100	0	100	20.5	29.9	24.8
WWF	1-Aug	15-Aug	0	100	0	100	20.8	29.6	25.2
WWF	16-Aug	31-Aug	0	100	0	100	20.1	27.7	24
WWF	1-Sep	15-Sep	0	100	0	100	19	25.9	22.1
WWF	16-Sep	30-Sep	0	100	0	100	14	22.6	18.4
WWF	1-Oct	15-Oct	0	100	0	100	11	17.4	14
WWF	16-Oct	31-Oct	0	100	0	100	9.1	17.2	12.8
WWF	1-Nov	15-Nov	43.5	56.5	0	100	6.1	18.8	13.3
WWF	16-Nov	30-Nov	1.4	98.6	0	100	2	10.5	6.3
WWF	1-Mar	31-Mar	58.3	41.7	0	100	4	14.9	8.8
WWF	1-Apr	15-Apr	80.9	19.1	0	100	6.6	22.4	14.7
WWF	16-Apr	30-Apr	58.4	41.6	0	100	10.7	20.9	15.2
WWF	1-May	15-May	24.6	75.4	0	100	10.6	20.6	15.7
WWF	16-May	31-May	0	100	0	100	13.4	21.3	17.8
WWF	1-Jun	15-Jun	0	100	0	100	15.7	24.1	19.6
WWF	16-Jun	30-Jun	0	100	0	100	17.6	23.7	20.6

Table 19. Gage 01467087 Temperature Summary Results by Maximum Criteria Period

Designated Use	Date range start	Date range end	% exceedance	% attaining	% flagged data	% accepted data	Min	Max	Mean
WWF	1-Jul	31-Jul	0	100	0	100	21	30.6	26
WWF	1-Aug	15-Aug	0	100	0	100	22.6	30.7	26.5
WWF	16-Aug	31-Aug	0	100	0	100	20.4	28.8	25.1
WWF	1-Sep	15-Sep	0	100	0	100	20.8	26.2	23
WWF	16-Sep	30-Sep	0	100	0	100	15.9	22.9	19.4
WWF	1-Oct	15-Oct	0	100	0	100	11.7	17.6	14.2
WWF	16-Oct	31-Oct	0	100	0	100	10.2	16.8	13.1
WWF	1-Nov	15-Nov	41.9	58.1	0	100	8.3	17.6	13.6
WWF	16-Nov	30-Nov	1.8	98.2	0	100	3	12	6.1
WWF	1-Mar	31-Mar	59.9	40.1	0	100	5.1	13	9
WWF	1-Apr	15-Apr	95.7	4.3	0	100	7.4	21	15.3
WWF	16-Apr	30-Apr	72.1	27.9	0	100	10.9	20.1	16
WWF	1-May	15-May	36.8	63.2	0	100	11.5	20.5	16.3
WWF	16-May	31-May	0	100	0	100	16.4	20.6	18.3
WWF	1-Jun	15-Jun	NA	NA	NA	NA	NA	NA	NA
WWF	16-Jun	30-Jun	NA	NA	NA	NA	NA	NA	NA

Cobbs Creek (Gages 01475530 and 01475548)



Dissolved oxygen and pH

The upstream Cobbs Creek site (01475530) almost always met the minimum dissolved oxygen criterion and never exceeded the 7-day average guideline (Table 20, Figures 15, 16, 19). Dissolved oxygen at the downstream site (01475548) did not always attain the minimum, particularly during the warmer months. The downstream site always attained the 7-day average guideline.

The pattern of dissolved oxygen and pH values between the upstream and downstream Cobbs Creek gages is likely due to greater algal activity at the downstream gage. During the spring—key months for algal growth—pH exceeded the maximum guideline at the downstream gage site (Tables 22-23). Algae remove CO_2 during photosynthesis, raising pH by shifting the dissolved inorganic carbon (DIC) balance toward alkaline carbonates. The diel fluctuations in DO were pronounced at both gages during these months (Figures 19-20).

A third indicator of increased algal activity in Cobbs Creek is the supersaturation of oxygen caused by photosynthesis. During April, the downstream gage recorded peak DO saturation levels near 150% during the day in dry weather conditions (Figures 21-22).

Table 20. Gage 01475530 Dissolved Oxygen Minimum Criterion Summary Results by Month

Month	Des. Use	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	WWF	2965	5.6	10.4	7.7	100	0	0	100
Aug-22	WWF	2964	5.2	11.5	7.7	100	0	0	100
Sep-22	WWF	2788	0.5	11.9	8.4	100	0	0.1	99.9
Oct-22	WWF	2971	8.1	11.6	9.6	100	0	0	100
Nov-22	WWF	2873	7.5	13.2	10.4	100	0	0	100
Mar-23	WWF	1388	9.2	15.1	11.3	100	0	0	100
Apr-23	WWF	2876	6.7	12.9	9.5	100	0	0	100
May-23	WWF	2671	6.9	11.9	9.2	100	0	0	100
Jun-23	WWF	2877	5.3	11	8	100	0	0	100

Table 21. Gage 01475548 Dissolved Oxygen Minimum Criterion Summary Results by Month

Month	Des. Use	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	WWF	2969	3.9	11.1	7	100	0	2.6	97.4
Aug-22	WWF	2967	2.8	10.3	6.4	100	0	14.4	85.6
Sep-22	WWF	2871	4.2	10.2	7.1	100	0	1.4	98.6
Oct-22	WWF	2969	6.2	11.3	9.1	100	0	0	100
Nov-22	WWF	2708	5	13.4	10.1	97.2	2.8	0	100
Mar-23	WWF	2048	6	16.8	12.2	100	0	0	100
Apr-23	WWF	2876	3.8	14.5	9	100	0	1.1	98.9
May-23	WWF	2963	6.2	12.7	9.3	100	0	0	100
Jun-23	WWF	2868	4.5	11.5	7.8	100	0	0.4	99.6

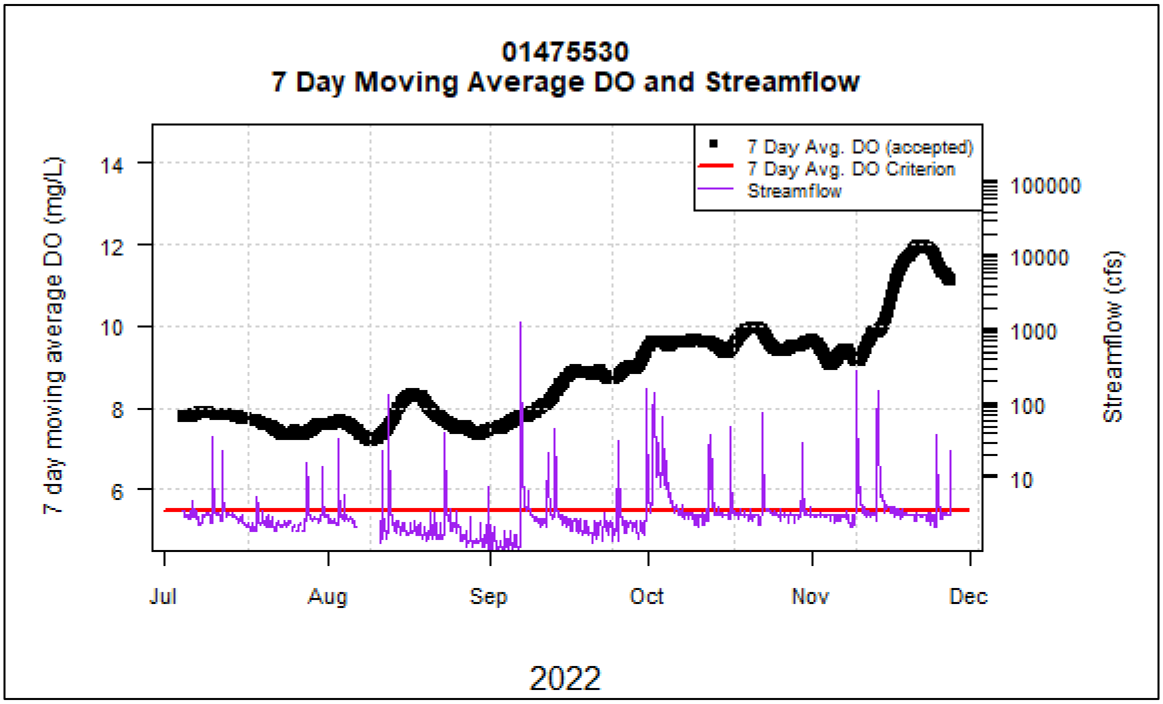


Figure 15. Gage 01475530, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Nov 2022.

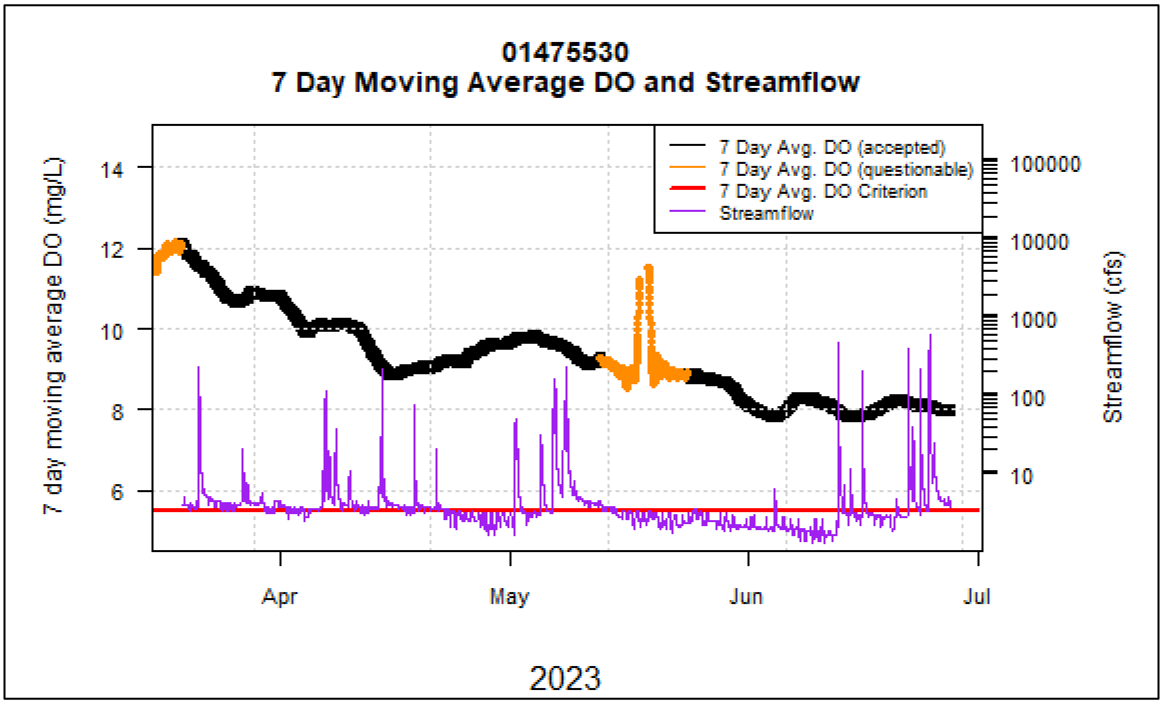


Figure 16. Gage 01475530, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2023.

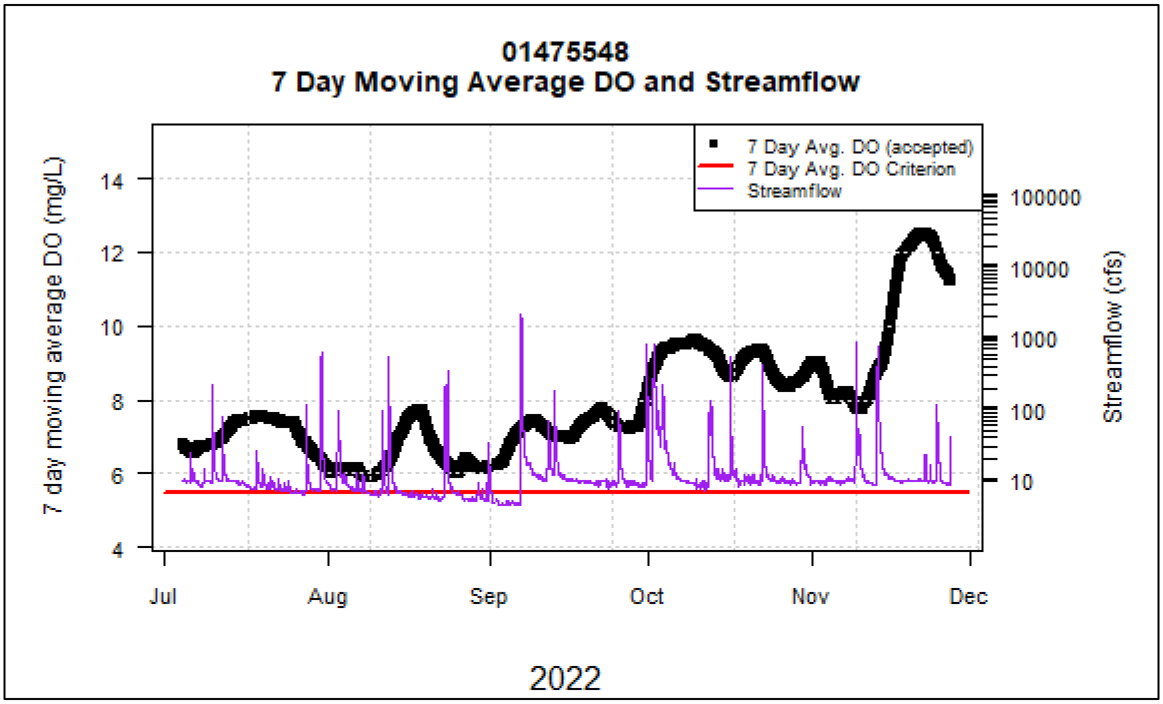


Figure 17. Gage 01475548, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Nov 2022.

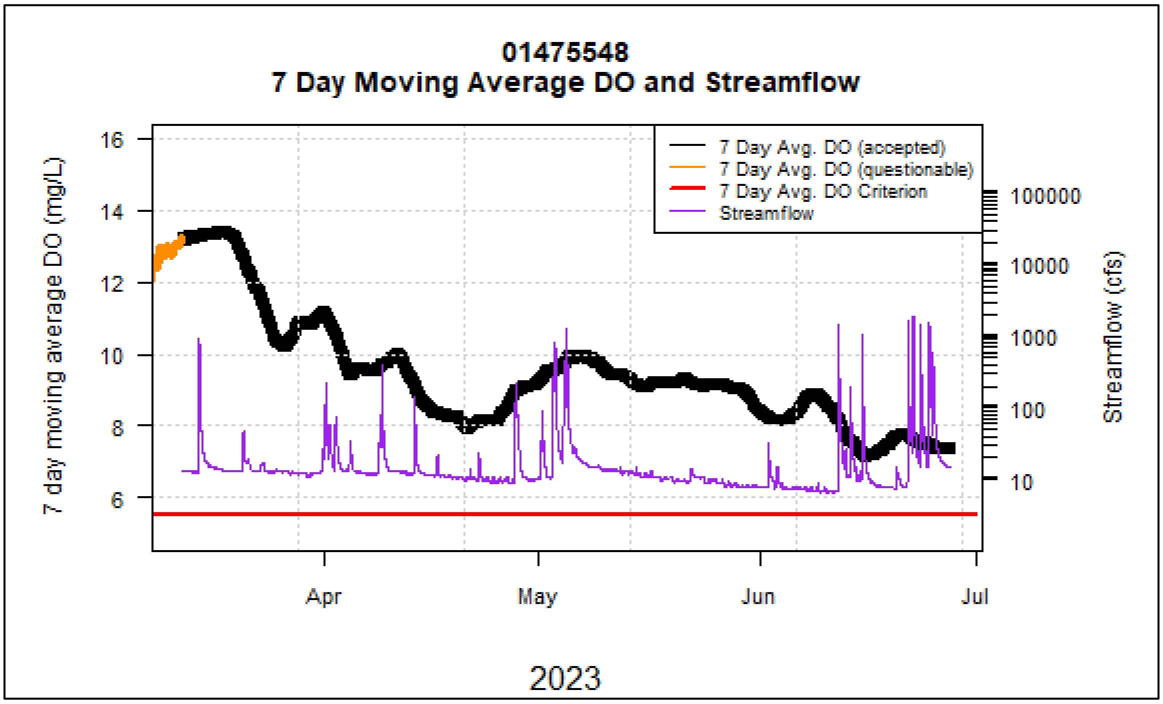


Figure 18. Gage 01475548, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2023.

Table 22. Gage 01475530 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	2964	7.1	8.4	7.5	100	0	0	0	100	100
Aug-22	2964	7.1	8.6	7.6	100	0	0	0	100	100
Sep-22	2789	6.9	8.5	7.4	100	0	0	0	100	100
Oct-22	2971	7	7.7	7.3	100	0	0	0	100	100
Nov-22	2874	7	7.6	7.3	100	0	0	0	100	100
Mar-23	1388	7.2	9.1	7.7	100	0	0	0.7	100	99.3
Apr-23	2876	7.2	8.6	7.6	100	0	0	0	100	100
May-23	2671	7.1	8.2	7.4	100	0	0	0	100	100
Jun-23	2878	6.9	7.8	7.3	100	0	0	0	100	100

Table 23. Gage 01475548 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	2969	7	8.6	7.7	100	0	0	0	100	100
Aug-22	2928	6.8	8.3	7.5	98.7	1.3	0	0	100	100
Sep-22	2871	7	8.1	7.6	100	0	0	0	100	100
Oct-22	2969	7	8.2	7.6	100	0	0	0	100	100
Nov-22	2785	7.1	8	7.6	100	0	0	0	100	100
Mar-23	2048	7.3	9.3	8.3	100	0	0	14.6	100	85.4
Apr-23	2876	7	9.1	7.7	100	0	0	0.2	100	99.8
May-23	2964	6.9	8.7	7.9	100	0	0	0	100	100
Jun-23	2628	6.9	8.6	7.6	100	0	0	0	100	100

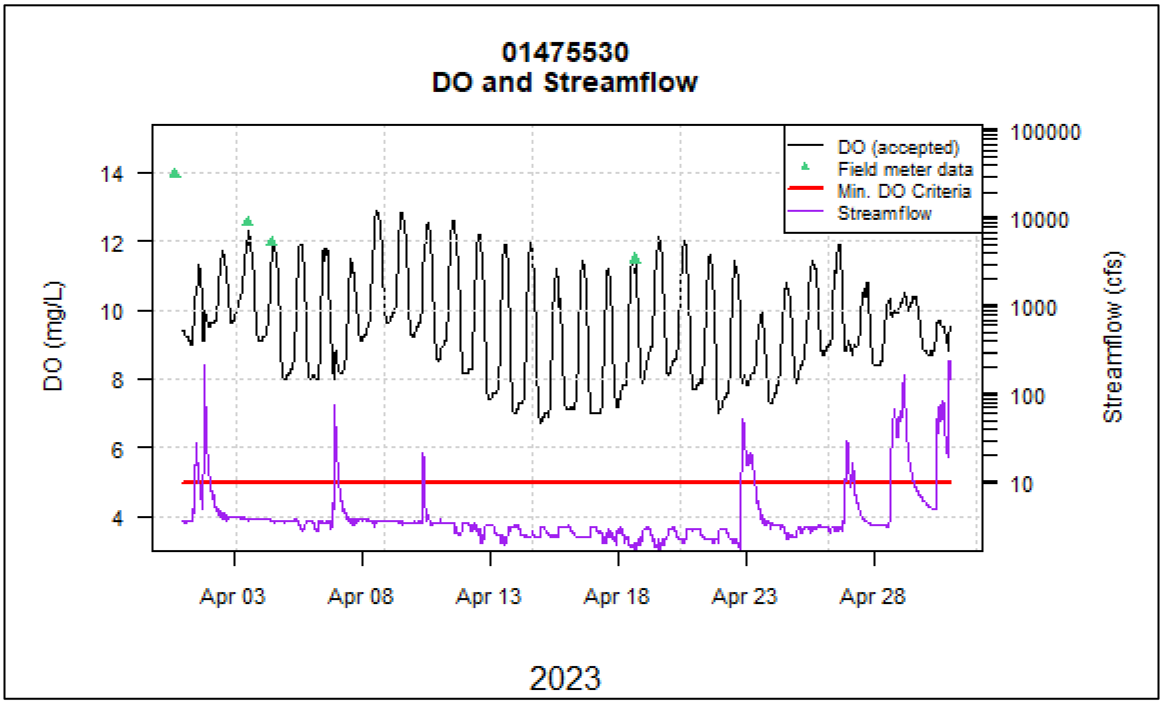


Figure 19. Gage 01475530, Dissolved Oxygen and Streamflow, April 2023.

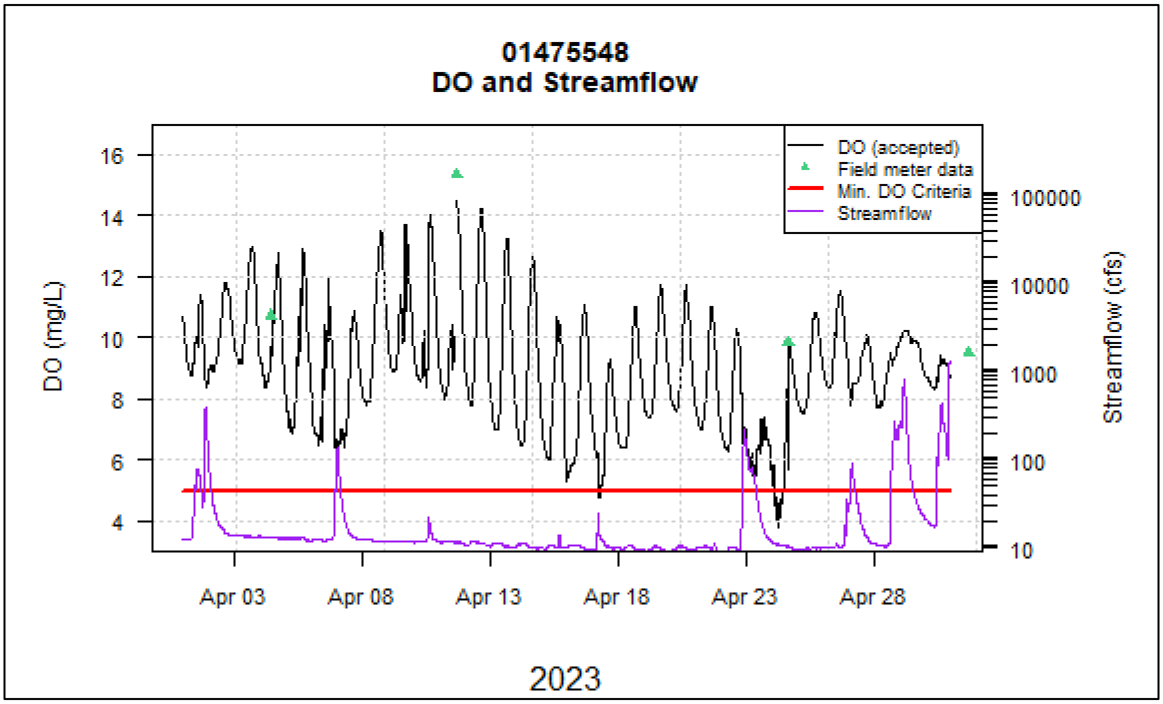


Figure 20. Gage 01475548, Dissolved Oxygen and Streamflow, April 2023.

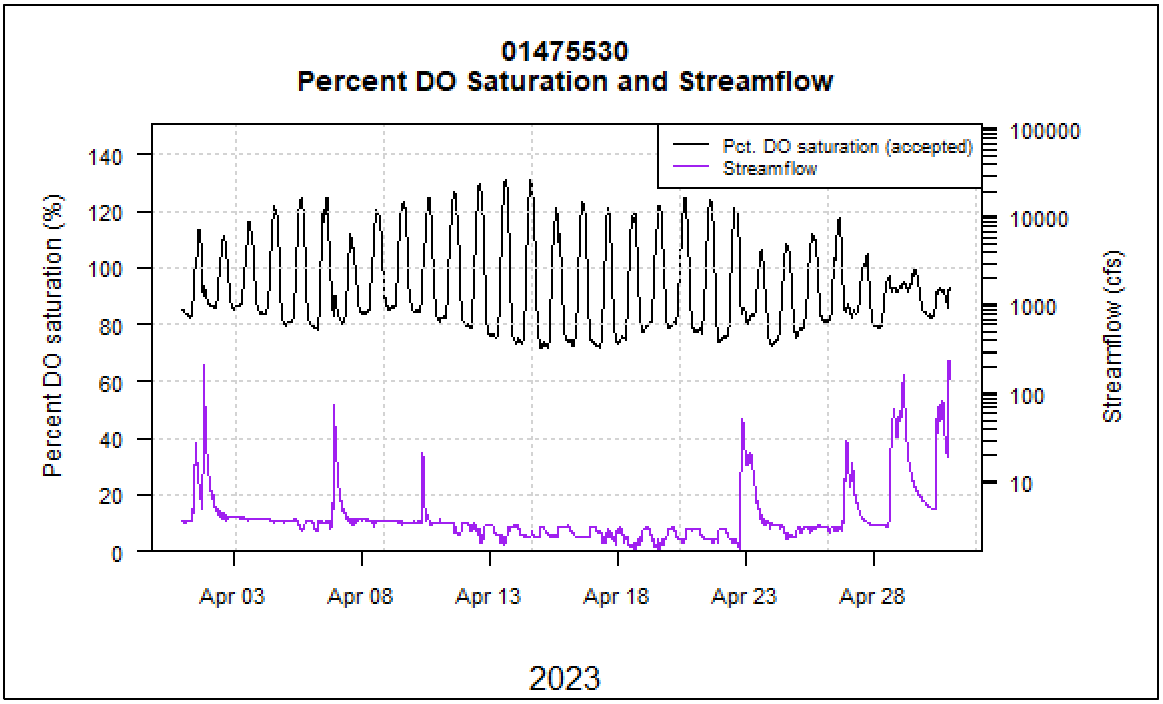


Figure 21. Gage 01475530, Percent DO Saturation and Streamflow, April 2023.

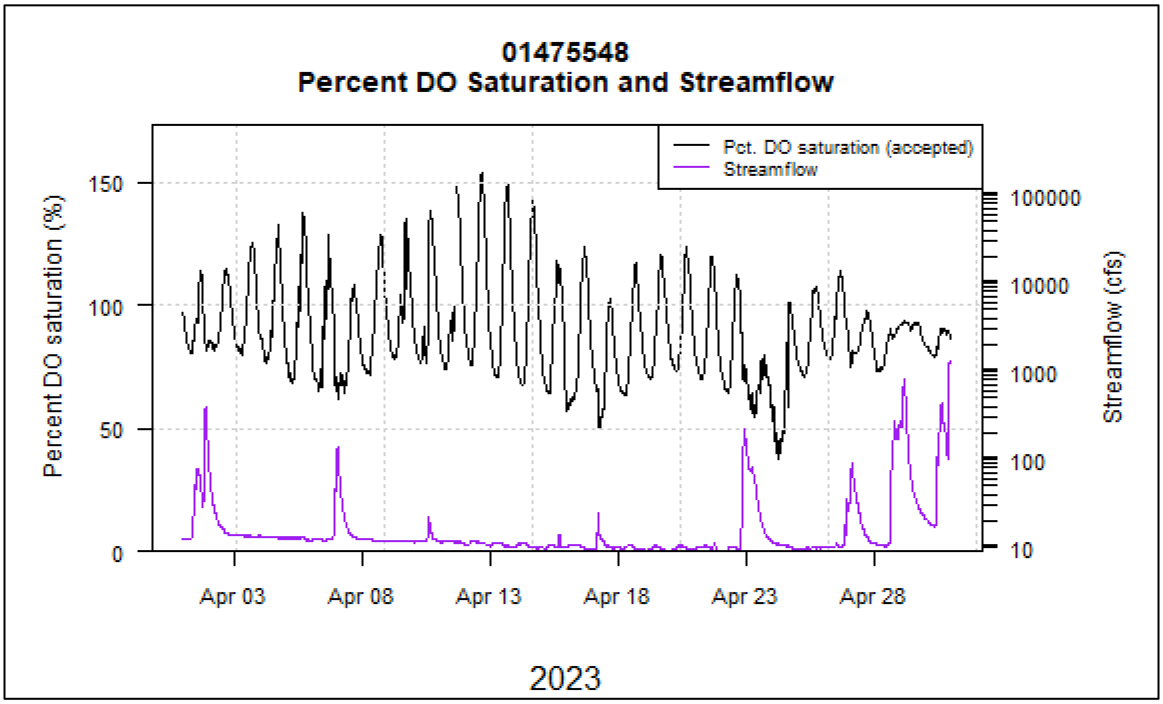


Figure 22. Gage 01475548, Percent DO Saturation and Streamflow, April 2023.

Figure 23. Gage 01475530, Cobbs Creek at Rte. 1, looking upstream

Figure 24. Gage 01475548, Cobbs Creek at Mt. Moriah Cemetery

Specific Conductance

Specific conductance observations were similar to those observed in Tacony Creek (Tables 24-25). During a typical winter, road salt may have some impact on conductance at both gages. However, the typical pattern of stormwater lowering conductance levels in the stream is well-observed during the storms that occurred in April (Figures 25-26).

Table 24. Gage 01475530 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	2964	136	637	571.2	100	0
Aug-22	2964	110	645	564.4	100	0
Sep-22	2789	88	637	541.1	100	0
Oct-22	2971	99	612	508.2	100	0
Nov-22	2874	90	635	555.5	100	0
Mar-23	1388	158	615	535.9	100	0
Apr-23	2479	61	635	515.8	89.9	10.1
May-23	2334	128	636	574.2	87.4	12.6
Jun-23	2595	64	641	505.4	90.2	9.8

Table 25. Gage 01475548 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	2969	197	767	644.4	100	0
Aug-22	2967	175	773	604.3	100	0
Sep-22	2870	83	781	645.7	100	0
Oct-22	2969	96	737	540.5	100	0
Nov-22	2785	117	752	602.1	100	0
Mar-23	2048	235	700	602.6	100	0
Apr-23	2876	92	721	557.7	100	0
May-23	2964	114	742	672.2	100	0
Jun-23	2868	70	747	517.4	100	0

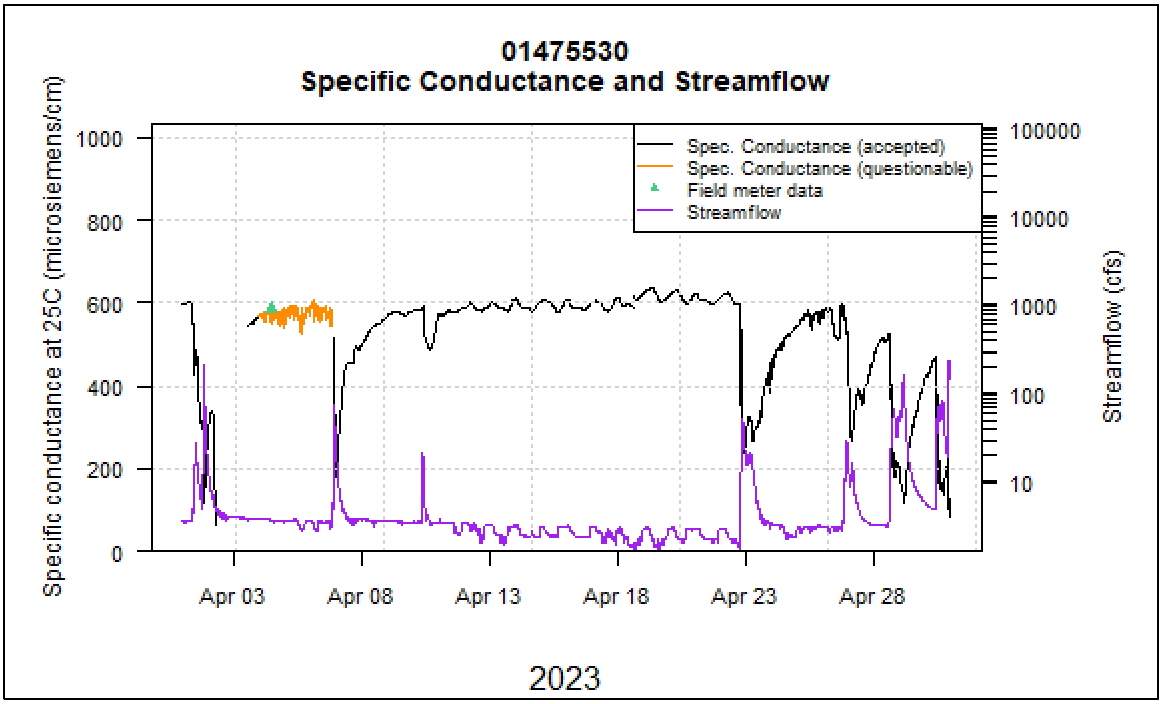


Figure 25. Gage 01475530, Specific Conductance and Streamflow, April 2023.

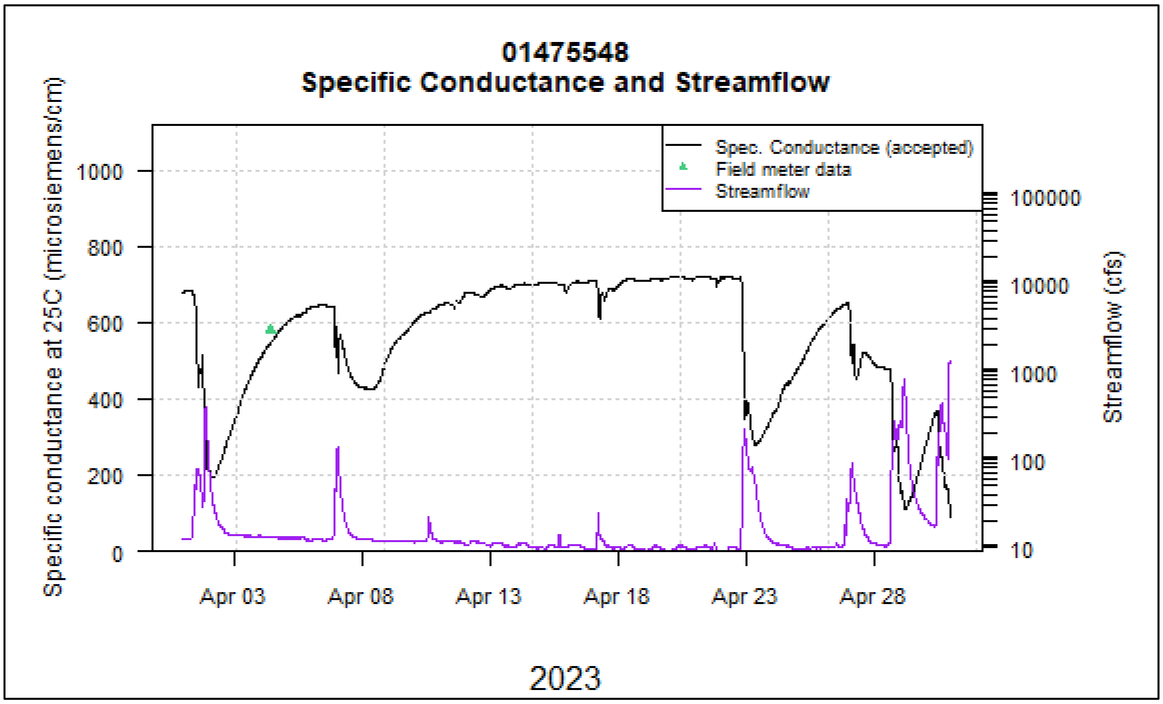


Figure 26. Gage 01475548, Specific Conductance and Streamflow, April 2023.

Temperature

Both Cobbs Creek gages showed exceedances of temperature maximum criteria during the fall and spring seasons, when temperature criteria are more stringent (Tables 26-27).

Table 26. Gage 01475530 Temperature Summary Results by Maximum Criteria Period

Designated Use	Date range start	Date range end	% exceedance	% attaining	% flagged data	% accepted data	Min	Max	Mean
WWF	1-Jul	31-Jul	0	100	0	100	19.5	27.9	23.4
WWF	1-Aug	15-Aug	0	100	0	100	20	28.4	24
WWF	16-Aug	31-Aug	0	100	0	100	19.1	26.3	22.9
WWF	1-Sep	15-Sep	0	100	0	100	18.5	24.4	21.5
WWF	16-Sep	30-Sep	0	100	0	100	13.8	22	17.9
WWF	1-Oct	15-Oct	0	100	0	100	11	17.8	14
WWF	16-Oct	31-Oct	0	100	0	100	9.3	16.7	12.7
WWF	1-Nov	15-Nov	38.2	61.8	0	100	6.8	18	13.3
WWF	16-Nov	30-Nov	2.7	97.3	0	100	2.7	10.3	6.9
WWF	1-Mar	31-Mar	80.3	19.7	0	100	4.4	14.3	9.7
WWF	1-Apr	15-Apr	79.7	20.3	0	100	7.3	21	14.2
WWF	16-Apr	30-Apr	51.3	48.7	0	100	10.8	20	14.7
WWF	1-May	15-May	7.7	92.3	0	100	10.5	20.4	14.7
WWF	16-May	31-May	0	100	0	100	12.7	20.5	17
WWF	1-Jun	15-Jun	0	100	0	100	15	23.7	18.7
WWF	16-Jun	30-Jun	0	100	0	100	16.8	23.8	19.8

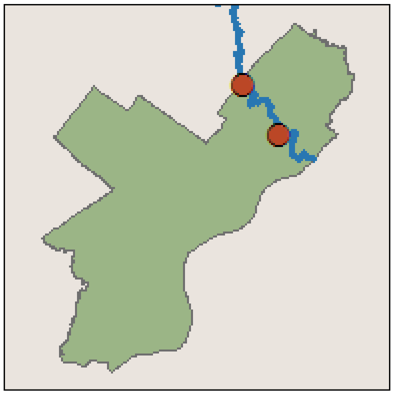
Table 27. Gage 01475548 Temperature Summary Results by Maximum Criteria Period

Designated Use	Date range start	Date range end	% exceedance	% attaining	% flagged data	% accepted data	Min	Max	Mean
WWF	1-Jul	31-Jul	0	100	0	100	20.9	29.1	24.9
WWF	1-Aug	15-Aug	0	100	0	100	21.4	28.9	25.2
WWF	16-Aug	31-Aug	0	100	0	100	20.4	27.4	24
WWF	1-Sep	15-Sep	0	100	0	100	19.7	24.9	22.2
WWF	16-Sep	30-Sep	0	100	0	100	14.6	22.4	18.4
WWF	1-Oct	15-Oct	0	100	0	100	11.5	17.9	14.1
WWF	16-Oct	31-Oct	0	100	0	100	9.5	16.8	12.8
WWF	1-Nov	15-Nov	40.1	59.9	0	100	7.5	18.1	13.5
WWF	16-Nov	30-Nov	0	100	0	100	2.2	10	6.2
WWF	1-Mar	31-Mar	59.4	40.6	0	100	4.2	13.7	8.9
WWF	1-Apr	15-Apr	88.9	11.1	0	100	9.1	21.2	14.8
WWF	16-Apr	30-Apr	60.9	39.1	0	100	11.1	20.6	15.4
WWF	1-May	15-May	22.6	77.4	0	100	11	20.7	15.7
WWF	16-May	31-May	0	100	0	100	14.6	21.4	18.1
WWF	1-Jun	15-Jun	0	100	0	100	16.5	24	19.8
WWF	16-Jun	30-Jun	0	100	0	100	18.1	24.6	20.8

Gages in Separate Sewer System Watersheds

Gages in the Pennypack, Wissahickon and Poquessing watersheds are situated in the separate sewer system areas of Philadelphia. Although these sites are not affected by combined sewer overflows, discharge of untreated stormwater runoff from stormwater outfalls can negatively affect water quality.

Pennypack Creek (Gages 01467042 and 01467048)



Dissolved oxygen and pH

Both the upstream (01467042) and downstream (01467048) gages of Pennypack Creek showed pronounced diel fluctuations in dissolved oxygen and pH as a result of algal activity. These patterns are most evident during dry weather periods, when algal growth is able to excel because of abundant sunshine and a lack of storm events that might otherwise scour the algal population.

At both upstream and downstream Pennypack Creek gages, periods of dry weather in warm months are conducive to excessive algal growth. During these periods, algal populations seemed to flourish, with large daily DO amplitudes during April (Figures 31-32).

In April, daily pH fluctuations of more than 1 unit were observed during dry weather (Figures 33-34). Maximum pH criteria were attained at both gages in the spring. It would be reasonable to conclude that if not for periodic interruptions of algal activity due to rainfall, these fluctuations and chronic pH criteria exceedance would likely occur through the entire season.

Algal communities in the area of both gages recover quickly after storm events, as seen in Figures 33-34. Prior to a series of small storms occurring in April 2023, both DO and pH showed the typical pronounced fluctuations indicative of strong algal activity. This pattern diminished with the storms, when much of the algae was likely scoured away and overcast conditions likely inhibited further growth, as indicated by the PAR data at 01467048 for April 2023 (Figure 35). However, within 2-3 days of the conclusion of the rainfall and the return of sunny conditions, fluctuations of DO and pH resumed, indicative of high algal density. This not only demonstrates the resilience of the algal population in this ecosystem, but also a likely abundance of nutrients that allows regrowth to occur so quickly.

Table 28. Gage 01467042 Dissolved Oxygen Minimum Criterion Summary Results by Month

Month	Des. Use	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	TSF	2969	5	12.8	8.3	100	0	0	100
Aug-22	TSF	2970	4.8	11.7	8	100	0	0.4	99.6
Sep-22	TSF	2875	5.9	13.6	8.7	100	0	0	100
Oct-22	TSF	2972	7.7	11.7	9.5	100	0	0	100
Nov-22	TSF	2878	6.2	12.7	10	99.9	0.1	0	100
Mar-23	TSF	2825	8.6	18	11.6	100	0	0	100
Apr-23	TSF	2876	6	15.4	9.3	100	0	0	100
May-23	TSF	2971	7.1	11.9	9.2	100	0	0	100
Jun-23	TSF	2877	2.8	13.4	7.9	100	0	4.9	95.1

Table 29. Gage 01467048 Dissolved Oxygen Minimum Criterion Summary Results by Month

Month	Des. Use	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	TSF	2968	4.2	12.6	7.7	99.9	0.1	1	99
Aug-22	TSF	2968	5	13	7.8	100	0	0	100
Sep-22	TSF	2872	5.9	14	8.7	99.9	0.1	0	100
Oct-22	TSF	2962	8.4	13.4	10.1	99.8	0.2	0	100
Nov-22	TSF	2878	6.1	15.7	10.9	100	0	0	100
Mar-23	TSF	2139	9.4	18	12.2	99.9	0.1	0	100
Apr-23	TSF	2859	6	15.9	9.5	100	0	0	100
May-23	TSF	2962	7	13.2	9.2	99.8	0.2	0	100
Jun-23	TSF	2870	5.8	12.5	8.2	99.9	0.1	0	100

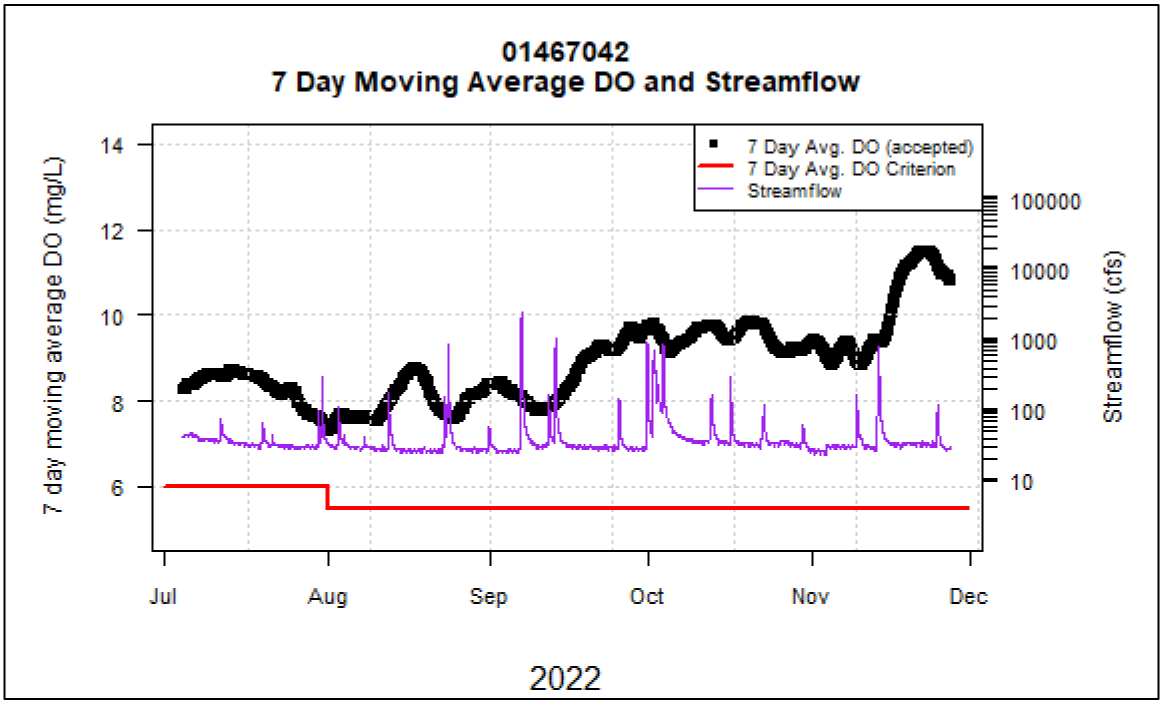


Figure 27. Gage 01467042, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Nov 2022.

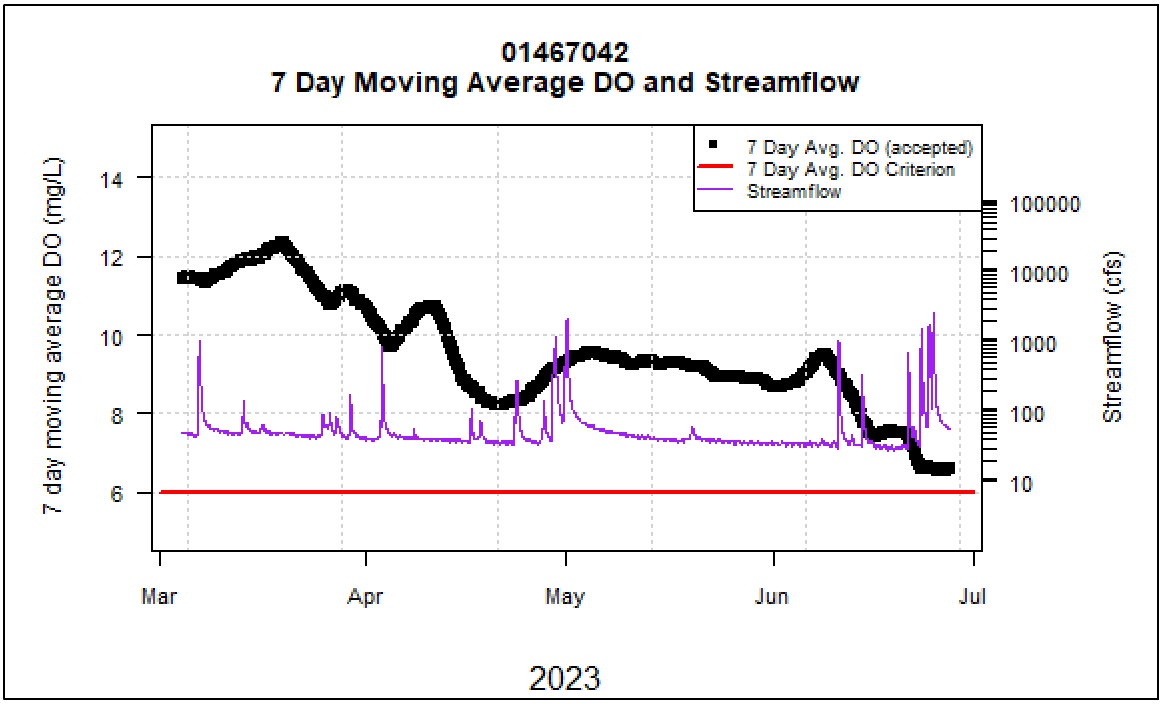


Figure 28. Gage 01467042, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2023.

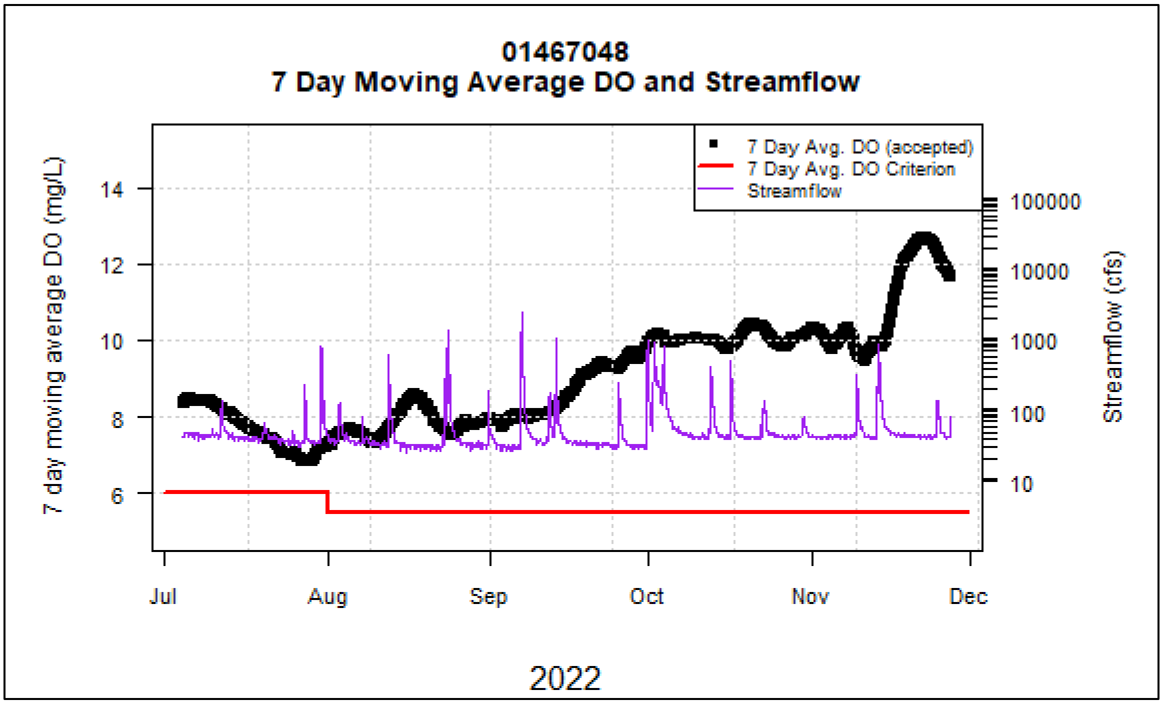


Figure 29. Gage 01467048, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Nov 2022.

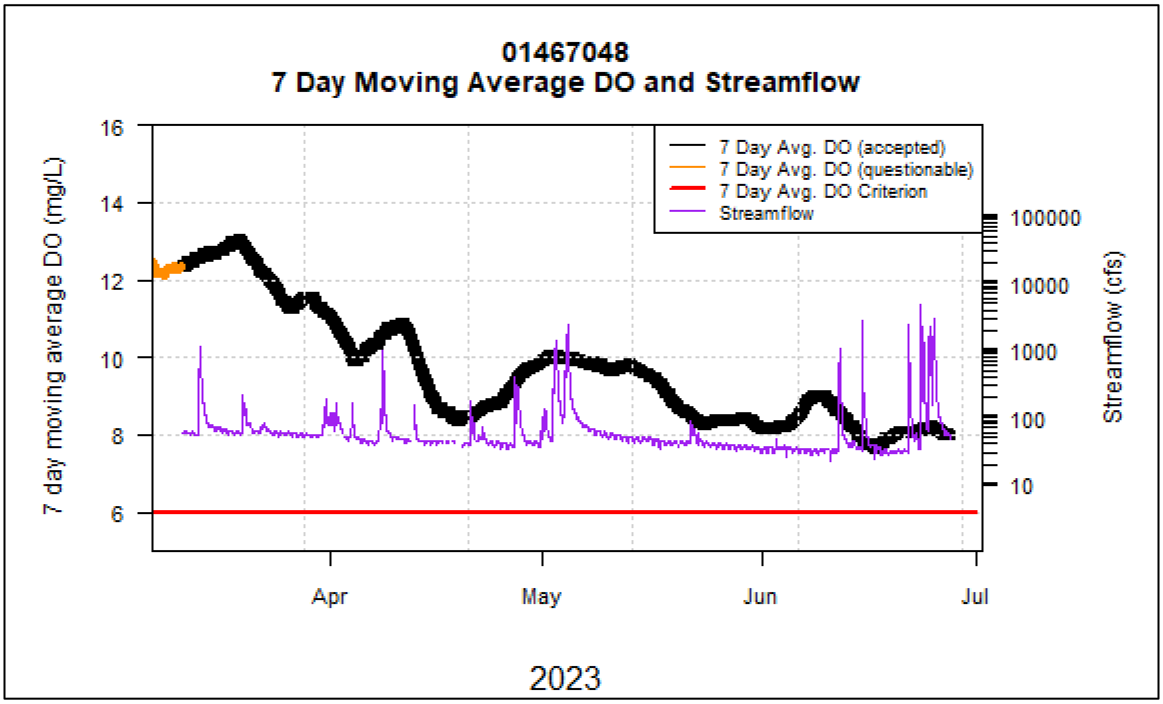


Figure 30. Gage 01467048, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2023.

Table 30. Gage 01467042 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	2969	7.2	8.8	7.9	100	0	0	0	100	100
Aug-22	2970	7	8.5	7.7	100	0	0	0	100	100
Sep-22	2875	6.8	8.5	7.6	100	0	0	0	100	100
Oct-22	2971	7.2	8.4	7.5	100	0	0	0	100	100
Nov-22	2878	7.2	7.8	7.5	100	0	0	0	100	100
Mar-23	2826	7.3	9.1	7.8	100	0	0	0.2	100	99.8
Apr-23	2877	7.3	8.9	7.7	100	0	0	0	100	100
May-23	2971	7.2	8	7.6	100	0	0	0	100	100
Jun-23	2878	6.9	8.6	7.5	100	0	0	0	100	100

Table 31. Gage 01467048 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	2967	7	8.8	7.8	99.9	0.1	0	0	100	100
Aug-22	2969	6.8	9	7.7	100	0	0	0	100	100
Sep-22	2875	6.8	8.9	7.7	100	0	0	0	100	100
Oct-22	2967	7.2	8.4	7.7	100	0	0	0	100	100
Nov-22	2873	7.2	8.8	7.7	99.9	0.1	0	0	100	100
Mar-23	2140	7.3	9.2	8.1	100	0	0	0.9	100	99.1
Apr-23	2855	7	9	7.5	99.9	0.1	0	0	100	100
May-23	2958	6.9	8.5	7.5	100	0	0	0	100	100
Jun-23	2871	6.6	8.7	7.5	100	0	0	0	100	100

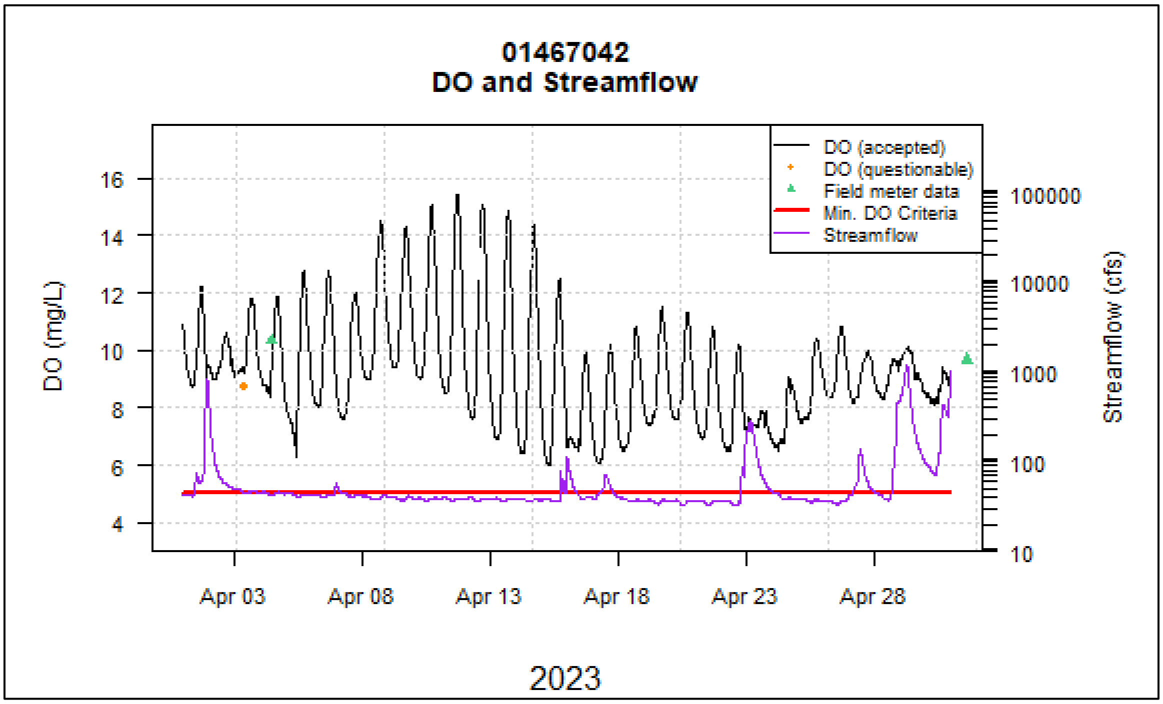


Figure 31. Gage 01467042, Dissolved Oxygen and Streamflow, April 2023.

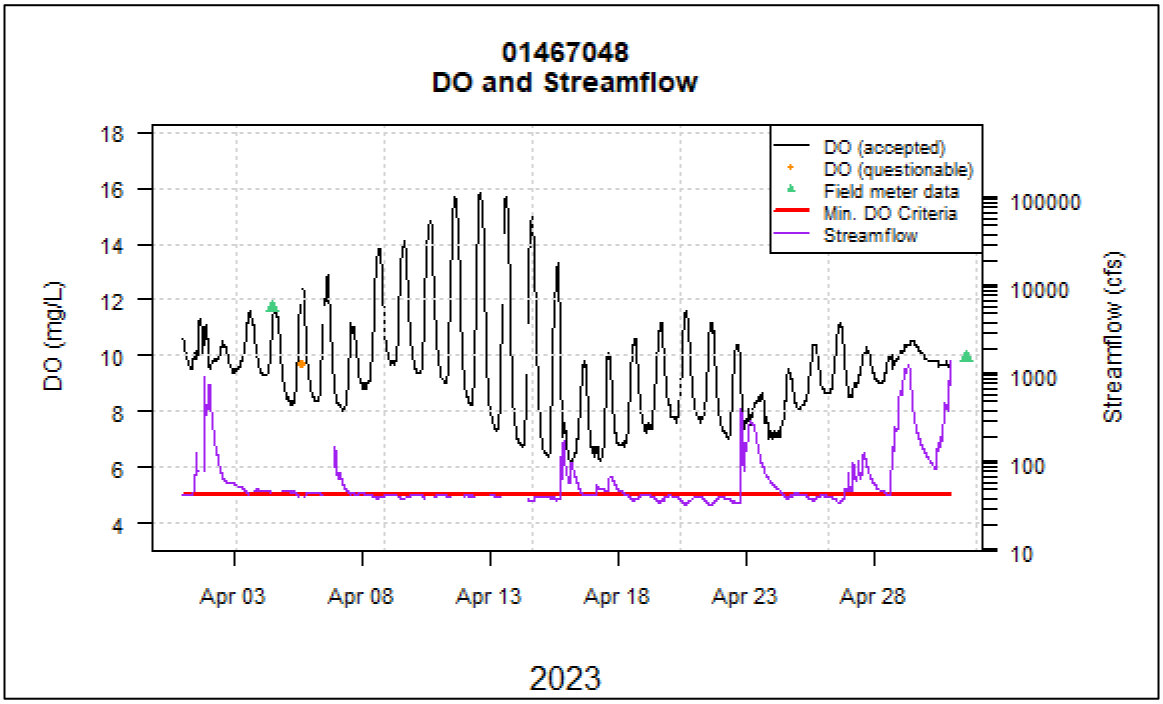


Figure 32. Gage 01467048, Dissolved Oxygen and Streamflow, April 2023.

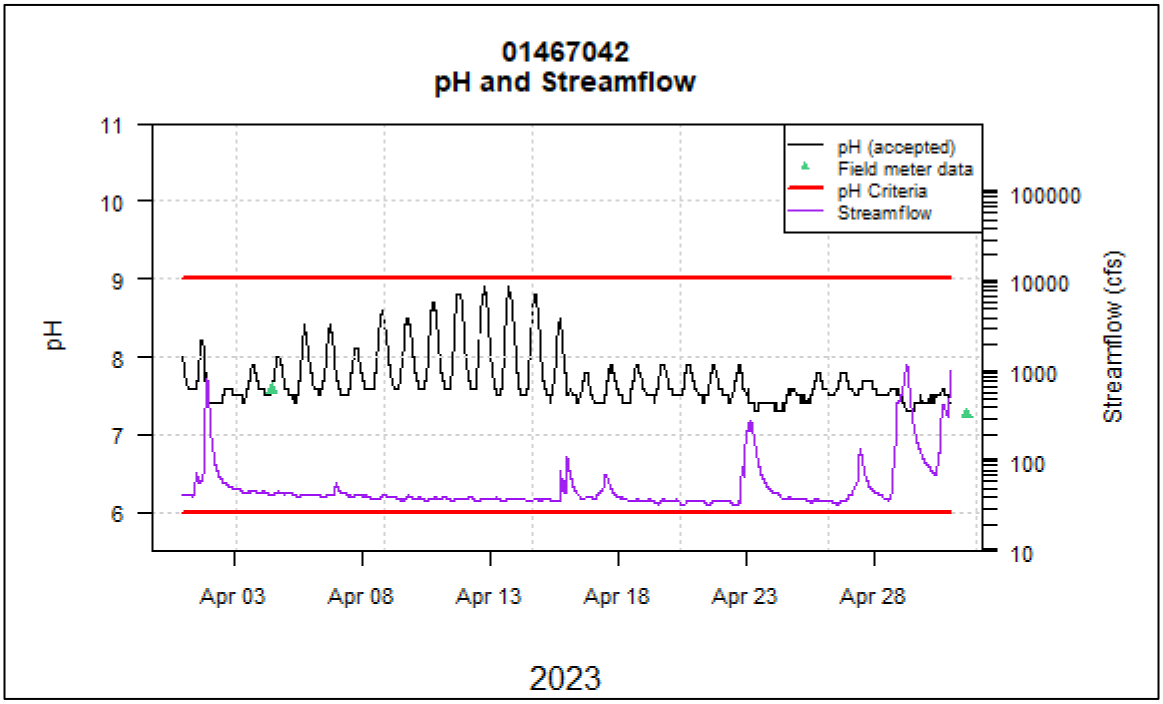


Figure 33. Gage 01467042, pH and Streamflow, April 2023.

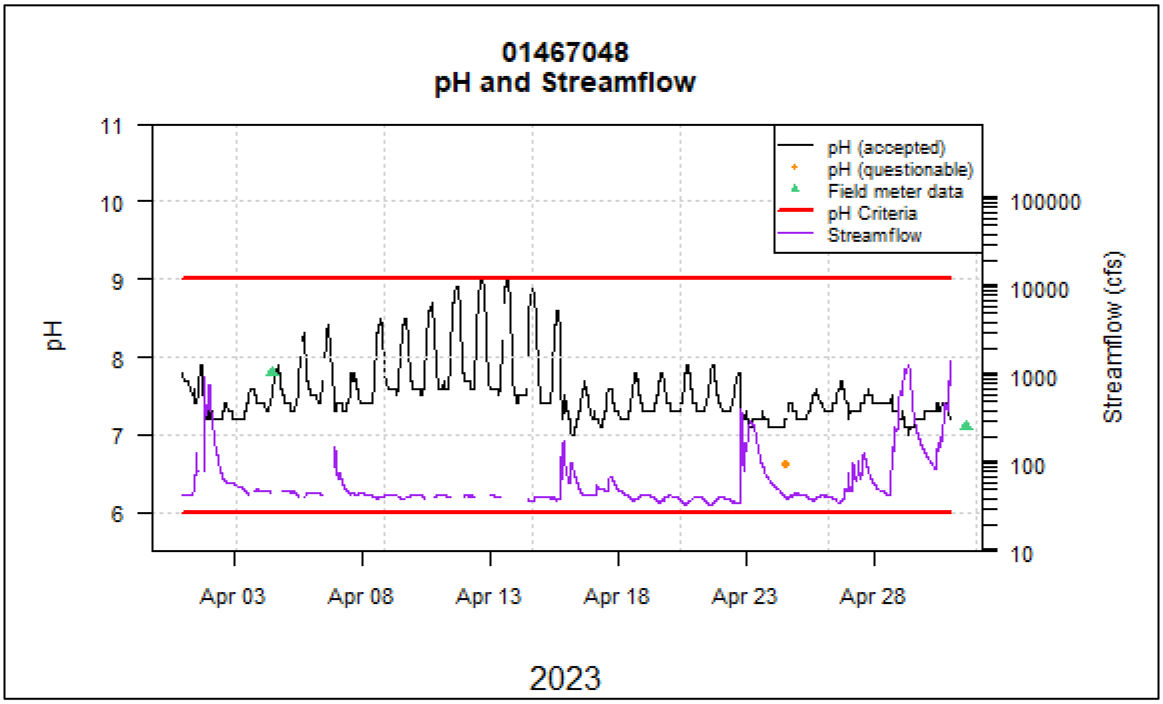


Figure 34. Gage 01467048, pH and Streamflow, April 2023.

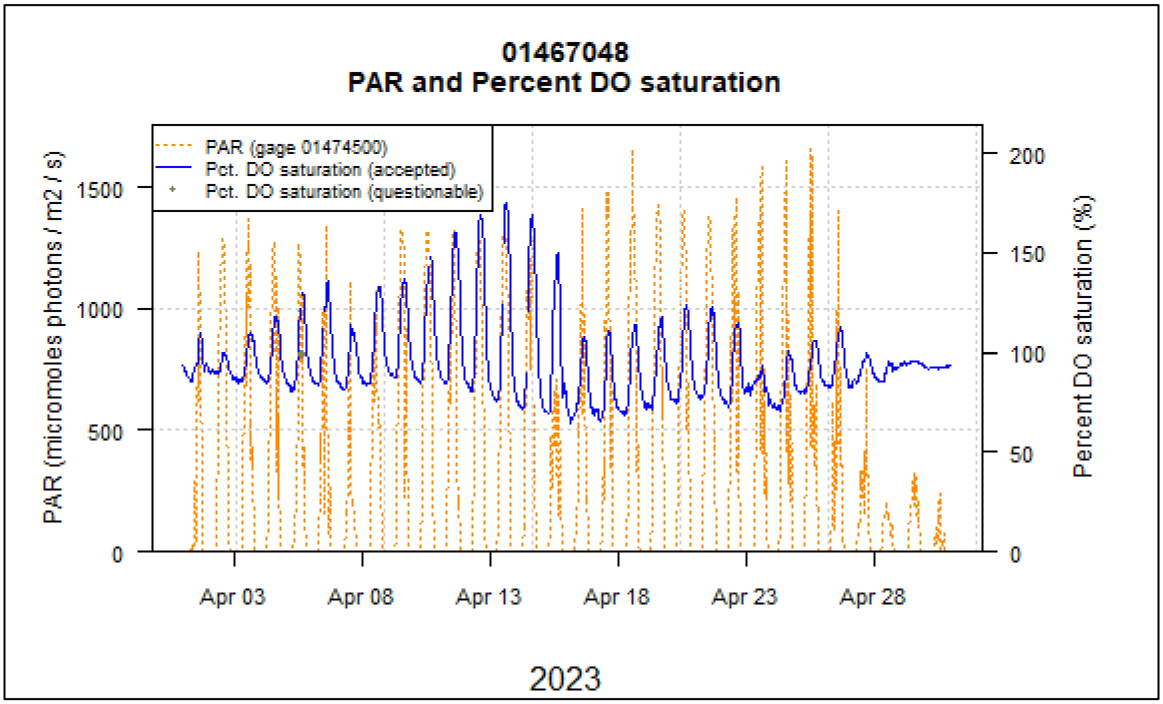


Figure 35. Gage 01467048, PAR and Percent Dissolved Oxygen Saturation, April 2023.

Figure 36. Gage 01467042, Pennypack Creek at Pine Rd., looking upstream

Figure 37. Gage 01467048, Pennypack Creek at Lower Rhawn St. Bridge, looking upstream

Turbidity

Turbidity data at the Pennypack Creek gages tend to reflect streamflow conditions. When there is high flow (*i.e.,* during and after storms), increases in turbidity are common and expected, as sediment in the creek bed is resuspended and particles present in runoff enter the stream (Figure 38). The downstream gage generally exhibited higher turbidity values throughout the year (Tables 32-33).

Flagged data are often due to periods during the month when sondes report high turbidity values that were corrected after the instrumentation was cleaned. After a storm, optical sensors such as those used to detect dissolved oxygen and turbidity can return inaccurate readings due to the sonde pipe becoming clogged with sediment and other debris. When turbidity readings come down after a cleaning, it is typical procedure to flag data back to the end of a storm, when the sonde pipe likely became clogged and did not reflect actual conditions in the stream.

Table 32. Gage 01467042, Turbidity Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% above max. guideline	% below max. guideline
Jul-22	2963	0.3	35	1	99.8	0.2	3	97
Aug-22	2970	0.3	220	2.6	100	0	10.2	89.8
Sep-22	2871	0.3	214	3.4	100	0	13.2	86.8
Oct-22	2967	0.4	77.2	3	99.8	0.2	21.6	78.4
Nov-22	2873	0.4	89.3	2	99.8	0.2	10.5	89.5
Mar-23	2821	0.6	169	3.1	100	0	14.9	85.1
Apr-23	2876	0.4	220	5.2	100	0	23	77
May-23	2971	0.3	181	2.6	100	0	5.8	94.2
Jun-23	2877	0.3	1290	16.1	100	0	26.1	73.9

Table 33. Gage 01467048, Turbidity Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% above max. guideline	% below max. guideline
Jul-22	2970	0.3	325	3	100	0	44.6	55.4
Aug-22	2968	0.3	210	3.8	100	0	16.8	83.2
Sep-22	2875	0.5	329	6.2	100	0	22.9	77.1
Oct-22	2964	0.3	134	4.8	99.9	0.1	37.4	62.6
Nov-22	2878	0.3	86.5	2.1	99.9	0.1	13.2	86.8
Mar-23	2142	0.3	16.5	2.1	100	0	11	89
Apr-23	2856	0.7	469	11.4	100	0	37.8	62.2
May-23	2967	0.5	316	4.3	100	0	12.5	87.5
Jun-23	2870	0.3	383	15.2	99.9	0.1	33.4	66.6

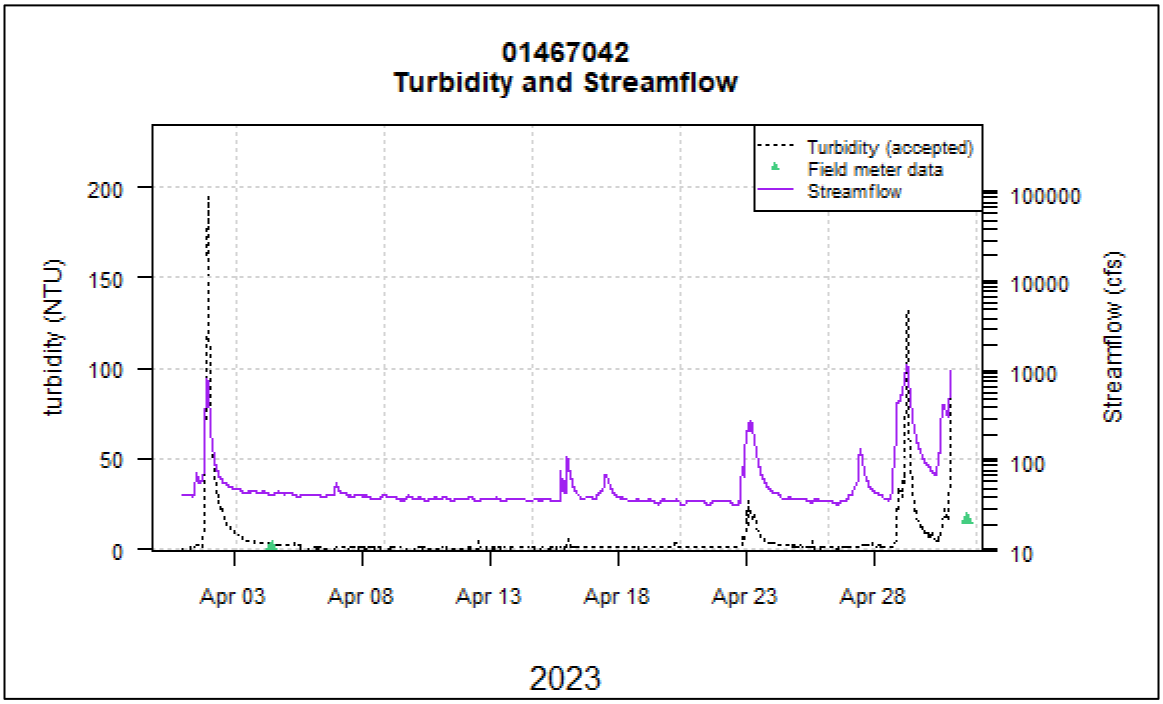


Figure 38. Gage 01467042, Turbidity and Streamflow, April 2023.

Specific Conductance

Specific conductance data were similar to other Philadelphia area streams. Elevated mean and maximum conductance values at both gages may be evidence of the effects of stormwater runoff and snowmelt containing road salt during a typical year.

Table 34. Gage 01467042 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	2967	378	854	685.4	99.9	0.1
Aug-22	2965	178	801	653.2	99.9	0.1
Sep-22	2870	128	778	622.2	100	0
Oct-22	2971	169	725	557	100	0
Nov-22	2876	201	732	624.2	100	0
Mar-23	2826	227	677	571.3	100	0
Apr-23	2875	139	714	551.9	100	0
May-23	2970	121	682	600.4	100	0
Jun-23	2877	103	739	552.4	100	0

Table 35. Gage 01467048 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	2966	185	766	656.7	100	0
Aug-22	2965	84	785	581.6	100	0
Sep-22	2870	117	757	573.6	100	0
Oct-22	2959	113	695	512.8	100	0
Nov-22	2874	206	728	593.8	100	0
Mar-23	2140	406	642	579.6	100	0
Apr-23	2856	130	661	507.1	100	0
May-23	2961	107	661	573.5	100	0
Jun-23	2869	54	714	497.7	100	0

Temperature

Temperature data showed variable attainment of maximum temperature criteria (Tables 36-37). Spring and early summer months are always subject to major air temperature fluctuations, and reliably predicting average stream temperatures during these periods is difficult at best. Maximum criteria for the summer months, for example, do not take into account natural summer temperature peaks. Above normal air temperatures are the likely cause of stream temperature exceedance rates in Spring 2023 (Figures 39-40).

Table 36. Gage 01467042 Temperature Summary Results by Maximum Criteria Period

Designated Use	Date range start	Date range end	% exceedance	% attaining	% flagged data	% accepted data	Min	Max	Mean
TSF	1-Jul	31-Jul	82.4	17.6	0	100	21	28	24.5
TSF	1-Aug	15-Aug	14.6	85.4	0	100	21.4	28.7	25
TSF	16-Aug	31-Aug	0	100	0	100	20.3	26.4	23.7
TSF	1-Sep	15-Sep	0	100	0	100	19.5	24.3	22
TSF	16-Sep	30-Sep	0	100	0	100	14.8	21.8	18.3
TSF	1-Oct	15-Oct	0	100	0	100	11.8	16.9	14.3
TSF	16-Oct	31-Oct	0	100	0	100	9.6	17	12.8
TSF	1-Nov	15-Nov	39.4	60.6	0	100	7.2	17.9	13.3
TSF	16-Nov	30-Nov	0	100	0	100	3	10	6.6
TSF	1-Mar	31-Mar	57.3	42.7	0	100	4.7	12.9	8.7
TSF	1-Apr	15-Apr	84.8	15.2	0	100	8.7	20.7	14.4
TSF	16-Apr	30-Apr	58.7	41.3	0	100	10.8	19.5	15.1
TSF	1-May	15-May	16.6	83.4	0	100	11	19.8	15.4
TSF	16-May	31-May	2.3	97.7	0	100	14	20.2	17.7
TSF	1-Jun	15-Jun	14.7	85.3	0	100	16	23	19.4
TSF	16-Jun	30-Jun	8.3	91.7	0	100	17.9	22.9	20.2

Table 37. Gage 01467048, Temperature Summary Results by Maximum Criteria Period

Designated Use	Date range start	Date range end	% exceedance	% attaining	% flagged data	% accepted data	Min	Max	Mean
TSF	1-Jul	31-Jul	95.1	4.9	0	100	21.9	31	25.7
TSF	1-Aug	15-Aug	32.1	67.9	0	100	21.6	31	26
TSF	16-Aug	31-Aug	0	100	0	100	20.7	29.4	24.7
TSF	1-Sep	15-Sep	0	100	0	100	19.8	26.7	22.7
TSF	16-Sep	30-Sep	0	100	0	100	15	23.4	18.9
TSF	1-Oct	15-Oct	0	100	0	100	11.9	17.6	14.3
TSF	16-Oct	31-Oct	0	100	0	100	9.6	16.5	12.9
TSF	1-Nov	15-Nov	42.6	57.4	0	100	7.6	18.2	13.3
TSF	16-Nov	30-Nov	0	100	0	100	2.4	9.7	5.9
TSF	1-Mar	31-Mar	60	40	0	100	4.9	13	8.9
TSF	1-Apr	15-Apr	89	11	0	100	7.1	21.8	14.8
TSF	16-Apr	30-Apr	68	32	0	100	11	20.3	15.7
TSF	1-May	15-May	26.5	73.5	0	100	11.3	20.5	15.9
TSF	16-May	31-May	19.7	80.3	0	100	15.5	22.2	18.6
TSF	1-Jun	15-Jun	34.7	65.3	0	100	17	25	20.3
TSF	16-Jun	30-Jun	18.3	81.7	0	100	18.1	24.5	20.8

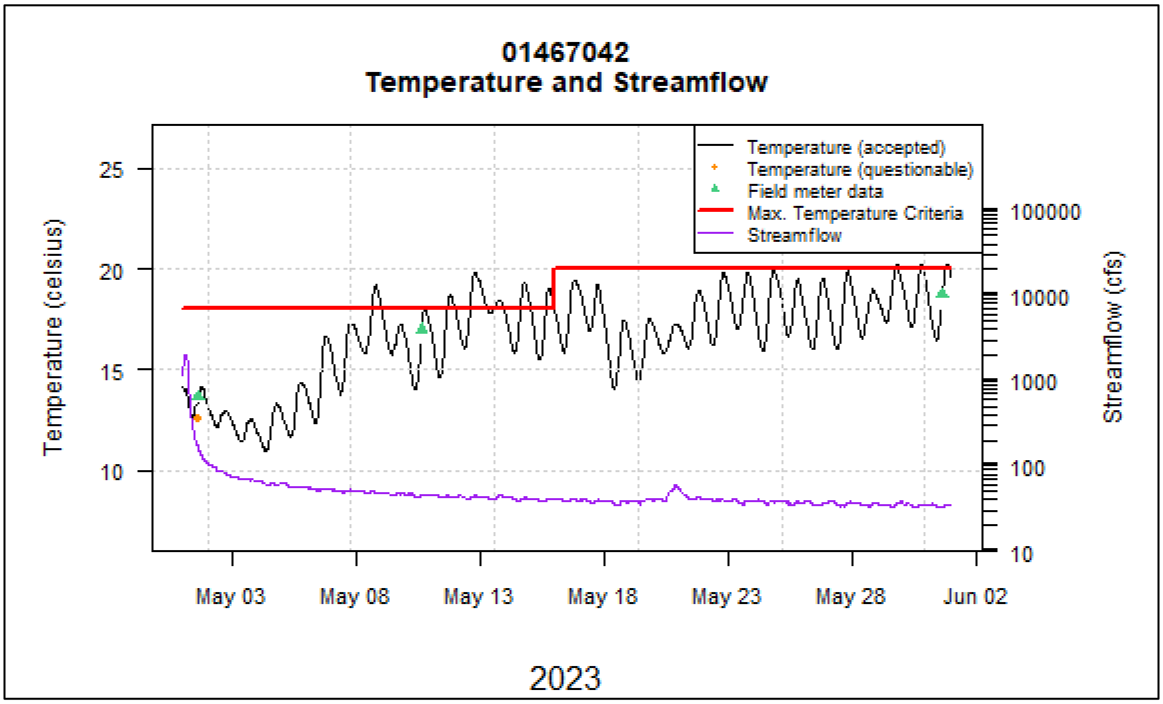


Figure 39. Gage 01467042, Temperature and Streamflow, May 2023.

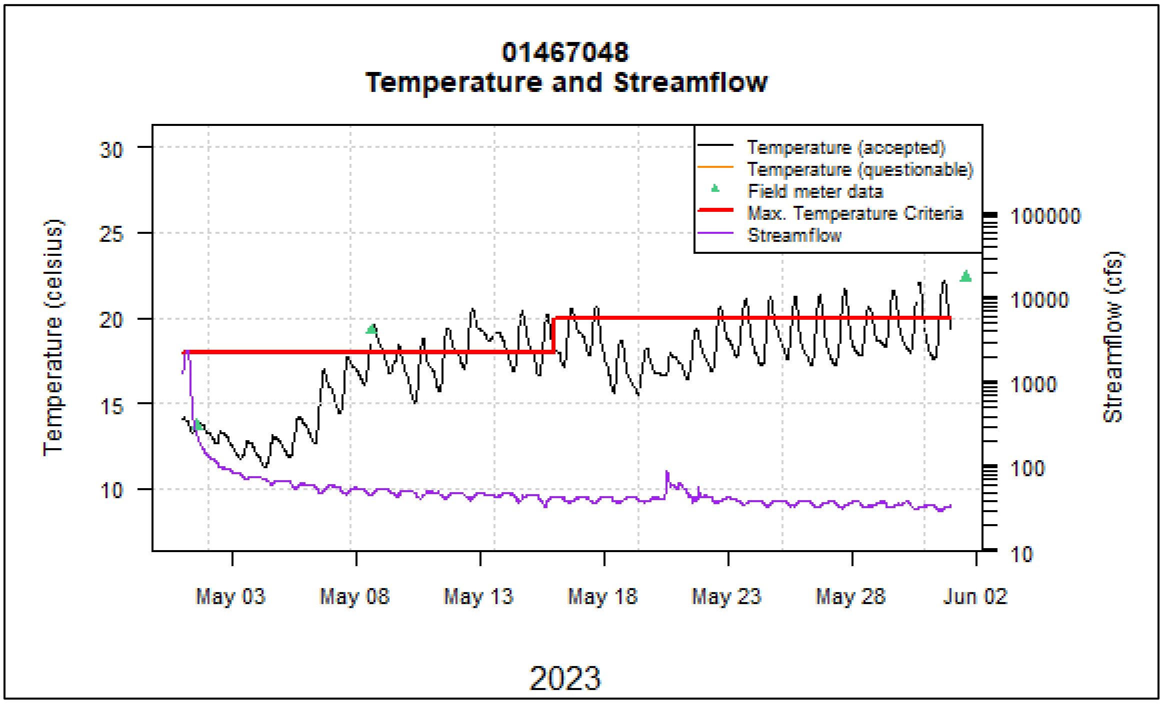
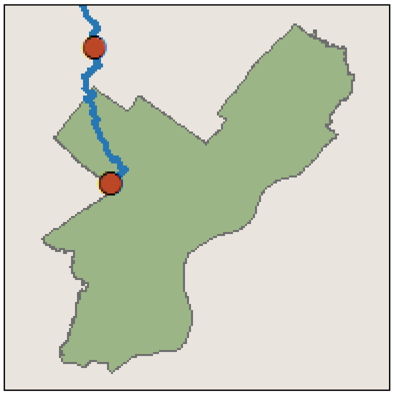


Figure 40. Gage 01467048, Temperature and Streamflow, May 2023.

Wissahickon Creek (Gages 01473900 and 01474000)



Dissolved oxygen and pH

Dissolved oxygen and pH data collected from the Wissahickon Creek gages also show signs of strong algal activity in the form of diel fluctuations. Although these two sites never exceeded the 7-day average guideline for dissolved oxygen, the upper gage (01473900) exhibits some of the most dramatic diel fluctuations of any of the Philadelphia USGS gage sites. In March 2023, dissolved oxygen can be observed to fluctuate by approximately 12 mg/L in a single day/night period (Figure 45), with pH experiencing significant swings at the same time (Figure 46). The pH maxima were exceeded in spring, a direct result of algal activity (Table 40).

Water quality data was not collected at the upstream Wissahickon site during October and November due to the removal of a tree anchoring the sonde during construction at the gage site.

Table 38. Gage 01473900 Dissolved Oxygen Minimum Criterion Summary Results by Month

Month	Des. Use	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	TSF	2964	4.3	13.6	7.7	99.9	0.1	6.4	93.6
Aug-22	TSF	2153	4.5	12.8	7.3	100	0	3.5	96.5
Sep-22	TSF	1853	5.4	13.2	8	100	0	0	100
Oct-22	TSF	NA	NA	NA	NA	NA	NA	NA	NA
Nov-22	TSF	NA	NA	NA	NA	NA	NA	NA	NA
Mar-23	TSF	778	7.1	22.8	12.6	100	0	0	100
Apr-23	TSF	1366	4.4	19	9.5	100	0	4	96
May-23	TSF	1483	5.7	14.1	8.9	100	0	0	100
Jun-23	TSF	1329	4.5	14.4	7.9	100	0	1.2	98.8

Table 39. Gage 01474000 Dissolved Oxygen Minimum Criterion Summary Results by Month

Month	Des. Use	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	TSF	1453	4.9	12.1	8.2	99.9	0.1	0.1	99.9
Aug-22	TSF	1484	5.9	10.9	8	100	0	0	100
Sep-22	TSF	1366	6.8	12.7	9	100	0	0	100
Oct-22	TSF	1485	8.6	12.6	10.2	100	0	0	100
Nov-22	TSF	1361	8.1	14	11.3	100	0	0	100
Mar-23	TSF	875	9.8	17	12.4	100	0	0	100
Apr-23	TSF	1438	6.9	14.6	9.9	100	0	0	100
May-23	TSF	1482	7.6	12.9	9.8	100	0	0	100
Jun-23	TSF	1436	5.8	15	9	100	0	0	100

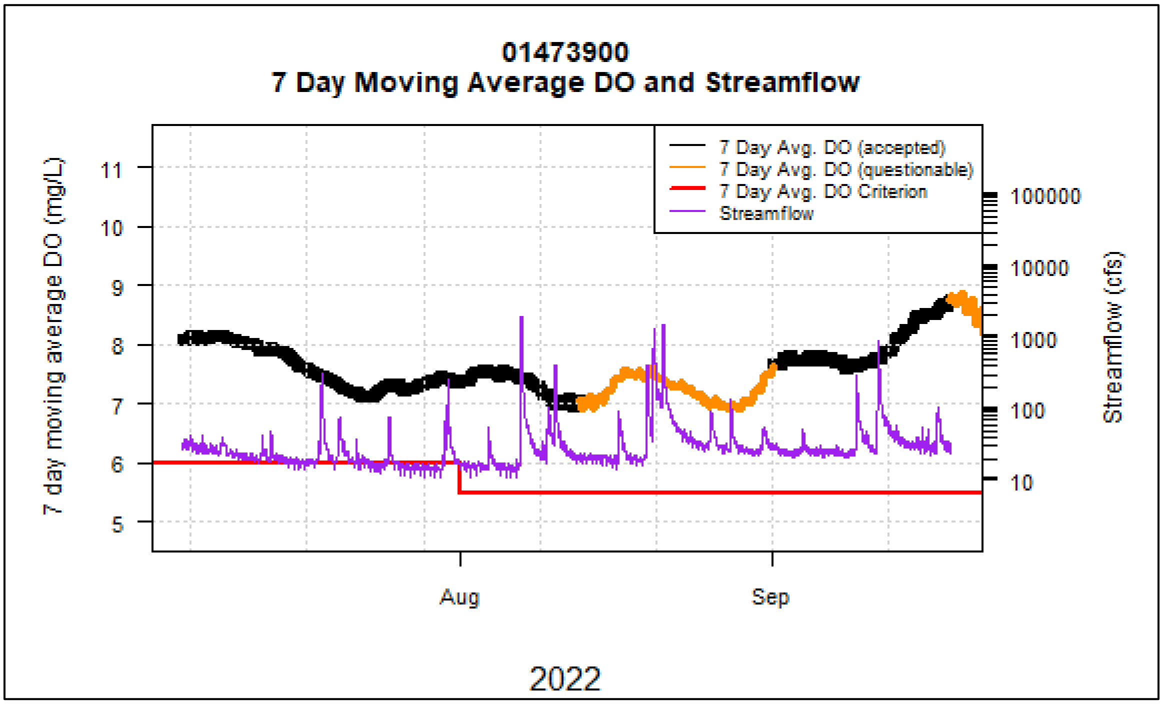


Figure 41. Gage 01473900, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Nov 2022.

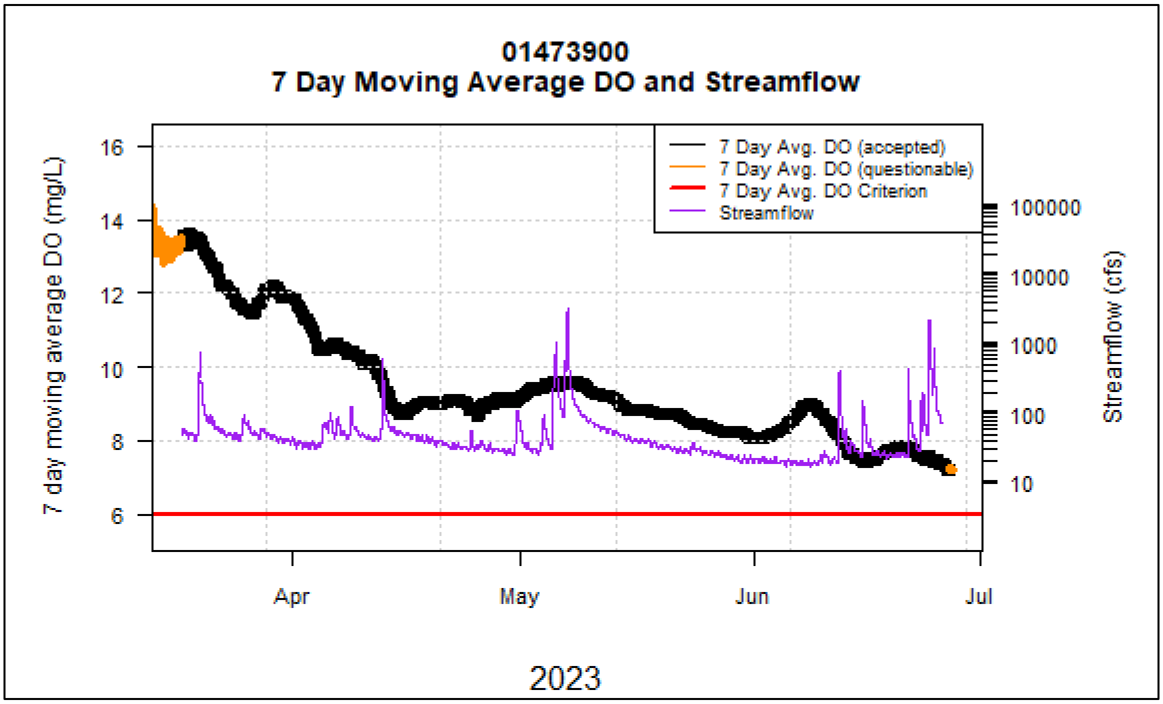


Figure 42. Gage 01473900, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2023.

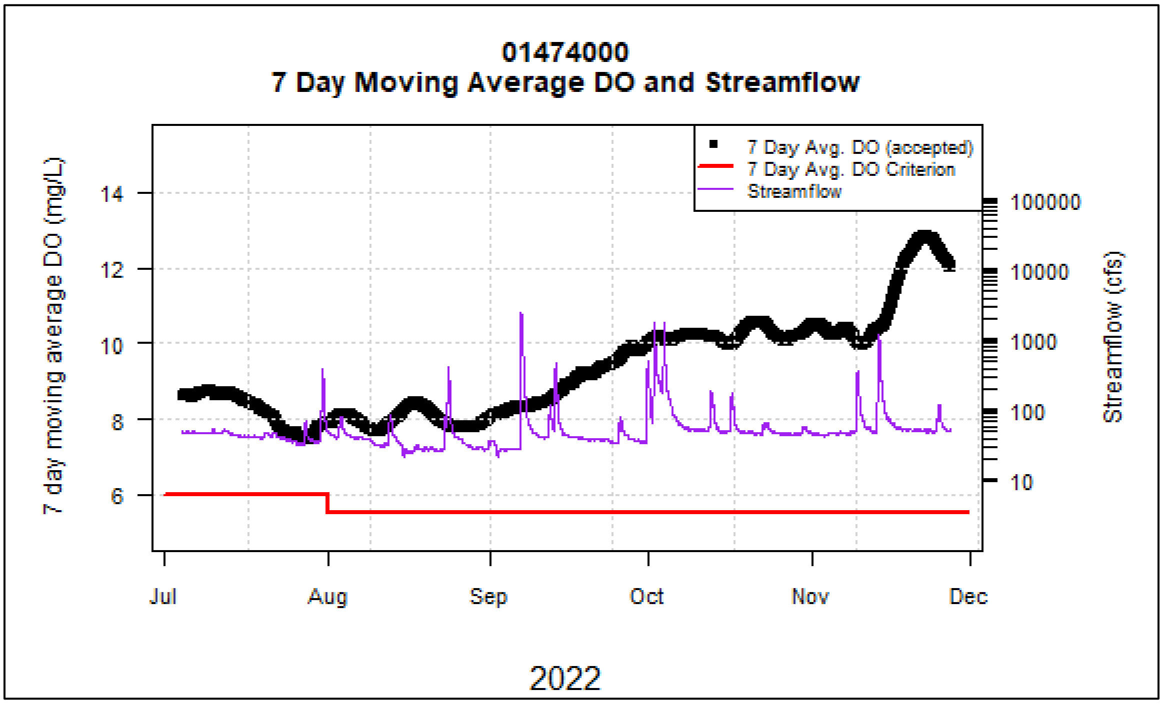


Figure 43. Gage 01474000, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Nov 2022.

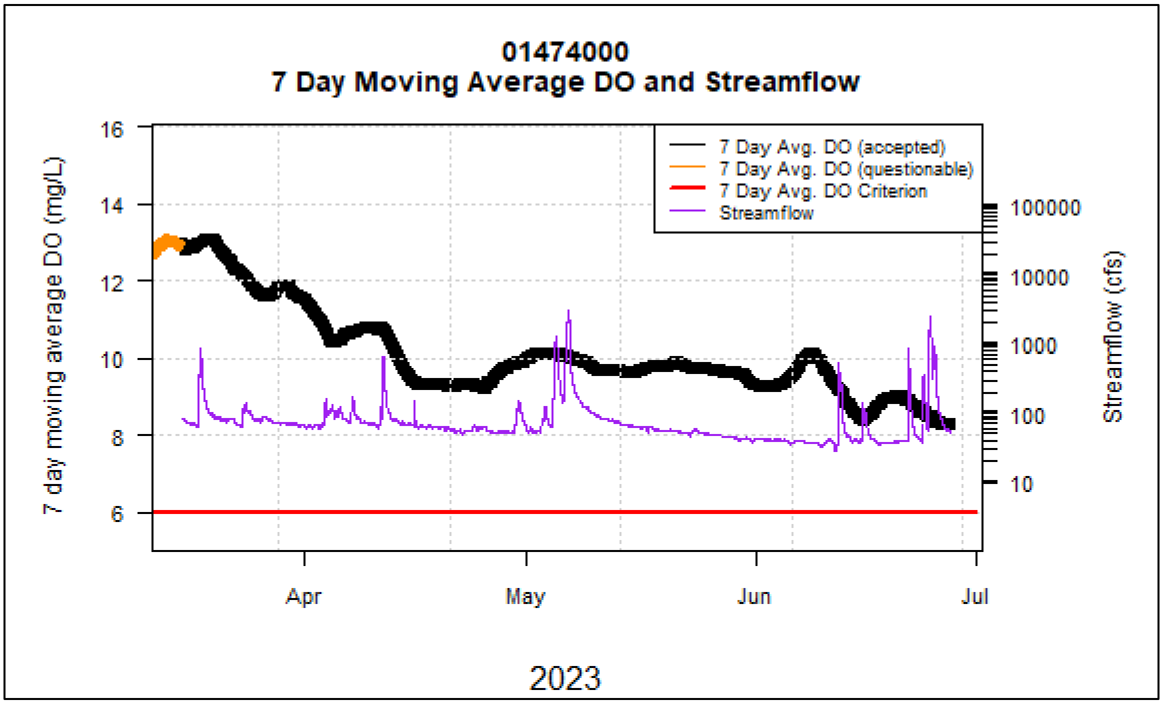


Figure 44. Gage 01474000, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2023.

Table 40. Gage 01473900 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	2965	7.3	8.6	7.9	100	0	0	0	100	100
Aug-22	2366	7.2	8.4	7.8	100	0	0	0	100	100
Sep-22	1851	7.1	8.5	7.7	100	0	0	0	100	100
Oct-22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nov-22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mar-23	778	7.6	9.4	8.4	100	0	0	18.1	100	81.9
Apr-23	1366	7.3	9.1	8	100	0	0	1	100	99
May-23	717	7.1	8.3	7.8	48.3	51.7	0	0	100	100
Jun-23	1329	6.5	8.7	7.8	100	0	0	0	100	100

Table 41. Gage 01474000 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	1455	7.6	8.8	8.2	100	0	0	0	100	100
Aug-22	1484	7.6	8.6	8.2	100	0	0	0	100	100
Sep-22	1397	7.4	8.7	8.3	100	0	0	0	100	100
Oct-22	1486	7.6	8.6	8.2	100	0	0	0	100	100
Nov-22	1378	7.8	8.5	8.2	99.9	0.1	0	0	100	100
Mar-23	875	7.9	9.3	8.6	100	0	0	8.5	100	91.5
Apr-23	1438	7.6	9	8.2	100	0	0	0	100	100
May-23	1482	7.3	8.7	8.2	100	0	0	0	100	100
Jun-23	1436	7.4	9	8.1	100	0	0	0	100	100

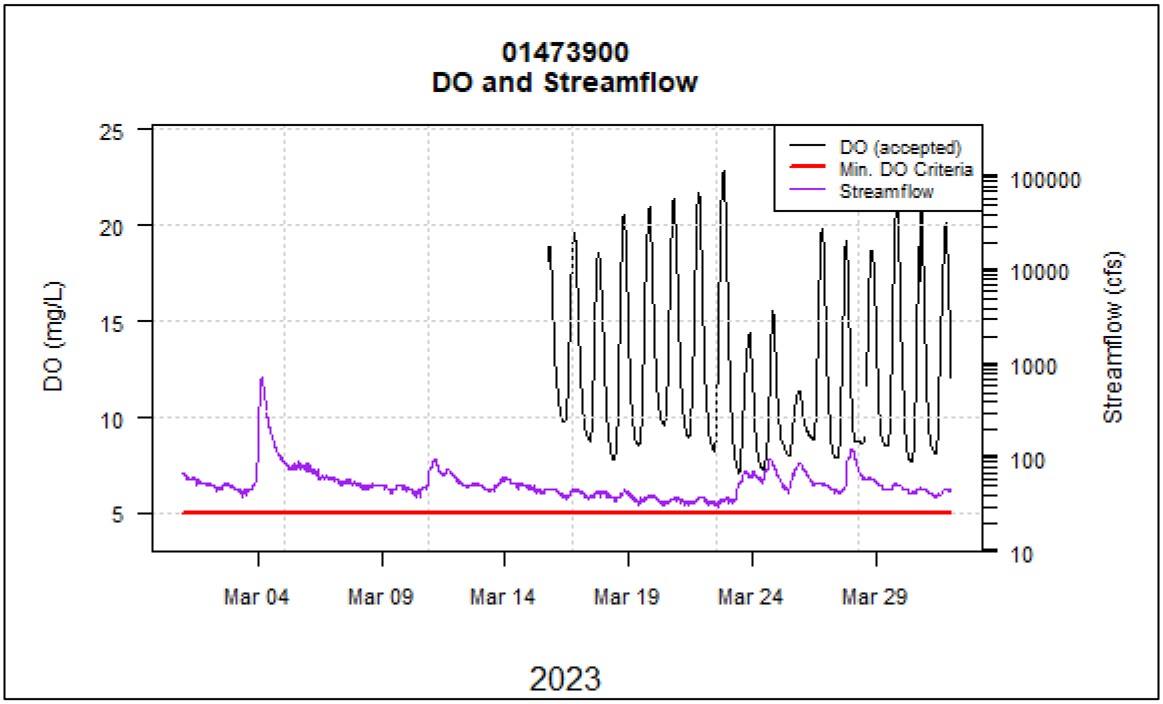


Figure 45. Gage 01473900, Dissolved Oxygen and Streamflow, March 2023.

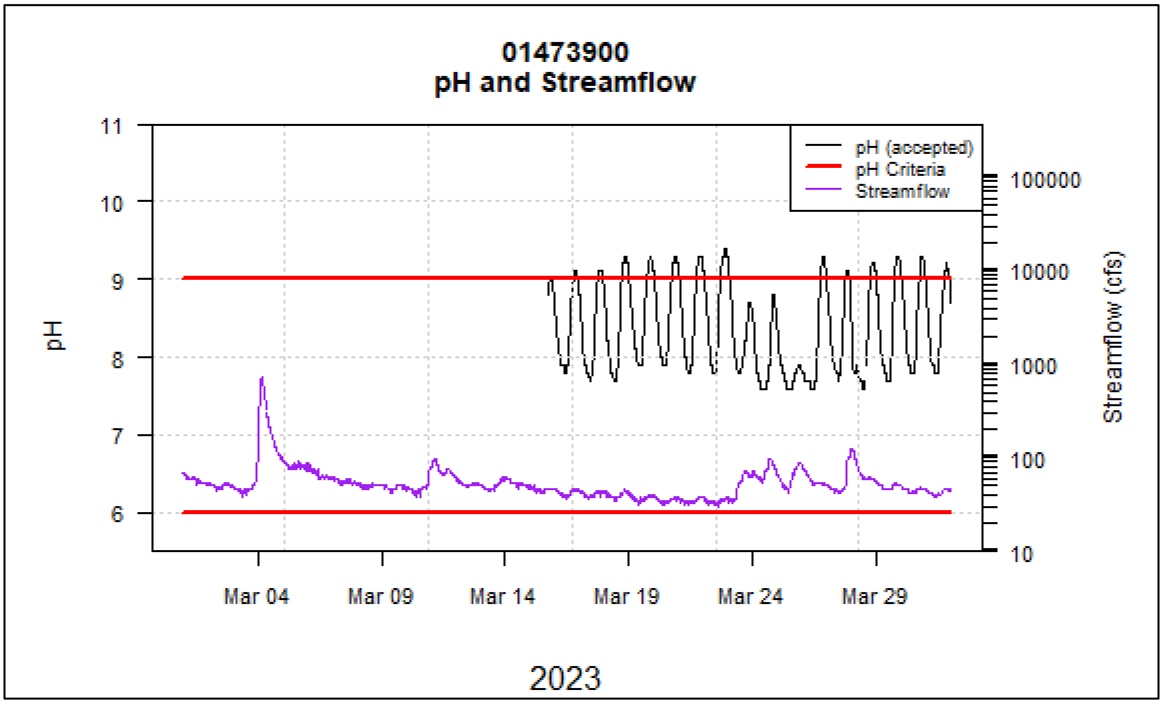


Figure 46. Gage 01473900, pH and Streamflow, March 2023.

Figure 47. Gage 01473900, Wissahickon Creek at Ft. Washington, looking downstream

Figure 48. Gage 01474000, Wissahickon Creek at mouth, looking downstream

Turbidity

Turbidity in the Wissahickon, as with most of Philadelphia's streams, increases drastically with increased flow from rainfall (Tables 42-43, Figure 49). It is possible that these spikes represent a temporarily fouled sensor (i.e., sediment or debris obscures the optical probe for turbidity), but the general rule in QAQC procedures is not to flag turbidity spikes that recede to normal levels on their own. If the sensor remains fouled after a storm or a field check confirms aberrant values, the data is flagged.

Table 42. Gage 01473900 Turbidity Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% above max. guideline	% below max. guideline
Jul-22	2964	0.6	87.5	2.9	100	0	29.1	70.9
Aug-22	2235	0.6	90.3	4	100	0	65	35
Sep-22	1856	0.7	186	5.1	100	0	30	70
Oct-22	NA	NA	NA	NA	NA	NA	NA	NA
Nov-22	NA	NA	NA	NA	NA	NA	NA	NA
Mar-23	777	0.7	23.6	6.6	99.9	0.1	64.4	35.6
Apr-23	1366	0.7	173.5	5.6	100	0	23.4	76.6
May-23	1483	0.7	202	9.2	100	0	85.9	14.1
Jun-23	1329	0.4	244.6	7.3	100	0	40.7	59.3

Table 43. Gage 01474000 Turbidity Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% above max. guideline	% below max. guideline
Jul-22	1461	0.3	69.8	1.8	100	0	8.1	91.9
Aug-22	1572	0.3	44	1.3	100	0	7.2	92.8
Sep-22	1472	0.3	176	3.1	100	0	11	89
Oct-22	1512	0.3	86.7	3.3	100	0	20.4	79.6
Nov-22	1378	0.3	68.6	2.1	99.9	0.1	12.5	87.5
Mar-23	875	0.4	13.2	1.2	100	0	1.4	98.6
Apr-23	1438	0.3	180	5.9	100	0	17.9	82.1
May-23	1942	0.3	214	2.8	100	0	5.9	94.1
Jun-23	2177	0.3	241	3.7	100	0	13.7	86.3

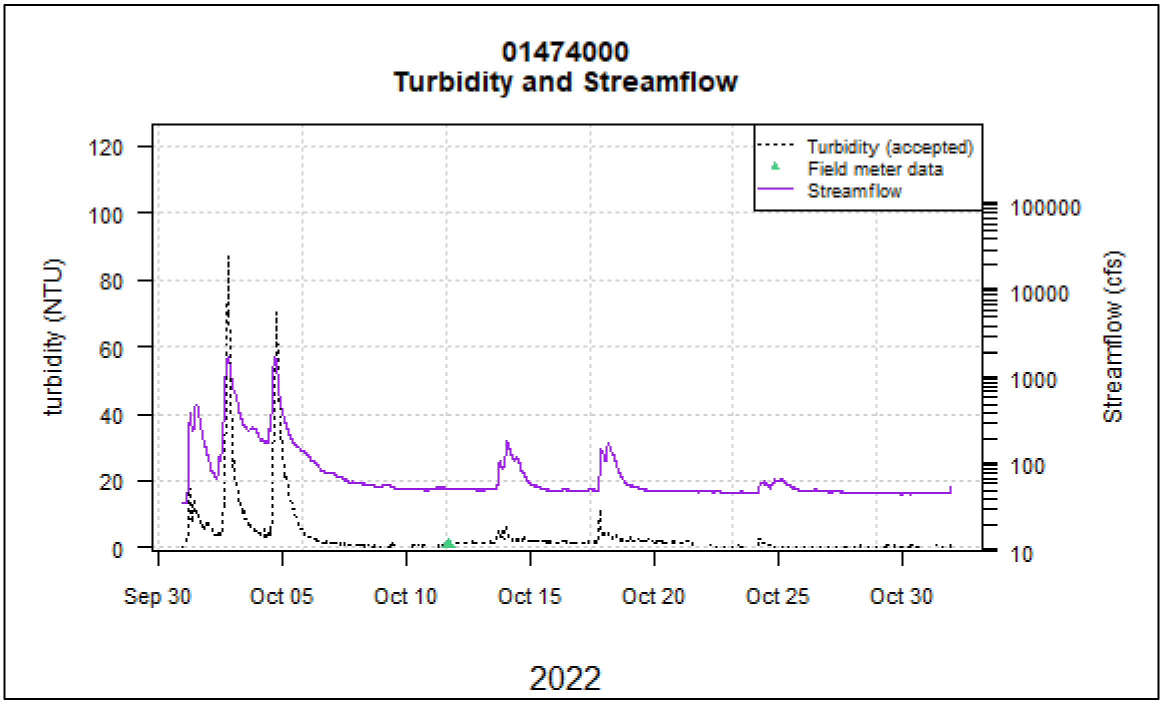


Figure 49. Gage 01474000, Turbidity and Streamflow, October 2022.

Specific Conductance

Specific conductance data at the Wissahickon Creek gage sites generally follow the established pattern in other Philadelphia streams: Runoff from rain events dilutes the stream and decreases conductivity (Figure 50). However, a reversal in this trend sometimes occurs during winter storms and during snowmelt, when it is presumed that the application of road salt (sodium chloride) prior to the storm washes into Wissahickon Creek and causes conductivity to increase in conjunction with streamflow.

Table 44. Gage 01473900 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	2962	348	1130	924	100	0
Aug-22	2187	21	1120	939.5	100	0
Sep-22	1832	136	1110	798	99.9	0.1
Oct-22	NA	NA	NA	NA	NA	NA
Nov-22	NA	NA	NA	NA	NA	NA
Mar-23	778	569	796	704.8	100	0
Apr-23	1365	163	850	690.9	100	0
May-23	1483	104	866	711	100	0
Jun-23	1329	36	952	714.4	100	0

Table 45. Gage 01474000 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	1452	323	909	826.3	100	0
Aug-22	1484	358	933	787.6	100	0
Sep-22	1401	160	930	746.5	100	0
Oct-22	1485	191	858	645.2	100	0
Nov-22	1393	273	929	670.6	100	0
Mar-23	875	586	764	688.3	100	0
Apr-23	1437	192	806	668.2	100	0
May-23	1482	121	814	683.8	100	0
Jun-23	1434	124	851	642.5	100	0

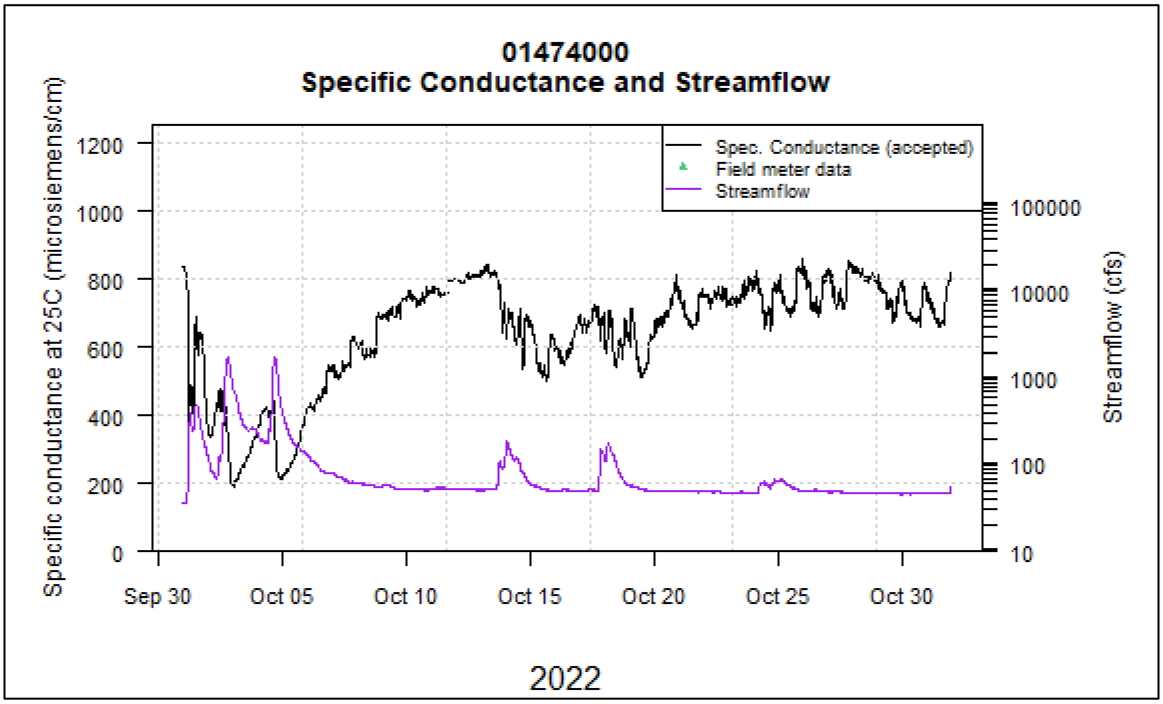


Figure 50. Gage 01474000, Specific Conductance and Streamflow, October 2022.

Temperature

Temperature trends and exceedance rates in Wissahickon Creek Watershed were similar to those observed in Pennypack Creek, with frequent exceedances during the spring in conjunction with higher ambient air temperatures (Tables 46-47, Figures 51-52).

Table 46. Gage 01473900 Temperature Summary Results by Month by Maximum Criteria Period

Designated Use	Date range start	Date range end	% exceedance	% attaining	% flagged data	% accepted data	Min	Max	Mean
TSF	1-Jul	31-Jul	75.5	24.5	0	100	20.6	28.5	24.3
TSF	1-Aug	15-Aug	15.4	84.6	0	100	20.7	28.8	25
TSF	16-Aug	31-Aug	0	100	0	100	20.2	26.8	23.3
TSF	1-Sep	15-Sep	0	100	0	100	19.2	24.6	22
TSF	16-Sep	30-Sep	0	100	0	100	17.5	22.4	20.1
TSF	1-Oct	15-Oct	NA	NA	NA	NA	NA	NA	NA
TSF	16-Oct	31-Oct	NA	NA	NA	NA	NA	NA	NA
TSF	1-Nov	15-Nov	NA	NA	NA	NA	NA	NA	NA
TSF	16-Nov	30-Nov	NA	NA	NA	NA	NA	NA	NA
TSF	1-Mar	31-Mar	80.7	19.3	0	100	5	13.7	9.6
TSF	1-Apr	15-Apr	85.6	14.4	0	100	8.7	21.2	14.4
TSF	16-Apr	30-Apr	60.1	39.9	0	100	10.7	20.5	15.2
TSF	1-May	15-May	15.5	84.5	0	100	11.2	20.3	15.4
TSF	16-May	31-May	8.1	91.9	0	100	13.4	21.2	17.6
TSF	1-Jun	15-Jun	14	86	0	100	15.6	23.2	19.3
TSF	16-Jun	30-Jun	11.3	88.7	0	100	17.6	23.3	20.1

Table 47. Gage 01474000 Temperature Summary Results by Month by Maximum Criteria Period

Designated Use	Date range start	Date range end	% exceedance	% attaining	% flagged data	% accepted data	Min	Max	Mean
TSF	1-Jul	31-Jul	87.7	12.3	0	100	21.3	27.9	24.7
TSF	1-Aug	15-Aug	13	87	0	100	21.9	28.5	25
TSF	16-Aug	31-Aug	0	100	0	100	20.9	26.2	23.6
TSF	1-Sep	15-Sep	0	100	0	100	19.4	24.4	22
TSF	16-Sep	30-Sep	0	100	0	100	15.2	21.3	18.2
TSF	1-Oct	15-Oct	0	100	0	100	11.8	16.2	14
TSF	16-Oct	31-Oct	0	100	0	100	9.7	15.8	12.6
TSF	1-Nov	15-Nov	27.4	72.6	0	100	8.3	16.6	13
TSF	16-Nov	30-Nov	0	100	0	100	3.2	9.1	6.3
TSF	1-Mar	31-Mar	67.6	32.4	0	100	5.2	12.3	9
TSF	1-Apr	15-Apr	87.2	12.8	0	100	9.6	20.1	14.2
TSF	16-Apr	30-Apr	64.8	35.2	0	100	11.1	19.8	15.5
TSF	1-May	15-May	16.4	83.6	0	100	11.4	19.6	15.4
TSF	16-May	31-May	2	98	0	100	15.2	20.2	17.9
TSF	1-Jun	15-Jun	9.9	90.1	0	100	17.1	22.3	19.7
TSF	16-Jun	30-Jun	11.4	88.6	0	100	18	23.1	20.5

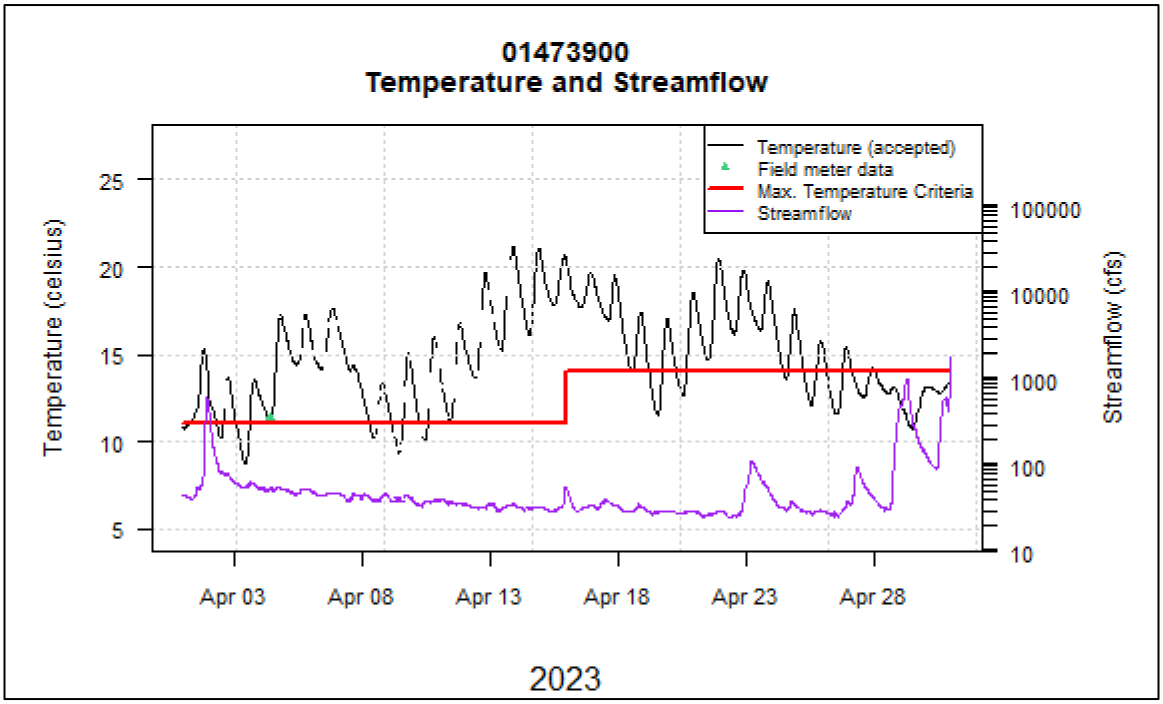


Figure 51. Gage 01473900, Temperature and Streamflow, April 2023.

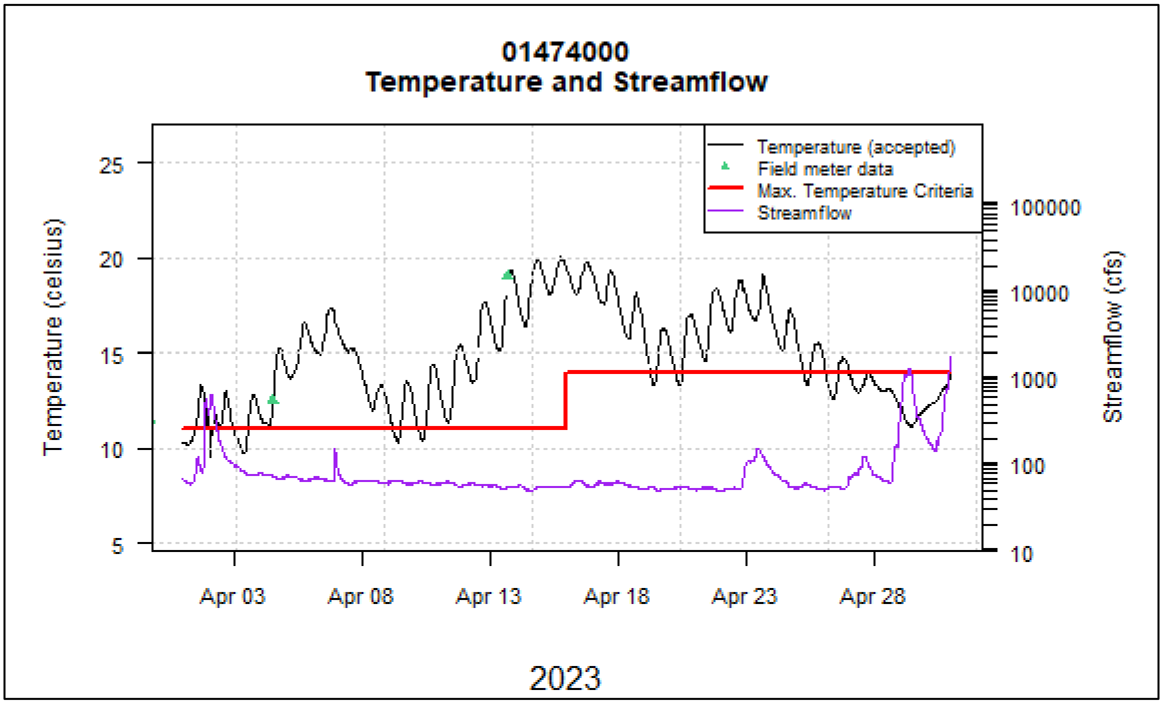
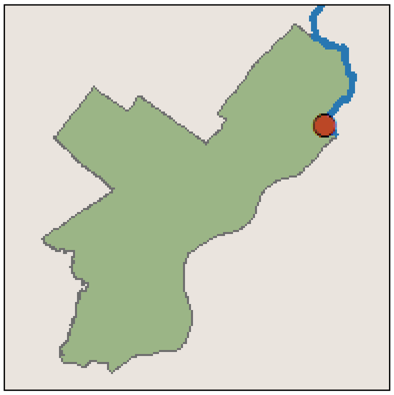


Figure 52. Gage 01474000, Temperature and Streamflow, April 2023.

Poquessing Creek (Gage 01465798)



Dissolved oxygen and pH

Dissolved oxygen and pH at this gage site were usually within acceptable ranges and only occasionally fell below the minimum DO criterion. The site rarely exceeded the pH maximum criterion (Tables 48-49, Figures 53-54). Data collected from Poquessing Creek did exhibit classic signs of algal activity, as indicated by diel fluctuations in both DO and pH.

As seen with previous sites, the algal activity and related diel fluctuations in DO and pH are only suppressed by storm events. These suppressions, however, are only very temporary. Given an adequate period of uninterrupted algal growth, such as occurred in April 2023 (Figures 55-56), one can expect increased DO and pH fluctuations.

Table 48. Gage 01465798 Dissolved Oxygen Min. Criteria Summary Results by Month

Month	Des. Use	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	WWF	2972	3.9	13	7.3	100	0	2.1	97.9
Aug-22	WWF	2964	3.4	12.2	7.5	100	0	1.9	98.1
Sep-22	WWF	2834	5.9	13.9	8.7	98.8	1.2	0	100
Oct-22	WWF	2876	2.6	13.2	9.5	96.8	3.2	0.5	99.5
Nov-22	WWF	2355	4.2	12.7	8.7	81.7	18.3	0.5	99.5
Mar-23	WWF	2809	8.5	18.4	12.2	100	0	0	100
Apr-23	WWF	2871	3.5	15.8	9.3	100	0	1.4	98.6
May-23	WWF	2849	6.4	14.6	9.3	96.1	3.9	0	100
Jun-23	WWF	2869	2.4	11.7	7.5	100	0	5.2	94.8

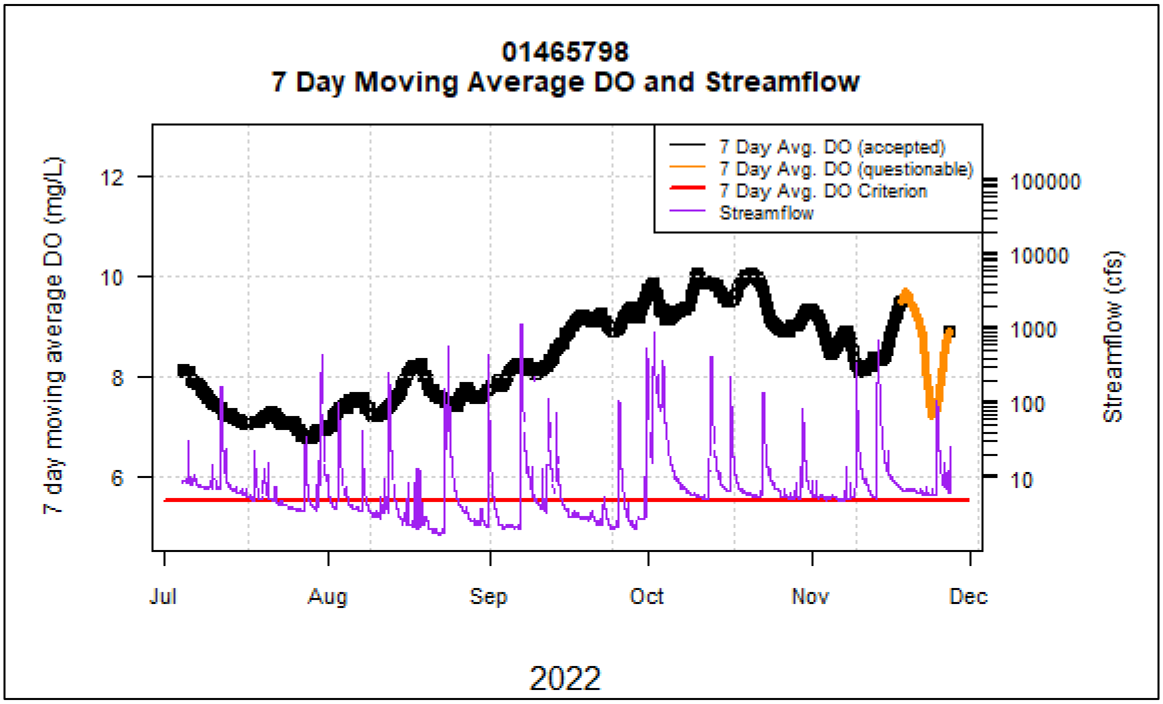


Figure 53. Gage 01465798, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Nov 2022.

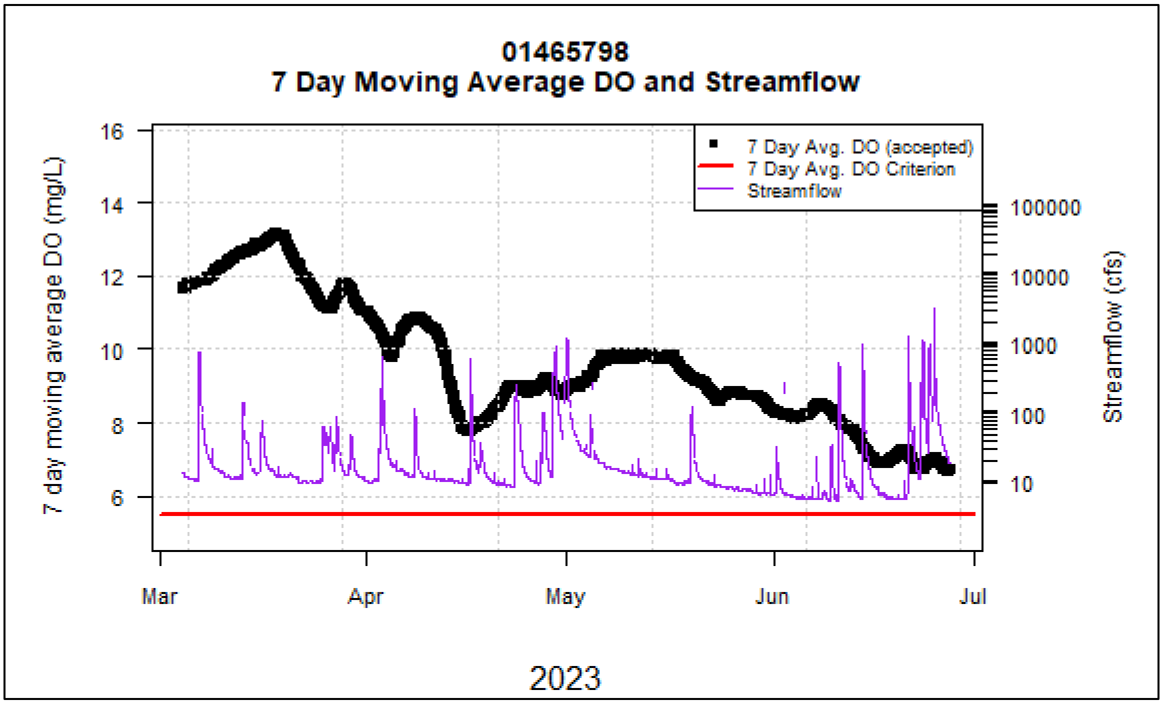


Figure 54. Gage 01465798, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2023.

Table 49. Gage 01465798 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	2972	6.9	8.7	7.3	100	0	0	0	100	100
Aug-22	2968	6.8	8.4	7.3	100	0	0	0	100	100
Sep-22	2867	6.9	8.7	7.3	100	0	0	0	100	100
Oct-22	2914	6.8	7.9	7.2	98.1	1.9	0	0	100	100
Nov-22	2881	6.7	7.4	7	100	0	0	0	100	100
Mar-23	2809	6.9	9.2	7.5	100	0	0	1.2	100	98.8
Apr-23	2870	6.7	9	7.3	100	0	0	0	100	100
May-23	2964	6.7	8.8	7.3	100	0	0	0	100	100
Jun-23	2868	6.4	7.8	7.1	100	0	0	0	100	100

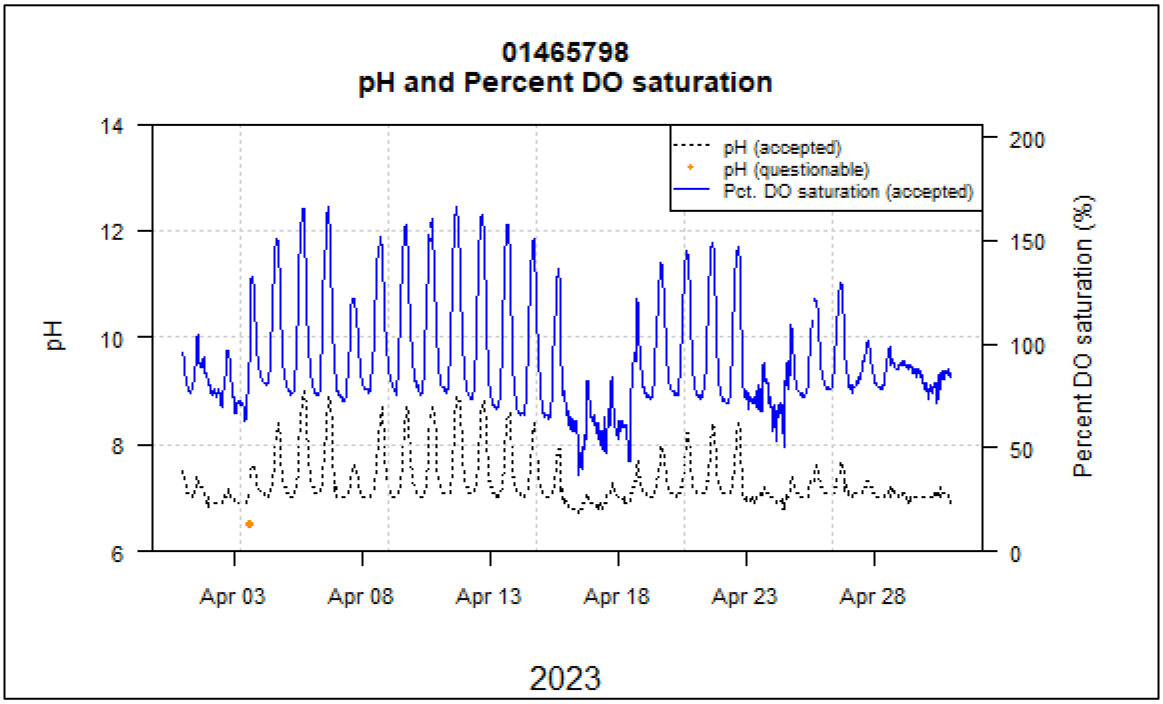


Figure 55. Gage 01465798, pH and Percent DO Saturation, April 2023.

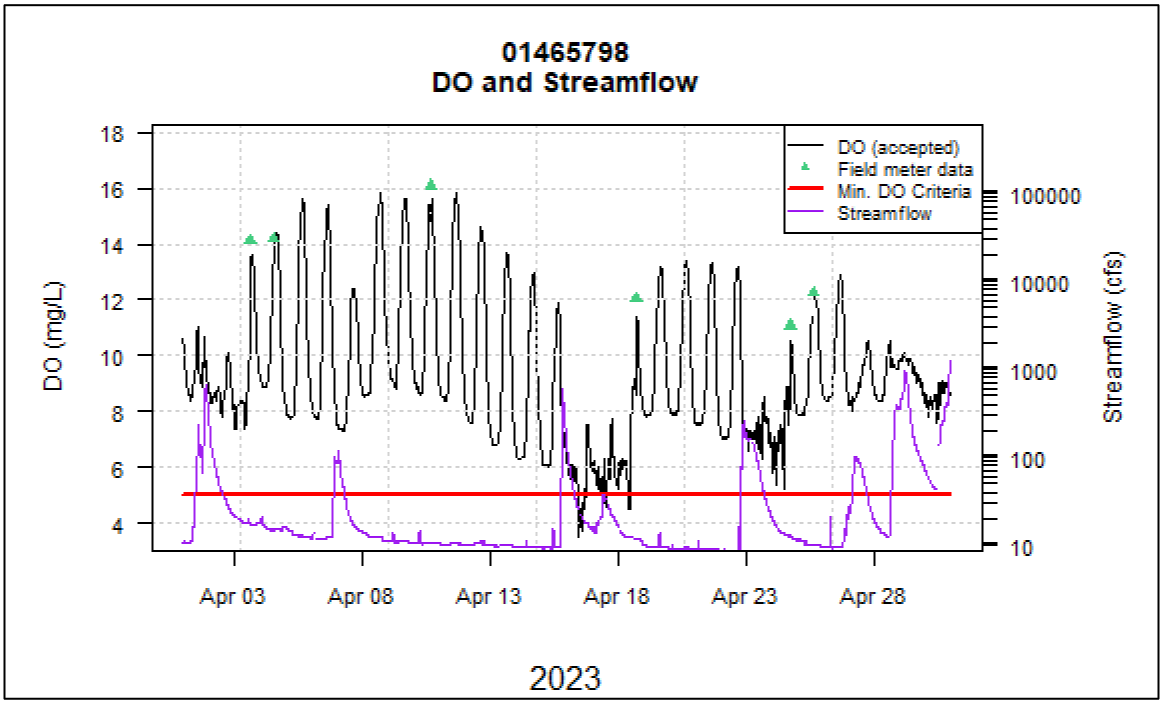


Figure 56. Gage 01465798, DO and Streamflow, April 2023.

Figure 57. Gage 01465798, Poquessing Creek at Grant Ave., looking upstream

Turbidity

As in other Philadelphia streams, high turbidity levels accompanied storm events and increased streamflow.

Table 50. Gage 01465798 Turbidity Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% above max. guideline	% below max. guideline
Jul-22	2972	0.8	209	3.5	100	0	23.9	76.1
Aug-22	2964	0.7	240	5	100	0	38.1	61.9
Sep-22	2867	0.4	186	2.7	100	0	9.1	90.9
Oct-22	2971	0.7	211	4.1	100	0	24.8	75.2
Nov-22	2880	0.4	110	3.3	100	0	22	78
Mar-23	2810	0.9	1300	7.6	100	0	35.8	64.2
Apr-23	2859	0.9	1300	20	100	0	38.8	61.2
May-23	2779	0.6	1300	11.4	93.8	6.2	6.9	93.1
Jun-23	2847	0.4	1300	53.9	100	0	42.1	57.9

Specific Conductance

Specific conductance data was similar to other Philadelphia streams.

Table 51. Gage 01465798 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	2971	82	814	648.7	100	0
Aug-22	2967	60	814	531.6	100	0
Sep-22	2866	68	779	528.5	100	0
Oct-22	2938	86	700	454.9	99	1
Nov-22	2879	126	728	537.8	100	0
Mar-23	2756	145	719	555.4	98.2	1.8
Apr-23	2870	86	679	481.2	100	0
May-23	2962	93	713	601.8	100	0
Jun-23	2868	60	741	478.7	100	0

Temperature

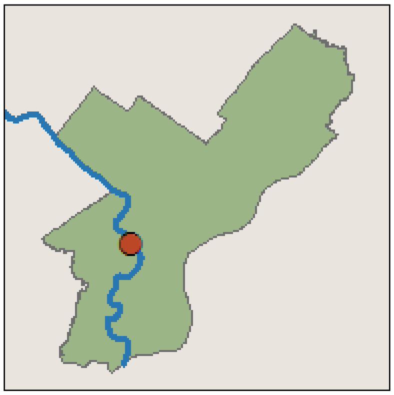
Temperature exceedance rates observed in Poquessing Creek were similar to those in other WWF designated-use creeks (*e.g.*, Tacony and Cobbs Creeks). Lack of data during early August was due to equipment failure for much of the month.

Table 52. Gage 01465798 Temperature Summary Results by Maximum Criteria Period

Designated Use	Date range start	Date range end	% exceedance	% attaining	% flagged data	% accepted data	Min	Max	Mean
WWF	1-Jul	31-Jul	0.3	99.7	0	100	21	31.3	25.3
WWF	1-Aug	15-Aug	0.6	99.4	0	100	21	31.4	25.7
WWF	16-Aug	31-Aug	0	100	0	100	20.5	29.4	24.5
WWF	1-Sep	15-Sep	0	100	0	100	19.2	27.2	22.6
WWF	16-Sep	30-Sep	0	100	0	100	14.2	23.8	18.8
WWF	1-Oct	15-Oct	0	100	0	100	11.4	17.9	14.2
WWF	16-Oct	31-Oct	0	100	0	100	9.4	17	12.9
WWF	1-Nov	15-Nov	43.6	56.4	0	100	6.7	18.9	13.4
WWF	16-Nov	30-Nov	0	100	0	100	1.9	10	6.2
WWF	1-Mar	31-Mar	51.9	48.1	0	100	3.6	14.6	8.5
WWF	1-Apr	15-Apr	81.3	18.7	0	100	8	23	14.7
WWF	16-Apr	30-Apr	59.2	40.8	0	100	11	21.4	15.3
WWF	1-May	15-May	26.4	73.6	0	100	10.8	21.5	15.8
WWF	16-May	31-May	1.3	98.7	0	100	13.6	22.4	18.1
WWF	1-Jun	15-Jun	0	100	0	100	15.8	25.7	19.9
WWF	16-Jun	30-Jun	0	100	0	100	17.5	25.3	20.7

Gages in Large Watersheds

Schuylkill River (Gage 01474500)



Dissolved oxygen and pH

DO water quality criteria were not exceeded at this location (Table 53, Figures 58-59), and pH criteria were also attained (Table 54). The Schuylkill gage usually attained pH criteria, even during stretches of spring when algal activity is usually greatest (Figure 60).

Table 53. Gage 01474500 Dissolved Oxygen Minimum Criterion Summary Results by Month

Month	Des. Use	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	WWF	1482	5.3	21.4	9.3	100	0	0	100
Aug-22	WWF	1366	6	11.9	8.2	100	0	0	100
Sep-22	WWF	1422	6.2	9.9	7.8	99.9	0.1	0	100
Oct-22	WWF	1485	8.7	10.8	9.7	100	0	0	100
Nov-22	WWF	1438	8.9	13.1	10.9	99.9	0.1	0	100
Mar-23	WWF	1481	10.4	13.3	11.9	100	0	0	100
Apr-23	WWF	1391	7	11.7	9.2	100	0	0	100
May-23	WWF	1480	7.1	10.3	8.6	100	0	0	100
Jun-23	WWF	1436	6.4	9.2	7.7	100	0	0	100

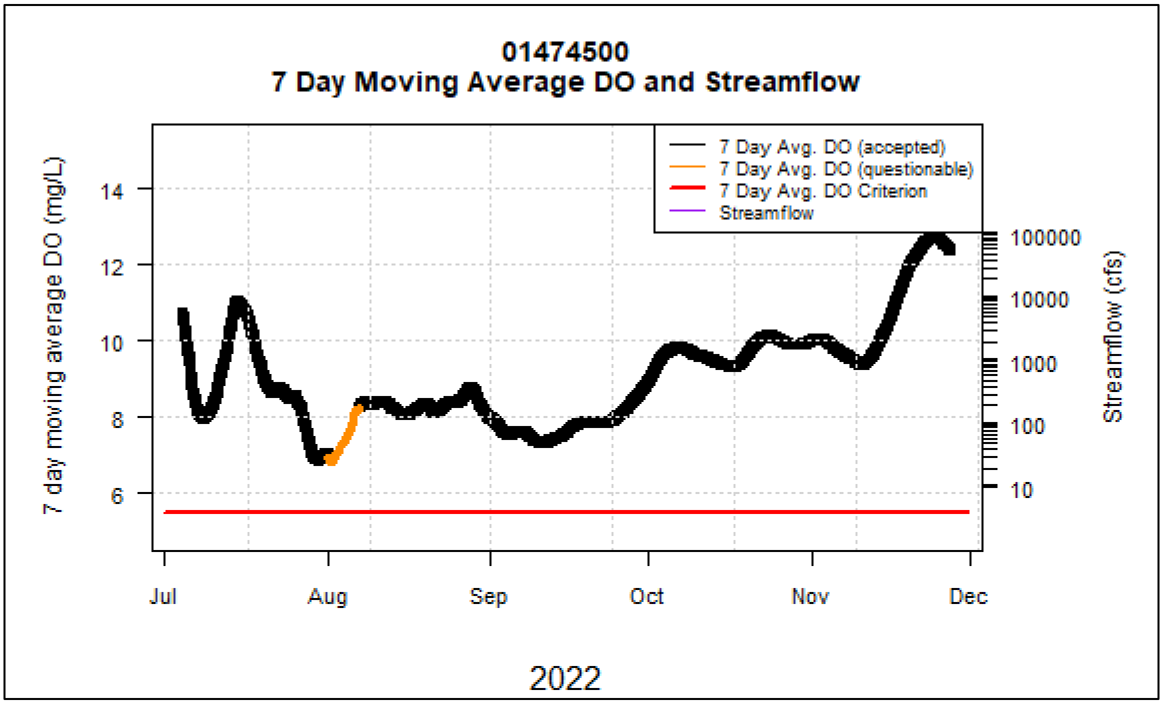


Figure 58. Gage 01474500, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Nov 2022.

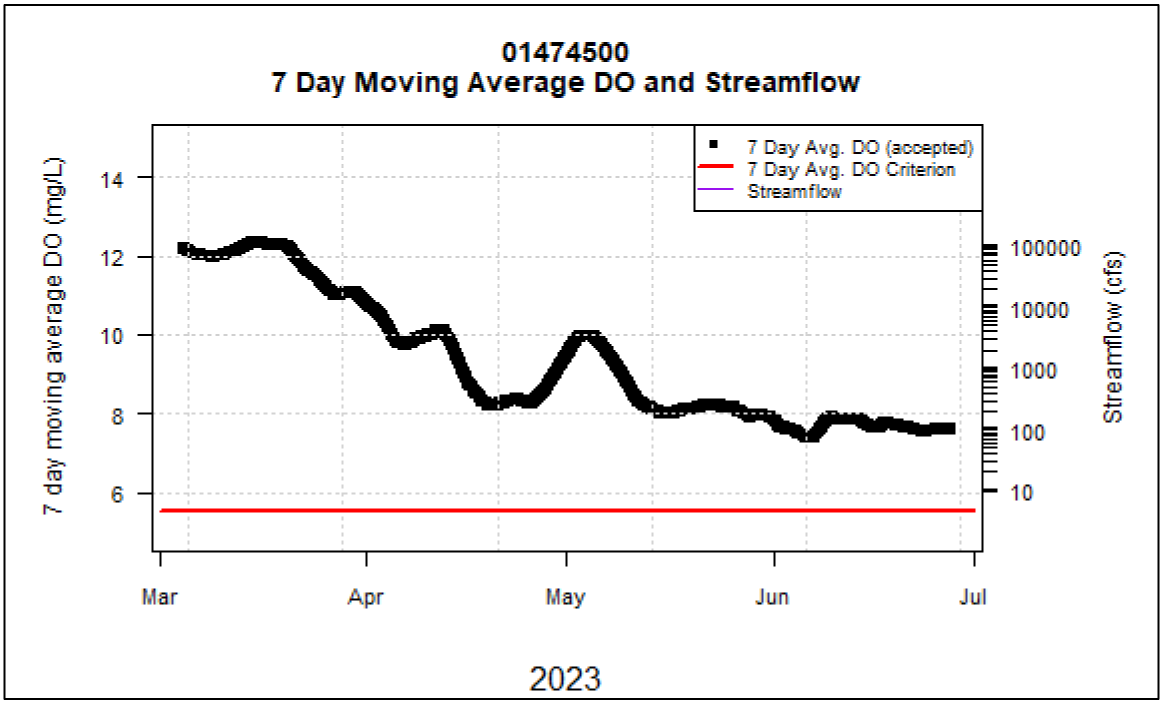


Figure 59. Gage 01474500, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2023.

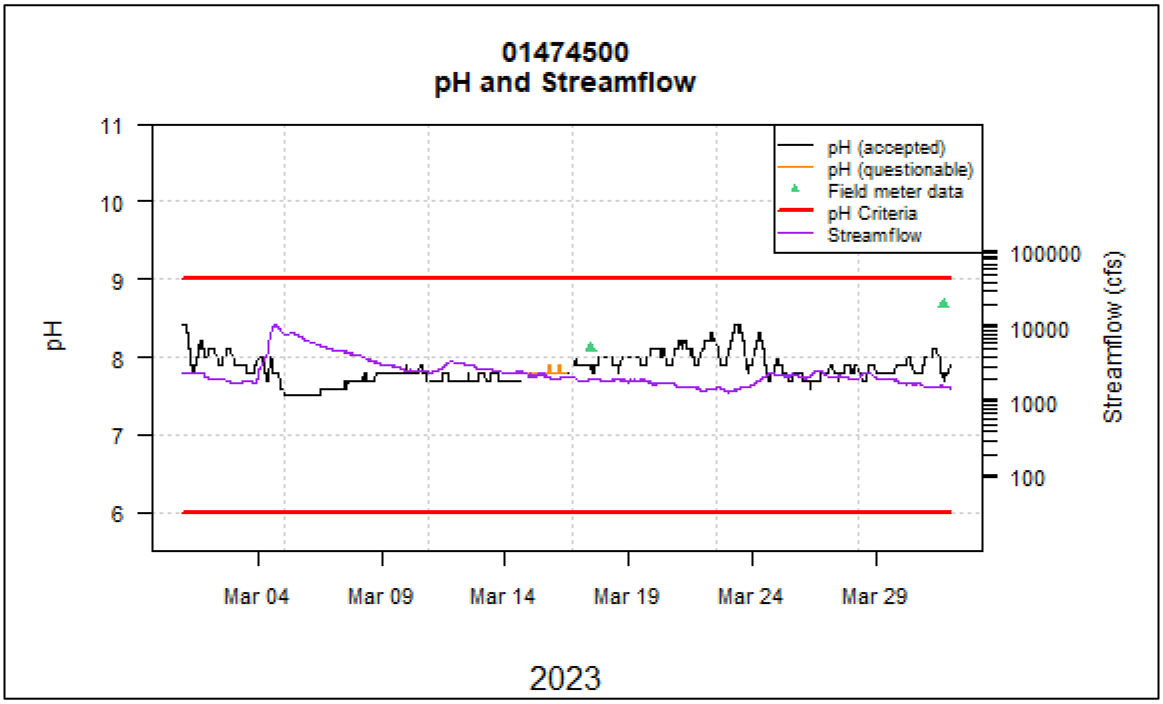


Figure 60. Gage 01474500, pH and Streamflow, March 2023.

Table 54. Gage 01474500 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	1482	7.3	9.4	8	100	0	0	2	100	98
Aug-22	1366	7.3	8.6	7.9	100	0	0	0	100	100
Sep-22	1422	7.4	8.3	7.8	99.9	0.1	0	0	100	100
Oct-22	1485	7.4	8.2	7.8	100	0	0	0	100	100
Nov-22	1439	7.4	8	7.7	100	0	0	0	100	100
Mar-23	1391	7.5	8.4	7.9	93.9	6.1	0	0	100	100
Apr-23	1391	7.1	8.6	7.7	100	0	0	0	100	100
May-23	1480	7.3	7.9	7.6	100	0	0	0	100	100
Jun-23	1436	7.4	8.1	7.7	100	0	0	0	100	100

Temperature

Table 55. Gage 01474500 Temperature Summary Results by Maximum Criteria Period

Designated Use	Date range start	Date range end	% exceedance	% attaining	% flagged data	% accepted data	Min	Max	Mean
WWF	1-Jul	31-Jul	0.7	99.3	0	100	26	31.3	28
WWF	1-Aug	15-Aug	0.5	99.5	0	100	25.9	31.1	28.6
WWF	16-Aug	31-Aug	0	100	0	100	25.7	29	27
WWF	1-Sep	15-Sep	0	100	0	100	22.9	28.2	25
WWF	16-Sep	30-Sep	0	100	0	100	18.4	25.1	21.8
WWF	1-Oct	15-Oct	0	100	0	100	12.9	18.4	15.5
WWF	16-Oct	31-Oct	0	100	0	100	12.4	16.3	14.2
WWF	1-Nov	15-Nov	62.1	37.9	0	100	11.2	16.8	14.3
WWF	16-Nov	30-Nov	2.1	97.9	0	100	4.5	11.2	6.4
WWF	1-Mar	31-Mar	40.9	59.1	0	100	5.3	11.6	8.2
WWF	1-Apr	15-Apr	98.2	1.8	0	100	10.9	20.3	14.8
WWF	16-Apr	30-Apr	88.5	11.5	0	100	13.5	20.9	17.8
WWF	1-May	15-May	41.8	58.2	0	100	12.4	21.6	16.6
WWF	16-May	31-May	19.8	80.2	0	100	19.2	23	21
WWF	1-Jun	15-Jun	0	100	0	100	21.7	26	23
WWF	16-Jun	30-Jun	0	100	0	100	20.7	25.3	22.6

Figure 61. Gage 01474500, Schuylkill River at the Fairmount Dam, looking upstream

Turbidity

Turbidity levels at the Schuylkill gage were less susceptible to extreme peaks due to storms and increased flow.

Table 56. Gage 01474500 Turbidity Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% above max. guideline	% below max. guideline
Jul-22	1482	0.7	5.1	2.4	100	0	31.2	68.8
Aug-22	1365	0.9	16.8	1.7	100	0	1.5	98.5
Sep-22	1420	1.1	54.9	3.9	100	0	29.7	70.3
Oct-22	1485	1.6	21.3	4.3	100	0	44.6	55.4
Nov-22	1438	1.6	12.6	3.4	100	0	61.1	38.9
Mar-23	1314	2	52.6	5	88.9	11.1	51.7	48.3
Apr-23	1308	0.6	17.2	3	94	6	21.9	78.1
May-23	1480	0.8	78.2	6.2	100	0	79.1	20.9
Jun-23	1436	0.4	29.1	2.5	100	0	15.9	84.1

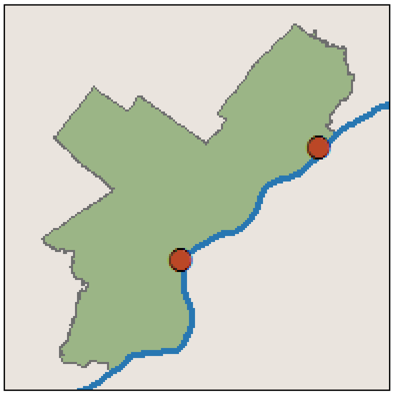
Specific Conductance

The Schuylkill River generally exhibits intermediate conductance, lower than the small Philadelphia tributary streams described elsewhere in this report, but greater than that observed in the Delaware River. Observed differences are likely due to geology and preponderance of anthropogenic sources in the respective watersheds.

Table 57. Gage 01474500 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	1482	455	604	525.3	100	0
Aug-22	1364	421	657	573.5	100	0
Sep-22	1420	292	678	527.2	100	0
Oct-22	1485	288	613	433.5	100	0
Nov-22	1438	329	574	461.3	100	0
Mar-23	1481	283	468	395	100	0
Apr-23	1390	338	489	437.6	100	0
May-23	1480	194	525	392.9	100	0
Jun-23	1436	261	595	456.3	100	0

Delaware River (Gages 01467200 and 014670261)



Dissolved oxygen and pH

The DRBC DO daily mean and pH criteria for Zone 3 was attained at Gage 01467200 for the entire reporting period (Tables 58 and 60). The Zone 2 DO daily mean and pH criteria were almost always attained at Gage 014670261 (Tables 59 and 61). Data is collected year-round at both gages.

Figure 62. Delaware River at Ben Franklin Bridge, near Gage 01467200

Table 58. Gage 01467200 Dissolved Oxygen Daily Mean Criterion Summary Results by Month

Month	**Des. Use**	**Days**	**Daily Avg. Min**	**Daily Avg. Max**	**Daily Avg. Mean**	**% non-attaining**	**% attaining**
Jul-22	DRBC	31	4.1	7.9	5.5	0	100
Aug-22	DRBC	31	4.0	5.2	4.8	0	100
Sep-22	DRBC	30	4.6	6.7	5.4	0	100
Oct-22	DRBC	26	7.3	7.9	7.6	0	100
Nov-22	DRBC	30	7.2	10.9	8.8	0	100
Dec-22	DRBC	31	11.5	13.9	12.4	0	100
Jan-23	DRBC	31	11.7	13.8	12.5	0	100
Feb-23	DRBC	28	11.2	13.1	12.3	0	100
Mar-23	DRBC	31	11.2	12.4	11.8	0	100
Apr-23	DRBC	30	7.9	11.1	9.7	0	100
May-23	DRBC	31	6.9	9.8	8.5	0	100
Jun-23	DRBC	30	5.0	8.1	5.8	0	100

Table 59. Gage 014670261 Dissolved Oxygen Daily Mean Criterion Summary Results by Month

Month	**Des. Use**	**Days**	**Daily Avg. Min**	**Daily Avg. Max**	**Daily Avg. Mean**	**% non-attaining**	**% attaining**
Jul-22	DRBC	31	5.4	9.2	6.9	0	100
Aug-22	DRBC	29	5.3	6.6	6.0	0	100
Sep-22	DRBC	30	5.5	7.2	6.3	0	100
Oct-22	DRBC	31	7.6	8.9	8.4	0	100
Nov-22	DRBC	30	8.5	12.4	10.1	0	100
Dec-22	DRBC	31	11.8	14.1	12.7	0	100
Jan-23	DRBC	31	11.9	13.8	12.6	0	100
Feb-23	DRBC	28	11.5	13.7	12.6	0	100
Mar-23	DRBC	31	11.3	12.6	12.1	0	100
Apr-23	DRBC	30	8.0	11.5	9.5	0	100
May-23	DRBC	31	7.4	9.9	8.7	0	100
Jun-23	DRBC	30	5.9	8.4	6.9	0	100

Table 60. Gage 01467200 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	8869	7.1	7.7	7.3	100	0	0	0	100	100
Aug-22	8830	7.1	7.4	7.3	100	0	0	0	100	100
Sep-22	6694	7.2	7.4	7.3	100	0	0	0	100	100
Oct-22	6991	7.1	7.4	7.2	100	0	0	0	100	100
Nov-22	8295	7.1	7.6	7.4	100	0	0	0	100	100
Dec-22	8866	7.4	7.6	7.5	100	0	0	0	100	100
Jan-23	8975	7.2	7.6	7.4	100	0	0	0	100	100
Feb-23	8002	7.2	7.4	7.3	100	0	0	0	100	100
Mar-23	8824	6.9	7.6	7.4	100	0	0	0	100	100
Apr-23	8582	7.1	7.5	7.2	100	0	0	0	100	100
May-23	2571	7.1	7.8	7.3	99.9	0.1	0	0	100	100
Jun-23	8511	7	7.4	7.1	100	0	0	0	100	100

Table 61. Gage 014670261 pH Criteria Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% min non-attaining	% max non-attaining	% min attaining	% max attaining
Jul-22	2966	7.2	8	7.4	100	0	0	0	100	100
Aug-22	2681	7	7.6	7.3	100	0	0	0	100	100
Sep-22	2869	7	7.4	7.3	100	0	0	0	100	100
Oct-22	2968	7	7.5	7.4	100	0	0	0	100	100
Nov-22	2883	7.3	7.6	7.4	100	0	0	0	100	100
Dec-22	2960	7.3	7.7	7.5	100	0	0	0	100	100
Jan-23	2873	7.3	7.6	7.5	100	0	0	0	100	100
Feb-23	2630	7.4	7.8	7.6	100	0	0	0	100	100
Mar-23	2876	7.5	7.9	7.7	100	0	0	0	100	100
Apr-23	2871	7.1	7.7	7.5	100	0	0	0	100	100
May-23	2962	6.8	7.9	7.2	100	0	0	0	100	100
Jun-23	2860	7.1	7.5	7.2	100	0	0	0	100	100

Temperature

Temperature criteria for the Delaware River were not exceeded at either gage.

Table 62. Gage 01467200 Temperature Summary Results by Maximum Criteria Period

Designated Use	Date range start	Date range end	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
DRBC	1-Jul	31-Jul	8869	23.8	28.7	26.7	100	0	0	100
DRBC	1-Aug	31-Aug	8830	26.9	29.2	27.8	100	0	0	100
DRBC	1-Sep	30-Sep	6686	20.4	27.7	25.2	100	0	0	100
DRBC	1-Oct	31-Oct	6991	14.2	17.1	15.4	100	0	0	100
DRBC	1-Nov	30-Nov	8286	6.2	15.5	11.7	100	0	0	100
DRBC	1-Dec	31-Dec	8866	0.2	6.8	4.3	100	0	0	100
DRBC	1-Jan	31-Jan	8960	0.7	6.2	4.4	100	0	0	100
DRBC	1-Feb	28-Feb	7988	3.3	7.2	5.0	100	0	0	100
DRBC	31-Mar	31-Mar	8822	5.7	9.3	6.9	100	0	0	100
DRBC	1-Apr	30-Apr	8564	9.1	17.5	13.7	100	0	0	100
DRBC	1-May	31-May	8834	11.5	20.7	16.8	100	0	0	100
DRBC	1-Jun	30-Jun	8508	20.5	23.8	21.9	100	0	0	100

Table 63. Gage 014670261 Temperature Summary Results by Maximum Criteria Period

Designated Use	Date range start	Date range end	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
DRBC	1-Jul	31-Jul	2966	23.7	29.4	27.1	100	0	0	100
DRBC	1-Aug	31-Aug	2680	26.7	29.4	27.9	100	0	0	100
DRBC	1-Sep	30-Sep	2869	19.4	27.5	23.7	100	0	0	100
DRBC	1-Oct	31-Oct	2968	12.9	19.4	15.0	100	0	0	100
DRBC	1-Nov	30-Nov	2884	4.8	15.2	10.5	100	0	0	100
DRBC	1-Dec	31-Dec	2915	0.1	6.5	3.8	100	0	0	100
DRBC	1-Jan	31-Jan	2874	1.2	6.4	4.5	100	0	0	100
DRBC	1-Feb	28-Feb	2659	1.9	7.5	4.9	100	0	0	100
DRBC	31-Mar	31-Mar	2877	4	9.7	6.8	100	0	0	100
DRBC	1-Apr	30-Apr	2872	8.8	18.4	14.1	100	0	0	100
DRBC	1-May	31-May	2964	11.2	21.2	17.2	100	0	0	100
DRBC	1-Jun	30-Jun	2860	20.6	24.4	22.2	100	0	0	100

Specific Conductance

The Delaware River exhibits much lower conductivity than the small Philadelphia tributary streams described elsewhere in this report. This is likely caused by differences in geology and proportionally fewer anthropogenic sources in the less-developed Delaware River watershed.

Table 64. Gage 01467200 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	8869	214	311	262.7	100	0
Aug-22	8830	290	376	325.5	100	0
Sep-22	6693	215	398	303.2	100	0
Oct-22	6991	212	262	238.9	100	0
Nov-22	8295	197	290	252.6	100	0
Dec-22	8866	172	244	207.8	100	0
Jan-23	8974	171	220	195.1	100	0
Feb-23	8002	206	267	232.9	100	0
Mar-23	8824	187	268	239.5	100	0
Apr-23	8582	168	247	202.9	100	0
May-23	8856	121	245	183.4	100	0
Jun-23	8511	241	306	275.7	100	0

Table 65. Gage 014670261 Specific Conductance Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data
Jul-22	2966	184	309	249.2	100	0
Aug-22	2680	275	309	285.7	100	0
Sep-22	2869	172	306	236.2	100	0
Oct-22	2968	193	286	227	100	0
Nov-22	2884	174	313	239.8	100	0
Dec-22	2959	162	305	208.5	100	0
Jan-23	2875	164	291	200.1	100	0
Feb-23	2659	200	308	233.4	100	0
Mar-23	2870	167	307	232	100	0
Apr-23	2872	163	262	200.8	100	0
May-23	2963	120	290	192.2	100	0
Jun-23	2859	223	313	271	100	0

Turbidity

Turbidity guidelines at 014670261 were almost always exceeded throughout the year. Turbidity is not continuously measured at 01467200.

Table 66. Gage 014670261 Turbidity Summary Results by Month

Month	Observations, n	Min	Max	Mean	% accepted data	% flagged data	% non-attaining	% attaining
Jul-22	2962	1.9	38.4	6.3	100	0	93.6	6.4
Aug-22	2680	1.7	25.5	5.5	100	0	93.9	6.1
Sep-22	2865	2	51.2	5	100	0	88.7	11.3
Oct-22	2963	1.1	32.7	5.7	100	0	98.5	1.5
Nov-22	2884	1.8	40.6	6.4	100	0	93.1	6.9
Dec-22	2960	3.5	57.1	9.1	100	0	100	0
Jan-23	2875	2.6	47.6	7.2	100	0	99.6	0.4
Feb-23	2671	2.4	35	6.1	100	0	99.7	0.3
Mar-23	2880	2	37.8	5.7	100	0	91.4	8.6
Apr-23	2872	1.5	34.3	5.1	100	0	91.4	8.6
May-23	2963	1.9	70.7	7.6	100	0	94.4	5.6
Jun-23	2856	1.9	46.6	7.1	100	0	95.4	4.6

Wet Weather and Dry Weather Results

Annual Summary, July 2022 - June 2023

Water quality data was also categorized as wet or dry for the purpose of evaluating weather effects on water quality, and specifically the incidence of non-attainment of water quality criteria. A wet weather condition was defined as rainfall greater than 0.05 inches in the preceding 72 hours, as measured at the nearest PWD rain gage.

In general, more frequent non-attainment of DO criteria was observed in wet weather due to the tendency of storm events to decrease DO via the introduction of stormwater runoff and BOD (Tables 67-68). The turbidity maximum guideline was also usually more frequently surpassed in wet weather (Tables 71-72). The pH maximum criterion was exceeded in both wet and dry weather (Tables 69-70). Temperature criteria were more likely to be exceeded at Trout Stocking Fishery (TSF) gages due to more stringent seasonal criteria (Tables 75-76).

Table 67. USGS Gage July 2022 - June 2023 Dissolved Oxygen Minimum Criterion Summary Results During Wet Weather

Gage number	Designated Use	Observations, n	% accepted data	% flagged data	% non-attaining	% attaining
01465798	WWF	16624	98.5	1.5	1.8	98.2
014670261*	DRBC	20636	100	0	0	100
01467042	TSF	17412	100	0	0.9	99.1
01467048	TSF	17185	99.9	0.1	0.2	99.8
01467086	WWF	7220	99.1	0.9	5.1	94.9
01467087	WWF	15790	97.9	2.1	15.8	84.2
01467200*	DRBC	19338	100	0	14.1	85.9
01473900	TSF	6240	100	0	2.5	97.5
01474000	TSF	7478	100	0	0	100
01474500	WWF	10072	100	0	0	100
01475530	WWF	13118	100	0	0	100
01475548	WWF	15293	99.5	0.5	3.5	96.5

*No minimum DO criterion applies at these locations.

Table 68. USGS Gage July 2022 - June 2023 Dissolved Oxygen Minimum Criterion Summary Results During Dry Weather

Gage number	Designated Use	Observations, n	% accepted data	% flagged data	% non-attaining	% attaining
01465798	WWF	11330	95.3	4.7	0.4	99.6
014670261*	DRBC	13779	100	0	0	100
01467042	TSF	12369	100	0	0	100
01467048	TSF	12588	99.9	0.1	0	100
01467086	WWF	5698	100	0	2.7	97.3
01467087	WWF	13579	99.6	0.4	16.8	83.2
01467200*	DRBC	14100	100	0	11.8	88.2
01473900	TSF	5688	100	0	3.2	96.8
01474000	TSF	5789	100	0	0	100
01474500	WWF	7174	100	0	0	100
01475530	WWF	11992	100	0	0	100
01475548	WWF	11322	100	0	0.5	99.5

*No minimum DO criterion applies at these locations.

Table 69. USGS Gage July 2022 - June 2023 pH Criteria Summary Results During Wet Weather

Gage number	Observations, n	% accepted data	% flagged data	% min. non-attaining	% max. non-attaining	% min. attaining	% max attaining	% attaining
01465798	16628	99.6	0.4	0	0.1	100	99.9	99.9
014670261	20610	100	0	0	0.0	100	100	100
01467042	17409	100	0	0	0.0	100	100	100
01467048	17177	100	0	0	0.0	100	100	100
01467086	7217	100	0	0	0.0	100	100	100
01467087	15845	99.8	0.2	0	0.0	100	100	100
01467200	18683	100	0	0	0.0	100	100	100
01473900	6316	97	3	0	0.8	100	99.2	99.2
01474000	7518	100	0	0	0.1	100	99.9	99.9
01474500	10072	99.1	0.9	0	0.1	100	99.9	99.9
01475530	13118	100	0	0	0.0	100	100	100
01475548	15294	99.7	0.3	0	0.8	100	99.2	99.2

Table 70. USGS Gage July 2022 - June 2023 pH Criteria Summary Results During Dry Weather

Gage number	Observations, n	% accepted data	% flagged data	% min. non-attaining	% max. non-attaining	% min. attaining	% max attaining	% attaining
01465798	11328	100	0	0	0.2	100	99.8	99.8
014670261	13792	100	0	0	0.0	100	100	100
01467042	12369	100	0	0	0.0	100	100	100
01467048	12580	100	0	0	0.2	100	99.8	99.8
01467086	5698	100	0	0	0.0	100	100	100
01467087	13578	99.9	0.1	0	0.0	100	100	100
01467200	12658	100	0	0	0.0	100	100	100
01473900	5822	90.1	9.9	0	2.0	100	98.0	98.0
01474000	5799	100	0	0	1.2	100	98.8	98.8
01474500	7174	100	0	0	0.3	100	99.7	99.7
01475530	11993	100	0	0	0.1	100	99.9	99.9
01475548	11081	100	0	0	1.7	100	98.3	98.3

Table 71. USGS Gage July 2022 - June 2023 Turbidity Summary Results During Wet Weather

Gage number	Observations, n	% accepted data	% flagged data	% above max. guideline	% below max. guideline
01465798	16590	98.9	1.1	42.1	57.9
014670261	20656	100	0	95.0	5.0
01467042	17407	99.9	0.1	25.1	74.9
01467048	17187	100.0	0.0	42.1	57.9
01467086*	0	NA	NA	NA	NA
01467087*	0	NA	NA	NA	NA
01467200*	18536	100	0	99.3	0.7
01473900	6276	100.0	0.0	53.8	46.2
01474000	7805	100	0	23.1	76.9
01474500	10054	97.5	2.5	55.4	44.6
01475530*	0	NA	NA	NA	NA
01475548*	0	NA	NA	NA	NA

*Turbidity not continuously monitored at this location

Table 72. USGS Gage July 2022 - June 2023 Turbidity Summary Results During Dry Weather

Gage number	Observations, n	%accepted data	% flagged data	% above max. guideline	% below max. guideline
01465798	11329	100	0	8.8	91.2
014670261	13775	100	0	94.9	5.1
01467042	12365	100	0.0	0.6	99.4
01467048	12584	100	0.0	9.2	90.8
01467086*	0	NA	NA	NA	NA
01467087*	0	NA	NA	NA	NA
01467200*	12657	100	0	98.0	2.0
01473900	5735	100	0	37.1	62.9
01474000	6908.0	100	0	0.1	99.9
01474500	7137	100	0	37.4	62.6
01475530*	0	NA	NA	NA	NA
01475548*	0	NA	NA	NA	NA

*Turbidity not continuously monitored at this location

Table 73. USGS Gage July 2022 - June 2023 Specific Conductance Summary Results During Wet Weather

Gage number	Observations, n	% accepted data	% flagged data
01465798	16620	99.5	0.5
014670261	20635	100	0
01467042	17400	100	0
01467048	17163	100	0
01467086	7211	100	0
01467087	15786	100	0
01467200	19338	100	0
01473900	6239	100	0
01474000	7522	100	0
01474500	10068	100	0
01475530	12999	98.3	1.7
01475548	15292	100	0

Table 74. USGS Gage July 2022 - June 2023 Specific Conductance Summary Results During Dry Weather

Gage number	Observations, n	% accepted data	% flagged data
01465798	11321	100	0
014670261	13789	100	0
01467042	12364	100	0
01467048	12570	100	0
01467086	5696	100	0
01467087	13570	100	0
01467200	14101	100	0
01473900	5698	100	0
01474000	5808	100	0
01474500	7171	100	0
01475530	11991	94.4	5.6
01475548	11322	100	0

Table 75. USGS Gage July 2022 - June 2023 Temperature Maximum Criteria Summary Results During Wet Weather

Gage number	Designated Use	Observations, n	% accepted data	% flagged data	% exceedance	% attaining
01465798	WWF	16628	100	0	13.4	86.6
014670261	DRBC	20642	100	0	0	100
01467042	TSF	17411	100	0.0	12.3	87.7
01467048	TSF	17116	100	0.0	13.1	86.9
01467086	WWF	7219	100	0	12.1	87.9
01467087	WWF	15853	100	0	12.2	87.8
01467200	DRBC	19318	100	0	0	100
01473900	TSF	6077	100	0	14.4	85.6
01474000	TSF	7480	100	0	11.8	88.2
01474500	WWF	10072	100	0	10.6	89.4
01475530	WWF	13119	100	0	11.4	88.6
01475548	WWF	15294	100	0	13.1	86.9

Table 76. USGS Gage July 2022 - June 2023 Temperature Maximum Criteria Summary Results During Dry Weather

Gage number	Designated Use	Observations, n	% accepted data	% flagged data	% exceedance	% attaining
01465798	WWF	11330	100	0	14.5	85.5
014670261	DRBC	13746	100	0	0	100
01467042	TSF	12369	100	0	14.7	85.3
01467048	TSF	12587	100	0	15.6	84.4
01467086	WWF	5700	100	0	17.3	82.7
01467087	WWF	13580	100	0	17.0	83.0
01467200	DRBC	14089	100	0	0	100
01473900	TSF	5468	100	0	16.6	83.4
01474000	TSF	5771	100	0	16.0	84.0
01474500	WWF	7176	100	0	18.0	82.0
01475530	WWF	11993	100	0	13.4	86.6
01475548	WWF	11323	100	0	14.9	85.1

References

Delaware River Basin Commission, 2007. Delaware River Basin Water Code: 18 CFR Part 410 (With Amendments Through September 27, 2006). West Trenton, NJ.

Appendix H – PWD/USGS Groundwater Monitoring Program

Background

The basis of PWD's CSO LTCPU wet weather source control strategy is the "capture" and infiltration of as much rainwater as possible with green stormwater infrastructure (GSI). The direct benefits of such an effort are a reduction of stormwater discharged directly to streams, as well as the increased recharge of stormwater to supplement groundwater resources. Increased infiltration, though advantageous in several respects, must be carefully planned and closely monitored to avoid unwanted impacts. Increasing groundwater levels in areas where the depth to water is shallow could result in the saturation of soils close to the surface, potentially causing basement flooding. In addition, building foundations could be impacted by rising groundwater levels.

The adaptive management approach being employed for the LTCPU is an iterative process strongly dependent on monitoring. In order to quantify the impact of this long-term effort on groundwater resources, it is necessary to monitor groundwater levels in Philadelphia. PWD has partnered with USGS to increase the geographic scope and frequency of groundwater monitoring in the Philadelphia region. A City-wide groundwater level monitoring network will provide long-term monthly data documenting current water levels and trends in groundwater elevations throughout the City, helping to track the impacts of widespread implementation of stormwater management practices (SMPs) and global climate change.

Data from the groundwater monitoring network will also be used to calibrate a Philadelphia groundwater model and update the USGS groundwater contour map of Philadelphia (Paulachok 1984). In addition to this City-wide, long term groundwater monitoring program, PWD is conducting site-scale monitoring to address the effectiveness of individual SMPs. The City-wide groundwater monitoring network and site-scale monitoring at GSI facilities provide complementary information regarding the effects of stormwater management practices at different spatial and temporal scales.

Methods

PWD and USGS identified existing wells that would be suitable for the network and obtained permission for site access. Once wells were identified and accessible, well condition and suitability for inclusion in the monitoring network were investigated by continuous water level monitoring and remote video camera inspection when accessible. Wells that met acceptance criteria were added to the monitoring network. After examining readily available information about existing wells, PWD elected to drill additional wells in order to provide better spatial distribution of wells in the monitoring network. USGS staff conduct groundwater observations monthly and upload water level data to the NWIS web server. PWD staff periodically download water level data from NWIS and summarize these data annually.

Well Network Establishment

Existing wells in the Philadelphia area were identified by USGS and PWD through digital and paper archives as well as through contacting representatives of other City agencies and large institutional landowners (*e.g.*, Philadelphia Fire Department, Philadelphia Department of Parks and Recreation, Philadelphia Gas Works, Southeastern Pennsylvania Transportation Authority, etc.). Priority was given to wells on publicly-owned or large institutional land uses in order to help ensure that wells would remain accessible in the future. The primary goal was to develop a network of wells with a spatial distribution and density sufficient to assess groundwater levels throughout the City of Philadelphia. Other criteria for establishment of the well network were:

- Sufficient density of wells in critical areas with a shallow water table
- No bias given to combined-sewered or separate-sewered areas
- Denser distribution of monitoring wells in the Northern Piedmont Ecoregion to reflect its more varied groundwater contours.

Wells that met acceptance criteria were assigned USGS location codes and added to the USGS well monitoring network and National Water Information System (NWIS) database. The well monitoring network contains 29 active sites that are monitored monthly. Additional sites are expected to be added once landowner access agreements are finalized or new wells are drilled.

Video Camera Inspection

The availability of well attribute information varied from well to well and in most cases the physical characteristics and condition of candidate wells to be added to the network was unknown. USGS staff perform remote video camera inspection, when possible, to determine physical characteristics such as screened intervals, total depth, depth to bottom of casing, and the location of potential water-bearing zones within the bore hole. Wells narrower than 4" diameter and wells with pumps or other plumbing could not accommodate the camera equipment and were not inspected with this method.

Continuous Water Level Monitoring

Monthly measurements are appropriate for monitoring long term trends in groundwater levels. However, it is important to verify that these monthly observations are representative of the unconfined aquifer and not influenced by anthropogenic activity or other conditions. USGS staff used data logging pressure transducers (LevelTroll model 500, In-Situ, Inc.) to conduct continuous water level monitoring in candidate wells. These sensors are vented to the surface of the well to provide atmospheric pressure correction. Continuous monitoring was carried out across all wells in the network to identify any aberrant trends, such as those that might be caused by local pumping operations. Sensors were deployed for three-month periods on a rotating schedule with five wells actively monitored at a time. Wells that appear to be influenced by permanent pumping operations will be removed from the monitoring network (*e.g.*, permanent wells dewatering the stadiums). Wells that are temporarily affected by local, dewatering operations (*e.g.*, a short term construction site), will remain in the system, but data collected during the period when dewatering operations affected the well will not be used in estimates of current water levels and water level trends.

Routine Groundwater Observations

USGS staff conduct groundwater observations monthly at each well using a water sensor and graduated tape. Equipment is sterilized in 10% bleach solution prior to and after measurements are taken in order to prevent introducing or transferring contamination between wells. Well level measurements are converted to elevation above the North American Vertical Datum of 1988 (NAVD88) based upon the known elevation correction factor for each well. Water level data are recorded on site in field notebooks along with any pertinent field notes and then uploaded to the NWIS web server. PWD periodically downloads data from NWIS and summarizes these data annually.

Monitoring Well Locations

Currently the well monitoring network contains 29 active sites that are monitored monthly. (Table 1, Figure 1). Of the 29 active wells, 11 are located within the Middle Atlantic Coastal Plain Ecoregion, while the remaining 18 wells are located in the Northern Piedmont (Omernik 1987). As stated above, higher well density is required in the latter region to reflect the more complex geology and interactions with groundwater.

Table 1. PWD-USGS Groundwater Monitoring Well Network Locations.

Site ID	Site Name	Lat.	Long.	Established
USGS-395342075102101	PH 12	39.895	-75.172	10/22/1978
USGS-395353075151501	PH 1052	39.898	-75.254	3/7/2011
USGS-395408075104001	PH 63	39.902	-75.177	9/14/1954
USGS-395416075150301	PH 1053	39.904	-75.251	4/24/2003
USGS-395459075140501	PH 797	39.916	-75.259	10/15/1980
USGS-395516075113901	PH 1051	39.921	-75.194	--
USGS-395611075091301	PH 1059	39.936	-75.154	8/14/2014
USGS-395656075100401	PH 136	39.949	-75.167	12/6/1978
USGS-395656075104401	PH 1064	39.948	-75.178	6/5/2015
USGS-395705075135901	PH 1061	39.951	-75.232	6/5/2015
USGS-395849075134201	PH 1063	39.98	-75.228	6/5/2015
USGS-395859075085401	PH 1042	39.983	-75.148	2/14/2011
USGS-395942075144301	MG 2164	39.995	-75.245	2/14/2011
USGS-400001075040301	PH 1057	40	-75.068	8/14/2014
USGS-400016075102801	PH 1062	40.004	-75.174	6/5/2015
USGS-400038075094601	PH 1058	40.011	-75.163	8/14/2014
USGS-400055075122501	PH 1060	40.015	-75.206	6/5/2015
USGS-400132075031001	PH 1056	40.026	-75.053	8/14/2014
USGS-400211075093701	PH 1050	40.036	-75.16	--
USGS-400217075142101	PH 540	40.038	-75.239	3/29/1948
USGS-400229075104601	PH 1043*	40.041	-75.179	2/14/2011
USGS-400308074592201	PH 397	40.052	-74.989	1/4/1979
USGS-400311075101301	PH 1040	40.053	-75.17	2/17/2011
USGS-400327075152201	PH 1044	40.057	-75.256	3/16/2011
USGS-400424075104901	PH 550	40.073	-75.18	--/--/1906
USGS-400512075033401	PH 1045	40.087	-75.059	7/18/2011
USGS-400516075033201	PH 1046	40.088	-75.059	7/18/2011
USGS-400524075042601	MG 2195	40.09	-75.074	--
USGS-400527075042801	MG 2193	40.091	-75.074	--
USGS-400527075042802	MG 2194	40.091	-75.074	--
USGS-400644074590801	PH 1041	40.112	-74.986	2/17/2011

* Philadelphia County observation well

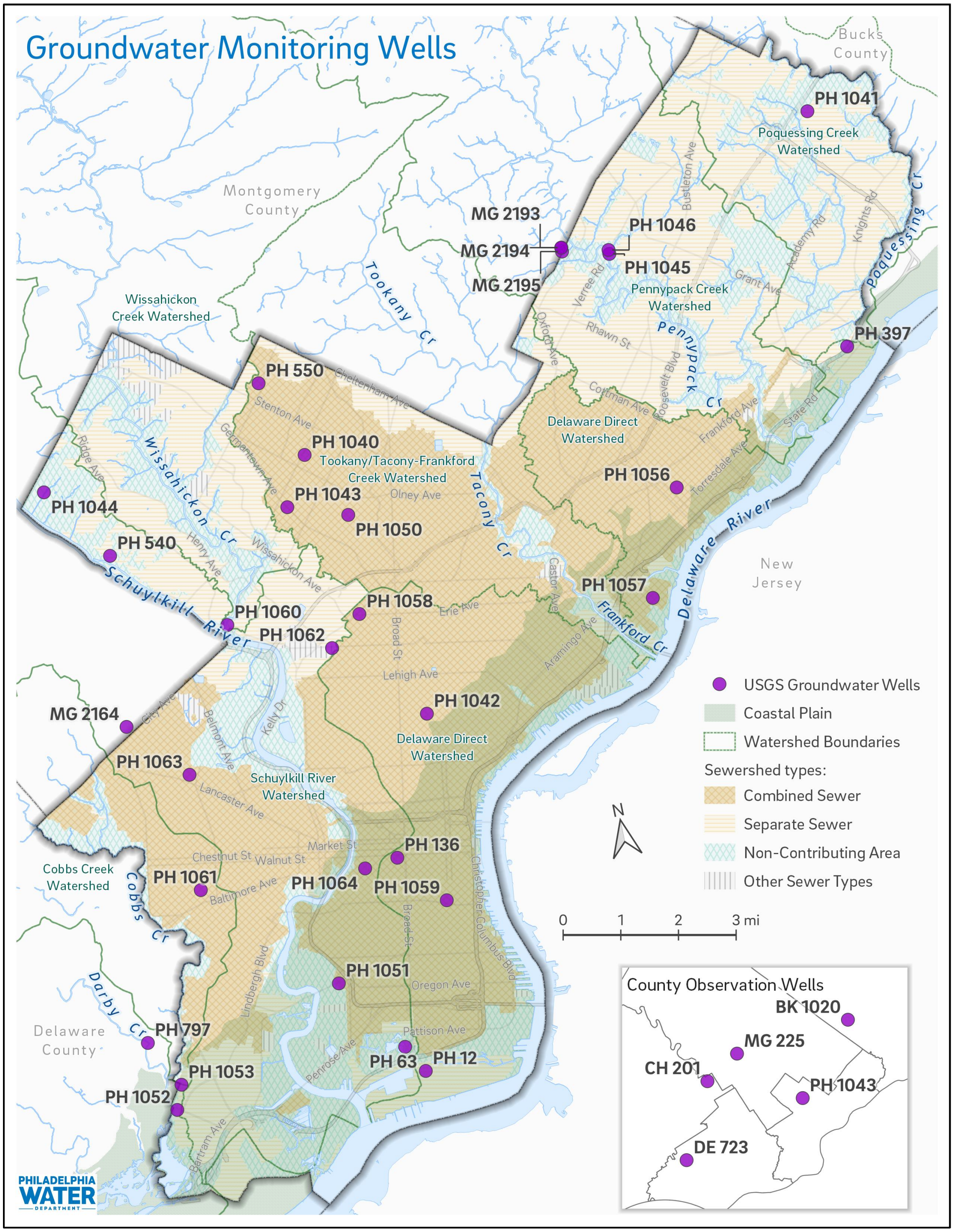


Figure 1. PWD-USGS Groundwater Monitoring Well Network Locations and (inset) County Reference Well Locations.

Wells were also classified according to predominant underlying geology and type of sewer system, *i.e.*, CSO or separate-sewered (Table 2, Figure 1). Another consideration for siting new wells was the potential influence of buried utilities and historic creek beds. During the period of rapid expansion of Philadelphia's grid-like network of streets, historic streams were encased in large brick sewers and buried in order to level and prepare land for development. Recent groundwater mapping and modeling work suggests that these brick sewers strongly influence local groundwater elevations (Paulachok 1991, Maimone et al. 2011).

Table 2. PWD-USGS Groundwater Well Geology and Sewer System Type Classification.

Site ID	Site Name	Sewer Type	Geology
USGS-395353075151501	PH 1052	Separate	Trenton Gravel
USGS-395408075104001	PH 63	Separate	Trenton Gravel
USGS-395416075150301	PH 1053	Separate	Trenton Gravel
USGS-395516075113901	PH 1051	CSO	Magothy Raritan Potomac
USGS-395656075100401	PH 136	CSO	Trenton Gravel
USGS-395859075085401	PH 1042	CSO	Pennsauken and Bridgeton Formation
USGS-395942075144301	MG 2164	Separate	Granitic Gneiss and Granite
USGS-400211075093701	PH 1050	CSO	Wissahickon Formation
USGS-400217075142101	PH 540	Separate	Wissahickon Formation
USGS-400229075104601	PH 1043	CSO	Wissahickon Formation
USGS-400308074592201	PH 397	Separate	Trenton Gravel
USGS-400311075101301	PH 1040	CSO	Wissahickon Formation
USGS-400327075152201	PH 1044	Separate	Wissahickon Formation
USGS-400424075104901	PH 550	CSO	Wissahickon Formation
USGS-400512075033401	PH 1045	Separate	Granitic Gneiss and Granite
USGS-400516075033201	PH 1046	Separate	Granitic Gneiss and Granite
USGS-400527075042801	MG 2193	Separate	Wissahickon Formation
USGS-400527075042802	MG 2194	Separate	Wissahickon Formation
USGS-400644074590801	PH 1041	Separate	Wissahickon Formation
USGS-400132075031001	PH 1056	CSO	Wissahickon Formation
USGS-400001075040301	PH 1057	CSO	Trenton Gravel
USGS-400038075094601	PH 1058	CSO	Pennsauken Formation
USGS-395611075091301	PH 1059	CSO	Trenton Gravel
USGS-395459075140501	PH 797	CSO	Trenton Gravel
USGS-395656075104401	PH 1064	CSO	Trenton Gravel
USGS-395705075135901	PH 1061	CSO	Wissahickon Formation
USGS-395849075134201	PH 1063	CSO	Wissahickon Formation
USGS-400016075102801	PH 1062	Separate	Pennsauken Formation
USGS-400055075122501	PH 1060	Separate	Wissahickon Formation

USGS maintains at least one reference well in most Pennsylvania counties. Reference wells located in neighboring counties (Figure 1, Table 3) may be used as regional reference wells for data analyses. Continuous hourly data are collected at well DE 723 in Delaware County. Reference wells in Chester, Bucks and Montgomery counties are not monitored continuously.

Site ID	Site Name	Lat.	Long.	Established
USGS-400453075255601	CH 201 Chester County Observation Well	40.136	-75.351	06/19/1978
USGS-400808075210401	MG 225 Montgomery County Observation Well	40.199	-75.052	08/15/1956
USGS-401157075032001	BK 1020 Bucks County Observation Well	40.081	-75.432	04/13/1968
USGS-395512075293701	DE 723 Delaware County Observation Well	39.920	-75.493	1983

Data Analysis

USEPA (2009) published detailed guidance on statistical analysis of groundwater contaminant concentrations. In many of the examples, the same logic and techniques could apply to analysis of groundwater levels. In the case of the Philadelphia groundwater monitoring network, the goal is to understand if groundwater levels are changing over time, at either a single well or group of wells. The main statistical tests to be utilized are a) Seasonal Kendall Test, and b) ANOVA. The tests are briefly described below.

The Seasonal Kendall test performs the Mann-Kendall (MK) trend test for individual seasons of the year, where season is defined by the user. It then combines the individual results into one overall test for whether the dependent variable (*i.e.,* groundwater level) changes in a consistent direction (monotonic trend) over time. The magnitude (*i.e.*, slope) of the trend is also determined. The test is nonparametric, therefore non-normal data can be analyzed (Helsel *et al.* 2006). USEPA (2009) advises that at least 10-12 measurements are needed, whereas Helsel and Hirsch (2002) recommends that the product of number of years and number of seasons be greater than 25. Helsel *et al.* (2006) further caution that with more than 10 years of data, adjusted p-values should be calculated to account for the possibility of serial correlation. The Seasonal Kendall test can be applied to data from a single well, not multiple wells. To examine seasonal trends across multiple wells, the Covariance-Sum test is used (Lettenmaier 1988), which is essentially the execution of multiple seasonal Kendall tests and calculation of the covariances between them. To analyze regional trends over time from a group of wells, the Regional Kendall test can be applied. The Regional Kendall test essentially functions the same way as the Seasonal Kendall test, except the data is categorized by region rather than season.

An alternate method to analyze temporal trends on either a single well or group of wells is the analysis of variance (ANOVA). For a single well or group of wells with data subdivided by season, a one-way ANOVA would examine the significance of seasonality as a statistical factor. A two-way ANOVA would be applied to include location or region as a statistical factor. Either form of ANOVA assumes that the datasets are normally distributed with constant variance. Group residuals should be tested for normality and for equality of variance. If the data cannot be transformed to a normal distribution, the nonparametric Kruskal-Wallis test can be used instead to detect significance of the specified statistical factor (USEPA 2009).

Well Monitoring Data Summary

Well monitoring data were summarized from July 2022 to June 2023 (Tables 4-5). These data are presented as an update of the program status. Additional data analysis will be completed as part of the groundwater model calibration and groundwater map update reports. Groundwater trends will be analyzed further once a sufficient amount of data has been collected (See Data Analysis section).

Table 4. PWD-USGS Groundwater Monitoring Well Data 7/2022-6/2023, Depth to Water Level (Feet below Land Surface).

Site ID	J	A	S	O	N	D	J	F	M	A	M	J
395353075151501	15.44	15.72	16.07	16.2	16.31	16.35	15.9	15.79	15.77	15.78	15.54	15.53
395408075104001	4.09	4.96		5.21			5.01		5.15	5.17	5.34	5.22
395416075150301	9.07	9.88	11.01	11.22	11.46	10.86	9.69	9.5	9.7	9.22	9.58	9.42
395459075140501	13.67	13.66	13.69	13.58	13.66	13.6	13.61	13.8	13.81	13.8	13.79	13.82
395516075113901												
395611075091301	26.68	26.87	27.13	27.23	27.17	27.28	27.17	27.11	27.15	27.14	27	26.91
395656075100401												
395656075104401	19.98	18.29	9.93	19.56	20.4	20.6	20.69	20.7	20.7	13.58	14.74	17.31
395705075135901	14.75	15.21	15.55	15.02	14.89	14.54	13.78	14.34	14.47	14.56	14.35	14.89
395849075134201	13.21	13.46	13.55	13.39	13.55	13.52	13.05	13.31	13.5	13.46	13.19	
395859075085401												
395942075144301	16.36	17.77	15.72	14.6	14.81	14.25	12.31	12.67	12.71	13.06	12.86	15.03
400001075040301	15.8	15.95	16.09	15.53	15.93	16.03	15.1	15.62	15.81	15.71	15.67	15.88
400016075102801	10.97	11.05	11.01	10.92	10.88	10.88	10.8	10.96	10.9	10.9	10.9	10.93
400038075094601	19.55	19.56	19.6	19.52	19.61	19.58	19.35	19.44	19.42	19.45	19.36	19.58
400055075122501	16.28	16.49	16.18	15.69	14.47	13.86	13.06	13.3	13.21	13.27	13.02	12.9
400132075031001	20.91	21.11	21.36	21.13	21.21	21.16	20.71	20.55	20.64	20.68	20.47	20.61
400211075093701	13.77	13.83	13.92	13.85	14.01	14.02	13.95	14.01	14.07	13.92	13.85	13.83
400217075142101	24.49	26.62	28.72	29.5	29.5	30.17	29.55	29.55	29.72	28.7	29.72	30
400229075104601	16.16	16.44	16.26	15.77	15.8	15.23	14.1	15.31	15.23	15.24	15.06	15.5
400308074592201	6.64	7.49	8.49	8.72	8.79	8.54	6.64	6.73	6.72	6.97	6.59	7.03
400311075101301	11.38	11.69	11.16	10.84	10.89	10.49	8.48	9.21	9.57	9.95	9.58	11.11
400327075152201	67.56	73.87	76.43	77.32	77.76	76.53	63.94	63.24	62.84	61.96	61	64.03
400424075104901	18.29	19.26	19.68	19.26	19.43	19.15	17.48	17.47	17.84	18.08	17.73	18.24
400512075033401	36.18	36.75	37.13	36.47	36.52	36.26	34.71	35.18	35.69	35.3	34.98	35.66
400516075033201	28.31	29.37	30.27	30.73	31.09	31.35	31.6	31.58	31.56	31.44	28.91	28.07
400527075042801												
400527075042802	21.11	21.57	22.41	21.57	21.9	21.59	19.8	20.43	20.44	20.55	20.32	20.83
400644074590801	22.22	23.79	25.23	25.46	24.66	23.83	18	21.38	21.18	21.32	20.65	22.11

Table 5. Regional County Observation Well Data 7/2022 - 6/2023.

Site ID	J	A	S	O	N	D	J	F	M	A	M	J
400453075255601	21.85	23.13	23.84	23.22	23.1	21.53	20.95	19.91	20.54	21.46	20.7	22.1
400808075210401		13.92		11.94		12.46		10.68		13.39		13.76
401157075032001		34.91		34.39		32.85		27.63		29.76		31.95
395512075293701		7.6		7.61			6.88		6.91		6.85	

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Appendix I – PWD Wadeable Steams Benthic Macroinvertebrate and Physical Habitat Assessments

PWD Wadeable Streams Benthic Macroinvertebrate and Physical Habitat Assessments

Background

Since 1999, the Philadelphia Water Department (PWD) has been using benthic macroinvertebrate sampling and instream physical habitat assessments in order to characterize watershed conditions and track trends in watershed health. Assessments are performed by the staff of PWD's Bureau of Laboratory Services (BLS) using PADEP Instream Comprehensive Evaluation (ICE) methods. As benthic invertebrates may be exposed to both short and long-duration stressors, data collected through this program are pertinent to all targets of PWD's Integrated Watershed Management Plan (IWMP) Strategy.

Common Acronyms Used in This Report

IBI - Index of Biotic Integrity, a biological assessment tool to indicate the capability of a stream to support a healthy aquatic community.

ICE - Instream Comprehensive Evaluation, a protocol to survey and evaluate wadeable streams.

PTV - Pollution Tolerance Values, a numeric measure of an organism's ability to withstand environmental degradation.

EPT - Ephemeroptera + Plecoptera + Trichoptera, the common names for pollution-sensitive mayflies, stoneflies and caddisflies.

Assessment Study Design

In recent years, agencies tasked with evaluating water quality have attempted to incorporate statistical sampling designs, or a "probabilistic" approach, to selecting sampling sites (Paulsen 2008, Borsuk *et al.* 2001) rather than relying on fixed sites. Statistical sampling design is particularly important when the goal of monitoring is to make an estimate of the percentage of waters affected by pollution. Another advantage of probabilistic study design is that the assessment units are distributed over a larger geographic area. When monitoring efforts are directed at individual watersheds on a rotating basis, as has been the case with PWD programs, the possibility arises that larger scale patterns may be missed. For example, the effects of floods or drought conditions are widespread, but only the watershed that is being monitored within the same time period will have data reflecting these effects. Disadvantages of a probabilistic approach include the technical demands of establishing and randomly selecting from geographic data sets containing all possible sampling locations as well as additional field reconnaissance work when conduct the actual monitoring.

The current PWD monitoring strategy is intended to be a compromise, recognizing the benefits of collecting data from randomly selected sites but also the importance of maintaining a consistent monitoring effort at selected locations over time. This plan is based on a similar monitoring program implemented by USGS in Chester County (Reif 2002, Reif 2004). The plan also reflects the manpower constraints of collecting and processing samples with the PADEP ICE protocol. It is hoped that this compromise approach (Table 1) will achieve some of the benefits of a randomized approach, while providing periodic re-evaluation of our watersheds required to inform the watershed planning process and comply with environmental mandates.

Stream Conditions

This report summarizes results from samples that were collected between March 22 and May 25, 2022. PWD is not aware of any spills, discharges or unusual conditions that would tend to cause misleading results.

Table 1. PWD Wadeable Streams Assessments Schedule

Period	Monitoring Activity (number of samples)
2011	USGS gage samples (8); Randomly selected sites (16)
2012	Cobbs Creek Assessment (6*); USGS gage samples (9); Random (10)
2013	Tookany/Tacony Creek (10*); USGS gage samples (8); Random (7)
2014	Wissahickon Creek Tributaries (11); USGS gage samples (9); Random (5)
2015	Wissahickon Creek (12*); USGS gage samples (8); Random (2)
2016	Pennypack Creek Tributaries (11); USGS gage samples (9); Random (5)
2017	Pennypack Creek (12*); USGS gage samples (9); Random (4)
2018	Poquessing Creek (12*); USGS gage samples (9); Random (4)
2019	Schuylkill River Tributaries (3); USGS gage samples (8); Random (3)
2020	USGS gage samples (6); Random (2)
2021	Cobbs Creek (6*); USGS gage samples (9); Random (7)
2022	Tookany/Tacony Creek (10*); USGS gage samples (9); Random (6)
2023	Wissahickon Creek Tributaries (15); USGS gage samples (9); Random (1)

* Number of monitoring sites excludes USGS gage sites in target watershed

Methods

Benthic Macroinvertebrate Sample Collection

Using the PADEP Instream Comprehensive Evaluation (ICE) protocol (PADEP 2009), macroinvertebrate samples were collected by placing a handheld D-frame net (500µm) at the downstream portion of a riffle. Stream substrate directly upstream of the D-frame net was then disturbed for approximately one minute to a depth of approximately 10 cm as substrate allowed. This procedure was repeated at other riffle locations of variable flow within the 100-m reach such that the sample at each station was a composite of six riffle samples. Composited samples from each biological monitoring location were then preserved in 95% ETOH (ethyl alcohol) and returned to the laboratory in polyethylene containers.

Benthic Macroinvertebrate Laboratory Procedures

Benthic macroinvertebrate samples were processed according to PADEP ICE protocols (PADEP 2009). Each composited sample was placed into an 18 x 12 x 3.5-inch pan marked with 28 four-square-inch grids. Four grids were randomly selected by drawing numbers. All material was extracted from the selected grids using a four-square-inch circular "cookie cutter," and placed into another identical empty pan. From this second pan, organisms were picked from randomly selected grids or “plugs” until a minimum of 200, but not more than 240, individuals were subsampled. This procedure was a misinterpretation of the actual technique, which stipulates a count of 200 (+/- 20%) individuals. When picking either the four initial “plugs” or additional plugs results in subsampling more than 240 individuals, the PADEP ICE protocol outlines a procedure for redistributing the subsample into a clean, gridded pan and “back counting” grids until a subsample consisting of 200 (+/-20%) is obtained. Invertebrates were identified under magnification, with taxonomic classification following PADEP 2009 guidelines.

Habitat Assessment

After collecting benthic invertebrates, biologists surveyed habitat features within the monitoring station and recorded scores for 12 habitat attributes according to the PADEP ICE protocol (Table 2). Biologists completed the survey independently and then discussed the interpretation of individual habitat attribute scores, averaging individual scores when necessary.

Table 2. PA DEP ICE Protocol Habitat Metrics

Habitat Parameter	Description
Instream Cover (Fish)	Mix of boulder, cobble or other stable habitat
Epifaunal Substrate	Length/width of riffles; characterization of boulders, gravel, cobble
Embeddedness	Presence/absence of fine sediment around boulders, gravel, cobble

Velocity/Depth Regimes	Presence/absence of four velocity/depth regimes
Channel Alteration	Degree of channelization or dredging
Sediment Deposition	Measure of sediment deposits, degree of change at the bottom
Frequency of Riffles	Occurrence of riffles and distance between riffles
Channel Flow Status	Degree to which water fills the available channel
Condition of Banks	Stability of streambanks and presence of erosion or bank failure
Bank Vegetative Protection	Percentage of streambank surface covered by vegetation
Grazing or Other Disruptive Pressure	Degree to which vegetation disrupted by grazing or mowing
Riparian Vegetative Zone Width	Width of riparian zone and determination of impact on vegetation by human activities

Data Analysis

Benthic macroinvertebrate and habitat data were compiled in a Microsoft Access database and queries were used to calculate scoring metrics. Individual metric standardized scores and the PADEP Index of Biotic Integrity (IBI) were calculated using the ICE protocol (Table 3).

Table 3. PADEP ICE Protocol Metrics and Metric Standardization Values

Metric	Standardization Value
Total Taxa Richness	33
EPT Taxa Richness (PTV 0-4)	19
Beck's Index, version 3	38
Hilsenhoff Biotic Index	1.89
Shannon Diversity	2.86

Percent Sensitive Individuals (PTV 0-3)	84.5

Monitoring Locations

Assessments were performed at 9 USGS gage sites, 10 sites in the targeted Tookany/Tacony-Frankford Creek watershed, and 6 randomly chosen sites from PWD's watershed assessment site network between 3/22/2022 and 5/25/2022 (Figure 1, Tables 4-5). USGS stream gaging stations are used as long-term monitoring points at which streamflow and continuous water chemistry data are collected (refer to PWD-USGS Cooperative Water Quality Monitoring appendix). Water chemistry grab sampling for nutrient and bacterial parameters is also conducted at these USGS gage stations on a quarterly basis (refer to PWD Quarterly Dry Weather Water Quality Monitoring appendix). Combining different forms of monitoring at the same station allows for better integration of information and may enable more sophisticated analyses in the future. In some cases, when USGS gage sites are not appropriate or accessible for bioassessment activities, a nearby upstream or downstream location is used to collect macroinvertebrates and assess habitat conditions.

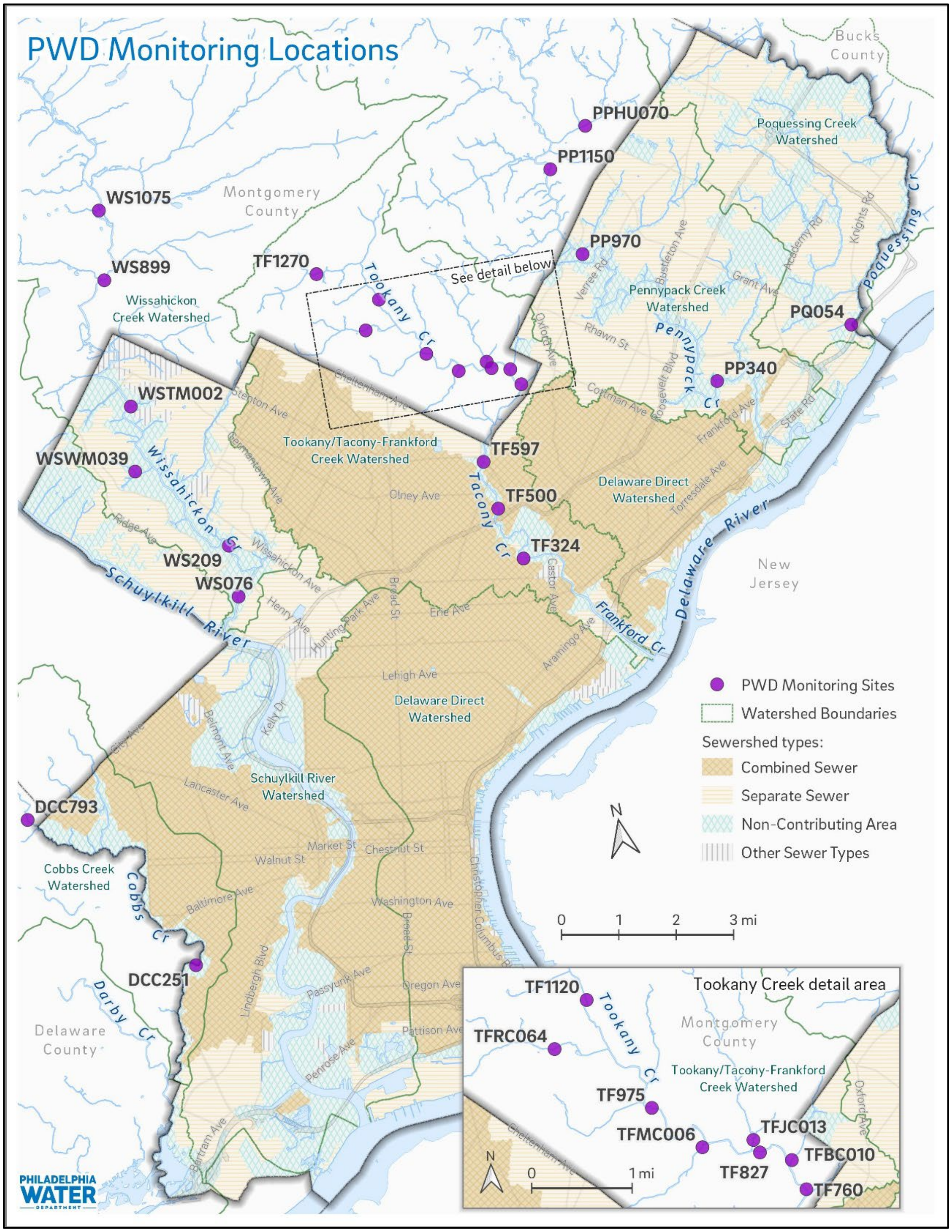

Figure 1. PWD Wadeable Streams Assessment Locations - Spring 2022

Table 4. PWD-USGS Cooperative Monitoring Program Sites

Site ID	USGS Gage	Site Description	Drainage Area (mi^2)
DCC253	01475548	Cobbs Creek at Mount Moriah Cemetery	19.78
DCC793	01475530	Behind Grange Estate, off private road (Myrtle Street)	4.60
PP340	01467048	Pennypack Creek at Lower Rhawn St bridge	49.84
PP970	01467042	Pennypack Creek at Pine Rd.	39.34
PQ053	01465798	Poquessing Creek at Holy Family College	21.67
TF324	01467087	Frankford Creek at Castor Ave.	29.69
TF597	01467086	Tacony Creek below Adams Ave. Bridge	16.25
WS076	01474000	Wissahickon Creek at Ridge Ave.	63.22
WS1075	01473900	Wissahickon Creek at Ft. Washington	40.44

Table 5. Targeted Sites in the Tookany/Tacony-Frankford Creek Watershed

Site ID	Site Description	Drainage Area (mi^2)
TF1120	US side of Route 73 (Washington Ln) bridge	5.36
TF1270	US of E Waverly Rd	1.89
TF500	350 ft DS of Tabor Rd, adjacent to end of Smylie Rd	17.37
TF760	200 ft DS of Central Ave bridge (at Ashbourne Rd bridge)	14.31
TF827	550 ft DS of Jenkintown Rd bridge	13.39
TF975	50 ft DS of High School Rd bridge	9.16
TFBC010	350 ft US of Tacony conflu.	0.64
TFJC013	450 ft US of Tookany Cr. Pky. bridge	1.78
TFMC006	600 ft DS of Ashbourne Rd bridge	1.65
TFRC064	800 ft DS of Washington Ln. bridge	1.63

Table 6. Random Monitoring Sites, Spring 2022

Site ID	Site Description	Drainage Area (mi^2)
PPHU070	150 ft DS of Red Lion Rd bridge	3.40
WSTM002	150 ft US of Wissahickon conflu.	0.18
PP1150	1200 ft DS of Huntingdon Pike bridge	35.53
WSWM039	1500 ft DS of Summit Ave bridge	0.35
WS209	930 ft US of Walnut Rd bridge	60.76
WS899	3000 ft US of Stenton Ave bridge (Wiss. Cricket Club)	45.32

Benthic Macroinvertebrate Monitoring Results - Spring 2022

This report presents macroinvertebrate monitoring results from 12 of the 25 sites where sampling occurred in spring 2022. Construction at PWD's Bureau of Laboratory Services throughout 2022 and early 2023 limited access to areas and equipment needed to complete the macroinvertebrate analysis.

The remaining results will be included with next year's annual report. Data presented below represents samples from the targeted Tookany/Tacony-Frankford Creek watershed sites.

A total of 2,624 benthic macroinvertebrates from 28 taxa were collected from the 12 sampling sites. When compared to PADEP ICE protocol metric reference conditions, all assessment sites were classified as impaired and fell below 50% comparability, meaning that they are not meeting the Aquatic Life Use (ALU) designation (Figure 2). Percent comparability with the standard reference IBI score ranged from 21.3% to 32%. All sites were characterized by low taxa richness, low or absent modified EPT taxa, and elevated Hilsenhoff Biotic Index scores (Table 7, Figure 2).

Table 7. PADEP ICE Metric Scores

Site ID	Taxa Richness	EPT richness (PTV 0-4)	Beck's Index	HBI	Shannon Index	% Sensitive individuals	IBI score
TF324	12	0	0	6.2	1.8	0	24.0
TF500	14	1	0	6.1	1.3	0.9	23.5
TF597	13	1	0	5.9	1.2	2.4	23.3
TF760	11	1	0	5.7	1.4	0.0	23.2
TF827	12	1	0	5.9	1.2	0.5	22.2
TF975	11	1	0	5.9	1.3	0.5	22.7
TF1120	10	2	3	5.7	1.3	1.9	25.1
TF1270	12	1	0	6.0	1.0	0.5	21.3
TFBC010	11	2	3	5.7	1.1	3.6	24.7
TFJC013	16	3	6	5.6	1.5	4.8	32
TFRC064	13	2	3	6.0	1.1	1.3	24.7
TFMC006	14	0	0	6.1	1.5	0.8	23.9

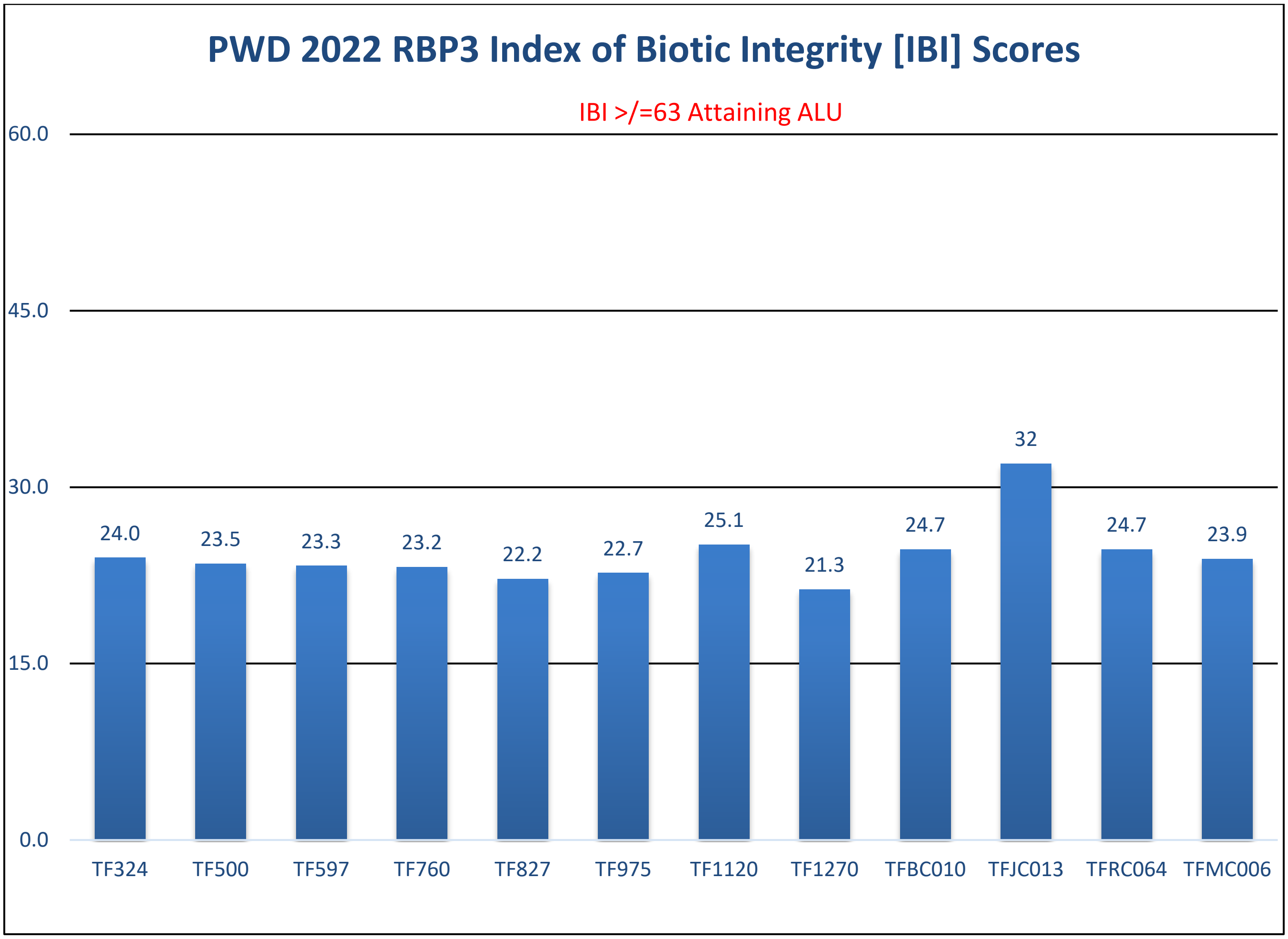

Figure 2. Spring 2022 Macroinvertebrate IBI Scores at Tookany/Tacony-Frankford Sites

Very sensitive taxa (pollution tolerance value ≤ 2) were present at 10 of the 12 sites assessed in spring 2022. All sites fell below the PADEP reference standard for Percent Intolerant Taxa metric (PTV = 0 to 3) of 84.5%.

Overall diversity was low among all sites. The Shannon Diversity Index scores for all sites ranged from 1.0 to 1.8, compared to the reference metric value of 2.86. The site with the greatest diversity was the Tacony Creek site at Castor Ave. (SDI=1.8), with a taxa richness (n=12), EPT taxa richness (n=0), and HBI (6.2).

The Hilsenhoff Biotic Index (HBI) is a metric used to determine the overall pollution tolerance of a site's benthic macroinvertebrate community. This community composition and tolerance metric generally increases with increasing ecosystem stress, resulting in increasing dominance of pollution-tolerant organisms. Oriented toward the detection of organic pollution, HBI scores can range from 0 (very sensitive) to 10 (very tolerant). The average HBI for all sites was 5.9, and scores at the 12 assessment sites ranged from 5.6 to 6.2.

Tolerance/intolerance measures are intended to be representative of relative sensitivity to perturbation and may include numbers of pollution tolerant and intolerant taxa or percent composition (Barbour *et al*., 1999). The proportion of moderately tolerant individuals at all sites ranged from 85.1% to 97.7%. The site with the greatest proportion of moderately tolerant taxa was TF1270, with 97.7% dominance directly related to a high number of Chironomidae (n=157) found within the sorted sample (n=214). Chironomids (Figure 3) were the dominant taxon at all assessment locations. The proportional dominance of Chironomids is evidence of increasingly homogenous community assemblages within the selected monitoring sites. Chironomids and other pollution-tolerant, generalist species increase in proportional dominance with increased disturbance due to the loss of optimal habitat conditions for less tolerant, more specialized species.

Figure 3. Chironomid, or non-biting midge
Photo: Simon Johnston

The proportion of tolerant taxa at each monitoring site ranged from 0.5% to 8.7%. Intolerant taxa were similarly represented. The proportion of intolerant taxa at each site ranged from 1.3% to 13.1%. The Burholme Creek tributary site (TFBC010) had the highest proportion of intolerant taxa.

Sensitive taxa (pollution tolerance values ≤ 3) were collected at 10 of the 12 sites (Table 8). However, the rarity of sensitive taxa at suggests a response to watershed-wide perturbation, such as water quality degradation. Other potential explanations for the rarity of sensitive taxa are habitat degradation caused by fine sediment delivered to the stream channel via bank erosion or stormwater runoff and changes in seasonal base flow and temperature that tend to accompany urbanization. *Antocha* (Diptera; Tipulidae, pollution tolerance value =3) were the most commonly collected sensitive taxa.

Table 8. Sensitive Taxa Collected

Site	Order	Family	Genus	HBI
TF500	Diptera	Tipulidae	*Antocha*	3
TF597	Diptera	Tipulidae	*Antocha*	3
TF827	Diptera	Tipulidae	*Antocha*	3
TF975	Diptera	Tipulidae	*Antocha*	3
TF1120	Diptera	Tipulidae	*Antocha*	3
TF1120	Trichoptera	Philopotamidae	*Dolophilodes*	0
TF1270	Diptera	Tipulidae	*Antocha*	3
TFBC010	Diptera	Tipulidae	*Antocha*	3
TFBC010	Trichoptera	Philopotamidae	*Dolophilodes*	0
TFJC013	Diptera	Tipulidae	*Antocha*	3
TFJC013	Trichoptera	Philopotamidae	*Dolophilodes*	0
TFJC013	Trichoptera	Glossosomatidae	*Glossosoma*	0
TFRC064	Trichoptera	Philopotamidae	*Dolophilodes*	0
TFRC064	Diptera	Tipulidae	*Antocha*	3
TFMC006	Diptera	Tipulidae	*Antocha*	3

Table 9. 2022 Benthic Macroinvertebrate Taxa List

Order	Family	Genus
Amphipoda	Crangonyctidae	*Crangonyx*
Amphipoda	Gammaridae	*Gammarus*
Coleoptera	Elmidae	*Stenelmis*
Diptera	Chironomidae	*spp*
Diptera	Empididae	*Hemerodromia*
Diptera	Empididae	*Clinocera*
Diptera	Muscidae	*Limnophora*
Diptera	Psychodidae	*Psychoda*
Diptera	Simuliidae	*Simulium*
Diptera	Tipulidae	*Antocha*
Diptera	Tipulidae	*Tipula*
Diptera	Tipulidae	*Limonia*
Gastropoda	Physidae	*sp*
Hirudinea		
Hydracarina	(water mite)	
Isopoda	Asellidae	*Caecidotea*
Odonata/Zygoptera	Caliopterygidae	*Calopteryx*
Oligochaeta		
Trichoptera	Glossosomatidae	*Glossosoma*
Trichoptera	Hydropsychidae	*Hydropsyche*
Trichoptera	Hydropsychidae	*Cheumatopsyche*
Trichoptera	Hydroptilidae	*Leucotrichia*
Trichoptera	Hydroptilidae	*Hydroptila*
Trichoptera	Philopotamidae	*Chimarra*
Trichoptera	Philopotamidae	*Dolophilodes*
Turbellaria	Nematoda	
Turbellaria	Nemertea	*sp*
Turbellaria	Planariidae	*sp*

Physical Habitat Monitoring Results - Spring 2022

Habitat impairments such as hydrologic extremes (*i.e.,* low base flow and accentuated flow during storm events), physical obstructions, and sedimentation/siltation appear to be the major environmental stressors on the aquatic ecosystem. Accumulation of sediment in the interstitial spaces of riffles has been shown to limit available habitat and possibly smother benthic invertebrate life stages (Runde and Hellenthal, 2000). Most sites received suboptimal or marginal total scores for habitat (Table 10). The site on Bells Mill Run, a tributary to the Wissahickon (WSBM007), achieved an optimal total score. The Frankford Creek site at Castor Ave (TF324) had the lowest total habitat scores of all sites (Table 10, Figure 4).

Table 10. Physical Habitat Scores at All Monitoring Sites - Spring 2022

Site ID	Instream	Epifaunal	Embed	Veldep	Chanalt	Seddep	Riffreq	Chanflo	Bankcond	Vegpro	Graze	Ripveg	Total Score
TF324	12	8	7	11.5	10	9	11.5	8	7.5	9	12	12	117.5
TF500	12	12.5	7	16	13	12	12	10	10	16	16	16	152.5
TF597	9	11.5	9.5	12	11.5	9	12	13.5	11	16	16	16	147
TF760	12	10	6.5	16	11	10.5	10	9	11	11	11	6.5	124.5
TF827	10	9.5	8	16	10	7.5	13	9	8.5	16	9.5	7.5	124.5
TF975	9.5	10.5	7.5	13	8.5	10.5	12.5	9.5	7.5	13	13	9.5	124.5
TF1120	14	10.5	11	17	7.5	14	12	16	12.5	5	15.5	5	140
TF1270	9.5	11.5	7.5	11.5	14.5	7	9	14	10	15.5	8	7.5	125.5
TFMC006	10.5	7	7	11.5	11.5	10.5	12.5	14	13	16	16.5	12	142
TFRC064	14.5	11	12	16	15	14	16	9	13	15.5	16.5	13.5	166
TFBC010	12	13	12	13	13.5	9.5	12.5	9.5	8	16	12	8.5	139.5
TFJC013	10	10	12.5	13	13.5	14	14	12	12	15	7.5	8	141.5
WSTM002	14	13.5	14.5	9	18.5	16.5	17	9	14	18	19.5	18.5	182
WSWM039	7.5	8.5	12	8.5	16.5	13	5	6	4.5	16	17	17	131.5
WS076	13.5	13.5	13.5	16.5	9	14	9	13	10.5	5.5	9	6.5	133.5
WS209	18	16.5	13	17.5	19	16.5	17	16	15	16.5	18.5	19	202.5
WS899	10	11	7.5	16	17	12	9.5	14.5	9	15.5	17	16	155
WS1075	11.5	12	9	16	14.5	9.5	12	16	11	14.5	9	7.5	142.5
DCC251	11	12	7	13	13.5	13	14.5	14.5	11	16.5	16.5	12	154.5
DCC793	17	14.5	14.5	16	15	11	15.5	9	5	16.5	17	16.5	167.5
PQ054	9	9.5	9	12	16	7	9.5	13.5	8.5	13	16	10.5	133.5
PP340	12.5	12	7.5	16	15	12.5	12	10	10	16	16.5	16.5	156.5
PP970	14.5	12	16.5	16	16	10	16	9	8	14	10	11	153
PP1150	15	14	12	16.5	14	14	12.5	14	10.5	15.5	15.5	15.5	169
PPHU070	5	11	7.5	9	10.5	5.5	10.5	14	11.5	10	6.5	8	109

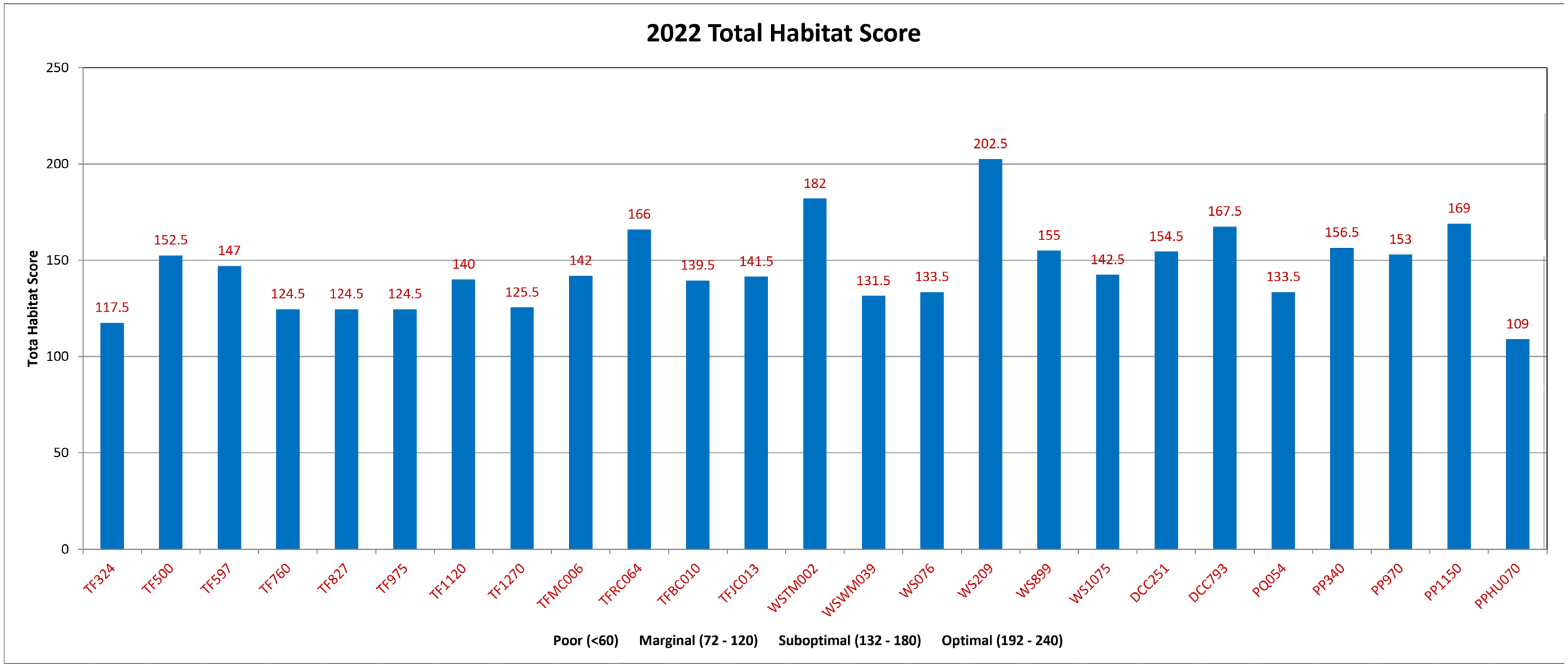

Figure 4. Habitat Scores, Spring 2022

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Appendix J – NPDES Industrial Stormwater Permitted Sites – Philadelphia County

Authority ID	Site Name	Program Description	Site Address
PAG-03 Discharge of Stormwater Assoc w Industrial Activities			
21593	METRO MACH OF PA SHIP REPAIR FAC	Clean Water	FOOT OF MORTON AVE CHESTER, PA 19013
326466	PAARNG SOUTHAMPTON FAC	Clean Water	2734 SOUTHAMPTON RD PHILADELPHIA, PA 19154
326472	PAARNG OGONTZ OMS 14A	Clean Water	5350 OGONTZ AVE PHILADELPHIA, PA 19141
326557	PAARNG FT MIFFLIN FAC	Clean Water	BLDG 56 FORT MIFFLIN 6400 HOG ISLAND RD PHILADELPHIA, PA 19153
459823	PHILA WATER DEPT NE WPCP	Clean Water	3895 RICHMOND ST PHILADELPHIA, PA 19137-1418
459790	PHILA WATER DEPT SE WPCP	Clean Water	25 PATTISON AVE PHILADELPHIA, PA 19148-5607
459812	PHILA WATER DEPT SW WPCP	Clean Water	8200 ENTERPRISE AVE PHILADELPHIA, PA 19153-3813
577993	DHL EXPRESS COLUMBUS BLVD FAC	Clean Water	1101 N CHRISTOPHER COLUMBUS BLVD PHILADELPHIA, PA 19125
781605	NDV RECYCLING N 2ND ST FAC	Clean Water	3630 N 2ND ST PHILADELPHIA, PA 19140-4605
886506	TRC TRANSFER STATION COLUMBUS BLVD FAC	Clean Water	2904 S CHRISTOPHER COLUMBUS BLVD PHILA INT AIRPORT PHILADELPHIA, PA 19148
1016261	ATLANTIC AVIATION ENTERPRISE AVE FAC	Clean Water	8375 ENTERPRISE AVE PHILA INT AIRPORT PHILADELPHIA, PA 19153
1020028	DAVE'S DELAWARE VALLEY TOWING PASSYUNK AVE FAC	Clean Water	6159 PASSYUNK AVE PHILADELPHIA, PA 19153
1032035	ATLANTIC USED AUTO PARTS ESSINGTON AVE FAC	Clean Water	6544 ESSINGTON AVE PHILADELPHIA, PA 19153
1033602	ESSINGTON AVE AUTO PARTS FAC	Clean Water	6746 ESSINGTON AVE PHILADELPHIA, PA 19153
1033629	JIM'S AUTO RECYCLING W PASSYUNK AVE FAC	Clean Water	6299 W PASSYUNK AVE PHILADELPHIA, PA 19153
1039992	BIG HEAD AUTO SALVAGE CORP	Clean Water	3511 S 61ST ST PHILADELPHIA, PA 19153
1041802	B & L AUTO PARTS 61ST STREET FAC	Clean Water	3404 S 61ST ST PHILADELPHIA, PA 19153

Authority ID	Site Name	Program Description	Site Address
1044986	STEVE'S AUTO PARTS II S 61ST ST FAC	Clean Water	3331 S 61ST ST PHILADELPHIA, PA 19153
1047066	JACK'S AUTO PARTS S 61ST ST FAC	Clean Water	3517-3555 S 61ST ST PHILADELPHIA, PA 19153
1056063	KANCO METALS INC	Clean Water	4601 BATH ST PHILADELPHIA, PA 19137-2216
1086796	ECO ENERGY PHILLY	Clean Water	3400 S CHRISTOPHER COLUMBUS BLVD PHILADELPHIA, PA 19148-5110
1098554	JT'S USED AUTO PARTS S 61ST ST FAC	Clean Water	3505 S 61ST ST PHILADELPHIA, PA 19153
1107170	SWEET OVATIONS TOMLINSON RD FAC	Clean Water	1741 TOMLINSON RD PHILADELPHIA, PA 19116-3847
1137392	CARTEL AUTO PARTS W PASSYUNK AVE FAC	Clean Water	6330 W PASSYUNK AVE PHILADELPHIA, PA 19153
1223833	RECLEIM PA LLC PHILA PLT	Clean Water	4301 N DELAWARE AVE BLDG A PHILADELPHIA, PA 19137
1428081	KINGSBURY	Clean Water	2050 BYBERRY RD PHILADELPHIA, PA 19116
1428328	RICHARDSAPEX MAIN ST FAC	Clean Water	2800 CHRISTIAN ST PHILADELPHIA, PA 19146
1428251	ZENTIS NORTH AMERICA	Clean Water	2100 KITTY HAWK AVE PHILADELPHIA, PA 19112-1808
1429658	DUFFEY OIL TERM	Clean Water	2801 HUNTING PARK AVE PHILADELPHIA, PA 19129
1431384	WASTE MGMT OF PA GRAYS FERRY AVE FAC	Clean Water	5109 BLEIGH AVE PHILADELPHIA, PA 19136
1431006	WASTE MGMT BLEIGH AVE FAC	Clean Water	5109 BLEIGH AVE PHILADELPHIA, PA 19136
1431892	CLEAN EARTH OF PHILA FAC	Clean Water	2904 S CHRISTOPHER COLUMBUS BLVD PHILADELPHIA, PA 19148
1431856	PHILA GAS WORKS PASSYUNK AVE PLT	Clean Water	3505 S 61ST ST PHILADELPHIA, PA 19153
1431719	ORTHODOX AUTO UNRUH AVE FAC	Clean Water	1701 KITTY HAWK AVE PHILADELPHIA, PA 19112-5087
1431928	NAVAL FOUNDRY AND PROPELLER CTR	Clean Water	TACONY ST & ADAMS AVE PHILADELPHIA, PA 19124

Authority ID	Site Name	Program Description	Site Address
1432454	S D RICHMAN SONS WHEATSHEAF LN FAC	Clean Water	5247 UNRUH AVE PHILADELPHIA, PA 19135
1431929	PEPSI BOTTLING ROOSEVELT BLVD PLT	Clean Water	8375 ENTERPRISE AVE PHILA INT AIRPORT PHILADELPHIA, PA 19153
1431945	LKQ VENICE AUTO PARTS	Clean Water	532 W ANNSBURY ST PHILADELPHIA, PA 19140
1433292	ALLEGHENY IRON & METAL TACONY ST FAC	Clean Water	9800 ASHTON RD PHILADELPHIA, PA 19114
1431913	NORTHEAST PHILADELPHIA AIRPORT (PNE)	Clean Water	MARGARET & BERMUDA STS PHILADELPHIA, PA 19137-1193
1433316	ADVANSIX RESINS AND CHEMICALS LLC FRANKFORD PLT	Clean Water	4700 BASIN BRIDGE RD THE NAVY YARD PHILADELPHIA, PA 19112
1432373	MARINE LUBRICANTS, INC-PHILLY	Clean Water	4201 TACONY ST PHILADELPHIA, PA 19124
1434270	UNITED METAL TRADERS COMLY ST FAC	Clean Water	2900 E ALLEGHENY AVE PHILADELPHIA, PA 19134-6302
1433515	BWC TERMINALS-PHILADELPHIA	Clean Water	4924 WELLINGTON ST PHILADELPHIA, PA 19135
1433318	TASTYKAKE	Clean Water	2157 E LEHIGH AVE PHILADELPHIA, PA 19125
1433464	KINDER MORGAN POINT BREEZE TERM	Clean Water	9820 BLUE GRASS RD PHILADELPHIA, PA 19114
1433801	ABF FREIGHT SYS	Clean Water	2160-66 E SOMERSET ST PHILADELPHIA, PA 19134
1434117	CSX INTERMODAL CHRISTOPHER COLUMBUS AVE FAC	Clean Water	2801 E ANN STREET PHILADELPHIA, PA 19134
1433494	CONRAIL - ANN STREET YARD	Clean Water	7500 LINDBERGH BLVD PHILADELPHIA, PA 19176-9998
1433457	CONRAIL - FRANKFORD JUNCTION YARD	Clean Water	6221D W PASSYUNK AVE PHILADELPHIA, PA 19153
1433049	RHOADS BUILDING 1028	Clean Water	6650 ESSINGTON AVE PHILADELPHIA, PA 19153
1432752	AMAZON.COM SERVICES LLC-DDP1	Clean Water	2960 ORTHODOX ST PHILADELPHIA, PA 19137
1436484	REPUBLIC SVC QUICKWAY TRANSFER STATION	Clean Water	2050 BYBERRY RD PHILADELPHIA, PA 19116

Authority ID	Site Name	Program Description	Site Address
1435104	REPUBLIC SVC OF PA PORT RICHMOND HAULING FAC	Clean Water	3115 WHARTON ST PHILADELPHIA, PA 19146
1434130	TJ COPE NORCOM RD FAC	Clean Water	2705 ROBERTS AVE PHILADELPHIA, PA 19129
1435118	SEPTA ROBERTS AVE FAC	Clean Water	4455-65 CASTOR AVENUE PHILADELPHIA, PA 19124
1434557	FEDEX TOWNSEND RD FAC	Clean Water	11TH ST & TERMINAL RD PHILADELPHIA, PA 19112
1434113	IVD LLC	Clean Water	2707 BLACK LAKE PLACE PHILADELPHIA, PA 19154-1008
1435426	GREENWICH TERM S COLUMBUS BLVD FAC	Clean Water	7575 BREWSTER AVE PHILADELPHIA, PA 19153-3206
1435091	AMAZON.COM SERVICES LLC - DPH8	Clean Water	10975 DUTTON RD PHILADELPHIA, PA 19154-3203
1435081	AMAZON.COM SERVICES LLC DDP9	Clean Water	7575 BREWSTER AVE PHILADELPHIA, PA 19153-3206
1436695	US POSTAL SVC LINDBERGH BLVD FAC	Clean Water	3001 RED LION RD PHILADELPHIA, PA 19114-1123
1438291	SUN CHEM HUNTING PARK AVE PLT	Clean Water	4101 N DELAWARE AVE PHILADELPHIA, PA 19137-1939
1440891	DURHAM SCH SRVS CSC - 4091	Clean Water	10975 DUTTON RD PHILADELPHIA, PA 19154-3203
1441572	HP HOOD PHILADELPHIA	Clean Water	7250 PASCHALL AVE PHILADELPHIA, PA 19142
No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03			
591838	PEARL PRESSMAN LIBERTY	Clean Water	7625 SUFFOLK AVE PHILADELPHIA, PA 19153-3020
711143	VICINITY ENERGY SCHUYLKILL GEN STA	Clean Water	2800 CHRISTIAN ST PHILADELPHIA, PA 19146
758806	FRONTIDA BIOPHARM INC	Clean Water	1100 ORTHODOX ST PHILADELPHIA, PA 19124
874849	SPECTRUM MICROWAVE PHILADELPHIA OPERATIONS	Clean Water	2707 BLACK LAKE PLACE PHILADELPHIA, PA 19154-1008
1023590	SANDMEYER STEEL	Clean Water	10060 SANDMEYER LN PHILADELPHIA, PA 19116
1027714	VEOLIA ENV SVC HEDLEY ST FAC	Clean Water	3100 HEDLEY ST PHILADELPHIA, PA 19137-1934

Authority ID	Site Name	Program Description	Site Address
1073324	SOUTHERN GRAPHIC SYSTEMS LLC	Clean Water	2781 ROBERTS AVE PHILADELPHIA, PA 19129
1078315	INNOVATION PRINTING & COMMUNICATION	Clean Water	11601 CAROLINE RD PHILADELPHIA, PA 19154
1078748	MUTUAL PHARM CO INC	Clean Water	7722 DUNGAN RD PHILADELPHIA, PA 19111-2733
1098231	FIBREFLEX PACKING & MFG UMBRIA ST FAC	Clean Water	5101 UMBRIA ST PHILADELPHIA, PA 19128-4345
1108533	COILPLUS BLEIGH AVE FAC	Clean Water	5135 BLEIGH AVE PHILADELPHIA, PA 19136
1142051	EFORCE COMPLIANCE	Clean Water	3115 WHARTON ST PHILADELPHIA, PA 19146
1144476	SMITH EDWARDS DUNLAP	Clean Water	2867 E ALLEGHENY AVE PHILADELPHIA, PA 19134-5994
1228873	JOWITT & RODGERS STATE RD FAC	Clean Water	9400 STATE RD PHILADELPHIA, PA 19114
1257040	ARCA RECYCLING INC	Clean Water	2000 BENNETT RD PHILADELPHIA, PA 19116
1259174	PENN MAID DUTTON RD PLT	Clean Water	10975 DUTTON RD PHILADELPHIA, PA 19154-3288
1292099	L3 TECH INC SPD ELEC SYS	Clean Water	13500 ROOSEVELT BLVD PHILADELPHIA, PA 19116-4201
1303748	PACKAGING COORDINATORS INC	Clean Water	3001 RED LION RD PHILADELPHIA, PA 19114
1305859	USPS VEHICLE MAINTENANCE FAC	Clean Water	1902 BYBERRY RD PHILADELPHIA, PA 19116-9997
1311981	USPS PHILA VEHICLE MAINTENANCE FACILITY	Clean Water	3201 SOUTH 74TH ST PHILADELPHIA, PA 19153-9996
1335502	ASTRAZENECA PLP	Clean Water	3001 RED LION RD PHILADELPHIA, PA 19114-1123
1337031	HONOR FOODS INC	Clean Water	5501 TACONY ST PHILADELPHIA, PA 19122
1355549	LANNETT CO INC	Clean Water	9000 STATE RD PHILADELPHIA, PA 19136-1615
1355556	LANNETT CO INC	Clean Water	9001 TORRESDALE AVE PHILADELPHIA, PA 19136-1586
1391236	THE BATTERY	Clean Water	11350 NORCOM RD PHILADELPHIA, PA 19154

Authority ID	Site Name	Program Description	Site Address
1396546	API TECH CORP - PHILA OPS	Clean Water	5000 RICHMOND ST PHILADELPHIA, PA 19137
1413054	SEPTA DECATUR DISTRIBUTION CENTER	Clean Water	2180 CHURCH ST PHILADELPHIA, PA 19124-4052
1417892	IOVANCE BIOTHERAPEUTICS	Clean Water	SCHUYLKILL AVE & MORRIS ST PHILADELPHIA, PA 19145
1424152	WUXI ADV THERAPIES 4701 LEAGUE ISLAND BLVD	Clean Water	3901 N DELAWARE AVE PHILADELPHIA, PA 19137
1424168	WUXI ADV THERAPIES 4000 S 26TH ST	Clean Water	400 ROUSE BLVD PHILADELPHIA, PA 19112-1904
1424174	WUXI ADV THERAPIES 400 ROUSE BLVD	Clean Water	3301 HUNTING PARK AVE PHILADELPHIA, PA 19132
1424195	WUXI ADV THERAPIES 4751 LEAGUE ISLAND BLVD	Clean Water	4751 LEAGUE ISLAND BLVD PHILADELPHIA, PA 19112-1220
1442879	HILLOCK ANODIZING MFG FAC	Clean Water	3028 W HUNTING PARK AVE PHILADELPHIA, PA 19132
1444285	PURE FISHING	Clean Water	1 RED LION RD PHILADELPHIA, PA 19115
NPDES Pmt Stormwater Industrial Site Runoff (Individual)			
18834	SEPTA VICTORY AVE TERM	Clean Water	110 & 103 VICTORY AVE UPPER DARBY, PA 19082
882940	PHILA ENERGY SOLUTIONS REFINING & MKTG LLC	Clean Water	3144 W PASSYUNK AVE PHILADELPHIA, PA 19145-5208
901759	PHILLY SHIPYARD INC	Clean Water	2100 KITTY HAWK AVE PHILADELPHIA, PA 19112-1808
963494	ROHM & HAAS PHILADELPHIA PLT	Clean Water	5000 RICHMOND ST PHILADELPHIA, PA 19137
1281171	PHILLY G STREET TERMINAL	Clean Water	4210 G ST PHILADELPHIA, PA 19124
1312193	PBF LOGISTICS PRODUCTS TERMINALS LLC	Clean Water	6850 ESSINGTON AVE PHILADELPHIA, PA 19153-3413
1329374	SUNOCO PARTNERS MKT & TERM LP FT MIFFLIN TERM	Clean Water	4 HOG ISLAND RD PHILADELPHIA, PA 19153-3809
1374567	JDM MATERIALS GRANT AVE PLT	Clean Water	2750 GRANT AVE PHILADELPHIA, PA 19114
1374574	JDM MATERIALS CO BARTRAM BATCH PLT	Clean Water	PENROSE FERRY RD PHILADELPHIA, PA 19153

Authority ID	Site Name	Program Description	Site Address
1411890	PHILA INTL AIRPORT	Clean Water	10551 DECATUR RD PHILADELPHIA, PA 19154-3800
1424715	AMTRAK 30TH STREET STATION	Clean Water	2955 MARKET ST PHILADELPHIA, PA 19104-2828

Appendix K – Defective Connections Group FY23 Report

Sewer Maintenance Unit

Defective Connections Group

Fiscal Year 2023 Annual Report

I. BACKGROUND INFORMATION

A. Phase I Stormwater Regulations

In 1990, the Environmental Protection Agency (EPA) promulgated Stormwater Regulations that required National Pollutant Discharge Elimination System (NPDES) permits for stormwater discharges from large (populations in excess of 250,000) and medium-sized (populations between 100,000 and 250,000) municipalities with separate storm sewer systems, (MS4)[1]. The City of Philadelphia with a 1990 population of 1.4 million was one of two NPDES Stormwater Phase I permittees in Pennsylvania. The other permittee was the City of Allentown.

B. NPDES Permit for Stormwater

The City of Philadelphia received its first NPDES Stormwater Permit under the 1990 Federal Regulations as issued by the Pennsylvania Department of Environmental Protection (PA DEP) in September 29, 1995. This permit had a 5-year term. Among other requirements, the permit required the city to reduce stormwater based pollution of local streams, creeks and rivers, from (1) residential and commercial areas, (2) construction sites, (3) industrial sites and (4) defective lateral connections.

The renewal of the NPDES Stormwater Permit that expired in September 2000 was approved by the PA DEP on September 30, 2005. The new permit provides for the same scope and requirements for the Defective Laterals Detection and Abatement Program as the previous permit and incorporates some provisions from the Consent Order and Agreement (COA) of July 1998 although the COA was successfully completed on March 18, 2004.

With the Water Department's internal reorganization and creation of the Office of Watersheds (OOW) in January 1999, the responsibilities numbered (1) through (3) above, along with the periodic reporting thereon was transferred to the OOW. The Defective Connections group (DCG) continues to pursue the 4th objective of NPDES Permit, namely the detection of defective laterals that cause sanitary wastewater to be carried to the local streams and rivers.

DCG field investigations began in March 1994.

II. DEFECTIVE LATERALS DETECTION AND ABATEMENT PROGRAM

A. Scope of Investigations

The MS4 impacts the areas of the city where there are two separate sewers in the street. The sanitary sewer system, which consists of a network of pipes of smaller diameter, carries domestic wastewater to the City's three Water Pollution Control Plants located in the Northeast, Southeast and Southwest sections. The storm sewer system consists of pipes of larger diameter but significantly shorter lengths and transports the stormwater to the nearest natural waterways. In general, the relatively newer sections of the city in the northeast, northwest and southwest are served by a MS4.

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[1] Municipal Separate Storm Sewer System

Due to problems generally attributed to improper installation or lack of oversight during construction, sanitary wastewater from some properties can be transported into the storm sewers and from there, to the streams and rivers. This intrusion of sanitary wastewater causes pollution of the streams and rivers, which are the source of city's water supply. The polluted streams and rivers also endanger the physical health and safety of residents and users of the streams. The NPDES Permit requires the city to identify and abate the plumbing connections (defective laterals) that cause the sanitary wastewater to drain into the streams.

The **investigations** of stream pollution are triggered by the presence of a dry weather discharge from the storm sewer outfalls into the streams. There are over 400 stormwater outfalls in city's MS4 system of which some 220 have exhibited some dry weather flow.

It should be mentioned however, that not all dry weather discharge from an outfall comes from sanitary wastewater incursion; some may come from underground natural streams or from groundwater inflow. Additional testing of chemical and biochemical composition of samples collected from the outfalls determines whether or not stream pollution may be caused by defective laterals.

B. Outfall Inspections and Sampling

A systematic sampling of the quality of dry weather flow from the 200 plus wet outfalls was performed in 1991 as part of the initial NPDES permit application process. This program attempted to document the amount of flow (gph) and in many cases, fecal coliform count (number of fecal colonies per ml of water). The outfall sampling results were updated in 1998 when additional observations of fluoride levels (mg/l) were included to provide some indication of the origin of water seen in the outfalls. This is based on the fact that the natural water coming from streams or ground water seepage does not contain any significant fluorides, but the City water contains 0.7 mg/l of fluorides.

The more likely outcomes of fluoride and fecal count analyses are interpreted as follows:

i. **High fluoride level with high fecal count:** possible intrusion of sanitary wastewater into the storm sewer
ii. **Low fluoride level with high fecal count:** possible transport of surface contamination in the non-domestic discharge
iii. **High fluoride with low fecal count**: possible drinking water source

As a part of the MS4 permit, all stormwater outfalls are to be inspected once every five years. If there is dry-weather flow present then the outfall is to be sampled and tested for fecal presence and fluoride levels. In addition, the priority outfalls of the watersheds are to be sampled on a quarterly basis. Outfall inspections and sampling are handled by the Industrial Waste unit. Laboratory analysis is completed by the Bureau of Laboratory Services.

During FY2023, 46 outfall inspections were conducted, and 36 samples were taken due to observed dry-weather flow as part of the Priority Outfall Sampling program. During FY2023, 74 outfall inspections were conducted, and 33 samples were taken due to observed dry-weather flow as part of the Permit Inspection program.

C. Field Screening

The object of **field screening** is to identify the areas in a sewershed that are suspected of contributing to stream pollution through defective laterals. The field screening begins systematically at an outfall that shows a dry weather flow[2].

Proceeding upstream from the outfall, the storm sewer manholes are successively opened and observed for the presence of flow. The term "**flow**" has been widened to include "**wet**" stormwater manholes on the assumption that the wetness was caused by earlier active flow. These observations are continued upstream along a specified sewer line and stop when a stormwater manhole no longer exhibits any flow or wetness. The field screening is then continued along another tributary sewer and eventually through the entire sewershed of the outfall.

D. Identification of Defective Laterals

1) Dye Tests

Dye testing is a process by which a cross-connected lateral at a property that carries sanitary wastewater to a storm sewer is identified.

(a) Initial Dye Test

Before a test is conducted, the fresh air inlets (FAIs) located at the curbside of the property are identified as being the sanitary or storm FAIs. In Philadelphia, the sanitary lateral is located downstream of the stormwater lateral in relation to the flow of the main sewer[3]. The dye test protocol adopted by the City requires the presence of two properly functioning FAIs for successful initial tests. If one or no FAI is seen at a property or one or both of the FAIs are clogged or damaged, the initial dye test is aborted with a notation "**Inconclusive**".

During the initial dye test, a water-soluble fluorescent dye is placed in the fresh air inlets (FAIs). The dye is then washed down with water.

In the case of a ***"Camera Assisted Dye Test"*** the emergence of the dye is observed in the **storm sewer** by a closed circuit television camera positioned in the storm sewer in front of the stormwater lateral connection of the property. Possible observations include:

(i) Green dye placed in storm FAI is seen in the storm sewer
(ii) Green dye paced in storm FAI is not seen in the storm sewer
(iii) Red dye placed in the sanitary FAI is seen in the storm sewer
(iv) Red dye placed in the sanitary FAI is not seen in the storm sewer.

The above observations are interpreted as follows:

1) Combination of (i) and (iv): **Proper Connection**
2) Combination of (i) and (iii): **Probable Cross Connection**
3) Combination of (ii) and (iv): **Inconclusive**
4) Combination of (ii) and (iii): **Probable Cross Connection**

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[2] A dry weather flow is defined as one that is detected after an elapse of 72 hours of a continuous dry spell from the previous rainfall event.

[3] As discussed in Section D. House Lateral Design, pages 5-3 and 5-4, in the PWD Water and Sewer Design Manual (2nd Edition) 2011.

In certain cases, the use of the closed circuit television camera is not possible. In such cases, the initial tests are conducted with a **"Manual Dye Test"**. Possible observations include:

In a **"Manual Dye Test"**, a green dye is placed in the storm FAI and observed in the **storm sewer**. At the same time, a red dye is placed in the sanitary FAI and observed in the **sanitary sewer**. If the red dye appears in the sanitary sewer, whether or not the green dye appears in the storm sewer, the conclusion arrived at is "**Proper Connection**".

If the red dye is not seen in the sanitary sewer, the test is repeated by placing more red dye in the sanitary FAI and observed in the **storm sewer**. If the red dye appears in the storm sewer, this result signifies the presence of a "**Probable Cross Connection**".

If dye is not seen in the sanitary and storm sewers the observation is "**Inconclusive**".

The initial dye tests, whether conducted manually or by a camera are intended to be least intrusive to the water customers. During these initial tests, no entry into the home is involved. In order to provide water for dye tests at the FAIs, field crews use portable water equipment. The Defective Connections group has two vehicles each retrofitted with water supply tanks.

(b) Confirmation Dye Test

A confirmation dye test is conducted in case of an Inconclusive test or a Probable cross connection. This test is conducted after a second notification to the customer has been sent. This test is **intrusive**; admission inside the home is required to conduct the testing.

The confirmation dye test is conducted **manually** by placing and flushing the fluorescent dye in household plumbing fixtures, such as a toilet[4]. The emergence of the dye is then observed in the **sanitary sewer**.

If the dye does appear only in the sanitary sewer, it is concluded that the property tested has a "**Proper Connection**." If the dye from the household plumbing does not appear in the sanitary sewer, then observation is made in the storm sewer. The presence of the dye in the storm sewer confirms the existence of a "**Cross Connection.**"

(c) Notification of Defective Lateral

When a confirmation dye test indicates that there exists a cross connection at the subject property, the property owner is advised that if the property qualifies as a residential property (with no more than 4 units in one of which the owner has his/her residence), the city will make repairs to the defective lateral(s) at no cost to the property owner. If later on it is discovered that the property does not fall within this category, the customer is informed by a follow up notice of his responsibility to repair the defect at their cost.

The Plumbing Repair Programs unit handles customer communications and is responsible for the abatement of these defects.

2) Customer Notifications

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[4] This step was modified in CY2001 to conduct the tests from all plumbing fixtures, including any in the basement in order to identify the existence of an internal cross connection, where all fixtures but one are properly connected to the sanitary sewer, with one offending connection to the storm sewer.

(a) Initial Notification

The identification of the defective laterals begins after delineating the parts of a sewershed suspected of contributing dry weather flow to the MS4 system, after field screening. All property holders in the specified area receive an initial notification letter, generated through the Oracle-based DLS computer program. The notification provides an introduction of the program and requests the customer's cooperation in enabling **dye tests** at their property. A dye test is conducted after an initial notification is sent out to a customer. There are three possible outcomes of a dye test:

(i) A test is conducted and no cross connection is found. In this case, a result of "No Cross Connection" is entered in the database and the case is closed.

(ii) A test is conducted and it is concluded that there might exist a cross connection that results in the transport of sanitary wastewater into the storm sewer. This condition requires additional tests to confirm the existence of a cross connection.

(iii) A test cannot be conducted due to any of a variety of reasons, such as FAIs were not conclusively identified, were clogged, etc. This situation also warrants additional tests to conclude whether or not a cross connection exists.

(b) Confirmation Notification

In either of case (ii) or (iii) above, a follow up notification is sent out to the customer, informing them of the results of the previous attempt and requesting them to be available at a specified date for additional "Confirmation" tests at their property. Of course, if the date provided by the City is not suitable to the customer, they can schedule an alternative appointment that suits them.

Dye tests are then conducted at the property from within the customer's premises as described earlier. The results of the tests, (a) a Proper Connection or (b) a Cross Connection, are entered in the DLS computer program.

(c) Water Shutoff Notification

Not all dye tests are completed as a result of confirmation notifications. Some customers ignore the scheduled date and fail to make an alternative appointment. In such cases an informatory note is left at the property and a follow up attempt for tests is made. If this also results in no test, another notification is sent out informing the customer that if they do not make a firm appointment by a specified date (usually within two calendar weeks of the notification date), their water service would be scheduled to be turned off by the Customer Service unit. Of course if the customers do respond and make an appointment for dye tests, the service shutoff is withdrawn and tests are completed as soon as possible.

(d) Miscellaneous Closures

In some cases, where there was no response to dye test requests or water service shutoff notifications due to properties being vacant or abandoned, the cases were closed with a notation "**Miscellaneous Closure**". A miscellaneous closure is activated because of any of the following reasons:

- No active water service to the premises
- Property abandoned, empty or unoccupied
- No billing to the property per Revenue Department
- No sewer connection

From time to time, the miscellaneously closed accounts are revisited. If we find that the reason that caused the account to be originally closed is no longer valid, a dye test is conducted and the property is then re-classified according to the test results.

III. PRIORITY SCORE LIST OUTFALLS

The emphasis of the Defective Laterals Detection and Abatement program is on outfalls on the Priority Score List. The Priority Score List ranks all outfalls sampled with dry-weather flow based on a preset formula that includes the fecal coliform results, the estimated volume of flow, whether the outfall discharges to a drinking water source water, and a complaint factor. The Priority Score List is periodically updated based on the results of the (Permit) Outfall Inspection and Sampling Program described earlier. This list was updated in July 2013.

IV. SUMMARY OF DYE TESTS AND ABATEMENTS

Table 1 provides a summary of the work performed in detecting and abating defective laterals. It shows the cumulative numbers since the inception of the project in 1994, and the progress that was attained during FY2023.

Table 1.
Updated Progress on Dye Tests in Philadelphia MS4 Area

	Since Inception of the Program	**During Fiscal 2023**
Dye Tests Initiated	66,026	406
No Cross Connections Found	63,135	385
Cross Connections Identified	1,848	16
Completed Tests	64,983	401
Abatements Completed	1,723	64

Of the 66 abatements done in FY2023, 63 were residential properties, and the cost for these abatements was $700,807.89. Additionally, 1 commercial property was abated at a cost of $15,361.50.

V. MISCELLANEOUS

Estimates of Pollution Removed

The following data provides a rough measure of the effectiveness of the Defective Connections group's positive contribution to improving the local environment:

- Number of Cross Connections Abated

Since Inception of the Program	1,723
During FY2023	64

- Estimated gallons of Polluted Water Prevented from entering the stormwater outfalls[5]

Since Inception of the Program	239.3 million gallons per year
During FY2023	9.27 million gallons per year

VI. STAFF LEVELS

Because of the high priority assigned to the Defective Connections group, the availability of manpower is extremely important. The sanctioned personnel for the unit is as follows:

One **Water Conveyance Supervisor**

Two **Field Representative Supervisors**

Four **SM Crew Chief Is / Science Technicians**

Eight **Utility Representatives**
Two positions vacant

One **Data Services Support Clerk**

The above field and office staffs are organized under the Water Conveyance Supervisor. This position is responsible for all aspects of the unit. The two Field Representative Supervisors are each responsible for two field crews, four crews in all. Each crew is led by a SM Crew Chief I / Science Technician and has two Utility Representatives.

In addition to the field staff, the Defective Connections group has the following position which provides general support:

Data Services Support Clerk: The DSSC handles the intricacies of the DLS database, creation of various correspondences related to dye tests, and follows-up with the field staff.

The DSSC also handles a variety of communications with the customers, makes appointments, and follows-up with delinquent customers. They also maintain the record of water shutoff warnings and miscellaneous closures.

At the end of FY2023, 11 of the 16 approved positions in the Defective Connections group were filled.

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[5] Based on an average use of 110 gallons per capita per day, over a family size of 3.5 persons.

Appendix L – Sanitary Infiltration Events

Report Date	Report Time	Location	Spill Notes	Affected Outfall	Abatement Date	Abatement Time	Abatement Notes
7/6/2022	9:00 PM	**306-312 W. Hortter St.**	Approximately 500 gal. discharged from outfall to stream. Contractor was disinfecting water main and had too much water to sanitary system.	W-068-05	7/6/2022	10:30 PM	Shut off water main valve. Clean up of outfall W-068-05 and Monshone Creek.
7/11/2022	12:00 PM	**M.H. W068-05-0820 to Outfall W-068-05**	Approximately 500 gal. discharged from outfall to stream. Gray sediment was found in creek, no solids were found.	W-068-05	7/11/2022	3:00 PM	Contractors shut down pump discharging in storm. WRT SM cleaned outfall and creek. No choke was found, inspection will take place following cleanup.
7/14/2022	12:00 PM	**13675 Philmont Ave.** (M.H. Q120-11-S0035 to M.H. Q120-11-S0040)	Approximately 5 gal. discharged from outfall to stream as a result of a choked sewer.	Q-120-11	7/14/2022	2:00 PM	Relieved choked sewer. Flushed storm sewer with water and dechlorination tabs. Notified WRT for cleanup.
7/22/2022	12:00 PM	**Lincoln Dr.** (M.H. W068-05-S1040 to Outfall W-068-05)	Approximately 100 gal. discharged from outfall to stream. Gray water was found in the creek, no solids.	W-068-05	7/22/2022	12:20 PM	Contractors are making repairs to sanitary sewer which discharged into storm. WRT SM cleaned up outfall and creek.
8/22/2022	11:00 AM	**1349 N. Alden St.** (M.H. S50-U013515 to M.H. S50-013510)	Unknown amount of discharge onto paved area as a result of a choked sewer.	N/A	N/A	N/A	Still active, property was served a one-day notice of defect for a blocked curb trap.
9/29/2022	9:33 AM	**Crescent Dr. - 165' East of Broad St.** (M.H. D73-S002895 to M.H. D73-S002890)	Approximately 50 gal. discharged onto pavement as a result of a choked sewer.	N/A	9/29/2022	1:00 PM	Relieved choked sewer. Cleaned street with flusher.
10/6/2022	3:00 PM	**S. 16th St. and Flagship Dr. - Philip Ave. Building 543** (M.H. D73-S002185 to M.H. D73-S002190)	Approximately 50 gal. discharged onto street and from FAI as a result of a choked sewer.	N/A	10/6/2022	7:45 PM	Relieved choked sewer. Cleaned street with flusher.
10/21/2022	8:00 AM	**Grant Ave. and Leon St.** (M.H. Q101-07-S0015 to M.H. Q101-07-S0010)	Approximately 135 gal. discharged from outfall to stream as a result of a choked sewer.	Q-101-07	10/21/2022	10:15 AM	Relieved choked sewer. Flushed storm sewer with water and dechlorination tabs.

Report Date	Report Time	Location	Spill Notes	Affected Outfall	Abatement Date	Abatement Time	Abatement Notes
10/24/2022	1:00 PM	**2100 Block of S. Broad St.** (M.H. D68-004400 to M.H. D68-004395)	Approximately 50 gal. discharged onto pavement as a result of a choked sewer from grease accumulation.	N/A	10/24/2022	1:30 PM	Choked sewer was relieved. Spill area was cleaned with pine oil and hydro-cleaned with flusher.
10/25/2022	8:00 AM	**8100 Blk Brous Ave.** (M.H. P091-06-S0280 to M.H. P091-06-S0290)	Approximately 9 gal. discharged as a result of a choked sewer.	N/A	10/25/2022	10:15 AM	Flusher relieved choked sewer.
10/25/2022	11:15 AM	**Henry Ave. IFO 7014** (M.H. W067-01-S0475 to M.H. W067-01-S0480)	Approximately 130 gal. discharged from outfall to stream, as a result of a choked sewer IFO 7014 Henry Ave.	W-067-01	10/26/2022	2:40 PM	Broke choke in sewer.
11/25/2022	12:00 PM	**600 Wendover St.** (M.H. W060-03-M0135 to M.H. W0600-03-S0130)	Approximately 10 gal. discharged into the basement of 600 Wendover St. as a result of a choked sewer.	N/A	11/25/2022	1:15 PM	Flushed sewer and broke choke.
12/22/2022	11:00 AM	**Cromwell Rd. and Calera Rd.** (M.H. Q106-21-0095 to M.H. Q106-08-S0155)	Approximately 600 gal. discharged from outfall to stream as a result of a choked sewer @ Woburn Pl. & Cromwell Rd., discharging in storm sewer.	Q-106-21	12/22/2022	4:15 PM	Choke was relieved by flusher.
2/6/2023	10:00 AM	**Wises Mill Rd.** (M.H. W076-13-0030 to M.H. W076-13-0025)	Unknown amount and reasoning for discharge from outfall to stream. No active discharge, but traces of grease and sewage were apparent at time of investigation.	W-076-13	2/6/2023	10:15 AM	Under investigation to find origin of sewage. Referred to WRT for pond cleanup. Referred to sewer maintenance for storm sewer cleaning.
2/21/2023	8:30 AM	**Bustleton Ave. and Redlion Rd.** (M.H. P113-01-S0030 to M.H. P113-01-S0035)	Approximately 300 gal. discharged from outfall to stream as a result of a choked sewer.	P-113-01	2/21/2023	11:05 AM	Choke was relieved. Storm sewer was flushed with water and dechlorination tabs.
2/23/2023	2:00 PM	**114-24 S. Front St.** (M.H. D54-000250-BE to M.H. D54-000245-E)	Approximately 2 gal. leaked from FAI onto pavement as a result of a defective sewer pipe.	N/A	2/23/2023	3:30 PM	Property owners were informed of leak from curb vent pipe and served a three-day notice of defect.

Report Date	Report Time	Location	Spill Notes	Affected Outfall	Abatement Date	Abatement Time	Abatement Notes
3/3/2023	11:29 PM	**Rising Sun Ave. and Tacony Creek** (Rock Run, M.H. THL-0165 to Outfall R-015)	Approximately 34,400 gal. discharged overland into stream. The 36" gate at Rock Run was in manual due to maintenance and did not close during 3/3/23 rain event.	R-015	3/4/2023	1:51 AM	The PWD WRT Unit cleaned up debris from around the MH and also removed soil from adjacent to the creek and spread lime. Parged the inside of MH THL-0615 riser and backfilled around MH with clean soil. PWD repaired and installed 36" gate cylinder.
3/9/2023	2:30 PM	**Brook Ln. and Stevenson St.** (M.H. Q101-13-S0010 to M.H. Q101-14-S0010)	Approximately 100 gal. discharged overland to stream as a result of a choked sewer. No discharge was found in storm sewer.	N/A	3/9/2023	3:25 PM	Choked sewer relieved. Referred to WRT for clean up.
3/14/2023	1:30 PM	**10788 Lockhart Rd.** (M.H. P116-02-S0015 to Outfall P-116-02)	Approximately 300 gal. discharged overland to stream as a result of a choked sewer.	P-116-02	3/14/2023	6:25 PM	Choked sewer relieved, no restoration needed. Flushed storm sewer with water and dechlorination tabs.
3/22/2023	3:30 PM	**Towpath Canal and Wright St.**	Approximately 100 gal. discharged from outfall to stream. No active discharge during investigation.	S-059-03	3/22/2023	3:30 PM	Discharge was not active at time of examination. WRT will be on location for clean up 3/23/2023.
4/10/2023	9:50 AM	**Neil Drive PS** (force main at creek crossing)	Approximately 2.79 MG discharged overland into stream- observed through ground surface above force main during pump on-cycle.	N/A	4/13/2023	2:55 PM	JPC completed emergency repairs and the pump station was put back into service on 4/13/23. PWD WRT set up hay bales at key points along the creek to trap solids. Crews removed solids, placed dechlorination tabs, and flushed the creek. Additional solids cleanup on Saturday, 4/15/23.
4/15/2023	8:00 AM	**6201 Crittenden St.**	Approximately 5 gal. discharged overland to a combined sewer as a result of a defective sewer pipe, blocked curb trap.	N/A	N/A	N/A	N/A
4/19/2023	9:00 AM	**300 Leverington Ave.** (M.H. S059-04-0050 to M.H. S059-04-S0080)	Approximately 100 gal. discharged from M.H. IFO 338 Leverington onto pavement into the inlet IFO 320 Leverington. This was a result of a choked sewer.	N/A	4/19/2023	10:00 AM	Choked sewer relieved.

Report Date	Report Time	Location	Spill Notes	Affected Outfall	Abatement Date	Abatement Time	Abatement Notes
4/24/2023	11:30 AM	**Towpath Canal and Wright St.**	Approximately 100 gal. discharged from outfall to stream. No active discharge at time of investigation.	S-059-03	4/24/2023	11:30 AM	No discharge was active at time of examination. WRT is on location cleaning outfall and canal. (4/24/2023)
4/30/2023	2:34 PM	**Belfry Dr. PS**	Approximately 61,000 gal. discharged during 4/30/23 rain event; the back-up generator failed to start-up pumps during this event. Pumps were brought back online at 6:27 PM, generator ran until 7:35 PM (4/30/23), when the PECO power was back online.	S-075-03	4/30/2023	6:29 PM	No contamination was found after walking the outfalls and surrounding area. PWD is having the generator assessed and repaired by a contractor.
5/16/2023	2:30 PM	**Greenmount Rd. and Telfair Dr.** (M.H. Q107-01-S0025 to M.H. Q107-01-S0020)	Unknown amount of discharge as a result of a choked sewer. Discharge outfall to stream, traces of grease and sewage but no active discharge at time of investigation.	Q-107-01	5/16/2023	5:30 PM	Investigating storm system for possible origin of sewage. Referred to flusher for cleaning of storm sewer.
5/18/2023	10:30 AM	**Wises Mill Rd. and Henry Ave.** (M.H. W076-13-0027 to Outfall W-076-13)	Approximately 500 gal. discharged from outfall to stream (Wises Mill Wetland). No active discharge at time of investigation.	W-076-13	N/A	N/A	No discharge was active at time of examination. WRT began flushing storm sewer, cleaning and flushing Wises Mill retention pond #1, and created a dam to prevent discharge from entering Wises Mill retention pond #2.
5/25/2023	6:30 AM	**Castor Ave. and Large St.**	Approximately 500 gal. discharged from outfall to stream. No active discharge was discovered during time of investigation. The reason for this spill is unknown.	P-099-03	5/25/2023	1:00 PM	Swept and removed debris from stream, flushed with water and dechlorination tabs.
6/5/2023	12:30 PM	**Bustleton Ave. and Lawler St.** (M.H. P113-04-S0275 to M.H. P113-04-S0330-Y)	Approximately 300 gal. discharged from outfall to stream. Spill resulting from a choked sewer.	P-113-04	6/5/2023	2:00 PM	Choke relieved with flusher, storm sewer was flushed with dechlorination tabs.
6/6/2023	3:00 PM	**Towpath Canal and Wright St.**	Approximately 100 gal. discharged from outfall to stream as a result of a defective sewer pipe. A slick residue on outfall rocks was observed.	S-059-03	6/6/2023	3:30 PM	At time of investigation there was no active discharge from the outfall. WRT on location cleaning outfall and canal. (6/7/2023)
6/15/2023	12:00 PM	**Gorgas Ln. and Lawnton St.**	Unknown amount and reasoning for discharge, from outfall to stream.	W-067-01	N/A	N/A	No discharge at time of examination of outfall. Referred to industrial waste for outfall testing and unknown substance.

Report Date	Report Time	Location	Spill Notes	Affected Outfall	Abatement Date	Abatement Time	Abatement Notes
6/16/2023	9:00 AM	**7100 Henry Ave.** (M.H. W067-01-S0495 to M.H. W067-01-S0505)	Approximately 500 gal. discharged from outfall to stream as a result of a choked sewer. There was no active discharge at time of report.	W-067-01	6/16/2023	11:35 AM	No active discharge at time of abatement, choked sewer relieved. Sewer cleaned and vacuumed.
6/28/2023	10:00 AM	**300 Hermitage St.** (M.H. S059-04-S0570 to M.H. S059-04-S0555)	Approximately 500 gal. discharged into basement as a result of a choked sewer. There was no active discharge at time of report.	N/A	6/28/2023	11:00 AM	Discharge was not active at the time of examination, choked sewer relieved. Sewer cleaned and vacuumed.

Appendix M – Pollution Migration / Infiltration

Date Reported	Date Completed	Who Called	Location	Pollutant	Pollutant Type Desc	Drainage Area	Incident Type	Destination	Observations	Vulnerability Assessment	Vulnerability Assessment
07/06/2022 20:50 PM	07/15/2022 12:00 PM	Citizen	306 W Hortter St	Sewage		Ms4 - W-68-05	Other - Possible Choke/ Sewer Overwhelmed By Contractor Pumping	Overland To Inlet	Sewage flowing from FAI in front of 306 W. Hortter and into storm inlet. Outfall is grey.	Major Impact - Caused Pass Through Or Interference	
07/13/2022 11:25 AM		Other Pwd Department	Q-120-11	Sewage		Ms4 - Q-120-11	Choke	Direct To Receiving Stream	Heavy sewage discharge from Q-120-11.	Potential Sanitary Sewer Overflow (Sso)	
07/20/2022 13:00 PM	07/11/2022 15:00 PM	Fire Communications	10169-75 Northeast Blvd	Petroleum (Oil | Fuel)	Diesel Fuel	Ms4 - P-113-03	Spill | Slug Discharge	Overland To Receiving Stream	Creek looks clear. Site needs to be cleaned by contractor. Diesel soaked into the ground.	No Impact On Department Operation Or Structure	
08/17/2022 15:26 PM	08/19/2022 12:00 PM	Other Pwd Department	4701 Grant Ave	Water	Potable	Ms4 - Q-101-11, Q-101-09	Discharge At Outfall	Direct To Receiving Stream	Outfall is cloudy. Dead fish at confluence to Poquessing. Elevated CL2.	Major Impact - Fish Kill	
08/17/2022 18:30 PM	08/17/2022 22:15 PM	Citizen	3330 Comly Rd	Water	Potable	Ms4 - Q-110-14	Discharge At Outfall	Direct To Receiving Stream	Creek is cloudy. Source is a discharge of chlorinated water from Q-110-14	Major Impact - Fish Kill	
08/22/2022 21:07 PM		Citizen	3144 W Passyunk Ave	Petroleum (Oil | Fuel)	Oil	Ms4 - S-42A, S-42-O	Spill | Slug Discharge	Direct To Receiving Stream		No Impact On Department Operation Or Structure	Negligible
08/25/2022 11:03 AM	08/25/2022 10:34 AM	Citizen	9898 E Roosevelt Blvd	Sewage		Ms4 - P-105-13A	Choke	Drain To Sewer	Sewage discharge from vent stack.	Minor Impact On Department Operation Or Structure	
09/09/2022 16:34 PM	09/09/2022 13:00 PM	Other	11500 E Roosevelt Blvd	Runoff		Ms4 - Q-113-11	Other - Cloudiness In Creek	Overland To Receiving Stream	Discoloration due to runoff from a retention basin/construction site.	No Impact On Department Operation Or Structure	
10/05/2022 11:58 AM	10/05/2022 16:25 PM	Other Pwd Department	3899 Richmond St	Petroleum (Oil | Fuel)	Petroleum Type Not Listed	Ms4 - Nee 0! - 03	Odor	Other		No Impact On Department Operation Or Structure	
10/25/2022 08:40 AM	10/31/2022 11:41 AM	Citizen	W-067-01	Sewage		Ms4 - W-067-01	Choke	Direct To Receiving Stream	Choked sewer causing sewage discharge at W-067-01.	Potential Sanitary Sewer Overflow (Sso)	
11/03/2022 10:38 AM	11/04/2022 10:00 AM	Other	10975 Dutton Rd	Food Waste	Heavy Cream And Milk	Ms4 - Private Outfall	Spill | Slug Discharge	Drain To Sewer,Overland To Receiving Stream	Process waste water discharging into the sanitary line was overwhelmed and flowed out to HP Hood storm drain into the nearby creek.	No Impact On Department Operation Or Structure	
11/29/2022 09:30 AM	07/27/2023 11:17 AM	Citizen	501 N Christopher Columbus Blvd	Petroleum (Oil | Fuel)	Oil	Ms4 - D47	Discharge At Outfall	Direct To Receiving Stream	Oil sheen discharging from D47. Outfall is located at an active construction site.		
12/12/2022 14:10 PM	12/23/2022 13:24 PM	Other Pwd Department	3025 Castor Ave	Cement And Sand Mixture		Ms4 - D17	Spill | Slug Discharge	Overland To Inlet		No Impact On Department Operation Or Structure	
01/14/2023 07:58 AM	01/19/2023 13:42 PM	Other Pwd Department	5700 Harbison Ave	Petroleum (Oil | Fuel)	Transformer Oil	Ms4 - R-14	Spill | Slug Discharge	Overland To Inlet	Transformer oil from a knocked down elevated transformer flowed into an inlet	No Impact On Department Operation Or Structure	
01/17/2023 22:26 PM		Citizen	12260 Townsend Rd	Water	Mixture	Ms4 - Q114-18	Spill | Slug Discharge	Direct To Receiving Stream	Milky discharge at the Outfall Q114-18 due to a possible cross connection from the property at 2903 Southampton Road	No Impact On Department Operation Or Structure	
01/20/2023 08:31 AM	01/20/2023 13:00 PM	Other	11500 E Roosevelt Blvd	Sewage		Ms4 - Q-114-02	Spill | Slug Discharge	Overland To Receiving Stream	Creek was not blue at time of the inspection. It was murky and there was a steady flow coming from 2168 Bennett Rd.	No Impact On Department Operation Or Structure	
02/16/2023 11:38 AM	03/14/2023 11:04 AM	Citizen	8212 Colfax St	Sewage		Ms4 - P-091-12	Choke	Spill To Ground Only	There is evidence of overflow of the fresh air inlet on the sidewalk	No Impact On Department Operation Or Structure	
03/09/2023 15:28 PM	03/09/2023 12:45 PM	Other Pwd Department	Brous Ave & Lexington Ave	Water	Potable	Ms4 - P-90-02	Discharge At Outfall	Direct To Receiving Stream	Significant amount of water in storm down Glendale ave to Loretto	Major Impact - Caused Pass Through Or Interference	Discharge of chlorinated water to stream
03/28/2023 13:21 PM	04/03/2023 10:03 AM	Citizen	8000 Buist Ave	Water	Construction Site Run Off	Ms4 - M-005-07	Hydrant	Overland To Inlet	Report of contractor using hydrant and discharging to inlet. Not founded at time of inspection.	No Impact On Department Operation Or Structure	
04/16/2023 14:30 PM		Other Pwd Department	2001 Richmond St	Petroleum (Oil | Fuel)	Oil	Ms4 - D-38	Spill | Slug Discharge	Spill To Ground Only	Hydraulic Oil leak from a PWD Backhoe	No Impact On Department Operation Or Structure	
04/24/2023 11:00 AM	05/10/2023 14:00 PM	Other	5200 Comly St	Fire Fighting Run Off		Ms4 - D09 (Most Runoff Impacted The System After The Cso)	Fire	Overland To Inlet	Steady flow was coming from the outfall. There was no sheen. Odor was a smoky smell and there were pieces of burnt material in the flow, other than that, flow was clear.	Minor Impact On Department Operation Or Structure	
05/02/2023 12:10 PM	07/27/2023 11:16 AM	Other City Department	3100 E Venango St	Foam		Ms4 - D18	Spill | Slug Discharge	Overland To Inlet	Fire suppression foam leaked from PGW.	Potential Illicit Discharge	
05/04/2023 13:35 PM	07/27/2023 11:11 AM	Citizen	12129 Sweet Briar Rd	Water	Construction Site Run Off	Ms4 - Q-114-10	Illegal Discharge | Dumping	Drain To Sewer	Contractor dumping wash water from buckets to storm manhole.	No Impact On Department Operation Or Structure	
05/15/2023 14:54 PM	05/15/2023 12:00 PM	Citizen	5800 Wissahickon Ave	Sewage		Ms4 - W-60-10	Discharge At Outfall	Direct To Receiving Stream	Creek bed from outfall W-60-10 has grey matting. There were some solids coming from the outfall. Fecal and fluoride taken. Fecal is 909MPN.	Minor Impact On Department Operation Or Structure	
05/17/2023 14:48 PM	05/17/2023 12:45 PM	Citizen	401 W Price St			Ms4 - W.60-10	Illegal Discharge | Dumping	Other	No signs of dumping. Inlets are dry and have trash/leaves.	No Impact On Department Operation Or Structure	
05/17/2023 14:57 PM	05/17/2023 14:00 PM	Citizen	6515 Ridge Ave	Water	Construction Site Run Off	Ms4 - W-67-01	Illegal Discharge | Dumping	Spill To Ground Only	No impact to outfall. Runoff did not reach any inlets.	No Impact On Department Operation Or Structure	
05/19/2023 14:35 PM	05/19/2023 14:30 PM	Citizen	8520 Rising Sun Ave	Automotive Fluids		Ms4 - P-104-07	Illegal Discharge | Dumping	Overland To Inlet	Staining in front of 2 inlets and a sheen in all 3 inlets in the intersection.	Minor Impact On Department Operation Or Structure	
05/26/2023 12:15 PM	07/27/2023 10:16 AM	Other City Department	3501 S 61St St	Petroleum (Oil | Fuel)	Oil	Ms4 - S-014-01	Fire	Overland To Receiving Stream	Junkyard fire. Runoff discharge to Schuylkill River.	No Impact On Department Operation Or Structure	
06/02/2023 08:40 AM	06/09/2023 16:00 PM	Citizen	W Hartwell Ln & Cherokee St	Chemical	Chemical Not Listed; Caller Claim A Cloudy Substance.	Ms4 - W076-14	Illegal Discharge | Dumping	Direct To Receiving Stream	Suspected chemical dumping into the Harwell Run (about 200 ft from the road).	No Impact On Department Operation Or Structure	Caller claimed was being dumped into the creek
06/03/2023 11:33 AM		Other Pwd Department	3226 Scotts Ln	Water	Illegal Connection To Fire Hydrant	Ms4 - S-046-06	Hydrant	Other	No hydrant connection during the site inspection	No Impact On Department Operation Or Structure	
06/04/2023 04:30 AM		Fire Communications	4100 Frankford Ave	Chemical	Solvent Not Listed	Ms4 - F-06	Spill | Slug Discharge	Overland To Receiving Stream	Fire Runoff mixed with Solvent and Oil impacting the Frankford Creek	No Impact On Department Operation Or Structure	
06/05/2023 02:08 AM		Citizen	116 Fountain St	Unknown		Ms4 - S-059-03	Illegal Discharge | Dumping	Direct To Receiving Stream	Illegal dumping at the Outfall S-059-03 into the Manayunk Canal.	No Impact On Department Operation Or Structure	
06/06/2023 11:20 AM		Other Pwd Department	638 Gorgas Ln	Cloudy Blue Coloration		Ms4 -	Discharge At Outfall	Direct To Receiving Stream		No Impact On Department Operation Or Structure	
06/08/2023 02:12 AM		Other Pwd Department	6798 Essington Ave	Petroleum (Oil | Fuel)	Oil	Ms4 - M-005	Spill | Slug Discharge	Overland To Inlet	Hydraulic or motor oil spilled to the ground and into the City inlet. The actual location is 6798 Essington Ave	No Impact On Department Operation Or Structure	
06/15/2023 12:40 PM	06/16/2023 12:00 PM	Other Pwd Department	W-067-01	Sewage		Ms4 - W-067-01	Choke	Direct To Receiving Stream	Choked sewer causing sewage discharge at W-067-01.	Potential Sanitary Sewer Overflow (Sso)	

Appendix N – Defective Lateral Quarterly Report FY23

STORM WATER MANAGEMENT PROGRAM
NPDES PERMIT NO. PA0054712

DEFECTIVE LATERAL CONNECTION STATUS REPORT
(Covering Period from July 1, 2022 to September 30, 2022)

Submitted to

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER QUALITY MANAGEMENT

By

CITY OF PHILADELPHIA
PHILADELPHIA, PA

December 5, 2022

DLC Program Update
3rd Quarter 2022

I. INTRODUCTION

This Defective Lateral Connection Status Report is submitted to the Pennsylvania Department of Environmental Protection (PADEP) as part of the reporting requirements of the City of Philadelphia NPDES Storm Water Management Permit No. PA 0054712. The report covers the three-month period beginning July 1, 2022 and ending September 30, 2022.

The body of this report will describe the recent activities of the City during the past quarter within the 1998 COA Priority Outfall areas and at other significant outfalls on the Stormwater Outfall Priority Score list. Additionally, goals for the next quarter will be listed.

Table 1 provides a summary of the program with respect to Complete tests, Cross-connections identified, and Abatements performed. Table 2 provides a listing of all laboratory analyses of samples taken at stormwater outfalls or within the stormwater system during the previous quarter. Table 3 provides a listing of properties with cross-connections outstanding greater than 120 days. Finally, Table 4 provides a listing of reported wastewater spills to the stormwater system or receiving streams.

II. PAST QUARTER REVIEW

A. Priority Outfalls

1. 7th & Cheltenham Outfall (T-088-01)

DLC program activities have performed 2,831 Complete tests in this sewershed, identifying 134 Cross-connections, all of which have been Abated.

Eight (8) sites intercepting flow are listed below.

1.	CFD-01	Plymouth St. west of Pittsville St.
2.	CFD-02	Pittsville St. south of Plymouth St.
3.	CFD-03	Elston St. east of Bouvier St.
4.	CFD-04	Ashley St. west of Bouvier St.
5.	CFD-05	Cheltenham Ave. east of 19th St.
6.	CFD-06	Verbena St. south of Cheltenham Ave.
7.	CFD-07	Cheltenham Ave. east of 7th St.
8.	CFD-08	7th St. south of Cheltenham Ave.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
CFD-01	7	0	0
CFD-02	6	0	0
CFD-03	4	0	0
CFD-04	6	0	0
CFD-05	6	0	0
CFD-06	7	0	0
CFD-07	15	1	0
CFD-08	14	0	0

The most recent fecal sample value was 3873 MPN per 100 ml. at the outfall on September 21, 2022.

2. Monastery Ave. Outfall (W-060-01)

DLC program activities have performed 637 Complete tests in this sewershed, identifying 17 Cross-connections, 16 of which have been Abated.

Two (2) sites intercepting flow are listed below.

1. MFD-01 Jannette St. west of Monastery Ave.
2. MFD-02 Green La. North of Lawnton St.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
MFD-01	5	0	0
MFD-02	5	0	0

No flow was observed during the most recent inspection of the outfall on September 22, 2022.

3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)

DLC program activities have performed 2,750 Complete tests in these sewershed areas, identifying 95 Cross-connections, 94 of which have been Abated. The majority of the efforts have been in the W-068-05 sewershed area which is by far the largest in terms of drainage area and properties served.

The most recent fecal sample value was 19,863 MPN per 100 ml. at the W-068-05 outfall on September 22, 2022.

4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

DLC program activities have performed 2,479 Complete tests in these sewershed areas, identifying 63 Cross-connections, all of which have been Abated. The majority of the efforts have been in the S-059-04 sewershed area.

The most recent fecal sample values at each outfall were:

- 4,430 MPN per 100 ml. at the S-058-01 outfall on September 29, 2022.
- 6,050 MPN per 100 ml. at the S-059-01 outfall on September 29, 2022.
- 81,640 MPN per 100 ml. at the S-059-02 outfall on September 28, 2022.
- >241,960 MPN per 100 ml. at the S-059-03 outfall on September 28, 2022.
- 22,470 MPN per 100 ml. at the S-059-04 outfall on September 28, 2022.
- No flow at the S-059-05 outfall on September 28, 2022.
- >241,960 MPN per 100 ml. at the S-059-09 outfall on September 28, 2022.

B. Other Outfalls

1. Sandyford Run Outfall (P-090-02)

DLC program activities have performed 6,376 Complete tests in this sewershed, identifying 90 Cross-connections, 88 of which have been Abated.

One (1) site intercepting flow is listed below.

1. PFD-01 Sandyford Run (Brous and Lexington Aves.)

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
PFD-01	16	2	0

The most recent fecal sample value was 298 MPN per 100 ml. at the P-090-02 outfall on September 20, 2022.

2. Franklin and Hasbrook Outfall (T-089-04)

DLC program activities have performed 1,036 Complete tests in this sewershed, identifying 46 Cross-connections, all of which have been Abated.

One (1) site intercepting flow is listed below.

1. CFD-01 Franklin and Hasbrook Aves.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
CFD-01	15	1	0

No flow was observed during the most recent inspection of the outfall on September 21, 2022.

3. A current summary of additional outfalls from the Stormwater Outfall Priority Score list that the City has performed complete testing or abatements this quarter is as follows.

Outfall #	Completed Test	Cross Connection	Abatement
P-083-03	0	0	1
P-091-01	0	0	0
P-091-02	0	0	0
P-099-03	0	0	1
P-100-11	0	0	0
P-116-02	1	0	0
Q-101-05	2	0	0
Q-114-12	0	0	0
Q-115-12	25	0	0
S-046-02	4	0	0
S-052-03	1	0	2
S-052-04	1	0	8
S50	3	0	0
T-089-01	0	0	0
T-098-01	79	1	0
W-067-01	1	0	0
W-086-01	2	0	0

III. NEXT QUARTER GOALS

A. Priority Outfalls

1. 7th & Cheltenham Outfall (T-088-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

2. Monastery Ave. Outfall (W-060-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)

Goals for the Quarter

- Continue sampling at outfall W-068-05 with dry-weather flow.

4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

Goals for the Quarter

- Continue sampling at the outfalls with dry-weather flow.

B. Other Outfalls

1. Sandyford Run Outfall (P-090-02)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

2. Franklin and Hasbrook Outfall (T-089-04)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

3. Continue to perform abatements of identified cross-connections within the following outfalls.

- D-056-09
- P-083-03
- P-090-02
- P-091-02
- P-091-06
- P-091-09
- P-099-03
- P-100-04
- Q-109-07
- Q-110-09
- R18
- S-046-06
- S-052-03
- S-052-04

- T-079-01
- T-080-02
- T-089-01
- T01
- W-067-01
- W-077-02
- W-086-02

4. Continue to perform property testing within the following outfalls.

- P-090-02
- P-091-01
- P-091-02
- P-099-03
- P-100-11
- P-116-02
- Q-101-05
- Q-115-12
- S-046-02
- S-052-04
- S50
- T-089-01
- T-098-01
- W-067-01
- W-086-01

Table 1
DLC Program Summary
July 1, 2022 to September 30, 2022

Complete Tests:

- 64,694 Complete tests have been performed under the DLC program
- **162 Complete tests were performed this past quarter**
- 26 Complete tests were performed in outfall P-090-02
- 0 Complete tests were performed in outfall P-091-01
- 0 Complete tests were performed in outfall P-091-02
- 16 Complete tests were performed in outfall P-099-03
- 0 Complete tests were performed in outfall P-100-11
- 1 Complete test were performed in outfall P-116-02
- 1 Complete test was performed in outfall Q-101-05
- 25 Complete tests were performed in outfall Q-115-12
- 4 Complete tests were performed in outfall S-046-02
- 1 Complete test was performed in outfall S-052-04
- 2 Complete tests were performed in outfall S-059-04
- 3 Complete tests were performed in outfall S50
- 0 Complete tests were performed in outfall T-089-01
- 79 Complete tests were performed in outfall T-098-01
- 1 Complete test was performed in outfall W-067-01
- 2 Complete tests were performed in outfall W-086-01

Cross-Connections Found:

- 1,833 Cross-connections have been identified under the DLC program
- **1 Cross-connection was identified this past quarter**
- 0 Cross-connections were identified in outfall P-090-02
- 0 Cross-connections were identified in outfall P-091-02
- 0 Cross-connections were identified in outfall P-099-03

Abatements:

- 1,676 Abatements have been performed under the DLC program
- **17 Abatements were performed this past quarter**
- 1 Abatement was performed in outfall P-083-03
- 0 Abatements were performed in outfall Q-114-12
- 0 Abatements were performed in outfall S-052-03

Outfall/Manhole Screening and Sampling:

- 15 outfall inspections were made as part of the **Priority Outfall Inspection Program** this past quarter
- 10 outfall samples were taken due to observed dry-weather flow during the above inspections

- 4 outfall inspections were made as part of the **Permit Inspection Program** this past quarter
- 3 outfall sample was taken due to observed dry-weather flow during the above inspections

Table 2
Lab Analysis of Water at Outfalls and/or in the Storm Sewers
July 1, 2022 to September 30, 2022

Outfall	Date	Time	Location	Sewer Size (noted)	Flow (gph)	Fluoride (mg/l)	Fecal Count (MPN per 100 ml)	Comments
A. Priority Outfalls								
P-090-02	9/20/2022	11:56	Sandyford	156"	1800	298	<0.1	Less Litter than average
T-088-01	9/21/2022	11:55	7th & Cheltenham	3' x 6'6"	18000	3873	0.144	Significant vegitation growth
W-060-01	9/22/2022	11:50	Monastery & Janett	60" x 48"	NF	NS	NS	No flow
W-068-05	9/22/2022	11:25	Lincoln & Morris	90"	Submerged	19863	0.192	Outfall submerged. Significant flow downstream
S-058-01	9/29/2022	11:51	Domino and Towpath	54"	Submerged	4430	0.235	Sample Collected from Drop Pool
S-059-01	9/29/2022	12:05	Parker & Towpath	42"	21600	6050	0.323	No odor or discoloration
S-059-02	9/28/2022	11:28	Fountain & Towpath	42"	1200	81640	0.54	No odor or discoloration
S-059-03	9/28/2022	11:42	Wright & Towpath	42"	3600	> 241,960	0.524	Definite Interconnectoin. Significant Odor.
S-059-04	9/28/2022	11:58	Leverington (N)	51"	Submerged	22470	0.1	Outfall submerged, flow indicated by sound of flowing water from outfall channel
S-059-05	9/28/2022	11:58	Leverington (S)	4'0"x2'8"	NF	NS	NS	Outfall submerged but no sign of flow
S-059-09	9/28/2022	12:08	Green Lane	36"	60	> 241,960	0.402	No Sheen or odor detected
B. Permit Inspection Program								
P-113-06	7/20/2022	12:41	Serota Dr.	42"	NF	NS	NS	No impact from nearby spill detected
Q-101-20	7/5/2022	10:20	Outlook Ave & Lansford St	54"	316.62	52	0.716	slight musty odor.
Q-115-19	7/13/2022	9:15	Dunksferry & Mechanicsville	30"	NF	920.8	0.123	No flow, however outfall bottom was wet. Last time I visited (6/21/22) there was a trickle of flow so this time I took sample from creek regardless.
T-089-04	9/21/2022	13:14	Franklin & Hasbrook	84	NF	NS	NS	Light litter/trash

Table 3
Residential Cross Connections Not Abated Within 120 Days

A. Properties Abated & Confirmed Prior to Reporting:

Address	Outfall Code	Complete Date	Admin. Action	Abatement Confirmation Date	Comments

B. Properties Active As Of Reporting:

Address	Outfall Code	Complete Date	Admin. Action	Comments
01941 Kentwood St	Q-109-07	01-19-2018		
03411 W Penn St	S-052-04	02-13-2018		
03424 W Penn St	S-052-04	02-17-2018		
03433 W Penn St	S-052-04	02-21-2018		
03425 Conrad St	S-052-04	03-01-2018		
03340 W Penn St	S-052-04	03-03-2018		
03530 Henry Ave	S-052-04	03-03-2018		
03313 Tilden St	S-052-04	03-24-2018		
03305 Tilden St	S-052-04	03-24-2018		
03329 Tilden St	S-052-04	03-27-2018		
03461 Sunnyside Ave	S-052-04	04-02-2018		
03449 W Penn St	S-052-04	05-03-2018		
03446 Crawford St	S-052-04	05-17-2018		
03433 Crawford St	S-052-04	05-26-2018		
03317 W Penn St	S-052-04	06-02-2018		
03448 W Queen Ln	S-052-04	06-23-2018		
03335 W Queen Ln	S-052-04	07-02-2018		
03419 W Queen Ln	S-052-04	07-02-2018		
03417 W Queen Ln	S-052-04	07-05-2018		
03326 W Queen Ln	S-052-04	07-12-2018		
03469 W Queen Ln	S-052-04	07-17-2018		
03474 Tilden St	S-052-04	07-21-2018		
03333 W Queen Ln	S-052-04	07-21-2018		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
03464 W Queen Ln	S-052-04	07-30-2018		
03435 W Queen Ln	S-052-04	07-30-2018		
03429 W Queen Ln	S-052-04	08-02-2018		
03459 W Queen Ln	S-052-04	08-16-2018		
03434 W Queen Ln	S-052-04	08-17-2018		
03460 W Queen Ln	S-052-04	08-24-2018		
02612 Woodward St	P-100-04	09-12-2018		
04437 Riverview Ln	S-052-03	09-19-2018		
04456 Riverview Ln	S-052-03	09-26-2018		
04423 Driftwood Dr	S-052-03	09-27-2018		
04433 Driftwood Dr	S-052-03	09-29-2018		
04410 Driftwood Dr	S-052-03	10-06-2018		
03235 Comly Pl	Q-110-09	10-06-2018		
04402 Driftwood Dr	S-052-03	10-13-2018		
03454 W Penn St	S-052-04	10-24-2018		
04431 Driftwood Dr	S-052-03	10-27-2018		
04425 Driftwood Dr	S-052-03	10-27-2018		
04404 Driftwood Dr	S-052-03	10-31-2018		
04412 Driftwood Dr	S-052-03	11-09-2018		
04417 Driftwood Dr	S-052-03	11-17-2018		
03700 Falls Cir	S-052-03	12-15-2018		
08726 Cottage St	P-083-03	12-22-2018		
03702 Falls Cir	S-052-03	12-24-2018		
04702 Almond St	D-056-09	12-26-2018		
03704 Falls Cir	S-052-03	01-17-2019		
03706 Falls Cir	S-052-03	01-19-2019		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
04408 Driftwood Dr	S-052-03	01-19-2019		
02629 Pratt St	D-056-09	01-26-2019		
04312 M St	R18	03-13-2019		
04300 M St	R18	03-15-2019		
04422 Ashburner St	P-083-03	03-22-2019		
04232 O St	R18	03-28-2019		
04254 O St	R18	04-06-2019		
00223 Stearly St	T-080-02	04-06-2019		
04310 Glendale St	R18	04-13-2019		
00215 Stearly St	T-080-02	04-20-2019		
05930 Newtown Ave	T-080-02	04-22-2019		
04250 Neilson St	R18	04-25-2019		
05922 Newtown Ave	T-080-02	04-26-2019		
04215 Castor Ave	R18	04-27-2019		
04219 Castor Ave	R18	05-02-2019		
04249 Neilson St	R18	05-04-2019		
04242 Castor Ave	R18	05-11-2019		
04236 Neilson St	R18	06-01-2019		
04245 Ormond St	R18	06-08-2019		
04309 Glendale St	R18	06-15-2019		
04122 M St	R18	07-06-2019		
08635 Ditman St	P-083-03	07-10-2019		
04146 Markland St	R18	07-27-2019		
04144 Markland St	R18	07-30-2019		
04142 Markland St	R18	08-03-2019		
04122 Markland St	R18	08-05-2019		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
01409 E Lycoming St	R18	08-13-2019		
01413 E Lycoming St	R18	08-20-2019		
01447 E Lycoming St	R18	08-26-2019		
04025 Castor Ave	R18	08-29-2019		
01404 E Lycoming St	R18	08-31-2019		
04023 Castor Ave	R18	09-04-2019		
04034 Castor Ave	R18	09-06-2019		
04051 Castor Ave	R18	09-11-2019		
04224 Markland St	R18	09-14-2019		
04024 Castor Ave	R18	09-17-2019		
04143 M St	R18	09-21-2019		
04215 M St	R18	09-24-2019		
07331 Hill Rd	W-067-01	09-30-2019		
02623 W Allegheny Ave	S-046-06	10-05-2019		
04014 Castor Ave	R18	10-08-2019		
04033 Castor Ave	R18	10-08-2019		
04030 Castor Ave	R18	10-12-2019		
04259 Castor Ave	R18	10-22-2019		
04261 Castor Ave	R18	10-26-2019		
01431 E Lycoming St	R18	11-02-2019		
08820 Cottage St	P-083-03	11-06-2019		
04259 Neilson St	R18	12-02-2019		
02320 Benson St	P-091-06	01-06-2020		
01352 E Hunting Park Ave	R18	01-08-2020		
04123 Markland St	R18	02-06-2020		
02306 Benson St	P-091-06	02-10-2020		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
01441 E Hunting Park Ave	R18	02-29-2020		
02128 Emerson St	P-091-06	10-24-2020		
02214 Hoffnagle St	P-091-06	10-26-2020		
04118 Castor Ave	R18	12-05-2020		
03460 Division St	S-052-04	01-23-2021		
08118 Lister St	P-091-06	03-03-2021		
02216 Emerson St	P-091-06	03-22-2021		
03660 Haywood St	S-052-04	03-27-2021		
03602 Haywood St	S-052-04	03-27-2021		
03611 Haywood St	S-052-04	03-29-2021		
03613 Haywood St	S-052-04	03-29-2021		
03643 Haywood St	S-052-04	03-29-2021		
08138 Shawnee St	W-077-02	04-03-2021		
03432 Warden Dr	S-052-04	04-08-2021		
03108 Midvale Ave	S-052-04	05-10-2021		
03230 Midvale Ave	S-052-04	05-12-2021		
00216 Claremont Rd	T-079-01	05-29-2021		
04150 Markland St	R18	06-02-2021		
03617 Midvale Ave	S-052-04	06-02-2021		
03209 W Coulter St	S-052-04	06-02-2021		
03001 Midvale Ave	S-052-04	06-05-2021		
03915 W Netherfield Rd	S-052-04	06-12-2021		
07524 Boyer St	W-086-02	06-21-2021		
07506 Boyer St	W-086-02	06-21-2021		
00062 W Gowen Ave	W-086-02	07-10-2021		
07627 Germantown Ave	W-086-02	07-21-2021		

Table 3

Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
04733 Belgrade St	D-056-09	07-23-2021		
03648 Haywood St	S-052-04	07-23-2021		
01410 E Hunting Park Ave	R18	07-30-2021		
08422 Pickering Ave	T01	09-04-2021		
00207 Passmore St	T-089-01	09-11-2021		
01829 Kendrick St	P-099-03	09-25-2021		
10710 Haldeman Ave	Q-109-07	10-18-2021		
04040 Castor Ave	R18	10-23-2021		
03513 New Queen St	S-052-04	10-23-2021		
03501 New Queen St	S-052-04	10-30-2021		
02233 Benson St	P-091-06	11-17-2021		

Table 4
Spills to Storm Sewers and/or Receiving Waters
July 1, 2022 to September 30, 2022

Date	Outfall	Address	Source Code	Material Involved	Completion Date	Remarks
07/06/22	W-068-05	306 W Horter Street	3009	Sewage	07/06/22	Contractor was disinfecting water main and had too much water discharging to sanitary sewer. As a result, sewage coming out at 306 W Hortter and into storm inlet and out of outfall W-068-05.
07/11/22	W-068-05	Outfall W-068-05	3011	Sewage	07/11/22	Gray sediment in creek, no solids. Contractors shut down pump discharging in storm. WRT sewer maintenance cleaned up outfall and creek. Will inspect again after clean up. No choked sewer found.
07/14/22	Q-120-11	13675 Philmont ave	3009	Sewage	07/14/22	Found sewage running in storm sewer from choked sanitary sewer. Flusher was used to relieve choke. Flushed storm sewer with water and de-chlorination tablets.
07/20/22	P-113-03	10169-75 Northeast Blvd	3011	Fuel	07/20/22	Creek looked clear during inspection. Site needs to be cleaned by contractor. Diesel fuel soaked into the ground.
07/22/22	W-068-05	Outfall W-068-05	3011	Sewage	07/22/22	Gray water observed in Wissahickon creek, no solids. Contractors were making repairs to sanitary sewer and discharged into storm. No choked sewer found, will inspect again after cleanup.
08/17/22	Q-101-11, Q-101-09	4701 Grant Ave	3011	Water	08/17/22	Outfall is cloudy. Dead fish at confluence to Poquessing. Elevated chlorine detected.
08/17/22	Q-110-14	3330 Comly Rd	3011	Water	08/17/22	Creek is cloudy. Source is a discharge of chlorinated water from Q-110-14
08/25/22	P-105-13A	9898 E Roosevelt Blvd	3008	Sewage	08/25/22	Sewage discharge from curb vent stack.

Source Codes:
3008 - Spill to Ground Only
3009 - Spill to Storm Sewer
3010 - Spill to Sanitary Sewer
3011 - Spill to Receiving Stream

STORM WATER MANAGEMENT PROGRAM
NPDES PERMIT NO. PA0054712

DEFECTIVE LATERAL CONNECTION STATUS REPORT
(Covering Period from October 1, 2022 to December 31, 2022)

Submitted to

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER QUALITY MANAGEMENT

By

CITY OF PHILADELPHIA
PHILADELPHIA, PA

February 3, 2023

DLC Program Update
4th Quarter 2022

I. INTRODUCTION

This Defective Lateral Connection Status Report is submitted to the Pennsylvania Department of Environmental Protection (PADEP) as part of the reporting requirements of the City of Philadelphia NPDES Storm Water Management Permit No. PA 0054712. The report covers the three-month period beginning October 1, 2022 and ending December 31, 2022.

The body of this report will describe the recent activities of the City during the past quarter within the 1998 COA Priority Outfall areas and at other significant outfalls on the Stormwater Outfall Priority Score list. Additionally, goals for the next quarter will be listed.

Table 1 provides a summary of the program with respect to Complete tests, Cross-connections identified, and Abatements performed. Table 2 provides a listing of all laboratory analyses of samples taken at stormwater outfalls or within the stormwater system during the previous quarter. Table 3 provides a listing of properties with cross-connections outstanding greater than 120 days. Finally, Table 4 provides a listing of reported wastewater spills to the stormwater system or receiving streams.

II. PAST QUARTER REVIEW

A. Priority Outfalls

1. 7th & Cheltenham Outfall (T-088-01)

DLC program activities have performed 2,831 Complete tests in this sewershed, identifying 134 Cross-connections, all of which have been Abated.

Eight (8) sites intercepting flow are listed below.

1.	CFD-01	Plymouth St. west of Pittsville St.
2.	CFD-02	Pittsville St. south of Plymouth St.
3.	CFD-03	Elston St. east of Bouvier St.
4.	CFD-04	Ashley St. west of Bouvier St.
5.	CFD-05	Cheltenham Ave. east of 19th St.
6.	CFD-06	Verbena St. south of Cheltenham Ave.
7.	CFD-07	Cheltenham Ave. east of 7th St.
8.	CFD-08	7th St. south of Cheltenham Ave.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
CFD-01	5	2	0
CFD-02	6	0	0
CFD-03	3	0	0
CFD-04	4	0	0
CFD-05	10	1	0
CFD-06	8	0	0
CFD-07	15	1	0
CFD-08	15	1	0

The most recent fecal sample value was 6950 MPN per 100 ml. at the outfall on November 8, 2022.

2. Monastery Ave. Outfall (W-060-01)

DLC program activities have performed 637 Complete tests in this sewershed, identifying 17 Cross-connections, all of which have been Abated.

Two (2) sites intercepting flow are listed below.

1. MFD-01 Jannette St. west of Monastery Ave.
2. MFD-02 Green La. North of Lawnton St.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
MFD-01	5	0	0
MFD-02	5	0	0

The most recent fecal sample value was 75 MPN per 100 ml. at the outfall on December 20, 2022.

3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)

DLC program activities have performed 2,752 Complete tests in these sewershed areas, identifying 95 Cross-connections, all of which have been Abated. The majority of the efforts have been in the W-068-05 sewershed area which is by far the largest in terms of drainage area and properties served.

The most recent fecal sample value was 24,196 MPN per 100 ml. at the W-068-05 outfall on December 20, 2022.

4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

DLC program activities have performed 2,479 Complete tests in these sewershed areas, identifying 63 Cross-connections, all of which have been Abated. The majority of the efforts have been in the S-059-04 sewershed area.

The most recent fecal sample values at each outfall were:

- 1,000 MPN per 100 ml. at the S-058-01 outfall on December 29, 2022.
- 100 MPN per 100 ml. at the S-059-01 outfall on December 27, 2022.
- 26,130 MPN per 100 ml. at the S-059-02 outfall on December 27, 2022.
- 209,800 MPN per 100 ml. at the S-059-03 outfall on December 28, 2022.
- 67,000 MPN per 100 ml. at the S-059-04 outfall on December 28, 2022.
- No flow at the S-059-05 outfall on December 28, 2022.
- 151,500 MPN per 100 ml. at the S-059-09 outfall on December 28, 2022.

B. Other Outfalls

1. Sandyford Run Outfall (P-090-02)

DLC program activities have performed 6,376 Complete tests in this sewershed, identifying 90 Cross-connections, 88 of which have been Abated.

One (1) site intercepting flow is listed below.

1. PFD-01 Sandyford Run (Brous and Lexington Aves.)

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
PFD-01	15	0	0

The most recent fecal sample value was 31.8 MPN per 100 ml. at the P-090-02 outfall on December 19, 2022.

2. Franklin and Hasbrook Outfall (T-089-04)

DLC program activities have performed 1,036 Complete tests in this sewershed, identifying 46 Cross-connections, all of which have been Abated.

One (1) site intercepting flow is listed below.

1. CFD-01 Franklin and Hasbrook Aves.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
CFD-01	16	2	2

No flow was observed during the most recent inspection of the outfall on December 20, 2022.

3. A current summary of additional outfalls from the Stormwater Outfall Priority Score list that the City has performed complete testing or abatements this quarter is as follows.

Outfall #	Completed Test	Cross Connection	Abatement
P090-02	19	0	0
P-091-06	2	0	1
P-099-03	1	0	0
P-104-07	26	2	0
Q-101-05	1	0	0
Q-110-15	9	0	0
Q-115-12	3	0	0
Q-117-02	1	0	0
R18	0	0	2
S-046-02	8	0	0
S-051-08	3	0	0
S-051-03	0	0	1
S-052-04	5	1	13
S-059-02	1	0	0
S50	1	0	0
T-089-01	1	0	0
T-098-01	51	3	2
W-060-01	0	0	1
W-067-01	0	0	1
W-068-05	0	0	1
W-077-02	0	0	3
W-085-02	4	0	0
W-086-02	0	0	1

III. NEXT QUARTER GOALS

A. Priority Outfalls

1. 7th & Cheltenham Outfall (T-088-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

2. Monastery Ave. Outfall (W-060-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)

Goals for the Quarter

- Continue sampling at outfall W-068-05 with dry-weather flow.

4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

Goals for the Quarter

- Continue sampling at the outfalls with dry-weather flow.

B. Other Outfalls

1. Sandyford Run Outfall (P-090-02)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

2. Franklin and Hasbrook Outfall (T-089-04)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

2. Continue to perform abatements of identified cross-connections within the following outfalls.

- D-056-09
- P-083-03
- P-090-02
- P-091-02
- P-091-06
- P-091-09
- P-099-03
- P-100-04
- Q-109-07
- Q-110-09
- R18
- S-046-06
- S-052-03
- S-052-04
- T-079-01
- T-080-02
- T-089-01
- T01
- W-067-01
- W-077-02
- W-086-02

4. Continue to perform property testing within the following outfalls.

- P-090-02
- P-091-01
- P-091-02
- P-099-03
- P-100-11
- P-116-02
- Q-101-05
- Q-115-12
- S-046-02
- S-052-04
- S50
- T-089-01
- T-098-01
- W-067-01
- W-086-01

Table 1
DLC Program Summary
October 1, 2022 to December 31, 2022

Complete Tests:

- 64,757 Complete tests have been performed under the DLC program
- **135 Complete tests were performed this past quarter**
- 19 Complete tests were performed in outfall P-090-02
- 2 Complete tests were performed in outfall P-091-06
- 1 Complete test was performed in outfall P-099-03
- 26 Complete tests were performed in outfall P-104-07
- 1 Complete test was performed in outfall Q-101-05
- 9 Complete tests were performed in outfall Q-110-15
- 3 Complete tests were performed in outfall Q-115-12
- 1 Complete test was performed in outfall Q-117-02
- 8 Complete tests were performed in outfall S-046-02
- 3 Complete tests were performed in outfall S-051-08
- 5 Complete tests were performed in outfall S-052-04
- 1 Complete test was performed in outfall S-059-02
- 1 Complete test was performed in outfall S50
- 1 Complete test was performed in outfall T-089-01
- 51 Complete tests were performed in outfall T-098-01
- 4 Complete tests were performed in outfall W-085-02

Cross-Connections Found:

- 1,839 Cross-connections have been identified under the DLC program
- **6 Cross-connections were identified this past quarter**
- 2 Cross-connections were identified in outfall P-104-07
- 1 Cross-connection was identified in outfall S-052-04
- 3 Cross-connections were identified in outfall T-098-01

Abatements:

- 1,701 Abatements have been performed under the DLC program
- **25 Abatements were performed this past quarter**
- 1 Abatement was performed in outfall P-091-06
- 2 Abatements were performed in outfall R18
- 13 Abatements were performed in outfall S-052-04
- 2 Abatements were performed in outfall T-098-01
- 1 Abatement was performed in outfall W-060-01
- 1 Abatement was performed in outfall W-067-01
- 1 Abatement was performed in outfall W-068-05
- 3 Abatements were performed in outfall W-077-02
- 1 Abatement was performed in outfall W-086-02

Outfall/Manhole Screening and Sampling:

- 10 outfall inspections were made as part of the **Priority Outfall Inspection Program** this past quarter
- 9 outfall samples were taken due to observed dry-weather flow during the above inspections

- 8 outfall inspections were made as part of the **Permit Inspection Program** this past quarter
- 5 outfall sample was taken due to observed dry-weather flow during the above inspections

Table 2
Lab Analysis of Water at Outfalls and/or in the Storm Sewers
October 1, 2022 to December 31, 2022

Outfall	Date	Time	Location	Sewer Size (noted)	Flow (gph)	Fluoride (mg/l)	Fecal Count (MPN per 100 ml)	Comments
A. Priority Outfalls								
T-088-01	11/8/2022	11:20	7th & Cheltenham	3' x 6'6"	NR	6950	0.386	White fluffy suspended solids. Emergency response inspection and sample.
T-088-01	12/20/2022	9:50	7th & Cheltenham	3' x 6'6"	NR	19350	0.146	No sheen/odors. White, fluffy solids on creekbed.
W-068-05	12/20/2022	6:05	Lincoln & Morris	90"	Submerged	24196	0.259	Outfall submerged, flow inestimable
S-059-01	12/27/2022	12:38	Parker & Towpath	42	300	100	0.362	Light flow, no indication of interconnection
S-059-02	12/27/2022	12:26	Fountain & Towpath	42"	300	26130	0.544	Slight scum residue on surface of drop pool
S-059-03	12/28/2022	12:00	Wright & Towpath	42"	360	209800	0.221	Significant bacterial matting
S-059-04	12/28/2022	12:19	Leverington (N)	51"	Submerged	67000	0.553	High tide, significant sound of flow
S-059-05	12/28/2022	12:19	Leverington (S)	4'0"x2'8"	NF/Submerged	NS	NS	No indication of flow
S-059-09	12/28/2022	12:35	Green Lane	36"	10	151500	0.362	Very light flow
S-058-01	12/29/2022	12:10	Domino and Towpath	54"	Submerged	1000	0.236	Sample collected from drop pool
B. Permit Inspection Program								
W-067-01	10/25/2022	10:40	Gorgas Lane	6' x 6'	NR	36,540	0.155	Emergency response sample. Slight sewage odor. Choke found.
Q-121-05	11/4/2022	9:45	Milford & Poquessing Creek Dr.	42"	10	10	0.661	Clear, no sheen/odors. Emergency response inspection.
P-108-19	11/22/2022	11:08	Walley & Twist	30"	NF	NS	NS	No Flow
P-104-05	11/22/2022	12:15	Norvelt Drive	42"	NF	NS	NS	No Flow
P-108-20	11/23/2022	7:57	Northeast & Fulmer	60"	NF	NS	NS	No Flow
P-090-02	12/19/2022	11:45	Sandyford	156"	600	31.8	<0.1	Normal amount of trash for this outfall
T-089-04	12/20/2022	9:35	Franklin & Hasbrook	84"	NR	NS	NS	Flow from both sides. Flow control notifed and the diversion gate was fixed
W-060-01	12/20/2022	6:55	Monastery & Janett	60" x 48"	600	75	0.122	No indication of sewage observed but significant flow

Table 3
Residential Cross Connections Not Abated Within 120 Days

A. Properties Abated & Confirmed Prior to Reporting:

Address	Outfall Code	Complete Date	Admin. Action	Abatement Confirmation Date	Comments

B. Properties Active As Of Reporting:

Address	Outfall Code	Complete Date	Admin. Action	Comments
01941 Kentwood St	Q-109-07	01-19-2018		
03411 W Penn St	S-052-04	02-13-2018		
03424 W Penn St	S-052-04	02-17-2018		
03425 Conrad St	S-052-04	03-01-2018		
03340 W Penn St	S-052-04	03-03-2018		
03530 Henry Ave	S-052-04	03-03-2018		
03305 Tilden St	S-052-04	03-24-2018		
03313 Tilden St	S-052-04	03-24-2018		
03329 Tilden St	S-052-04	03-27-2018		
03461 Sunnyside Ave	S-052-04	04-02-2018		
03449 W Penn St	S-052-04	05-03-2018		
03446 Crawford St	S-052-04	05-17-2018		
03433 Crawford St	S-052-04	05-26-2018		
03317 W Penn St	S-052-04	06-02-2018		
03335 W Queen Ln	S-052-04	07-02-2018		
03326 W Queen Ln	S-052-04	07-12-2018		
03469 W Queen Ln	S-052-04	07-17-2018		
03474 Tilden St	S-052-04	07-21-2018		
03333 W Queen Ln	S-052-04	07-21-2018		
03435 W Queen Ln	S-052-04	07-30-2018		
03459 W Queen Ln	S-052-04	08-16-2018		
02612 Woodward St	P-100-04	09-12-2018		
04437 Riverview Ln	S-052-03	09-19-2018		

Table 3

Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
04456 Riverview Ln	S-052-03	09-26-2018		
04423 Driftwood Dr	S-052-03	09-27-2018		
04433 Driftwood Dr	S-052-03	09-29-2018		
04410 Driftwood Dr	S-052-03	10-06-2018		
03235 Comly Pl	Q-110-09	10-06-2018		
04402 Driftwood Dr	S-052-03	10-13-2018		
03454 W Penn St	S-052-04	10-24-2018		
04425 Driftwood Dr	S-052-03	10-27-2018		
04431 Driftwood Dr	S-052-03	10-27-2018		
04404 Driftwood Dr	S-052-03	10-31-2018		
04412 Driftwood Dr	S-052-03	11-09-2018		
04417 Driftwood Dr	S-052-03	11-17-2018		
03700 Falls Cir	S-052-03	12-15-2018		
08726 Cottage St	P-083-03	12-22-2018		
03702 Falls Cir	S-052-03	12-24-2018		
04702 Almond St	D-056-09	12-26-2018		
03704 Falls Cir	S-052-03	01-17-2019		
04408 Driftwood Dr	S-052-03	01-19-2019		
03706 Falls Cir	S-052-03	01-19-2019		
02629 Pratt St	D-056-09	01-26-2019		
04312 M St	R18	03-13-2019		
04422 Ashburner St	P-083-03	03-22-2019		
04232 O St	R18	03-28-2019		
04254 O St	R18	04-06-2019		
00223 Stearly St	T-080-02	04-06-2019		
04310 Glendale St	R18	04-13-2019		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
00215 Stearly St	T-080-02	04-20-2019		
05930 Newtown Ave	T-080-02	04-22-2019		
04250 Neilson St	R18	04-25-2019		
05922 Newtown Ave	T-080-02	04-26-2019		
04215 Castor Ave	R18	04-27-2019		
04219 Castor Ave	R18	05-02-2019		
04249 Neilson St	R18	05-04-2019		
04242 Castor Ave	R18	05-11-2019		
04236 Neilson St	R18	06-01-2019		
04245 Ormond St	R18	06-08-2019		
04309 Glendale St	R18	06-15-2019		
04122 M St	R18	07-06-2019		
08635 Ditman St	P-083-03	07-10-2019		
04146 Markland St	R18	07-27-2019		
04144 Markland St	R18	07-30-2019		
04142 Markland St	R18	08-03-2019		
04122 Markland St	R18	08-05-2019		
01409 E Lycoming St	R18	08-13-2019		
01413 E Lycoming St	R18	08-20-2019		
01447 E Lycoming St	R18	08-26-2019		
04025 Castor Ave	R18	08-29-2019		
01404 E Lycoming St	R18	08-31-2019		
04023 Castor Ave	R18	09-04-2019		
04034 Castor Ave	R18	09-06-2019		
04051 Castor Ave	R18	09-11-2019		
04224 Markland St	R18	09-14-2019		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
04024 Castor Ave	R18	09-17-2019		
04143 M St	R18	09-21-2019		
04215 M St	R18	09-24-2019		
02623 W Allegheny Ave	S-046-06	10-05-2019		
04014 Castor Ave	R18	10-08-2019		
04033 Castor Ave	R18	10-08-2019		
04030 Castor Ave	R18	10-12-2019		
04259 Castor Ave	R18	10-22-2019		
04261 Castor Ave	R18	10-26-2019		
01431 E Lycoming St	R18	11-02-2019		
08820 Cottage St	P-083-03	11-06-2019		
04259 Neilson St	R18	12-02-2019		
02320 Benson St	P-091-06	01-06-2020		
04123 Markland St	R18	02-06-2020		
01441 E Hunting Park Ave	R18	02-29-2020		
02128 Emerson St	P-091-06	10-24-2020		
02214 Hoffnagle St	P-091-06	10-26-2020		
04118 Castor Ave	R18	12-05-2020		
03460 Division St	S-052-04	01-23-2021		
08118 Lister St	P-091-06	03-03-2021		
02216 Emerson St	P-091-06	03-22-2021		
03602 Haywood St	S-052-04	03-27-2021		
03660 Haywood St	S-052-04	03-27-2021		
03643 Haywood St	S-052-04	03-29-2021		
03613 Haywood St	S-052-04	03-29-2021		
03432 Warden Dr	S-052-04	04-08-2021		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address				Outfall Code	Complete Date	Admin. Action	Comments
03108		Midvale	Ave	S-052-04	05-10-2021		
00216		Claremont	Rd	T-079-01	05-29-2021		
04150		Markland	St	R18	06-02-2021		
03617		Midvale	Ave	S-052-04	06-02-2021		
03209	W	Coulter	St	S-052-04	06-02-2021		
03001		Midvale	Ave	S-052-04	06-05-2021		
03915	W	Netherfield	Rd	S-052-04	06-12-2021		
07524		Boyer	St	W-086-02	06-21-2021		
00062	W	Gowen	Ave	W-086-02	07-10-2021		
07627		Germantown	Ave	W-086-02	07-21-2021		
04733		Belgrade	St	D-056-09	07-23-2021		
03648		Haywood	St	S-052-04	07-23-2021		
01410	E	Hunting Park	Ave	R18	07-30-2021		
08422		Pickering	Ave	T01	09-04-2021		
00207		Passmore	St	T-089-01	09-11-2021		
01829		Kendrick	St	P-099-03	09-25-2021		
10710		Haldeman	Ave	Q-109-07	10-18-2021		
04040		Castor	Ave	R18	10-23-2021		
03513		New Queen	St	S-052-04	10-23-2021		
03501		New Queen	St	S-052-04	10-30-2021		
02233		Benson	St	P-091-06	11-17-2021		

Table 4
Spills to Storm Sewers and/or Receiving Waters
October 1, 2022 to December 31, 2022

Date	Outfall	Address	Source Code	Material Involved	Completion Date	Remarks
10/6/2022	S-006-06 and 07	5100 S 16th St	3008	Sewage	10/6/2022	Found choked sewer with sewage ponding on the street. Discharge also coming out of FAI. Relieved grease filled sewer and cleaned surface with flusher.
10/21/2022	Q-101-07	Grant Ave and Leon St	3009	Sewage	10/21/2022	Choked sewer, but very minimum discharge in storm sewer. Broke choke with flusher.
10/25/2022	P-091-06	8100 Brous Ave	3009	Sewage	10/25/2022	Choked sewer, but very minimum discharge in storm sewer. No signs of sewage or discharge at outfall. Broke choke with flusher.
10/25/2022	W-067-01	7014 Henry Ave	3009	Sewage	10/26/2022	Choked sewer led to discharge to outfall W-067-01. Broke choke in sewer and cleaned storm sewer and outfall with flusher and de-chlorination tablets.
11/3/2022	Q-110-09	10975 Dutton Rd	3010	Food Waste	11/4/2022	Process waste water discharging into the sanitary line was overwhelmed and flowed out to storm drain into the nearby creek.
11/25/2022	W-060-03	600 Wendover St	3008	Sewage	11/25/2022	Choked sewer led to discharge in basement of 600 Wendover. Broke choke with flusher and cleaned basement.
12/22/2022	Q-106-21	Cromwell Rd and Woburn Place	3009	Sewage	12/22/2022	Found choked sewer at Woburn Pl & Cromwell Rd discharging in storm sewer. Relieved choke, and cleaned storm sewer with flusher and de-chlorination tablets.
12/12/2022	D-17	3025 Castor Ave	3009	Cement	12/23/2022	Concrete material spilled into storm sewer.

Source Codes:

3008 - Spill to Ground Only	**3010 - Spill to Sanitary Sewer**
3009 - Spill to Storm Sewer	**3011 - Spill to Receiving Stream**

STORM WATER MANAGEMENT PROGRAM
NPDES PERMIT NO. PA0054712

DEFECTIVE LATERAL CONNECTION STATUS REPORT
(Covering Period from January 1, 2023 to March 31, 2023)

Submitted to

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER QUALITY MANAGEMENT

By

CITY OF PHILADELPHIA
PHILADELPHIA, PA

April 21, 2023

DLC Program Update
1st Quarter 2023

I. INTRODUCTION

This Defective Lateral Connection Status Report is submitted to the Pennsylvania Department of Environmental Protection (PADEP) as part of the reporting requirements of the City of Philadelphia NPDES Storm Water Management Permit No. PA 0054712. The report covers the three-month period beginning January 1, 2023 and ending March 31, 2023.

The body of this report will describe the recent activities of the City during the past quarter within the 1998 COA Priority Outfall areas and at other significant outfalls on the Stormwater Outfall Priority Score list. Additionally, goals for the next quarter will be listed.

Table 1 provides a summary of the program with respect to Complete tests, Cross-connections identified, and Abatements performed. Table 2 provides a listing of all laboratory analyses of samples taken at stormwater outfalls or within the stormwater system during the previous quarter. Table 3 provides a listing of properties with cross-connections outstanding greater than 120 days. Finally, Table 4 provides a listing of reported wastewater spills to the stormwater system or receiving streams.

II. PAST QUARTER REVIEW

A. Priority Outfalls

1. 7th & Cheltenham Outfall (T-088-01)

DLC program activities have performed 2,831 Complete tests in this sewershed, identifying 134 Cross-connections, all of which have been Abated.

Eight (8) sites intercepting flow are listed below.

1.	CFD-01	Plymouth St. west of Pittsville St.
2.	CFD-02	Pittsville St. south of Plymouth St.
3.	CFD-03	Elston St. east of Bouvier St.
4.	CFD-04	Ashley St. west of Bouvier St.
5.	CFD-05	Cheltenham Ave. east of 19th St.
6.	CFD-06	Verbena St. south of Cheltenham Ave.
7.	CFD-07	Cheltenham Ave. east of 7th St.
8.	CFD-08	7th St. south of Cheltenham Ave.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
CFD-01	5	0	0
CFD-02	6	0	0
CFD-03	6	0	0
CFD-04	6	0	0
CFD-05	5	0	0
CFD-06	6	0	0
CFD-07	17	1	0
CFD-08	17	1	0

The most recent fecal sample value was 2064 MPN per 100 ml. at the outfall on March 9, 2023.

2. Monastery Ave. Outfall (W-060-01)

DLC program activities have performed 637 Complete tests in this sewershed, identifying 17 Cross-connections, all of which have been Abated.

Two (2) sites intercepting flow are listed below.

1. MFD-01 Jannette St. west of Monastery Ave.
2. MFD-02 Green La. North of Lawnton St.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
MFD-01	5	1	0
MFD-02	5	1	0

The most recent fecal sample value was 355 MPN per 100 ml. at the outfall on March 22, 2023.

3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)

DLC program activities have performed 2,750 Complete tests in these sewershed areas, identifying 95 Cross-connections, all of which have been Abated. The majority of the efforts have been in the W-068-05 sewershed area which is by far the largest in terms of drainage area and properties served.

The most recent fecal sample value was 8,297 MPN per 100 ml. at the W-068-05 outfall on February 6, 2023.

4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

DLC program activities have performed 2,475 Complete tests in these sewershed areas, identifying 64 Cross-connections, 63 of which have been Abated. The majority of the efforts have been in the S-059-04 sewershed area.

The most recent fecal sample values at each outfall were:

- 15,650 MPN per 100 ml. at the S-059-01 outfall on March 20, 2023.
- 10,810 MPN per 100 ml. at the S-059-02 outfall on March 20, 2023.
- 173,290 MPN per 100 ml. at the S-059-03 outfall on March 21, 2023.
- 26,130 MPN per 100 ml. at the S-059-04 outfall on March 21, 2023.
- No flow at the S-059-05 outfall on March 21, 2023.
- 16,240 MPN per 100 ml. at the S-059-09 outfall on March 21, 2023.

B. Other Outfalls

1. Sandyford Run Outfall (P-090-02)

DLC program activities have performed 5,833 Complete tests in this sewershed, identifying 90 Cross-connections, 88 of which have been Abated.

One (1) site intercepting flow is listed below.

1. PFD-01 Sandyford Run (Brous and Lexington Aves.)

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
PFD-01	16	1	0

The most recent fecal sample value was 10 MPN per 100 ml. at the P-090-02 outfall on March 8, 2023.

2. Franklin and Hasbrook Outfall (T-089-04)

DLC program activities have performed 1,017 Complete tests in this sewershed, identifying 45 Cross-connections, 43 of which have been Abated.

One (1) site intercepting flow is listed below.

1. CFD-01 Franklin and Hasbrook Aves.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
CFD-01	18	0	0

No flow was observed during the most recent inspection of the outfall on March 9, 2023

3. A current summary of additional outfalls from the Stormwater Outfall Priority Score list that the City has performed complete testing or abatements this quarter is as follows.

Outfall #	Completed Test	Cross Connection	Abatement
D-056-09	0	0	1
P-099-01	12	0	0
P-099-03	18	0	1
P-099-05	(12)	0	0
Q-101-05	21	1	0
Q-110-15	2	0	0
S-046-02	1	0	0
S-052-03	0	0	4
S-052-04	2	0	4
T-089-01	2	0	0
T-098-01	4	1	0
W-085-02	2	0	0
W-086-01	7	1	0
W-086-02	3	0	1

III. NEXT QUARTER GOALS

A. Priority Outfalls

1. 7th & Cheltenham Outfall (T-088-01)

Goals for the Quarter
- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

2. Monastery Ave. Outfall (W-060-01)

Goals for the Quarter
- Continue to monitor the operation of the diversion apparatuses.

- Continue sampling at the outfall with dry-weather flow.

3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)

Goals for the Quarter
- Continue sampling at outfall W-068-05 with dry-weather flow.

4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

Goals for the Quarter
- Continue sampling at the outfalls with dry-weather flow.

B. Other Outfalls

1. Sandyford Run Outfall (P-090-02)

Goals for the Quarter
- Continue to monitor the operation of the diversion apparatus.

2. Franklin and Hasbrook Outfall (T-089-04)

Goals for the Quarter
- Continue to monitor the operation of the diversion apparatus.

2. Continue to perform abatements of identified cross-connections within the following outfalls.

- D-056-09
- P-083-03
- P-091-02
- P-091-06
- P-099-03
- P-100-04
- P-104-07
- Q-101-05
- Q-109-07
- Q-110-09
- R18
- S-046-06
- S-052-03
- S-052-04
- T-079-01
- T-080-02
- T-089-01
- T-098-01

- T01
- W-067-01
- W-086-01
  W-086-02

4. Continue to perform property testing within the following outfalls.

- P-099-03
- Q-101-05
- Q-110-15
- S-046-02
- S-052-04
- T-089-01
- T-098-01
- W-076-13
- W-086-01
  W-086-02

Table 1
DLC Program Summary
January 1, 2023 to March 31, 2023

Complete Tests:

- 64,833 Complete tests have been performed under the DLC program
- **76 Complete tests were performed this past quarter**
- 9 Complete tests were performed in outfall P-090-02
- 12 Complete tests were performed in outfall P-099-01
- 18 Complete tests were performed in outfall P-099-03
- (12) Complete tests were performed in outfall P-099-05
- 21 Complete tests were performed in outfall Q-101-05
- 2 Complete tests were performed in outfall Q-110-15
- 1 Complete test was performed in outfall S-046-02
- 2 Complete tests were performed in outfall S-052-04
- 9 Complete tests were performed in outfall S-059-02
- 2 Complete tests were performed in outfall T-089-01
- (4) Complete tests were performed in outfall T-089-04
- 4 Complete tests were performed in outfall T-098-01
- 2 Complete tests were performed in outfall W-085-02
- 7 Complete tests were performed in outfall W-086-01
- 3 Complete tests were performed in outfall W-086-02

Cross-Connections Found:

- 1,842 Cross-connections have been identified under the DLC program
- **3 Cross-connections were identified this past quarter**
- 1 Cross-connection was identified in outfall Q-101-05
- 1 Cross-connection was identified in outfall S-059-02
- (1) Cross-connection was identified in outfall T-089-04
- 1 Cross-connection was identified in outfall T-098-01
- 1 Cross-connection was identified in outfall W-086-01

Abatements:

- 1,709 Abatements have been performed under the DLC program
- **8 Abatements were performed this past quarter**
- 1 Abatement was performed in outfall D-056-09
- 1 Abatement was performed in outfall P-099-03
- 4 Abatements were performed in outfall S-052-03
- 4 Abatements were performed in outfall S-052-04
- (3) Abatements were performed in outfall T-089-04
- 1 Abatement was performed in outfall W-086-02

Outfall/Manhole Screening and Sampling:

- 12 outfall inspections were made as part of the **Priority Outfall Inspection Program** this past quarter
- 9 outfall samples were taken due to observed dry-weather flow during the above inspections

- 16 outfall inspections were made as part of the **Permit Inspection Program** this past quarter
- 10 outfall sample was taken due to observed dry-weather flow during the above inspections

Table 2
Lab Analysis of Water at Outfalls and/or in the Storm Sewers
January 1, 2023 to March 31, 2023

Outfall	Date	Time	Location	Sewer Size (noted)	Flow (gph)	Fluoride (mg/l)	Fecal Count (MPN per 100 ml)	Comments
A. Priority Outfalls								
T-088-01	3/9/2023	6:45	7th & Cheltenham	84"	NR	0.106	2064	Clear Flow
W-060-01	3/10/2023	12:37	Monastery & Janett	60" x 48"	60	NS	NS	Bacterial matting at mouth of outfall
W-060-01	3/22/2023	12:07	Monastery & Janett	60" x 48"	60	0.093	355	Bacterial matting at mouth of outfall
W-068-05	2/6/2023	11:20	Lincoln Dr and Morris St	90"	NR	0.232	8297	Film/coating, Sewage odor
S-059-01	3/20/2023	12:00	Fountain & Towpath	42"	60	0.515	15650	Light flow, no strong indicators of interconnection
S-059-02	3/20/2023	12:20	Wright & Towpath	42"	90	0.65	10810	Bacterial matting observed
S-059-03	3/21/2023	10:55	Wright & Towpath	42"	1800	0.217	173290	Significant bacterial matting to mouth of canal
S-059-04	3/21/2023	11:17	Leverington (N)	51"	Submerged	0.255	26130	Audible indication of flow
S-059-05	3/21/2023	11:22	Leverington (S)	4'0"x2'8"	NF	NS	NS	No indication of flow
S-059-09	3/21/2023	11:50	Green Lane	36"	60	0.602	16240	Light consistent flow
P-090-02	3/8/2023	12:08	Sandyford	156	3600	0.592	10	Very high amount of flow from outfall.
T-089-04	3/9/2023	6:24	Franklin & Hasbrook	3' x 6'6"	NF	NS	NS	No flow from city outfall.
B. Permit Inspection Program								
P-091-03	1/2/2023	8:00	Ryan & Lexington	27"	NF	NS	NS	No Flow
P-100-13	3/17/2023	4:30	Holme & Longford W.	156	NF	NS	NS	Significant vegetation around outfall
P-100-14	3/31/2023	11:52	Holme & Longford	156	10	0.656	30	Significant vegetation around outfall
P-100-16	3/16/2023	10:00	Maxwell & Tremont	54"	60	0.136	1439	Milky, cloudy layer on top. Small amount of foam.
P-100-23	1/12/2023	11:45	Ashton and Meyer	42	900	0.472	1	Clear. No sheen/odors
Q-101-10	2/8/2023	10:30	Torresdale & Filter	36"	NF	NS	NS	No flow. Observed from MH Q101-10-0055 & Q101-10-0020
Q-107-05	3/20/2023	11:00	Dimarco Dr. & Green Dale Rd.	42"	120	0.334	<1	Clear. No odor. Empties into a small pool, which had some cloudy scum on the surface.
Q-110-06	3/21/2023	10:25	Academy & Amity Rds.	54"	30	0.656	<1	Clear, small flow.
Q-110-07	3/21/2023	11:00	Academy Rd. & Chalfont Dr.	30"	20	0.05	1	Clear, small flow.
Q-110-10	3/20/2023	10:20	Comly & Tara Rds	36"	NF	NS	NS	No Flow
S-046-01	1/27/2023	12:50	City Ave	3'0"	NR	<0.1	41	Sampled from MH S046-01-0008. Unable to locate outfall. Clear, no sheen/odors
S-0598-01	3/20/2023	11:35	Parker & Towpath	42	Outfall Submerged	0.148	141360	Significant Layer of Scum: Collected from Drop Pool
T-050-01	2/9/2023	11:16	N. of Delaware Ave and Lewis St	42	NR	0.112	231	hydrocarbon odor
W-068-01	3/8/2023	11:00	Greene & N. Mt. Pleasant	24"	NF	NS	NS	Outfall was dry
W-068-02	3/8/2023	11:15	Greene & S. Mt Pleasant	24"	NF	NS	NS	Outfall was dry
W-076-13	2/6/2023	8:15	Wises Mill	48"	NR	0.4	17329	Outfall submerged. Slight sewage odors, heavy suspended solids.

Table 3
Residential Cross Connections Not Abated Within 120 Days

A. Properties Abated & Confirmed Prior to Reporting:

Address	Outfall Code	Complete Date	Admin. Action	Abatement Confirmation Date	Comments

B. Properties Active As Of Reporting:

Address	Outfall Code	Complete Date	Admin. Action	Comments
01941 Kentwood St	Q-109-07	01-19-2018		
03411 W Penn St	S-052-04	02-13-2018		
03424 W Penn St	S-052-04	02-17-2018		
03425 Conrad St	S-052-04	03-01-2018		
03340 W Penn St	S-052-04	03-03-2018		
03530 Henry Ave	S-052-04	03-03-2018		
03305 Tilden St	S-052-04	03-24-2018		
03313 Tilden St	S-052-04	03-24-2018		
03329 Tilden St	S-052-04	03-27-2018		
03461 Sunnyside Ave	S-052-04	04-02-2018		
03449 W Penn St	S-052-04	05-03-2018		
03446 Crawford St	S-052-04	05-17-2018		
03433 Crawford St	S-052-04	05-26-2018		
03317 W Penn St	S-052-04	06-02-2018		
03326 W Queen Ln	S-052-04	07-12-2018		
03469 W Queen Ln	S-052-04	07-17-2018		
03333 W Queen Ln	S-052-04	07-21-2018		
03474 Tilden St	S-052-04	07-21-2018		
03435 W Queen Ln	S-052-04	07-30-2018		
03459 W Queen Ln	S-052-04	08-16-2018		
02612 Woodward St	P-100-04	09-12-2018		
04437 Riverview Ln	S-052-03	09-19-2018		
04456 Riverview Ln	S-052-03	09-26-2018		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
04423 Driftwood Dr	S-052-03	09-27-2018		
04433 Driftwood Dr	S-052-03	09-29-2018		
03235 Comly Pl	Q-110-09	10-06-2018		
03454 W Penn St	S-052-04	10-24-2018		
04431 Driftwood Dr	S-052-03	10-27-2018		
04425 Driftwood Dr	S-052-03	10-27-2018		
04404 Driftwood Dr	S-052-03	10-31-2018		
04417 Driftwood Dr	S-052-03	11-17-2018		
03700 Falls Cir	S-052-03	12-15-2018		
08726 Cottage St	P-083-03	12-22-2018		
03702 Falls Cir	S-052-03	12-24-2018		
03704 Falls Cir	S-052-03	01-17-2019		
03706 Falls Cir	S-052-03	01-19-2019		
02629 Pratt St	D-056-09	01-26-2019		
04312 M St	R18	03-13-2019		
04422 Ashburner St	P-083-03	03-22-2019		
04232 O St	R18	03-28-2019		
00223 Stearly St	T-080-02	04-06-2019		
04254 O St	R18	04-06-2019		
04310 Glendale St	R18	04-13-2019		
00215 Stearly St	T-080-02	04-20-2019		
05930 Newtown Ave	T-080-02	04-22-2019		
04250 Neilson St	R18	04-25-2019		
05922 Newtown Ave	T-080-02	04-26-2019		
04215 Castor Ave	R18	04-27-2019		
04219 Castor Ave	R18	05-02-2019		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address				Outfall Code	Complete Date	Admin. Action	Comments
04249		Neilson	St	R18	05-04-2019		
04242		Castor	Ave	R18	05-11-2019		
04236		Neilson	St	R18	06-01-2019		
04245		Ormond	St	R18	06-08-2019		
04309		Glendale	St	R18	06-15-2019		
04122		M	St	R18	07-06-2019		
08635		Ditman	St	P-083-03	07-10-2019		
04146		Markland	St	R18	07-27-2019		
04144		Markland	St	R18	07-30-2019		
04142		Markland	St	R18	08-03-2019		
04122		Markland	St	R18	08-05-2019		
01409	E	Lycoming	St	R18	08-13-2019		
01413	E	Lycoming	St	R18	08-20-2019		
01447	E	Lycoming	St	R18	08-26-2019		
04025		Castor	Ave	R18	08-29-2019		
01404	E	Lycoming	St	R18	08-31-2019		
04023		Castor	Ave	R18	09-04-2019		
04034		Castor	Ave	R18	09-06-2019		
04051		Castor	Ave	R18	09-11-2019		
04224		Markland	St	R18	09-14-2019		
04024		Castor	Ave	R18	09-17-2019		
04143		M	St	R18	09-21-2019		
04215		M	St	R18	09-24-2019		
02623	W	Allegheny	Ave	S-046-06	10-05-2019		
04014		Castor	Ave	R18	10-08-2019		
04033		Castor	Ave	R18	10-08-2019		

Table 3

Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
04030 Castor Ave	R18	10-12-2019		
04259 Castor Ave	R18	10-22-2019		
04261 Castor Ave	R18	10-26-2019		
01431 E Lycoming St	R18	11-02-2019		
08820 Cottage St	P-083-03	11-06-2019		
04259 Neilson St	R18	12-02-2019		
02320 Benson St	P-091-06	01-06-2020		
04123 Markland St	R18	02-06-2020		
01441 E Hunting Park Ave	R18	02-29-2020		
02128 Emerson St	P-091-06	10-24-2020		
02214 Hoffnagle St	P-091-06	10-26-2020		
04118 Castor Ave	R18	12-05-2020		
03460 Division St	S-052-04	01-23-2021		
08118 Lister St	P-091-06	03-03-2021		
02216 Emerson St	P-091-06	03-22-2021		
03660 Haywood St	S-052-04	03-27-2021		
03602 Haywood St	S-052-04	03-27-2021		
03613 Haywood St	S-052-04	03-29-2021		
03643 Haywood St	S-052-04	03-29-2021		
03108 Midvale Ave	S-052-04	05-10-2021		
00216 Claremont Rd	T-079-01	05-29-2021		
03209 W Coulter St	S-052-04	06-02-2021		
03617 Midvale Ave	S-052-04	06-02-2021		
04150 Markland St	R18	06-02-2021		
03915 W Netherfield Rd	S-052-04	06-12-2021		
07524 Boyer St	W-086-02	06-21-2021		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
07627 Germantown Ave	W-086-02	07-21-2021		
04733 Belgrade St	D-056-09	07-23-2021		
03648 Haywood St	S-052-04	07-23-2021		
01410 E Hunting Park Ave	R18	07-30-2021		
08422 Pickering Ave	T01	09-04-2021		
00207 Passmore St	T-089-01	09-11-2021		
01829 Kendrick St	P-099-03	09-25-2021		
10710 Haldeman Ave	Q-109-07	10-18-2021		
03513 New Queen St	S-052-04	10-23-2021		
04040 Castor Ave	R18	10-23-2021		
03501 New Queen St	S-052-04	10-30-2021		
02233 Benson St	P-091-06	11-17-2021		

Table 4
Spills to Storm Sewers and/or Receiving Waters
Januray 1, 2023 to March 31, 2023

Date	Outfall	Address	Source Code	Material Involved	Completion Date	Remarks
01/14/23	R-14	5700 Harbison Ave	3009	Sewage	01/19/23	Transformer oil from a knocked down elevated transformer flowed into an inlet. PECO cleanup crew cleaned the inlet.
01/17/23	Q-114-18	12260 Townsend Rd	3011	Sewage	01/18/23	Milky discharge at the outfall due to a possible cross connection from the property @2903 Southampton Road. Samples were taken and sent to BLS. City did the cleanup.
01/18/23	Q-114-02	11500 E Roosevelt Blvd	3011	Sewage	01/20/23	Creek was not blue at time of the inspection. It was murky and there was a steady flow coming from 2168 Bennett Rd. Added reponsible party.
02/06/23	W-076-13	Wises Mills Rd	3011	Sewage	02/06/23	Traces of grease/sewage, but no active discharge. Referred to WRT sewer maintenance for pond clean up. Referred to flusher for cleaning of storm sewer.
02/16/22	P-091-12	8212 Colfax St	3008	Sewage	03/14/22	There is evidence of overflow of the fresh air inlet on the sidewalk. Incident Referred to CFS for follow up.
02/21/23	P-113-01	Bustleton Ave & Redlion Rd	3011	Sewage	02/21/23	Sewer was choked and found small amount of discharge in storm sewer. Flushed storm sewer with Dechlorination Tablet.
03/03/23	PS SSO	Rockrun PS	3011	Sewage	03/04/23	36 " Inch gate did not close during rain event. WRT cleaned up debris from MH, removed soil from adjacent to the creek and spread lime. Parged the inside of MH riser and backfilled with clean soil.
03/09/23	Q-101-13 Q-101-14	3900 Blk Stevenson St	3011	Sewage	03/09/23	Found Sewage running into creek. No discharge in storm sewer. Referred to Water Restoration for cleanup.
03/14/23	P-116-02	10788 Lockhart Rd	3011	Sewage	03/14/23	Found sewage running into storm sewer discharging out to creek. Flushed storm sewer with Dechlorination Tablet.
03/22/23	S-059-03	Towpath & Wright St	3011	Sewage	03/22/23	Discharge was not active at time of Examination.Water Restoration on location for cleanup.

Source Codes:

3008 - Spill to Ground Only	**3010 - Spill to Sanitary Sewer**
3009 - Spill to Storm Sewer	**3011 - Spill to Receiving Stream**

STORM WATER MANAGEMENT PROGRAM
NPDES PERMIT NO. PA0054712

DEFECTIVE LATERAL CONNECTION STATUS REPORT
(Covering Period from April 1, 2023 to June 30, 2023)

Submitted to

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER QUALITY MANAGEMENT

By

CITY OF PHILADELPHIA
PHILADELPHIA, PA

July 19, 2023

DLC Program Update
2nd Quarter 2023

I. INTRODUCTION

This Defective Lateral Connection Status Report is submitted to the Pennsylvania Department of Environmental Protection (PADEP) as part of the reporting requirements of the City of Philadelphia NPDES Storm Water Management Permit No. PA 0054712. The report covers the three-month period beginning April 1, 2023 and ending June 30, 2023.

The body of this report will describe the recent activities of the City during the past quarter within the 1998 COA Priority Outfall areas and at other significant outfalls on the Stormwater Outfall Priority Score list. Additionally, goals for the next quarter will be listed.

Table 1 provides a summary of the program with respect to Complete tests, Cross-connections identified, and Abatements performed. Table 2 provides a listing of all laboratory analyses of samples taken at stormwater outfalls or within the stormwater system during the previous quarter. Table 3 provides a listing of properties with cross-connections outstanding greater than 120 days. Finally, Table 4 provides a listing of reported wastewater spills to the stormwater system or receiving streams.

II. PAST QUARTER REVIEW

A. Priority Outfalls

1. 7th & Cheltenham Outfall (T-088-01)

DLC program activities have performed 2,831 Complete tests in this sewershed, identifying 134 Cross-connections, all of which have been Abated.

Eight (8) sites intercepting flow are listed below.

1.	CFD-01	Plymouth St. west of Pittsville St.
2.	CFD-02	Pittsville St. south of Plymouth St.
3.	CFD-03	Elston St. east of Bouvier St.
4.	CFD-04	Ashley St. west of Bouvier St.
5.	CFD-05	Cheltenham Ave. east of 19th St.
6.	CFD-06	Verbena St. south of Cheltenham Ave.
7.	CFD-07	Cheltenham Ave. east of 7th St.
8.	CFD-08	7th St. south of Cheltenham Ave.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
CFD-01	6	0	0
CFD-02	5	0	0
CFD-03	5	1	0
CFD-04	6	0	0
CFD-05	7	0	0
CFD-06	6	0	0
CFD-07	13	1	0
CFD-08	14	0	0

The most recent fecal sample value was 5,172 MPN per 100 ml. at the outfall on May 4, 2023.

2. Monastery Ave. Outfall (W-060-01)

DLC program activities have performed 637 Complete tests in this sewershed, identifying 17 Cross-connections, all of which have been Abated.

Two (2) sites intercepting flow are listed below.

1. MFD-01 Jannette St. west of Monastery Ave.
2. MFD-02 Green La. North of Lawnton St.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
MFD-01	6	0	0
MFD-02	6	0	0

The most recent fecal sample value was 204 MPN per 100 ml. at the outfall on April 24, 2023.

3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)

DLC program activities have performed 2,750 Complete tests in these sewershed areas, identifying 95 Cross-connections, all of which have been Abated. The majority of the efforts have been in the W-068-05 sewershed area which is by far the largest in terms of drainage area and properties served.

The most recent fecal sample value was >24,196 MPN per 100 ml. at the W-068-05 outfall on April 25, 2023.

4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

DLC program activities have performed 2,475 Complete tests in these sewershed areas, identifying 64 Cross-connections, 63 of which have been Abated. The majority of the efforts have been in the S-059-04 sewershed area.

The most recent fecal sample values at each outfall were:

- 17,329 MPN per 100 ml. at the S-059-01 outfall on May 25, 2023.
- 51,720 MPN per 100 ml. at the S-059-02 outfall on May 19, 2023.
- 111,990 MPN per 100 ml. at the S-059-03 outfall on May 30, 2023.
- 3,590 MPN per 100 ml. at the S-059-04 outfall on May 30, 2023.
- No flow at the S-059-05 outfall on May 30, 2023.
- 198,630 MPN per 100 ml. at the S-059-09 outfall on May 30, 2023.

B. Other Outfalls

1. Sandyford Run Outfall (P-090-02)

DLC program activities have performed 5,834 Complete tests in this sewershed, identifying 90 Cross-connections, 88 of which have been Abated.

One (1) site intercepting flow is listed below.

1. PFD-01 Sandyford Run (Brous and Lexington Aves.)

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
PFD-01	15	1	0

The most recent fecal sample value was 2 MPN per 100 ml. at the P-090-02 outfall on April 4, 2023.

2. Franklin and Hasbrook Outfall (T-089-04)

DLC program activities have performed 1,025 Complete tests in this sewershed, identifying 46 Cross-connections, 43 of which have been Abated.

One (1) site intercepting flow is listed below.

1. CFD-01 Franklin and Hasbrook Aves.

The number of inspections, blockages cleared, and discharges noted during this quarter are listed below.

Flap Gate	Inspections	Blockages	Discharges
CFD-01	14	2	0

No flow was observed during the most recent inspection of the outfall on May 4, 2023

3. A current summary of additional outfalls from the Stormwater Outfall Priority Score list that the City has performed complete testing or abatements this quarter is as follows.

Outfall #	Completed Test	Cross Connection	Abatement
D-056-09	0	0	1
P-090-02	1	0	0
P-091-06	0	0	1
P-099-03	13	0	1
P-104-07	0	0	1
Q-101-05	2	0	0
Q-109-07	0	0	1
Q-110-15	1	0	0
R18	0	0	2
S-046-02	1	0	0
S-052-04	1	0	4
S-075-03	3	0	0
T01	0	0	1
T-079-01	0	0	1
T-080-02	0	0	1
T-080-03	32	2	(1)
T-089-04	8	1	0
T-098-01	55	0	0
W-086-01	2	1	0
W-086-02	0	0	1
W-086-05	31	2	0

III. NEXT QUARTER GOALS

A. Priority Outfalls

1. 7th & Cheltenham Outfall (T-088-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

2. Monastery Ave. Outfall (W-060-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)

Goals for the Quarter

- Continue sampling at outfall W-068-05 with dry-weather flow.

4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

Goals for the Quarter

- Continue sampling at the outfalls with dry-weather flow.

B. Other Outfalls

1. Sandyford Run Outfall (P-090-02)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

2. Franklin and Hasbrook Outfall (T-089-04)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

2. Continue to perform abatements of identified cross-connections within the following outfalls.

- D-056-09
- P-083-03
- P-090-02

- P-091-02
- P-091-06
- P-099-03
- P-100-04
- P-104-07
- Q-101-05
- Q-109-07
- Q-110-09
- R18
- S-046-06
- S-052-03
- S-052-04
- T-080-02
- T-080-03
- T-089-01
- T-089-04
- T-098-01
- W-067-01
- W-086-01
- W-086-02
- W-086-05

4. Continue to perform property testing within the following outfalls.

- P-090-02
- P-099-03
- Q-101-05
- Q-110-14
- S-046-02
- S-052-04
- S-075-03
- T-080-03
- T-089-04
- T-098-01
- W-086-01
- W-086-05

Table 1
DLC Program Summary
April 1, 2023 to June 30, 2023

Complete Tests:

- 64,983 Complete tests have been performed under the DLC program
- **150 Complete tests were performed this past quarter**
- 1 Complete test was performed in outfall P-090-02
- 13 Complete tests were performed in outfall P-099-03
- 2 Complete tests were performed in outfall Q-101-05
- 1 Complete test was performed in outfall Q-110-15
- 1 Complete test was performed in outfall S-046-02
- 1 Complete test was performed in outfall S-052-04
- 3 Complete tests were performed in outfall S-075-03
- 32 Complete tests were performed in outfall T-080-03
- 8 Complete tests were performed in outfall T-089-04
- 55 Complete tests were performed in outfall T-098-01
- 2 Complete tests were performed in outfall W-086-01
- 31 Complete tests were performed in outfall W-086-05

Cross-Connections Found:

- 1,848 Cross-connections have been identified under the DLC program
- **6 Cross-connections were identified this past quarter**
- 2 Cross-connections were identified in outfall T-080-03
- 1 Cross-connection was identified in outfall T-089-04
- 1 Cross-connection was identified in outfall W-086-01
- 2 Cross-connections were identified in outfall W-086-05

Abatements:

- 1,723 Abatements have been performed under the DLC program
- **14 Abatements were performed this past quarter**
- 1 Abatement was performed in outfall D-056-09
- 1 Abatement was performed in outfall P-091-06
- 1 Abatement was performed in outfall P-099-03
- 1 Abatement was performed in outfall P-104-07
- 1 Abatement was performed in outfall Q-109-07
- 2 Abatements were performed in outfall R18
- 4 Abatements were performed in outfall S-052-04
- 1 Abatement was performed in outfall T-079-01
- 1 Abatement was performed in outfall T-080-02
- (1) Abatement was performed in outfall T-080-03
- 1 Abatement was performed in outfall T-01
- 1 Abatement was performed in outfall W-086-02

Outfall/Manhole Screening and Sampling:

- 9 outfall inspections were made as part of the **Priority Outfall Inspection Program** this past quarter.
- 8 outfall samples were taken due to observed dry-weather flow during the above inspections.
- 46 outfall inspections were made as part of the **Permit Inspection Program** this past quarter.
- 15 outfall samples were taken due to observed dry-weather flow during the above inspections.

Table 2
Lab Analysis of Water at Outfalls and/or in the Storm Sewers
April 1, 2023 to June 30, 2023

Outfall	Date	Time	Location	Sewer Size (noted)	Flow (gph)	Fluoride (mg/l)	Fecal Count (MPN per 100 ml)	Comments
A. Priority Outfalls								
T-088-01	5/4/2023	11:30	7th & Cheltenham	84"	NR	0	5172	Clear flow, outfall submerge
W-060-01	4/24/2023	12:37	Monastery & Janett	60" x 48"	360	0	204	Increased flow since Last Inspection. Sampled 5/
W-068-05	4/25/2023	10:00	NW Lincoln Dr. & Morris St.		N/A	0	> 24196	Slight musty odo
S-059-01	5/25/2023	12:24	Fountain & Towpath	42"	120	0	17329	Light flow, no strong indicators of interconnectio
S-059-02	5/19/2023	12:10	Wright & Towpath	42"	1800	0	51720	Worsening odor since last observatio
S-059-03	5/30/2023	12:10	Wright & Towpath	42"	3600	0	111990	Significant bacterial matting to mouth of canal, heavy Sewage od
S-059-04	5/30/2023	12:25	Leverington (N)	51"	Submerged	0	3590	Audible indication of flow
S-059-05	5/30/2023	12:25	Leverington (S)	4'0"x2'8"	NF	NS	NS	No indication of flow
S-059-09	5/30/2023	12:25	Green Lane	36"	60	1	198630	Light consistent flow
B. Permit Inspection Program								
P-090-01	5/7/2023	11:38	Sandyford & Brous	156	300	1	12200	Matting & Odor indicate interconnectio
P-090-02	4/4/2023	11:38	Sandyfor	156	6000	1	2	Test results suggest water main brea
Q-101-11	4/4/2023	9:40	Grant & Torresdale	36	NF	NS	NS	Waterproof boots, gas meter, flashlight needed. Outfall deep into culvert/sewer tunnel. Slight trickle of moisture, too small to be sampled.
Q-101-12	4/4/2023	9:40	Grant & Torresdale	18	NF	NS	NS	Outfall not in SERV.Waterproof boots, gas meter, flashlight needed. Outfall deep into culvert/sewer tunnel. Completely dr
Q-102-05	4/17/2023	11:55	State Rd and Grant Ave	24	NF	NS	NS	No flow
Q-106-11	4/4/2023	8:55	S. of Morrell & Ashfiel	21	NF	NS	NS	Waders necessary. At least 1' of muck at stream bottom throughout to outfall in culvert. Dry, no flo
Q-106-22	4/4/2023	9:07	S. of Morrell & Ashfield	30	3.17	0	46110	Waders necessary, outfall in middle of culvert. Just a small trickle of flow.
Q-107-02	4/13/2023	9:30	S. Woodhaven & Medford	30	NF	0	20	Outfall is 90' inside culvert, left side. Dry. Stagnant water at open channel of culvert gray with musty scent, samples taken there.
Q-107-07	4/18/2023	8:20	Knights & Frankford	54	3	0	4884	Flow was a slow trickle.
Q-109-06	4/10/2023	10:35	Red Lion & Roosevelt	66	NF	NS	NS	Outfall partially submerged but no evidence of flow. Water clear but stagnent. Many minnows.
Q-110-01	4/10/2023	12:04	Norcom & Charter	36	NF	NS	NS	4 outfalls observed in middle of culvert that Q-110-01 is next to. One had flow. May return to sample.
Q-110-02	4/12/2023	9:00	Decatuar & Darnell	42	NF	NS	NS	Bottom of outfall surface wet, but no flow or even standing water. Many white suckerfish (Catostomus commersonii) and sunfish observed.
Q-110-03	4/12/2023	9:00	Decatuar & Darnell	42	NF	NS	NS	Many white suckerfish (Catostomus commersonii) and sunfish observed.
Q-110-04	4/12/2023	8:40	Decatuar & Darnell	42	475	1	<1	Water gushing from outfall into stream. Looked and smelled exactly like tap water. Many white suckers and green sunfish, and minnows observed upstream. No fish at all from at least 300' downstream. Indicates probable water line break. If it's a break then this is an annual loss of 4,161,000 gallons.
Q-110-05	4/12/2023	8:50	Decatuar & Darnell	42	NF	NS	NS	No flow
Q-110-10	5/8/2023	12:40	Riverside Dr	36"	30	1	9804	No evidence of concrete damage to outfall
Q-110-11	4/5/2023	10:30	Comly and Tara Rds	60	Submerged	0	108	clear
Q-110-13	4/13/2023	9:10	S. Woodhaven & Medford	36	NF	NS	NS	Many white suckerfish (Catostomus commersonii)observed.
Q-110-14	4/13/2023	9:10	S. Woodhaven & Medford	54	NF	NS	NS	Many white suckerfish (Catostomus commersonii) observed. Outfall partially submerged but no evidence of flow.
Q-110-17	4/10/2023	12:27	Waldemire & Chalfont	60	NF	NS	NS	Outfall partially submerged. No flow evidence. Water stagnent. Fish and turtle at outfall entrance.
Q-110-21	4/12/2023	9:15	Norcom & Roosevelt	66	NF	NS	NS	Completely dry.
Q-113-09	4/18/2023	8:55	Tomlinson & NE Avenue	4'00" x 7'07"	NF	NS	NS	Outfall unreachable due to high concrete walls on either side of stream. Easily observable however. Water at culvert clear, less than 1' deep and no flow.
Q-114-03	4/11/2023	12:18	Comly & Nestor	42	NF	NS	NS	Outfall and 70' channel to stream completely dry.
Q-114-06	4/3/2023	10:30	Comly & Thorton	54	80	<0.1	9.7	Flow. Sampled. Wading in stream required.
Q-114-12	4/13/2023	8:50	S. Woodhaven & Medford	54	3	0	63	Very slow trickle. Many white suckerfish (Catostomus commersonii) and sunfish present.
Q-114-13	4/13/2023	9:00	S. Woodhaven & Medford	30	NF	NS	NS	Many white suckerfish (Catostomus commersonii) and sunfish observed.
Q-114-14	4/13/2023	9:05	S. Woodhaven & Medford	30	NF	NS	NS	Outfall structure piping collapsed and in sections. No evidence of flow. Many white suckerfish (Catostomus commersonii) and sunfish observed.
Q-118-01	4/10/2023	1:05	Roosevelt & Horning	36	NF	NS	NS	Outfall damp but no flow. Nearby culvert releasing strong stream of water into streamfrom crack. May return to sample this.
S-010-01	4/20/2023	0:00	SW of Pattison Ave & Broad St	NA	NA	NS	NS	Area under construction, no outfall observed
S-010-02	4/20/2023	0:00	W of Pattison Ave & Broad St	60	NA	NS	NS	half submerged, stagnant water
S-011-01	4/20/2023	0:00	E of Broad St by Navy Yard entrance	NA	NA	NS	NS	Area under construction, no outfall observed
S-046-05	4/13/2023	10:45	Sw of Neill and Falls	24	NF	NS	NS	Dry and in good shape.
S-058-01	5/25/2023	12:12	Parker & Towpath	42	Outfall Submerged	0	410	Significant Layer of Scum: Collected from Drop Pool
T-071-01	4/4/2023	10:50	Tabor Rd and Olney Ave	24	NF	<0.1	1986.3	moderate sewage odor/trash
T-089-04	5/4/2023	12:00	Franklin & Hasbrook	3' x 6'6"	NF	NS	NS	No flow from city outfall.
T-098-01	4/13/2023	0:00	NE of Fillmore St & Shelmire Ave	54	NA	NS	NS	Directions are bad: from Westbound Cottman turn R on Church St, R on Mayfield, L on Fillmore, R on Shelmire
T-098-02	4/13/2023	0:00	E of Fillmore & Shelmire Ave	36	NA	NS	NS	Pool of water, no flow or stressed veg
T-098-03	4/13/2023	0:00	Central and Shelmire Ave by water tower	30	NA	NS	NS	Dry and in good shape.
W-076-10	5/15/2023	10:18	Valley Green & Wolcot	42	19	0	2382	Light flow
W-076-11	4/26/2023	12:25	E. Cherokee & St. Martin's	36	NF	NS	NS	Outfall completely dry and about 50 yards from creek.
W-076-14	5/15/2023	11:50	Hartwell & Cherokee	57	38	0	10	Outfall is 25' inside culvert. Need boots, light, meter.
W-077-01	5/15/2023	11:10	Elmen St & Chesheim Vally Dr	48	NF	NS	NS	Bottom of outfall was damp but no flow at all.
W-077-02	5/24/2023	11:35	Lincoln Dr & Chesheim Vally Dr	66	136	0	171	Cl2 meter reading was 0.06mg
W-086-04	5/31/2023	11:40	Anderson & Woodbrook Ln	42	NF	NS	NS	Outfall completely dry
W-086-05	5/31/2023	11:35	Anderson & Woodbrook Ln	48	NF	NS	NS	Partially submerged. No evidence of flow
W-086-06	5/31/2023	12:00	Ivy Hill Rd & Stenton Ave	48	NF	NS	NS	Partially submerged. No evidence of flow

Table 3
Residential Cross Connections Not Abated Within 120 Days

A. Properties Abated & Confirmed Prior to Reporting:

Address	Outfall Code	Complete Date	Admin. Action	Abatement Confirmation Date	Comments

B. Properties Active As Of Reporting:

Address	Outfall Code	Complete Date	Admin. Action	Comments
01941 Kentwood St	Q-109-07	01-19-2018		
03411 W Penn St	S-052-04	02-13-2018		
03424 W Penn St	S-052-04	02-17-2018		
03425 Conrad St	S-052-04	03-01-2018		
03340 W Penn St	S-052-04	03-03-2018		
03530 Henry Ave	S-052-04	03-03-2018		
03313 Tilden St	S-052-04	03-24-2018		
03305 Tilden St	S-052-04	03-24-2018		
03461 Sunnyside Ave	S-052-04	04-02-2018		
03449 W Penn St	S-052-04	05-03-2018		
03446 Crawford St	S-052-04	05-17-2018		
03433 Crawford St	S-052-04	05-26-2018		
03317 W Penn St	S-052-04	06-02-2018		
03326 W Queen Ln	S-052-04	07-12-2018		
03469 W Queen Ln	S-052-04	07-17-2018		
03474 Tilden St	S-052-04	07-21-2018		
03435 W Queen Ln	S-052-04	07-30-2018		
03459 W Queen Ln	S-052-04	08-16-2018		
02612 Woodward St	P-100-04	09-12-2018		
04437 Riverview Ln	S-052-03	09-19-2018		
04456 Riverview Ln	S-052-03	09-26-2018		
04423 Driftwood Dr	S-052-03	09-27-2018		
04433 Driftwood Dr	S-052-03	09-29-2018		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
03235 Comly Pl	Q-110-09	10-06-2018		
03454 W Penn St	S-052-04	10-24-2018		
04431 Driftwood Dr	S-052-03	10-27-2018		
04425 Driftwood Dr	S-052-03	10-27-2018		
04404 Driftwood Dr	S-052-03	10-31-2018		
04417 Driftwood Dr	S-052-03	11-17-2018		
03700 Falls Cir	S-052-03	12-15-2018		
08726 Cottage St	P-083-03	12-22-2018		
03702 Falls Cir	S-052-03	12-24-2018		
03704 Falls Cir	S-052-03	01-17-2019		
03706 Falls Cir	S-052-03	01-19-2019		
04422 Ashburner St	P-083-03	03-22-2019		
04232 O St	R18	03-28-2019		
04254 O St	R18	04-06-2019		
04310 Glendale St	R18	04-13-2019		
00215 Stearly St	T-080-02	04-20-2019		
05930 Newtown Ave	T-080-02	04-22-2019		
04250 Neilson St	R18	04-25-2019		
05922 Newtown Ave	T-080-02	04-26-2019		
04215 Castor Ave	R18	04-27-2019		
04219 Castor Ave	R18	05-02-2019		
04249 Neilson St	R18	05-04-2019		
04236 Neilson St	R18	06-01-2019		
04245 Ormond St	R18	06-08-2019		
04309 Glendale St	R18	06-15-2019		
04122 M St	R18	07-06-2019		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address	Outfall Code	Complete Date	Admin. Action	Comments
08635 Ditman St	P-083-03	07-10-2019		
04146 Markland St	R18	07-27-2019		
04144 Markland St	R18	07-30-2019		
04142 Markland St	R18	08-03-2019		
04122 Markland St	R18	08-05-2019		
01409 E Lycoming St	R18	08-13-2019		
01413 E Lycoming St	R18	08-20-2019		
01447 E Lycoming St	R18	08-26-2019		
04025 Castor Ave	R18	08-29-2019		
01404 E Lycoming St	R18	08-31-2019		
04023 Castor Ave	R18	09-04-2019		
04034 Castor Ave	R18	09-06-2019		
04051 Castor Ave	R18	09-11-2019		
04224 Markland St	R18	09-14-2019		
04024 Castor Ave	R18	09-17-2019		
04143 M St	R18	09-21-2019		
04215 M St	R18	09-24-2019		
02623 W Allegheny Ave	S-046-06	10-05-2019		
04014 Castor Ave	R18	10-08-2019		
04033 Castor Ave	R18	10-08-2019		
04030 Castor Ave	R18	10-12-2019		
04259 Castor Ave	R18	10-22-2019		
04261 Castor Ave	R18	10-26-2019		
01431 E Lycoming St	R18	11-02-2019		
08820 Cottage St	P-083-03	11-06-2019		
04259 Neilson St	R18	12-02-2019		

Table 3

Residential Cross Connections Not Abated Within 120 Days

Address				Outfall Code	Complete Date	Admin. Action	Comments
02320		Benson	St	P-091-06	01-06-2020		
04123		Markland	St	R18	02-06-2020		
01441	E	Hunting Park	Ave	R18	02-29-2020		
02128		Emerson	St	P-091-06	10-24-2020		
02214		Hoffnagle	St	P-091-06	10-26-2020		
04118		Castor	Ave	R18	12-05-2020		
03460		Division	St	S-052-04	01-23-2021		
08118		Lister	St	P-091-06	03-03-2021		
02216		Emerson	St	P-091-06	03-22-2021		
03660		Haywood	St	S-052-04	03-27-2021		
03602		Haywood	St	S-052-04	03-27-2021		
03643		Haywood	St	S-052-04	03-29-2021		
03613		Haywood	St	S-052-04	03-29-2021		
03617		Midvale	Ave	S-052-04	06-02-2021		
03209	W	Coulter	St	S-052-04	06-02-2021		
04150		Markland	St	R18	06-02-2021		
03915	W	Netherfield	Rd	S-052-04	06-12-2021		
07627		Germantown	Ave	W-086-02	07-21-2021		
04733		Belgrade	St	D-056-09	07-23-2021		
01410	E	Hunting Park	Ave	R18	07-30-2021		
00207		Passmore	St	T-089-01	09-11-2021		
01829		Kendrick	St	P-099-03	09-25-2021		
03513		New Queen	St	S-052-04	10-23-2021		
04040		Castor	Ave	R18	10-23-2021		
03501		New Queen	St	S-052-04	10-30-2021		
01826		Benson	St	P-099-03	01-15-2022		

Table 3
Residential Cross Connections Not Abated Within 120 Days

Address			Outfall Code	Complete Date	Admin. Action	Comments
01742	Bergen	St	P-099-03	05-07-2022		
01816	Benson	St	P-099-03	05-14-2022		
03100	Nesper	St	P-091-02	05-28-2022		
01103	Brighton	St	P-090-02	06-23-2022		
01128	Brighton	St	P-090-02	06-25-2022		
00300	Hartel	Ave	T-098-01	10-08-2022		
07915	Burholme	Ave	T-098-01	10-15-2022		
00715	Arnold	St	P-104-07	10-25-2022		
03514	New Queen	St	S-052-04	12-03-2022		
00286	Fountain	St	S-059-02	01-07-2023		

Table 4
Spills to Storm Sewers and/or Receiving Waters
April 1, 2023 to June 30, 2023

Date	Outfall	Address	Source Code	Material Involved	Completion Date	Remarks
04/10/23	PS SSO	Neil Drive PS	3011	Sewage	04/13/23	2.79MG discharge observed through the ground surface above the force main during pump on cycle. JPC was brought in to make emergency repairs to the force main. Repairs were completed and the pump station was put back into service.
04/15/23		6201 Crittenden St	3009	Sewage	04/15/23	Sewage from FAI went into inlet. Served notice for blocked curb trap.
04/19/23	S-059-04	300 Leverington Ave	3009	Sewage	04/19/23	Observed sewage coming from manhole running into inlet. Choked sewer relieved
04/24/23	S-059-03	Towpath & Wright St	3011	Sewage	04/24/23	Discharge was not active at time of examination. Water Restoration on location cleaned outfall and canal.
04/24/23	D-18	5200 Comly St	3009	Sewage	05/10/23	Fiere fighting runoff. No sheen from outfall, smoky smell and burt material in the flow. Added responsible party under callers in the service request.
04/30/23	PS SSO	Belfry PS	3011	Sewage	04/30/23	Pump Station's back up generator failed to start during rain event. Discharge was approximately 61000 gal. PWD crews were sent to assess the problem and generator was reparied by contractor, back in service.
05/15/23	W-60-10	5800 Wissahickon Ave	3011	Sewage	05/15/23	Creek bed has grey matting. Solids in the flow. Fecal and fluoride sample taken. PWD did clean up. Referred to Sewer maintenance and WRT.
05/16/23	Q-107-01	Greenmount Rd & Telfair Dr	3011	Sewage	05/16/23	Traces of grease/sewage, but no active discharge. Investigated storm system for possible origin of sewage. Referred to flusher for cleaning of storm sewer
05/18/23	W-076-13	Wises Mills & Henry Ave	3011	Sewage	05/18/23	Found discharge in storm sewer & retention pond #1. No discharge was not active at time of examination. WRT flushed storm sewer to outfall. Cleaned retention pond #1. Setted up dam to prevent discharge going in to retention pond #2.
05/19/23	P-104-07	8520 Rising Sun Ave	3009	Sewage	05/19/23	Report of dumping motor oil into inlets. Staining and sheen in them. Warning letter sent to residents.
05/25/23	P-099-03	Castor Ave & Large St	3011	Sewage	05/25/23	No active discharge found and no clogged sewers. Grey debris on rock in stream. Swept and removed debris from stream. Flushed creek with water and dechlorination tabs.
05/26/23	S-014-01	3501 S 61St St	3011	Sewage	06/05/23	Fire at a junkyard. Runoff from firefighting efforts discharged to the Schuylkill River. Added responsible party under callers in the service request.
06/04/23	F-06	4100 Frankford Ave	3011	Sewage	06/09/23	Barrels of oil and solvent were damaged during the fire, and the fire runoff impacted the Frankford Creek. Sample test taken. Referred to IWBC group.
06/05/23	P-113-04	Bustleton Ave & Lawler St	3011	Sewage	06/05/23	Sewer choked and discharged in storm sewer. Relived choke with flusher. Flushed storm sewer with dechlorination tabs.
06/05/23	S-059-03	116 Fountain St	3011	Sewage		Illegal dumping at the outfall into the Manayunk Canal. Follow up inspection and further investigation required.
06/06/23	S-059-03	Towpath & Wright St	3011	Sewage	06/07/23	Slick residue on outfall rocks. At time of investigation there was no active discharge from the outfall. Referred to Sewer Maintenance for sewer S&L. Water restoration on location cleaned outfall and canal.
06/06/23	W-067-01	638 Gorgas Ln	3011	Sewage		Cloudy blue Coloration at the outfall. Sample test taken. Referred to Sewer maintenance and other department.
06/08/23	M-005	6798 Essington Ave	3009	Sewage		Hydraulic or motor oil spilled to the ground and into the city inlet. Sample of the oil was taken to BLS for confirmation
06/15/23	W-067-01	Henry Ave	3011	Sewage	06/16/23	Choked sewer. No discharge at time of examination. Referred to sewer maintenance storm sewer S&L exam. Referred to industrial waste for testing of outfall and unknown substance.
06/16/23	W-067-01	Henry Ave	3011	Sewage	06/16/23	No active discharge at time of investigation. Storm sewer referred to CCTV for full exam. Choked sewer relieved. Sewer cleaned and vacuumed.
06/28/23	S-059-04	300 Hermitage St	3008	Sewage	06/28/23	Discharge was not active at time of Examination. Storm sewer referred to CCTV for full exam. Choked sewer relieved. Sewer cleaned and vacuumed.

Source Codes:
3008 - Spill to Ground Only
3009 - Spill to Storm Sewer
3010 - Spill to Sanitary Sewer
3011 - Spill to Receiving Stream

Appendix O – City of Philadelphia Snow and Ice Operations Plan Winter 2021-2022

STREETS DEPARTMENT

WINTER 2021 — 2022

SNOW AND ICE OPERATIONS PLAN

Streets Commissioner: Carlton Williams
Deputy Commissioner: Richard Montanez
Chief Highways Engineer: Stephen Lorenz

City of Philadelphia

STREETS
PHILADELPHIA

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SECTION 1

SNOW & ICE REMOVAL OPERATIONS PLAN

PLAN SUMMARY

Philadelphia, like many other northeastern cities in the United States, often faces winter storms that bring potentially dangerous accumulations of ice, sleet, freezing rain, and snow.

To provide roadway conditions that are safe for traffic on primary, secondary, and tertiary (residential) streets throughout the entire City of Philadelphia, the Streets Department has prepared a Snow and Ice Removal Operations Plan outlining the City's response to adverse winter weather conditions. This document outlines procedures and responsibilities for responding to winter weather emergencies.

The goal of the Plan is to ensure a continuity of City services by reducing, if not eliminating, the occasions when the City government will have to close or reduce City services due to severe winter weather, particularly with regards to curbside trash & recycling collection. The chief objective for the City in all severe winter weather is to allow all Philadelphians to return to their normal daily activities as quickly as possible.

The Plan prioritizes route systems, indicates the appropriate distribution of resources, and identifies the duties and responsibilities of all personnel engaged in the response. Also, the Plan delineates necessary linkages with other City departments and agencies including but not limited to, the Office of Fleet Management and the Office of Emergency Management.

In addition, the Plan outlines areas requiring planning before, during, and after a winter weather event, understanding that the severity of storms and the resulting conditions vary depending on many environmental factors, the plan allows for flexibility in the department's response. A matrix (see: Chart A, page 6) indicating the storm type with a brief description and resources required to respond to the emergency is provided. An in-depth description of resources required to respond to each storm type is provided in subsequent sections of the plan.

CHART A
RESOURCE DEPLOYMENT WINTER EVENT

POST STORM FORECAST: ABOVE FREEZING TEMPERATURES

STORM TYPE		HIGHWAY DIVISION	SANITATION DIVISION	NEIGHBORHOOD OPERATIONS	BRINE APPLICATION*	CONTRACTORS	LIFT SETS*
1	Sleet/ freezing rain less than 1 inch of snow	✓			✓		
2	1 – 3 inches of snow	✓		Partial clearing focusing on higher terrain (15 routes)	✓		
3	3 – 5 inches of snow	✓		Partial clearing focusing on higher terrain	✓	✓	
4	Above 5 inches of snow	✓	✓	Full Deployment (135 routes)	✓	✓	✓

POST STORM FORECAST: BELOW FREEZING TEMPERATURES

STORM TYPE		HIGHWAY DIVISION	SANITATION DIVISION	NEIGHBORHOOD OPERATIONS	BRINE APPLICATION*	CONTRACTORS	LIFT SETS*
5	Sleet/ freezing rain less than 1 inch of snow	✓		Partial clearing focusing on higher terrain (15 routes)			
6	1 – 3 inches of snow	✓		Partial clearing focusing on higher terrain	✓		
7	3 – 5 inches of snow	✓	✓	Partial clearing focusing on higher terrain	✓	✓	
8	Above 5 inches of snow	✓	✓	Full Deployment (135 routes)	✓	✓	✓

- For pre-storm forecasts of rain to snow, brine will not be pre-applied. It will wash away.
- Lift sets are generally in Center City.
- Full Deployment may be deployed when the National Weather Service issues a winter storm warning.

ESSENTIAL STAFF

A. Purpose

The Streets Department is the primary response agency for the City in winter weather events such as snow and ice storms. As such, it is essential the Department maintain an adequate workforce in such emergencies.

B. Definitions

Weather Event: Includes all weather emergencies as declared by the Managing Director's Office through the Office of Emergency Management, in consultation with the Mayor's Office, and any weather event that requires the mobilization of staff to maintain clear roadways.

Essential Staff: *All Department employees and any employees assigned to Streets Department Operations during a weather event are deemed essential and must report to work unless otherwise instructed by the appropriate supervisor.*
(see: Streets Order No. 100 – Change #6, page 9)

C. Policy Statement

When a weather emergency occurs, all personnel, as determined essential by the appropriate supervisor, will be required to report to their assigned functions. Since there are significant differences in the size and severity of weather events, those employees required to report may vary from event to event. When possible, employees will be notified by the appropriate supervisor/manager as to their status prior to an event. However, since such notification is not feasible in all situations, employees should report for duty unless otherwise instructed.

During weather events all employees should monitor local news broadcasts for information and should contact their work location to obtain direction on their work status.

Employees who are not instructed to report for duty during a weather event shall be authorized to utilize accrued vacation, comp, or AL leave during weather events. Employees not engaged in storm operations may be required to report to work, at the discretion of their supervisor, if the nature of their regular work assignments has become critical.

Employees may be assigned shift work as required by the event response plan.

D. Responsibilities

Streets Commissioner: The Commissioner will serve as incident commander for snow and ice operations. These duties include supervising the logistical response of the Streets Department to winter storm events, and consulting with the Managing Director regarding the declaration of a Snow Event, the declaration of a Snow Emergency, and the activation of the Emergency Operations Center (EOC).

The decision to activate the EOC will be made by the Managing Director's Office.

The Streets Commissioner, MDO, and the EOC will coordinate with the Philadelphia School District and the Philadelphia Archdiocese regarding winter storm events.

Chief Highway Engineer: will develop and maintain a comprehensive snow plan that defines required staffing levels during weather events and identifies specific job positions and functions. Direct all field operations during winter weather events. In addition, will coordinate (or delegate) with all other support Departments and external partners (ie: SEPTA, PPA, PennDOT)

Supervisors: will maintain a list of employees and phone numbers, and notify those employees assigned to snow operations as required by this policy. Supervisors are to grant leave time only as prescribed in this policy statement, or in the event of extraordinary circumstances.

Human Resource Division: will communicate the Essential Staff Policy to all employees prior to the winter season.

Residential Snow Coordinator: under direction of the Chief Highway Engineer, coordinate all residential snow activity.

Snow Contractor Liaison: will maintain a list of contracted snow and ice removal vendors and order their services when necessary. The liaison also monitors contractors' performance and services rendered and authorizes payment for services.

Field Staff: All personnel, including all supporting departments, will be under the direction of the Streets Department personnel. In the interest of public safety, all personnel will report directly to Streets Department supervisors, and will not be released until directed by the Chief Highway Engineer. All are expected to be in place, on time, and ready to perform the duties for which they have been trained. Exceptions will be at the Streets Commissioner's or Managing Director's discretion through the Chief Highway Engineer.

Department of Streets
Office of the Commissioner
City of Philadelphia

Streets Order No. 100 — Change #6
Subject: Essential Staff Policy

General

The City of Philadelphia Streets Department's mission is to maintain clean and safe streets. The Department delivers a number of City services that are critical to maintaining public health and safety in our communities. These essential services include, but are not limited to, maintaining all traffic control devices and street lighting, the safe operation and maintenance of our roads and bridges, timely and consistent removal of trash and debris, and during winter weather events the plowing and salting of City streets. In the performance of such functions, it is essential that employees of the Department report to work on time when scheduled to provide services to the public. Since each division has varying needs, each division head is responsible for implementing staffing policies to effectively manage the number of employees required for duty on a mandatory basis, to insure that these essential services are delivered and that public health and safety are maintained in communities at all times.

To maintain the essential services identified above, employee leave may be canceled as determined necessary by the division head. In addition, employees assigned to essential services are required to continue their assignments until properly relieved.

Winter Weather Events

During a winter weather event, all Streets Department employees are expected to report to work at their regularly scheduled time unless notified to report to a different location and/or at a different time. All employees with a valid Pennsylvania Commercial Driver's License (CDL) shall be considered essential during a winter weather event. Any employee holding a valid Pennsylvania Driver's License will be considered essential if notified of such by the Department. During an event, the times and location of reporting may vary significantly depending upon the nature of the event. The Department will notify, in a timely manner, essential employees whose starting time and location are modified. However, all employees should monitor weather conditions and are expected to report for duty during winter weather events or snow emergencies.

Since there are significant variations in the time, nature and intensity of events, the assignments of employees will vary. Some employees may be excused from reporting during an event. Those employees excluded from reporting shall be granted exemptions on a case by case basis provided their assigned function will not be required as dictated by the event, and if the Department Head, or designee, grants such exception.

Compliance

The Streets Department cannot successfully deliver core services without the participation of its entire team. Due to the critical nature and importance of the work to be performed, an employee who does not work his or her assigned hours may be subject to disciplinary action up to and including discharge.

GOALS

The Streets Department is the lead City agency for development and implementation of Philadelphia's snow and ice removal (de-icing) program. The goal of the program is to maintain safe egress for citizens throughout the duration of a storm and to return the City to normal operations as soon as possible after the event has ceased. The Department works closely with other City & external agencies to clear and make safe more than 2,500 miles of streets and roadways. This allows businesses, SEPTA and City agencies to maintain their normal operations during most events. Significant resources in the form of vehicles, materials, and staff are dedicated to the operation. As in similar emergency response plans, priority is given to major thoroughfares, the primary route system; however, the plan also addresses the needs of all streets within the City limits.

Sanitation service is a critical function for the citizens of Philadelphia; as such an important component of the plan is to maintain trash and recycling collections. To minimize the need to mobilize the Sanitation fleet, and the subsequent cessation of this service, the current plan augments the Streets Department's current resources with a partnership of snow fighting fleet of vehicles from various departments. The Streets Department and supporting agencies are committed to providing the most efficient and effective snow and ice removal operations as possible and are continually evaluating new methods and processes.

SCOPE

The Roadway System

There is a network of approximately 2,575 miles of City and State roads within the boundaries of the City of Philadelphia. The responsibility for maintaining these roadways during winter storms is split among the Pennsylvania Department of Transportation (PennDOT), the Streets Department, and the Department of Parks & Recreation. Of the 360 miles of state roads, PennDOT maintains 50 miles of limited access state highways. These include I-95, the Schuylkill Expressway(I-76), The Vine Street Expressway (I-676), Roosevelt Blvd Extension (Rt-1), Woodhaven Rd extension (Rt-63), all on & off ramps, and Gustine Lakes interchange. 310 miles are state roads that PennDOT contracts with the City for snow and ice removal. This amounts to a total of 2,525 miles of City and State roads that the City maintains.

The Department of Parks & Recreation de-ices 35 miles of Park roads, including but not limited to B.F. Parkway Lincoln Drive, Kelly Drive and Martin Luther King Drive. Snow and ice removal on the remaining 2,490 miles of City streets is the responsibility of the Streets Department. The Highway

Division maintains general responsibility for the organization and deployment of City forces during winter storm operations. In storms of large accumulation, the Sanitation Division will be mobilized to supplement the snow removal effort with vehicles outfitted with plows. Finally, private contractors supplement City forces in storms of significant magnitude.

In order to provide effective service during winter storms, the City's street system is divided into primary, secondary, and tertiary route systems. The primary route system encompasses 665 miles, including 110 miles of Snow Emergency Routes. The secondary route system includes another 700 miles of streets (both systems exclude the roadway maintained by the Department of Parks & Recreation). The balance of City streets falls into the tertiary street system, covering approximately 1,125 miles of streets, 25 miles of which are private streets where the residents or Home Owner Associations contract for private snow removal.

Route Priority

When a Snow Emergency is declared, Snow Emergency and *Primary* Routes become the first priority for snow removal efforts. **The Snow Emergency Route System is clearly marked and consists of the major street network within the City.** Primary routes include major access roads through the central business district, and in and out of neighborhoods. Most primary routes encompass major and minor arterials, which serve the highest traffic volumes and distribute traffic throughout the City.

The secondary route system, which includes other streets that primarily convey traffic within neighborhoods, is the second focus of snow removal efforts. Most SEPTA routes fall within the boundaries of the primary and secondary route system.

The tertiary system includes most local residential streets. These streets are cleared based upon storm type as defined in this document.

The primary and secondary route systems are salted as soon as significant moisture has accumulated on roadways, thereby minimizing travel conditions that are potentially dangerous. Certain roads may also be pre-treated with salt brine when conditions warrant. Plowing begins when there is such a sufficient build-up of snow that salting is no longer effective. Plowing and salting will occur on local and residential streets as defined in this document.

Residential streets that are inaccessible for snow and ice removal efforts due to illegally parked or abandoned vehicles cannot be treated until those vehicles are removed by the owner or ticketed and subsequently towed.

Snow Emergency Declaration

The Mayor, Managing Director, Deputy Managing Director of Emergency Management (DMD-EM) and the Commissioner of Streets will consult to determine if a declaration of a Snow Emergency is necessary.

A snow emergency declaration allows curb to curb plowing on designated snow emergency routes (see: Section 2 for Snow Emergency Route Listings). No parking is allowed on snow emergency routes during a snow emergency. The Philadelphia Parking Authority and Police Department are responsible for ticketing and towing vehicles parked on snow emergency routes.

Signs are posted on the Snow Emergency Routes by the Traffic Engineering Division. The signs are MUTCD approved accept for the 686-SNOW phone number. This number is answered by the Police Communications. 311 is also notified.

WINTER WEATHER ACTION OUTLINE

SNOW AND ICE REMOVAL OPERATIONS ARE DIVIDED INTO THREE ELEMENTS:

Planning

The Deputy Commissioner for Transportation, the Chief Highway Engineer and the Deputy Commissioner of Sanitation, under direction of the Streets Commissioner, are responsible for developing a comprehensive winter response plan. The planning activity will include all other support departments such as Fleet, Parks and Recreation, Water and others. Planning will encompass continuing communications with the Office of Fleet Management to ensure that vehicles are properly maintained and outfitted for salting and snow removal. Further, the plan includes periodic reviews of the Snow and Ice Operations and the route structures.

During this phase, responsibilities are outlined, key positions are identified, and crews are trained. In addition, materials are requisitioned, received, and stockpiled; equipment is repaired and readied, and snow routes and route maps are reviewed and revised as needed.

Operations

The operations phase begins when the forecast is for temperatures consistent with snow, ice, sleet or freezing rain, with at least a 50 percent chance of precipitation. The Highway Division supervisors, the Residential Snow Coordinator, Fleet Management, Water Dept, & Dept of Parks & Rec are notified of the possibility of precipitation and possible plan.

The Chief Highway Engineer is made aware of "Special Events" and major closures. The De-icing crews will be forwarded this information, so the appropriate actions can be taken.

The Highway Division directs all anti-icing and de-icing efforts undertaken by the Streets Department. The Division operates under the supervision of the Chief Highway Engineer, and is divided into six regional Highway Districts, supervised by District Highway Engineers. The District Highway Engineers and the Residential Snow Coordinator, in consultation with the Snow Headquarters, located at the Bridge Maintenance Office at Whitaker Avenue and Luzerne Street, direct the winter weather operations.

The 6 Highway District yards are at the following locations:

Highway District 1	48th Street and Parkside Avenue
Highway District 2	63rd Street and Essington Avenue
Highway District 3	22nd Street and York Street
Highway District 4	Stenton Avenue and Sylvania Street
Highway District 5	Whitaker Avenue and Luzerne Street
Highway District 6	State Road and Ashburner Street

The 6 Residential District Headquarters are at the following locations:

District 1	Belmont & Concourse Dr. – Carousel house
District 2	3033 63rd St. (63rd St & Essington). Trailer next to dome
District 3	Gustine Lakes Rec. Center 4700 Ridge Ave.
District 4	4501 G St. (G & Ramona Ave.) Street Lighting Shop
District 5	4040 Whitaker Ave. (Whitaker & Luzerne) 2nd Floor
District 6	8401 State Road (State & Ashburner) – Training Center

Resources are deployed as needs dictate, however, operations generally follow a set pattern. Once the storm arrives and precipitation is falling creating icy or snow-covered streets, salting operations begin. Certain roads may also be pre-treated with salt brine when conditions warrant. In additions, some trucks are equipped with a pre-wet system that will brine the salt before it is spread Salt trucks are deployed to cover the route structure. Salting will continue until it is no longer necessary or has become ineffective.

As snow continues to fall and build up on the streets, plows are deployed to the routes. Plowing will continue until the streets are passable and safe for use by vehicular traffic.

Once this is complete, individual complaints are addressed. 311 is notified by the Streets Dept, Public Relations Unit as to how to handle snow & ice complaints.

Cleanup and Assessment

Following each storm, the snow removal equipment is cleaned (including the brine equipment); spreaders and plows are removed and stored; personnel are released from snow duty; and final reports are submitted. At this time, after action reviews are undertaken. If contractors are used, all paperwork will be submitted and prepared for billing before the shift is over and Managers are released. All vehicles are post-checked and reported to Fleet for repairs.

All Highway Districts shall notify the Assistant Chief Highway Engineer as to how much salt so replenishment orders can be made following the event. An assessment of the salt dome at Domino Lane will also be done.

PARTICIPATING ORGANIZATIONS— ASSIGNMENTS & RESPONSIBILITIES

Assignments and Reporting Structure

All personnel involved in winter weather operations will be under the direction of Streets Department. **Once deployed to snow operations, they will be relieved from their respective daily assignments and will not be released, except for emergency, to their respective operating departments without approval of Streets Department snow headquarters. It is the responsibility of the employee to notify their supervisor that they will be working snow operations.**

Streets Department

The Streets Commissioner is the incident commander for all winter weather operations The Highway Division coordinates the citywide program for snow removal from the City street system and is directly responsible for salting and plowing the primary, secondary, and tertiary route structures. In addition, the Chief Highway Engineer is responsible for the supervision and organization of all de-icing efforts. With the approval of the Streets Commissioner, the Chief Highway Engineer is responsible for mobilizing necessary plowing and lifting operations. These operations may require the suspension of normal Sanitation Division operations under certain conditions, and the conversion of Sanitation vehicles for plow operations. However, the Department's goal is to minimize the impact on Sanitation operations and avoid the delay or interruption of curbside collection services. In addition, private contractors may be called in to supplement the de-icing efforts as conditions dictate. Sanitation personnel, Highway personnel, other Departmental personnel and contractors are responsible for de-icing under the direction of the Highway Division.

Department of Parks and Recreation

The Department of Parks and Recreation maintains a portion of the roadways in and around the Park system. The Benjamin Franklin Parkway, Kelly Drive, MLK Drive, Lincoln Drive, & Strawberry Mansion Bridge are the primary routes that are de-iced in all events. When full residential is deployed, they are assigned some residential grids.

In addition, they are responsible for the trail system and for treating the sidewalks and parking lots at the parks and recreation centers. The Leadership of the Dept of Parks & Rec will decide the priorities. In the event equipment has to be taken from the roadway de-icing operation, the Parks & Rec Coordinator will communicate with the Chief Highway Engineer. Since the residential program uses two of their facilities (Carousel House and Gustine Lakes), the residential manager will have those parking lots treated. The Chief Highway Engineer & the Parks & Rec winter coordinator will discuss and communicate prior to and throughout the event.

If a circumstance occurs where the winter event may cause trees to or limbs to fall and block roadways, the Chief Highway Engineer and Parks & Rec winter coordinator will communicate the concerns and report back to the appropriate staffing (both field and administrative). If the EOC is activated, they will be notified as well.

Office of Fleet Management

The Office of Fleet Management is responsible for the maintenance and repair of all vehicles in the City's fleet is responsible for opening fuel sites (see: Fuel Site Locations Table) during winter weather events, providing and installing chains, and where necessary, assisting with the installation of plows, except for the Sanitation Division, which installs chains and plows on compactors. The Chief Highway Engineer and Fleet Management Liaison will discuss the event. This discussion will include Brine, Salt, Plow, shifts, shop openings, and post event issues.

FUEL SITE LOCATION

SITE #	OPERATING HOURS	DEPARTMENTS	SITE NAME	STREET ADDRESS	ZIP	CONTACT #	FUEL TYPE	UNLEADED TANK CAP	DIESEL TANK CAP
01	24/7	Police Department	24th & Wolf	2301 S. 24th Street	19145	686-3010	U	10,000	N/A
02	24/7	Police Department	11th & Wharton	1100 Wharton Street	19147	686-3030	U	10,000	N/A
03	MON – FRI 7:30 – 3:00	Philadelphia Water Department	8200 Enterprise	8200 Enterprise Avenue	19153	685-4047	U/D	2,500	2,500
04	MON – FRI 7:30 – 3:00	Commerce/ Division of Aviation	International Airport	8500 Essington Avenue	19153	492-3056	U/D	8,000	8,000

05	24/7	Streets Department	51st & Grays	5014 Grays Avenue	19143	685-2612	D	N/A	10,000
06	24/7	Police Department	55th & Pine	5524-30 Pine Street	19143	686-3180	U	10,000	N/A
07	24/7	Police Department	61st & Thompson	6059 Haverford Avenue	19151	686-3190	U/D	6,000	N/A
08	MON – FRI 7:00 – 3:30	Office of Fleet Management	25th & Tasker	2500 Tasker Street	19145	952-6201	U/D	20,000	10,000
09	24/7	Police Department	Girard & Montgomery	611-17 E. Girard Avenue	19125	686-3260	U	10,000	N/A
R 10	24/7	Police Department	21st & Pennsylvania	401 N. 21st Street	19130	686-3090	U	10,000	N/A
11	MON – FRI 7:00 – 10:00	Streets Department	26th & Glenwood	2601 Glenwood Avenue	19121	685-3978	U/D	10,000	10,000
12	MON – FRI 7:00 – 3:00	Philadelphia Water Department	7800 Penrose	7800 Penrose Ferry Road	19145	685-4068	U/D	10,000	20,000
13	MON – FRI 7:00 – 3:00	Philadelphia Water Department	3900 Richmond	3899 Richmond Street	19137	685-1336	U/D	6,000	4,000
14	MON – FRI 7:00 – 3:00	Streets Department	Delaware & Wheatsheaf	3101 Castor Avenue	19134	685-1364	U/D	2EA/1,500	10,000
15	24/7	Office of Fleet Management	Front & Hunting Park	100 East Hunting Park Avenue	19124	685-9100	U/D	10,000	10,000
16	MON – FRI 8:00 – 4:30	Philadelphia Water Department	29th & Cambria	2900 N. 29th Street	19132	685-9633	U/D	20,000	10,000
17	24/7	Police Department	22nd Hunting Park	2201 W. Hunting Park Avenue	19124	686-3390	U	10,000	N/A
18	24/7	Police Department	Harbison & Levick	2809 Levick Street	19149	686-3150	U	10,000	N/A
19	24/7	Police Department	Broad & Champlost	5960 N. Broad Street	19141	685-2862	U	10,000	N/A
20	24/7	Police Department	Germantown & Haines	39-43 Haines Street	19126	686-3140	U	10,000	N/A
21	24/7	Police Department	Ridge & Cinnaminson	6666 Ridge Avenue	19128	686-3050	U	6,000	N/A
22	MON – FRI 7:00 – 11:00	Streets Department	Domino & Umbria	200 Domino Lane	19128	685-2580	U/D	10,000	10,000
23	MON – FRI 7:00 – 11:00	Office of Fleet Management	State & Ashburner	8401 State Road	19136	685-8977	U/D	10,000	20,000

24	24/7	Fire Department	Germantown & Carpenter	6800 Germantown Avenue	19119	685-2225	U/D	600	2,500
25	24/7	Fire Department	3rd & Spring Garden	276 Spring Garden Street	19123	686-1372	U	6,000	N/A
26	MON – FRI 7:00 – 5:00	Philadelphia Water Department	Fox & Abbottsford	3201 Fox Street	19129	685-2054 685-2024	U/D	10,000	10,000
27	MON – FRI 6:00 – 11:00	Streets Department	4040 Whitaker	4040 Whitaker	19124	685-9800	U/D	6,000	10,000
28	24/7	Fire Department	28th & Thompson	1301 N. 28th Street	19121	685-3889	D	N/A	1,000
29	24/7	Fire Department	Cottman & Loretta	1900 Cottman Avenue	19111	685-0591	D	N/A	1,000
30	24/7	Fire Department	Pennypack Circle	8205 Roosevelt Blvd	19152	685-8891	D	N/A	1,000
31	24/7	Fire Department	Broad & Fitzwater	711 S. Broad Street	19147	685-6897	D	N/A	1,000
32	24/7	Fire Department	4th & Snyder	414 Snyder	19148	685-1792	D	N/A	1,000
33	MON – FRI 7:00 – 3:30	Parks and Recreation	Chamounix (Parks/ Recreation)	715 Chamounix Drive	19131	685-0110	U/D	10,000	10,000
34	24/7	Fire Department	63rd & Lancaster	1913 N. 63rd Street	19151	685-0068	D	N/A	1,000
35	MON – FRI 7:00 – 6:00	Streets Department	48th & Parkside	4804-48 Parkside Avenue	19131	685-0164	D	N/A	2,000
36	24/7	Fire Department	10th& Cherry	133 N. 10th Street	19107	686-1350	D	N/A	1,000
37	24/7	Fire Department	4th & Girard	400-08 Girard Avenue	19123	686-1349	D	N/A	1,000
38	24/7	Fire Department	82nd & Tinicum	8201 Tinicum	19153	492-3393	D	N/A	1,000
39	24/7	Fire Department	52nd & Willows	783 S. 52nd Street	19143	685-1987	D	N/A	2,000
40	24/7	Fire Department	Foulkrod & Darrah	1652-54 Foulkrod Street	19124	685-1295	D	N/A	1,000
41	24/7	Fire Department	Bustleton & Bowler	1701 Bowler Street	19115	685-0387	D	N/A	3,000
42	24/7	Fire Department	Bustleton & Hendrix	812 Hendrix Street	19116	685-0388	D	N/A	1,000
43	24/7	Fire Department	Chelten & Baynton	300 E. Chelten Avenue	19144	685-2227	D	N/A	1,000

	44	24/7	Fire Department	30th & Grays Ferry	3023-45 Grays Ferry Avenue	19146	685-1790	D	N/A	1,000
	45	24/7	Fire Department	Belgrade & Ontario	2520 E. Ontario Street	19134	685-9849	D	N/A	1,000
	46	24/7	Fire Department	13th & Shunk	2600 S. 13th Street	19148	685-1783	D	N/A	1,000
	47	24/7	Fire Department	24th & Ritner	2301 S. 24th Street	19145	685-1793	D	N/A	600
R	48	MON – FRI 7:00 – 3:30	Commerce/ Division of Aviation	Northeast Airport	3001 Grant Avenue	19114	685-0311	D	N/A	4,000
	49	24/7	Fire Department	Academy & Comly	11650 Academy Road	19154	685-9374	D	N/A	600
	50	24/7	Fire Department	Ridge & Cinnaminson	6666 Ridge Avenue	19128	685-2555	D	N/A	600
R	51	24/7	Police Department	Dungan Road	7790 Dungan Road	19111	685-5101	U	8,000	N/A
	52	24/7	Fire Department	Park & Cambria	1325 W. Cambria Street	19132	685-9773	D	N/A	600
	53	24/7	Fire Department	Old York Road	5931 Old York Road	19141	685-2881	D	N/A	600
	54	24/7	Fire Department	43rd & Market	4299 Market Street	19104	685-7699	D	N/A	600
	55	24/7	Fire Department	Belgrade & Huntington	2601 Belgrade Street	19125	685-9847	D	N/A	600
	56	24/7	Fire Department	Rising Sun	5332 Rising Sun Avenue	19120	685-9197	D	N/A	600
	57	24/7	Office of Fleet Management	3033 S. 63 Rd	3033 South 63rd Street	19125	685-4250	D	N/A	10,000
R	58	MON – FRI 6:00 – 3:00	School District of Philadelphia	Shallcross	Byberry & Woodhaven	19154	281-2617	D	N/A	10,000
R	59	MON – FRI 6:00 – 3:00	School District of Philadelphia	Broad & Lehigh	2600 N. Broad Street	19132	215-227-4430	D	N/A	10,00

Total number of sites is fifty-nine

“R”= restricted to vehicles assigned to the department only

Managing Director’s Office

The Managing Director, in consultation with the Mayor, has the authority to declare a snow emergency and if necessary, close City offices. This plan should limit, if not eliminate, the need to enforce any closures during snow events.

When a snow emergency is declared the Managing Director’s Office is responsible for coordinating the citywide response to the emergency. Streets Department personnel, along with personnel from other departments, participate in the staffing of the Emergency Operations Center, located at 3rd and Spring Garden Streets in the Fire Administration Building, and in other coordinated efforts as necessary

Police Department

Police Department support is required to support existing parking regulations. Police will ticket vehicles identified as impeding snow removal efforts including, but not limited to, vehicles parked on corner radii and double-parked vehicles. Police officers will stop all private entities placing snow in previously cleared streets. During declared snow emergencies, Police support will ensure snow emergency routes are clear. The Police Department is responsible for performing de-icing activities in their facilities. The Police Department will coordinate with the Philadelphia Parking Authority for towing.

As Routes are cleared of vehicles, the Police will notify both the EOC and Snow Headquarters, so the appropriate de-icing can occur.

Other City Departments

The tertiary route structure is maintained by the following City Departments under the direction of the Residential Snow Coordinator.

Streets Department
Public Property
Managing Director’s Office (CLIP)
Prisons Department
Free Library
Water Department
Parks & Recreation
Licenses & Inspections
Revenue Department
Health Department

SNOW FIGHTING EQUIPMENT INVENTORY

Streets Department 2019 – 2020 Fleet Summary

Listed below is the Streets Department's fleet inventory for snow operations. Due to the age of the fleet and the challenges facing the Office of Fleet Management, we (the City) have concerns about the reliability of the equipment. Winter operations place a great strain on aging vehicles, and equipment availability will have a significant impact on the Department's ability to effectively respond to weather events. With projected downtime, the City will be challenged to field a full complement of equipment to cover all routes.

The result of insufficient equipment will be slow response time, particularly on residential streets. To address this issue, in part, the Streets Department has snow contract agreements to provide supplemental equipment for both large and residential streets. The Department also continues to work closely with the Managing Director's Office to identify interdepartmental equipment that can supplement the inventory.

All departments are required to provide a full complement of necessary vehicles for snow operations for clearing the roadway system.

STREETS DEPT. SNOW VEHICLES

100	HIGHWAY SALT
13	LOADERS, HIGHWAY, ARTICULATED
14	SANITATION SKID STEER
144	COMPACTORS
8	BRINE VEHICLES
2	SNOW TRAILERS FOR ROOSEVELT BLVD
135	ALL SNOW VEHICLES ASSIGNED TO RESIDENTIAL

ROUTE DESIGNATIONS AND TREATMENT

The primary and secondary route systems are divided into 148 specific routes. Salting and/or plowing of these routes will continue until the routes are deemed passable and safe for vehicular traffic.

The tertiary street system is covered in a grid pattern determined by each District Highway Engineer and the Residential Snow Coordinator. These streets are salted/plowed as storm type dictates (see Chart A, page 3). Grids are assigned, and the plows attempt to clear all streets in that grid. Streets that are blocked by parked cars or other obstructions will not be treated until the obstruction is removed. Double-parked vehicles or vehicles parked on corner radii will be ticketed and towed by Police to permit snow removal efforts.

All tertiary grids will not be treated during every storm. The City's topography will primarily dictate the specific areas that will be treated during every storm type. Storm severity will dictate the expansion of treatment in the tertiary network. Regional commerce, public health, mass transit issues, sporting & special events and time of year will guide these decisions.

Snow and ice on the tertiary street system will be cleared to provide one passable lane for each direction that the specific streets can accommodate. Residential efforts are designed to allow access to the primary and secondary route system and mass transit.

Use of Salt and Other De-icing Materials

Salt (sodium chloride) or a brine solution of the same chemical, or in extreme situations, sand or other abrasives, will be spread on Philadelphia's roadway network to ensure safety for the traveling public.

Salt brine is a liquid containing a 23 per cent sodium chloride solution. Applied at rates of 30 gallons per lane mile, this treatment should effectively melt the first 2 inches of snow before re-application is necessary. The treatment can also be applied before storms begin. The Department will utilize this program in the Northwest and Northeast sections of the city, areas that typically have higher evaluations. In addition, the department may Brine the sports complex if there is an event. This should provide greater service delivery at a reduced cost, especially in the higher elevation areas of the City. The decision to Brine will be made 72 hours in advance. Brine is primarily used to pre-treat the roadway, so snow does not bind to roadway. As conditions permit, brine trucks may be re-filled and used on some routes or parking lots during the event. This is most effective when there is less than 2 inches of snow, temperatures are greater than 20 degrees and no rain.

STORM TYPES AND RESPONSE

There are eight (8) basic storm types that require different responses as outlined below.

POST STORM FORECAST

ABOVE FREEZING TEMPERATURES

	Storm Type	Deployment of Fleet
1	Sleet/ Freezing Rain	City salt truck deployment and primary and secondary routes only.
2	1 to 3 inches of snow	City salt truck deployment on primary and secondary routes. Partial residential deployment in limited areas of higher elevation. If cold temperatures are forecast, limited plowing may occur. (No contractors).
3	3 to 5 inches of snow	City and contractor salt truck deployment on primary and secondary Routes. Partial residential deployment in limited areas of higher elevation. A snow lifting may be deployed in the central business district.
4	Above 5 inches of snow*	As above, plus the declaration of a "snow emergency." Sanitation compactors will plow the primary and secondary route system. Additional contractor equipment will be deployed. Full residential will be deployed.

BORDERLINE AND BELOW FREEZING TEMPERATURES

	Storm Type	Deployment of Fleet
5	Sleet/ Freezing Rain	City salt trucks deployed on primary and secondary routes only. Possible partial residential deployment in limited areas of higher elevation.
6	1 to 3 inches of snow	City salt truck contractor deployment on primary and secondary routes. Salting Operation for tertiary streets may occur once the primary and secondary network is complete. This operation will be performed by primary and secondary route vehicles that can navigate smaller streets. Partial residential deployment in limited areas of higher elevation. If cold temperatures are forecast, limited plowing may occur.
7	3 to 5 inches of snow	As above, plus a snow lifting may be deployed in the central business district.
8	Above 5 inches of snow*	As above, plus the declaration of a snow emergency. Sanitation compactors will plow the primary and secondary route system. Additional contractor vehicles will help clear snow. Full residential will be deployed.

*Full deployment may be deployed when the National Weather Service issues a winter storm warning.
Lifting snow from other sections of the City will only occur when directed by the Chief Highway Engineer.

Weather Forecasting Services

The City of Philadelphia will, in addition to monitoring local national weather forecasts for our metropolitan region, contracts with an independent private weather service to ensure that forecasts are made specific to our needs. The City recognizes that there are unique geographic differences within our boundaries and expects detail in our contracted services to assist in deployment decisions.

STORM OPERATIONS

Storm Conditions

Philadelphia's geographic position contributes substantially to the forecasting uncertainties that it faces. Due to our location, with the mountains to our west and the Atlantic Ocean to our east, forecasters usually must watch storm systems for as long as possible before determining if they are going to hit Philadelphia or be deflected to the east or west. In addition, there are literally thousands of types of winter storms - each storm combines a number of factors that lends to its uniqueness.

The Streets Department must be prepared to deal with these planning uncertainties, as well as uncertainties that occur during the storm. For example, the Blizzard of March 1993 was originally forecasted as a 3" storm. It mushroomed into a major storm of upwards of 12 inches, including sleet and freezing rain. In early December 2013, a forecasted 1" storm during an Eagles game turned into a 9-inch winter event. The unexpected changes in forecasts made it more difficult for the Streets Department to mobilize the most effective response to react to a storm of such magnitude. The Blizzard of January 2016 (Winter Storm Jonas) was supposed to start at 10PM and started at 7PM. In March 2017 (Winter Storm Stella) was forecasted for over 12 inches of snow, about 4 inches of snow fell followed by a couple of inches of sleet and below freezing temperatures.

In March 2018, 3 different Nor-Easter storms effected the City of Philadelphia with temperatures at freezing. This caused many trees to block the roadways and parks. These storms had all available equipment to remove trees and de-ice the streets, so crews can perform the necessary work.

There are several other variables that affect the Department's timely response to storm events. These variables are briefly outlined below. Each of the variables listed may have a significant impact on the Department's response. Proper planning and the development of appropriate procedures, combined with some level of operational flexibility is a priority to develop the most appropriate, effective response possible, given the existing conditions. Communication through Snow Headquarters is the key to success.

- Storms may fail to materialize at the forecasted hour. Conversely, storms may stall, thereby increasing the duration of the event and the amount of accumulation. These factors increase the expense associated with responding to a storm and the chance of work force fatigue.
- During a storm, the type of precipitation may change. Different types of precipitation require different responses. For example, plowing may be hampered as ice accumulates on the top of the snow, creating a hard crust.
- The time of the year also impacts the Department's response to storms. In the late fall and early spring months when the temperature is warmer, it may be possible to fight a storm of four to five-inch accumulation with salt alone. In colder months, plowing would be necessary.
- If two or more severe storms occur in rapid succession, the Department's response may be affected. Response to the initial event may be expanded in anticipation of the subsequent storm. For example, in 2015, we had 2 storms within 36 hours at accumulations of 12 inches and 5 inches respectively with 8 hours in between.
- Low temperatures increase the amount of salt necessary to melt off precipitation.
- Winds can create havoc during storms. Although light breezes help to dry roadways following storms, stronger winds may hamper snow fighting efforts by drifting snow across cleared roadways.
- Significant elevation differences exist between the southern portion of the City and the areas in the northeast and northwest. In the northeast and northwest, snow frequently accumulates to greater depths.
- The city has developed micro-climates along the rivers creating black ice.
- Other Department's core services may impact equipment and personnel (ie: Water main breaks or down trees due to ice and wind)

The Department's Snow and Ice Operations Plan presents a flexible framework providing effective response to all types of storms.

It is the goal of the City of Philadelphia that for the majority of the winter weather events that typically affect this city, that we will have, depending on storm type and response protocol, all routes identified in these response protocols passable within 24 to 48 hours of the fall of the last flake. Storms outside of the protocol upper limits may lead to significant adjustments in this timeline.

STORM TYPES 1, 2 & 3

DEPLOYMENT

Streets Department

Chief Highway Engineer

— Will develop the operations plan for approval by the Streets Commissioner

— Once the plan is approved, The Chief & Assistant Chief Highway Engineers will notify as listed below:

- Notifies District Highway Engineers, Central Maintenance Unit (CMU), Bridge Maintenance Unit (BMU) of mobilization time and plan
- Notifies the yard supervisors
- Notifies Residential Snow Coordinator of mobilization time
- Notifies Highway Division Snow Headquarters, located at the Bridge Maintenance Yard – 4040 Whitaker Avenue, personnel to report at specified deployment time
- Notifies OIT
- Notifies Office of Fleet Management of mobilization decision
- Notifies SEPTA
- Notifies Sanitation
- Notifies maintenance supervisors
- Notifies Parks and Recreations
- Notifies Unified Dispatch
- Notifies Water Department
- Notifies the Streets Department, Public Affairs
  - — Will coordinate with 311
- An email notification will be sent out to all involved. The Streets Commissioner will be included so it can be shared with the MDO or Mayor's Office at his discretion. This is a follow-up to phone calls.
- Establish communication with the EOC (if activated).

Highway District Engineers

— Notify spotters to report at specified deployment time

Highway District Maintenance Supervisors

— Notify personnel to report at specified deployment time

Residential Snow Coordinator

— Notifies residential snow operations personnel of partial residential deployment (if needed)

Office of Fleet Management

— Will determine which garages for Fleet maintenance support and fueling sites for duration of event at determined times. This will be coordinated with Snow Headquarters

Parks and Recreation

- Responsible to activate operation for salting Park road system including Benjamin Franklin Parkway, MLK, Kelly, Lincoln Drive. Report times will be coordinated with the Chief Highway Engineer.

OPERATIONS

Highway Districts

Spotters monitor street conditions. Salt trucks are loaded and positioned at the start of an assigned route. As street surfaces accumulate sufficient moisture for effective salting, spotters notify Maintenance Supervisors to begin salting activity. Spotters will provide route condition reports to their district headquarters on intervals as directed. District headquarters will compile this data and forward to Highway Division Snow Headquarters.

The Highway Yard Districts will work with the Sanitation yards to ensure the Citizen Drop off centers are de-iced.

Residential Districts

Spotters monitor street conditions. Trucks are positioned at the start of an assigned route. Treatment of the street surface begins upon notification from the Residential Snow Coordinator. Spotters will provide route condition reports to their district headquarters on three (3) hour intervals. District headquarters will compile this data and forward it to the Residential Snow Coordinator, who in turn summarizes the information and forwards it to Highway Division headquarters.

Highway Division Snow Headquarters

Snow Headquarters will:

- Inform Highway Districts of weather forecasts
- Monitor, through Highway Districts, the status of all salting operations
- Maintain a log of all service calls for snow and ice related activities
- Monitor weather conditions and forecasts
- Analyze the data and forward it to the appropriate parties
- Analyze reports from the field and make changes to future operations where required
- Forward emergency calls from Police and Fire Departments to Highway Districts
- Maintain Snow Route Status Report
- Order commodities as required to maintain an adequate supply at all Districts
- Take calls from the EOC
- View PennDOT, Police and Streets Department cameras.
- Monitor GPS

Office of Fleet Management

- Repair vehicles as necessary
- Report vehicle down time to Snow Headquarters

Parks and Recreation

- Treat Park road system, trails, and parks & recreation facilities

CESSATION OF OPERATIONS

Highway Districts

— District Engineers release spotters to regularly assigned duties.

— District Engineers collect route inspection information

Residential Districts

— Release spotters and drivers to their respective departments

— Forward all reports to Residential Snow Coordinator who, in turn, forwards them to Highway Division Snow Headquarters

— Supervise the cleaning and redeployment of residential snow equipment

Highway Division Snow Headquarters

— Compile final report on personnel, equipment utilized and material usage and forward to Streets Commissioner.

— Estimate cost of event

Office of Fleet Management

— Compile final report on equipment costs and return to normal Fleet repair activities

— Prepare for the next event

Parks and Recreation

— Compile final report on personnel and equipment utilized

— Return to normal Park maintenance activities

STORM TYPES 6, 7 & 8

DEPLOYMENT | Same as response 1, 2 & 3, except the following additions:
Streets Department

Chief Highway Engineer

— Notifies District Highway Engineers and Residential Snow Coordinator of decision to salt/plow tertiary system (Note: Storm type 6 only, partial to full residential deployment depending on event specifics).

— Will advise everyone for potential of multiple shifts

Residential Snow Coordinator

— Notifies residential snow operations personnel of partial to full residential deployment

STORM TYPES
4 & 8

DEPLOYMENT | Same as 1, 2 & 3, but also includes:
Streets Department

Chief Highway Engineer

- Notifies District Highway Engineers of initial mobilization time for salting operations and subsequent mobilization time for plowing operation
- Advises district that Sanitation, contractor equipment and residential roadway treatment will occur
- Notifies Highway Division Snow Headquarters, personnel to report at specified deployment time
- Notifies Snow Contractor Liaison to order contractor support equipment at specified time
- Notifies Residential Snow Coordinator of mobilization time
- Notifies Deputy Commissioner for Sanitation for full deployment of Sanitation resources, both for plowing primary and secondary routes
- Notifies Office of Fleet Management of mobilization decisions
- Advises all involved of anticipated number of shifts
- Notifies SEPTA
- Notifies Sanitation
- Notifies Water

Snow Contractor Liaison

- Contact private sector vendors and orders equipment for each highway district.
- Advises of deployment time and likelihood of deployment duration
- Advises contractors of lifting set (if any) requirements

Highway District Engineers

- Notify Maintenance Supervisors to deploy their staff at specified time
- Notify spotters to report at specified time
- Notify inspection staff for contracted equipment to report at specified time
- Are advised that residential street system snow removal has been activated

Residential Snow Coordinator

- Notifies residential snow operations personnel of residential deployment

Highway District Maintenance Supervisors

- Notify personnel to report at specified deployment time

Streets Department — Sanitation Division

Deputy Commissioner — Sanitation

- Mobilizes plows for primary/secondary route system at six Sanitation yards at specified time.
- Notify Chief of Operations to designate a Sanitation representative for Highway Division Snow Headquarters
- Notify division management of deployment times and subsequent suspension of curbside collections

Office of Fleet Management

- Will deploy sufficient resources to support fleet maintenance activities for duration of winter weather event
- Will open fuel sites and staff appropriate garages for duration of event
- Will support Sanitation Division of Streets Department during plow and chain mounting for Sanitation compactors and support equipment

Parks and Recreation

- Responsible to activate operations for salting/plowing road system and trail system. The Leadership of Parks & Rec will create a plan for treating the trails and recreation centers

Office of the Managing Director

- Will issue declaration of snow emergency
- Will activate the city's Emergency Operations Center located at the Fire Administration Building 3rd and Spring Garden Streets.

OPERATIONS

Streets Department

Highway Division

- Spotters monitor street conditions
- District Highway Engineers assign inspection staff to contact salting vehicles
- Salt trucks are loaded & positioned at the start of an assigned route. As street conditions accumulate sufficient moisture for salt to be effective, spotters notify districts to begin salting operation. Salt will be applied prior to plowing operations or until no longer effective
- Plowing operations will begin at 2"-3" accumulation and continue until routes are clear
- Chief Highway Engineer directs Residential Snow Coordinator to begin Tertiary Street plowing/salting when needed
- Highway District Engineers direct Sanitation plowing commencement
- All spotters & inspectors will provide route condition reports on three (3) hour intervals. Each district headquarters will compile this information & forward to Highway Division Snow Headquarters
- Highway District Engineers will ensure that all routes are salted upon completion of plowing efforts
- Highway District Engineers will direct snow lifting/melting operations within their respective district

Residential Snow Districts

- Spotters monitor street conditions. Trucks are positioned at the start of an assigned route. Treatment of the street surface begins upon notification from the Residential Snow Coordinator
- Spotters will provide route condition reports to their district headquarters on three (3) hour intervals. District headquarters will compile this data and forward it to the Residential Snow Coordinator, who in turn summarizes the information and forwards it to Highway Division Snow Headquarters

Sanitation Division

- Sanitation Assistant Chiefs of Operation and District Managers direct Sanitation Operations and report progress to Highway District Engineers
- At the Highway District Engineers direction, they will adjust on-street operations for specified route assignments
- Progress reports are to be provided at two (2) hour intervals to Highway District Sanitation Coordinator
- Managers will ensure that all vehicles are manned at shift change
- Personnel will not be released without replacement
- Sanitation and Highway Yard Liaison will coordinate completion of the routes so a salt truck can follow behind.
    - Sanitation will support the Residential program by treating the small streets with the skid steers.

Highway Division Snow Headquarters

Snow Headquarters will:

- Inform Highway Districts of weather forecasts
- Monitor, through Highway Districts, the status of all salting operations
- Maintain a log of all service calls for snow and ice related activities
- Monitor weather conditions & forecasts. Analyze the data & forward it to the appropriate parties
- Analyze reports from the field & make changes to future operations where required
- Forward emergency calls from Police and Fire Departments to Highway Districts
- Maintain Snow Route Status Report
- Order commodities as required to maintain an adequate supply at all Districts
- Provide Emergency Operations Center (EOC) reports route conditions, weather updates and identified trouble spots

Office of Watersheds (Division of PWD)

- Office of Watersheds will de-ice the porous streets when a conditional deployment is called. During a full deployment, they will appropriately treat those streets. If they are not treated by the Office of Watersheds, then the residential program will treat the porous streets. As of October 2019, there are 6 porous blocks within the City.

Office of Fleet Management (OFM)

— OFM will provide necessary manpower & garage space as need to support storm type

— OFM will supply vehicle status reports to Highway Division Snow Headquarters, the Managing Director's Office and Emergency Operations Center on an hourly basis

Parks and Recreation

— Treat Park road system and Benjamin Franklin Parkway as required by conditions

— Clear all sidewalks around recreation centers

— All trails will be treated

CESSATION OF OPERATIONS

Streets Department

Highway Division

— Highway District Engineers will release all equipment to their respective departments for regularly assigned duties

— Highway District Engineers will release all personnel to their regularly assigned duties

— District Maintenance Supervisors will ensure salt truck operators return unused material to stockpiles and wash truck beds, augers and spinners.

— Highway District Engineers will compile final contractor billing information

— All storm related information on personnel, equipment deployed, contract support & material used will be compiled by each district and forwarded to Snow Headquarters

Residential Districts

— Release spotters and drivers to their respective departments.

— Forward all reports to Residential Snow Coordinator who in turn forwards them to Highway Division Snow Headquarters

— Supervise the cleaning and redeployment of residential snow equipment

Sanitation Division

— Sanitation Division will dismount plows, remove chains and ready fleet for return to normal collection/cleaning activities

Highway Division Snow Headquarters

— Compile final report on all elements deployed for specific storm type

— Forward report to Streets Commissioner and EOC

— Compile cost estimate for event

— Direct highway districts post storm clean up deployment

Office of Fleet Management (OFM)

— OFM to compile final report on equipment repair costs and vehicle status and return to normal fleet repair activities

— Prepare for next event

Parks and Recreation

- Compile final report on personnel and equipment utilized
- Return to normal Park maintenance activities

Office of the Managing Director

- End snow emergency declaration and close EOC
- Effective in 2015, the 686-SNOW phone number has been permanently changed to inform citizens of their responsibilities of parking on a Snow Emergency Route. It is routinely checked to make sure it is active.

DE-ICING SUPPORT PERSONNEL ASSIGNMENTS

The following functions will be performed by Streets Department and other City agencies personnel not directly involved with the operation of snow fighting equipment:

Bridge Maintenance Unit

The Bridge Maintenance Unit will perform anti-icing activities on the sidewalks of the City's vehicle bridges & pedestrian bridges as well as removing snow from the 15 stairways in Manayunk. Highway maintenance district yard personnel and Sanitation area personnel will be called to assist with this effort as dictated by storm type.

Highway Maintenance District Personnel and Sanitation Area Personnel

Highway maintenance district personnel and Sanitation area personnel, as dictated by storm type, will be provided hand snow removal equipment and will clear snow from curb ramps and open city inlets. This is to allow melting snow access to the drainage system and provide pedestrian accessibility. Snow may also be cleared from areas surrounding fire hydrants. Efforts will be made to keep select bike lanes clear of snow & ice. All bike lanes will be attempted to receive de-icing treatment.

SWEEP Support (Streets & Walkways Education and Enforcement Program)

SWEEP Officers will, beginning in commercial corridors, enforce sidewalk clearance — Ordinance 10-719. Upon completion, enforcement will expand to schools, hospitals, etc., culminating in residential inspection.

All City Departments

- Dry salting Will NOT be practiced.
- Sidewalks & ADA ramps: All City departments will be responsible for removing snow on the sidewalks abutting their facilities. Salt can be requested through snow HQ. In addition, bagged salt & Calcium Chloride is available on a Citywide contract for all Departments to Purchase
- Parking Lots: All Departments are responsible for treating & salting their respective parking lots.
  - The Police Department will coordinate with the Chief Highway Engineer for salt needed to salt all Police parking lots & driveways. The Streets Dept will treat the Round House ramp and the Traffic Police ramp on Erie Ave.
  - No Department will be supplied salt for the purposes of dry salting

- Dilworth Park is the responsibility of Center City District
- Dilworth Plaza is the responsibility of Public Property. Note: It is not recommended to drive heavy equipment on Dilworth Plaza.
- Sanitation will provide salting & plowing vehicles to treat the citizen's drop off areas.

Highway Division Support Personnel

Highway Division support personnel will continue snow removal support functions as part of their daily work activities after Sanitation workers return to regular collections. Snow removal equipment will supplement these efforts as it becomes available.

Small Streets

As part of the City's responsibility of making streets passable, the Sanitation Division will be de-icing several miles of streets that are less than 10 feet in width. These are known as Gator Routes. These will be treated when a full deployment is called. The crew chief in charge of this operation will report to the residential manager.

PWD Support (Philadelphia Water Department)

During major events, PWD crews will be dispatched to clear snow at inlets to prevent intersection flooding (if appropriate)

Bus Stops

OTIS has contracted with Intersection to de-ice all bus stops. This contract includes access to the bus stops and ADA ramp. In addition, they will be clearing the snow at the Direct Bus Stops along Roosevelt Blvd.

Police Department Support

The Philadelphia Police Department will enforce existing ordinance/regulations prohibiting the discharge of snow back onto city streets. Private plow contractors caught in the act of plowing snow from private property onto city streets risk fine and/or forfeiture of equipment.

Bicycle Facilities

The City of Philadelphia is becoming one of the most bicycle friendly City in the United States. As doing so, the de-icing plan shall include bike facilities. However, in certain events, the treatment may not occur until 24 hours after the final snowflake has fallen.

— The City (OTIS) has permitted bicycle corrals to be installed within the parking lanes. The private sponsor of the bike corral is responsible for clearing snow and de-icing. Note, throwing snow into the travel lane is not permitted. The City does not take on any responsibility for damage done by de-icing operations.
  - No bike corrals are permitted on snow emergency routes during winter months.
  - The INDEGO bike share program is privately owned and coordinated with OTIS. INDEGO is responsible for snow removal and de-icing. Snow shall not be placed in the treated street.
  - As part of the Streets Department's Deicing and snow removal program, an effort will be placed on bike lanes where it is feasible.
    - Salting the bike lanes can occur with the salting of the travel lanes.
    - If the bike lane is next to the curb, efforts will be made to push the snow as close to the curb as possible. As the snow begins to melt, additional plowing and salting may be performed to expedite the snow melting
    - The City will be treating each protected bike lane in a different manner.

PUBLIC RELATIONS AND EDUCATION

Major Media Notification

The City will use various media types to ensure that notification of the Department's plan is timely as well as effective.

Key communications tools include:

- Issuing of press releases/advisories. This will be done by or coordinated with the Mayor's press office.
- Social Media
- Nextdoor Social Site

— Posting information on Streets Department's website including list of FAQs, snow tips and status of departmental services as appropriate. Suggested snow tips will include:
  - "Park car as far away from the corner as possible. Cars parked too close to the corner limit the turning radius of snow equipment."
  - "Obstructions, such as, illegally parked cars affect our ability to plow effectively."
  - For effective snow and ice management partnership, City and citizens need to work together.
  - Do not throw snow into the street or bike lanes.
  - Posting information on community websites/list serves
  - Utilizing OIT to distribute announcements email

Notification System

The Department uses OEM's ReadyPhilly system to notify of snow alerts.

311/Streets Department Communication Protocols for Snow Events

During storm events, all snow related inquiries will be accepted by 311, however, formal service requests will not be taken until 311 is notified by the Streets Department Public Relations that the event is officially declared over. During the event, 311 will advise the public of the level of deployment and let citizens know if their street is to be serviced depending on the level of service. After the event is ended, 311 will resume taking complaints from the public and the requests will be forwarded to the Streets Department for response within a reasonable time.

Responding to Citizens' Complaints

— **Delegation** — Service requests are, as always, delegated from the centralized system to operational units for appropriate action.

— **Tabulation** — Information can be gathered from the Public Relation's computerized system to provide a post-storm picture of complaints.

— **Planning** — This information can be further utilized to plan appropriately and change plans for future snow events.

School Closure Policy

When inclement weather is present or anticipated that may impact schools opening or closing early, Streets, SDP, Archdiocese, MDO, and MDO/OEM will conference to determine appropriate action relating to storm conditions.

Post Season Survey/Spring Maintenance

Beginning on or about March 1 of each year and continuing through April 30th, weather conditions permitting, sweeps will be made of Philadelphia road network, identifying defects for the upcoming spring repair season. Streets Department personnel, as well as those involved with residential inspection, may be asked to perform this task.

SNOW FIGHTING IN PHILADELPHIA OPERATIONAL GUIDELINES

Snow Operations COVID Prevention Protocols:

Snow operations events typically involve a high volume of employees, and, sometimes contractor support to clear and remove snow and ice from city streets and roadways. With the advent of the COVID-19 epidemic, the Streets Department has a responsibility to ensure the health, wellness and safety of our employees, contractors and general public while snow event operations are taking place. We have therefore established clear guidelines and protocols to follow in order to protect the health, wellness and safety participants and the general public. To prevent COVID-19 exposure, it is important that these health and safety guidelines are monitored and enforced during an event.

An assigned senior manager will serve in the role of COVID Prevention Director ensuring all snow operations facility sites are equipped and trained to implement prevention protocols. One trained person at each individual facility site will fulfill the responsibilities of a COVID Prevention Coordinator. The coordinator will ensure health and safety practices and COVID prevention measures are monitored and enforced at all times. The following represents the various protocols the coordinator is responsible for monitoring and enforcing:

All employees and contractors arriving to an event site must successfully complete a COVID health assessment screener via link at https://www.phila.gov/employee-screener/#/. If an employee or contractor cannot take the assessment on-line using their cell phone, paper assessment questionnaires will be available and administered to the individual. A negative response to any of the series of questions asked on the questionnaire, will result in a failed assessment, indicating the individual is at risk and cannot work the snow event. Employees and contractors must successfully complete the health screener assessment indicating that they are cleared to work. The coordinator will check and verify that the screener clears the individual to work. If the screener does not clear the individual, the coordinator must notify the individual that they are required to leave the facility and cannot work the snow event. If necessary, the coordinator will obtain the support and assistance of a manager to ensure the individual does not work the event and is directed to go home.

Other responsibilities include:

- Requiring event participants maintain social distancing from other participants and general public throughout the event by keeping at least three to six-foot distance from others unless it is absolutely necessary and they are wearing appropriate PPE
- Requiring all participants to wear either a face mask covering their nose and mouth while working at least three to six-feet of other participants or individuals (masks will be available for the event)
- Participants who refuse to maintain proper social distance or to wear proper PPE must leave the project site
- You must inspect and monitor participants throughout the event to ensure proper PPE is being worn by employees, they are reminded about required safety protocols and that they should immediately go home if not feeling well
- Ensuring hand sanitizer and/or hand soap is available during the event with the expectation that participants clean their hands frequently throughout the day
- Participants should clean their hands frequently during the event, after any breaks and directly after any restroom break
- Employees who indicate they are feeling ill while working onsite, must be immediately informed to go home and leave the project site

Material Resources

Salt inventory is dictated by several factors: storage capacity (including salt domes at secure, satellite locations throughout the city), availability of product, and environmental concerns. A salt dome is located at the six Highway District Yards and Domino Lane, Area 4. The City has the capacity to store over 50,000 tons of salt. Note, Anti-skid may be added to the salt if the inventory starts to run low or if the temperatures are cold where the salt may not be as effective. The Sanitation will sweep the street as conditions permit.

The Department orders salt as the inventory is depleted to maintain maximum capacity throughout the winter. Initial salt orders are placed against purchase orders cut from a blanket purchase order under the Commonwealth of Pennsylvania’s contract. The City of Philadelphia has a secondary salt contract in place

Subsequent product is obtained from the City of Philadelphia’s citywide rock salt contract. This contract provides for a primary and secondary vendor, and has language that includes the product specification, testing procedures, delivery locations, quantities and requirements, and weight certifications, and liquidated damages.

Requisitioning

The District Supervisor keeps an up-to-date inventory of the materials used for snow and ice removal during the winter months. S/he notifies the Administrative Officer (AO) and Assistant Chief Highway Engineer as orders need to be placed. An overall salt inventory for all six Districts & Domino Lane is maintained by the Assistant Chief Highway Engineer.

At the end of the winter season, the Chief Highway Engineer, AO, the Director of Planning & Analysis, and the Budget Officer review the remaining salt inventory to determine the necessary amount of salt needed to meet the following year’s requirements. Accordingly, the State is notified of our estimated quantities, as is the Procurement Department for use in developing contracts for the following year.

Salting Policy

The Highway Division endeavors to maximize every application of de-icing to maintain the safest roads possible in the most economical way while protecting the environment. This also puts the City of Philadelphia in compliance with the MS-4 permit, this is maintained by PWD. The policy includes:

DRY SALTING WILL NOT BE PRACTICED.
This is not an effective way of treating streets and is a waste of material.

Personnel Training: The Streets Department is committed to providing continuing personnel training to ensure that staff is well equipped to perform their jobs effectively.

Equipment: The Streets Department and Office of Fleet Management should update and replace equipment in an economically responsible manner.

Calibration of Spreaders: Regardless of whether automatic or manual controls are used, they should be calibrated before the snow season starts. Poorly maintained and un-calibrated controls are responsible for excessive salt use.

Use of Automatic Controls: The use of automatic controls is recommended for spreaders to make sure the correct amount of salt is being spread at all times.

Adequate Covered Storage: Storage facilities are vital to any winter operation. They must have sufficient capacity and good cover preferably under roof. Stock piles that are stored unprotected should be covered to prevent loss of materials and to protect the environment.

Proper maintenance procedures should be followed around storage areas. Outside stockpiles should be properly shaped and should be on impermeable pads. There must also be proper drainage to keep the salt dry and protect the surrounding area. A method for disposal or retention of the leached salt should be in place. Any salt that is stored outside of a protected area, may be temporarily tarped. This shall occur not only while deliveries are being made, but also if it is stored in areas outside of the designated salt storage areas (i.e.: Parking lots)

The 7 salt storage locations are domes or sheds. This will protect the salt from the weather.

The Street's Department is committed to work with the MDO, Clean Water task force & GSI initiatives.

Safeguarding the Environment: Salt and de-icing materials should be used in a manner that safeguards the environment. If misused, de-icing can pollute. If improperly used or stored it can get into wells or ground water. Excessive salt use can be damaging to certain plants and trees when runoff leaves sodium chloride in the soil. This practice makes the City of Philadelphia in compliance with the MS-4 permit.

Application: The application of salt alone depends on the type of precipitation, temperature, and snowfall intensity. When there is adequate frozen precipitation on the pavement (non-plowable depth), and the temperature is above 25 degrees Fahrenheit, straight salt is optimized. Below 25 degrees Fahrenheit, a mixture of salt and abrasives will be used. The initial treatment of the roadway before plowing operations begin is to reduce ice or snow bonding to the pavement. Salt application rates range from 200 to 800 pounds per two-lane mile, depending on the storm conditions. Salt can be applied in a windrow or full width, which is sometimes necessary. Brine, formed by salt and water, will run to other parts of the road and be spread by traffic. Plowing operations should be timed to allow maximum melting. Salt reaction time is usually 20 to 30 minutes. (Reaction time increases as temperature decreases.)

Operation of Equipment:

Within the City of Philadelphia, there are many bridges with weight restrictions. The drivers are not to drive crew cabs or tri-axles loaded with salt over bridges with low weight restrictions. These bridges include but not limited to:

- FALLS BRIDGE
- MARTIN LUTHER KING DRIVE

In addition, the following bridges are closed or will be closed during the winter of 2021–22:

- MARGIE ST BRIDGE, WEST OF GLENWOOD
- CHESTNUT ST BRIDGE, CROSSING THE SCHUYLKILL RIVER
- MONTGOMERY AVE BETWEEN 29TH AND 31ST
- COULTER ST, EAST OF WISSAHICKON AVE
- ERIE AVE, WEST OF 3RD ST
- CRESHEIM VALLEY DR, GERMANTOWN AV TO EMLEN ST

In addition, drivers who are responsible for driving vehicles with "dumps" need to be aware of the height restrictions so to avoid low clearance bridges, wires and tree limbs.

Equipment Resources

Certain specialized equipment is required to support the snow and ice removal plan; specifically, snowplows, salt spreaders, and snow loaders. Much of this equipment is available within the Department. Additional equipment is obtained through contract and is provided by other operating departments.

- **Spreaders:** Spreaders including tailgate and V-box spreaders are used to apply salt or sand, which are the primary de-icing chemicals used for fighting winter storms. Application rates are set for various conditions following Salt Institute guidelines.
- **Plows:** Plows are mounted on Highway Division trucks and Sanitation Division compactors of the Streets Department, as well as equipment in supporting departments for residential plowing once accumulation predictions are for 4" or more snow (or as conditions permit)

- **Contract Equipment:** City equipment is supplemented using private sector contracted equipment for significant weather events. This equipment is used to assist clearing snow and ice from the primary/secondary network, as well as hauling snow from the CBD to a predetermined snow field.
- **Footbridge/Sidewalk Clearance Protocol:** Bridge Maintenance employees of the Streets Department are dispatched after each event ends to clear snow and de-ice from pre-determined footbridges and from the sidewalks of bridges. Other personnel may be asked to clear of sidewalks as conditions permit.
- **Bus Stops & Kiosks:** In 2017 and 2018, OTIS entered into a contract with Intersection to maintain the Bus Stops & Kiosks. As part of the maintenance agreement, they are to shovel and treat the sidewalks around the Bus Stops & Kiosks. This also includes the upgraded bus stops along Blvd Connect.
- **Communication:** All vehicles will be equipped with either radios or cell phones for communication during the events. GPS units are installed on most vehicles.
- **Winter Maintenance Facilities:** The six Highway Division maintenance facilities serve, along with Snow Headquarters, located in the Bridge Maintenance Yard, as the bases of all de-icing operations. During significant events, they are supplemented by Sanitation area and residential facilities. Salt is stored at the six Highway Division yards and Domino Lane.
- **Operation and Safety:** Equipment will be operated in a safe, effective manner by trained, properly licensed, operators. Winter is the season when equipment fails to start, personnel take shortcuts, traction is poor, visibility is poor, and other motorists may not see the operators of other vehicles. All drivers and crews should make required checks prior to and during the use of equipment to ensure safe operations are maintained. Pre and post trip inspections are mandatory.

Usage of Snow Melters

If the amount of snow in a single event or multiple events combine warrant a large-scale removal, the City may invest in the rental of snow melting equipment. The Streets Dept will work with Fleet Management and the Airport in arranging for this equipment to be delivered to a pre-determined location. The location will be approved by the Water Dept so that MS-4 permit will not be violated. In addition, the inlets will be cleared so not to produce flooding from a choked inlet.

Personnel Resources

All Streets Department personnel are subject to reporting to duty during snow and ice storms. Failure to notify the supervisor of the inability to work during a storm is grounds for disciplinary action. Please see the Essential Staff Policy in Section 1, page 6.

The Highway Division is responsible for overall coordination of snow and ice control preparations. Supervisors are responsible for providing the direction required for effective snow and ice control.

- **Clothing:** The lack of proper clothing is a direct cause of most frostbite occurrences, falls, and in many cases, is a factor in equipment accidents. All crews are urged to dress for the possibility that they may be stranded without heat for several hours. It is contemplated that within two hours assistance will be provided to any crew having trouble.
- **Communications:** On street communications are maintained by inspectors and spotters, who are in constant communication with the Highway and Sanitation Districts and Snow Headquarters.

Personnel Notification Lists (and equipment and other assignments) will be provided to required personnel. Phone trees are to be initiated as necessary at the beginning of a snow alert.

Reporting Procedures

Status Reports: District Highway Engineers will be responsible for maintaining contact with all supervisors and operators in their districts and reporting on the progress of the field personnel to the Snow Headquarters. District Highway Engineers or their designee will make their first report one hour after notification of the snow alert and will continue to make reports as needed throughout the duration of the snow removal operations.

Accident Reports: The following are the responsibilities of the driver if an accident should occur during snow removal operations:

- Check for injury to persons, never admit liability, call 911 immediately for medical emergencies and state that there is a medical emergency;
- Obtain identification of the other vehicle and driver;
- Notify Police immediately either through radio dispatcher or by telephone. Do not leave the scene of an accident except in cases where physical harm is threatened. If physical harm is threatened, relocate then notify the police;
- Notify supervisor by radio or telephone immediately. All accident should be reported to Snow Headquarters.
- Forms 77-501 (Employee Accident/Incident Information) and 77-502 (Citizen Accident Information) should be carried in every vehicle and thoroughly completed at the scene of any accident then forwarded to either a supervisor or directly onto Form 82-S-87 (Traffic Accident Report);

- Employee should not sign statements, suggest any settlement or volunteer information about the accident except as noted above. All other requests for statements or signatures should be forwarded to the City of Philadelphia's Risk Management Department;
- The Safety Office shall be notified. Also, Email sent to the Safety Office.

Non-Municipal Employees contracted for snow removal operations should follow all of the directives listed above except completion of Form 82-S-7 which should be completed by the City on duty supervisor. The contractor is responsible for their own equipment.

Training

Requirements and Timelines: Training will be held for all personnel involved in snow removal as needs determine. Snowplow training for Highway Division and Sanitation Division personnel is part of on-going CDL training. Residential training is an intensive effort that will take place in November of each year for required personnel.

Field Inspection Procedure

Spotters/inspectors- will report on actual roadway condition. Reports will include surface condition, material application, plow progress, and problem locations. Conditions which have prevented the removal of snow and ice, such as illegally parked cars, abandoned cars, vehicles stuck in snow, etc. will be noted for follow-up removal efforts. Spotters/inspectors will file field reports with their respective coordinators after each event.

- **Primary/Secondary:** Spotters/inspectors are to report on the condition of the network, with a focus on identifying areas that are particularly troublesome for immediate follow- up.
- **Residential:** Spotters/inspectors, as well as the residential navigators, are to report on residential conditions, noting streets that will require follow-up work due to problems encountered during the initial effort.
- **Frequency of Report & Detail:** Reports are to be made as needed to the district managers and forwarded to Snow Headquarters. Detail to include whether road is passable, snow covered, salted, plowed or bare pavement. Conditions are coded and noted on inspector's reports.
- **Expectations:** It is the City's expectation that the road network will be made passable, 12 hours after the last flake has fallen. Additionally, it is the City's goal to have all routes identified in this manual's response protocols clear within 24 hours of the fall of the last flake.

Policy on Snow Plowed into Streets and Bike Lanes

As noted in the Philadelphia Code, Chapter 9, Section 601 (4) (f), Chapter 9, Section 404 and Chapter 10, Section 720, snow is not permitted to be plowed or shoveled onto City streets. Enforcement and penalties are described in the respective chapters.

Police Department Responsibility: Police Department personnel are to stop private contractors from plowing snow off of parking lots and driveways into city streets.

Streets Department Responsibility: SWEEP Officers will be dispatched to warn residents about throwing snow in the streets, as well as enforcing the 6-hour timeline to have your sidewalk shoveled to a minimum of a 36-inch path.

Communication

Internal: Communication of on-street activity during winter weather events will occur as needed. Spotters and inspectors will report to their respective coordinators route conditions and any identified trouble spots on their assigned routes. Operators will report any mechanical problems to both their headquarters and the Office of Fleet Management. All district coordinators will forward the updates to Highway Division Snow Headquarters, where the information will be compiled.

External: Highway Division Snow Headquarters will disseminate all information concerning winter weather events to external sources. Route progress reports, street conditions, equipment and personnel deployed, and materials used will be included in these reports. For major events, this information will be forwarded to the Streets Commissioner. He will then forward this information. Snow Headquarters will communicate to the Emergency Operations Center.

SECTION 2

SNOW EMERGENCY ROUTES

VISIT PHILADELPHIA®

SNOW EMERGENCY ROUTES

2.1 Snow Declaration

The Mayor, through the Managing Director, has the authority to issue a Snow Emergency Declaration for significant events. This declaration implements parking regulations on dedicated snow emergency routes.

2.2 Citizen Responsibility

Citizens are required to remove their vehicles from snow emergency routes.

2.3 Inspector Responsibility

Inspectors are required to report locations where cars have not been moved and to ensure that designated routes are plowed completely curb to curb.

2.4 Police/Parking Authority Support and Timelines

Police Tow Squad and Parking Authority tow vehicles will remove vehicles from snow emergency routes. Towing will begin at the designated snow emergency starting time and continue as necessary until the declaration is lifted.

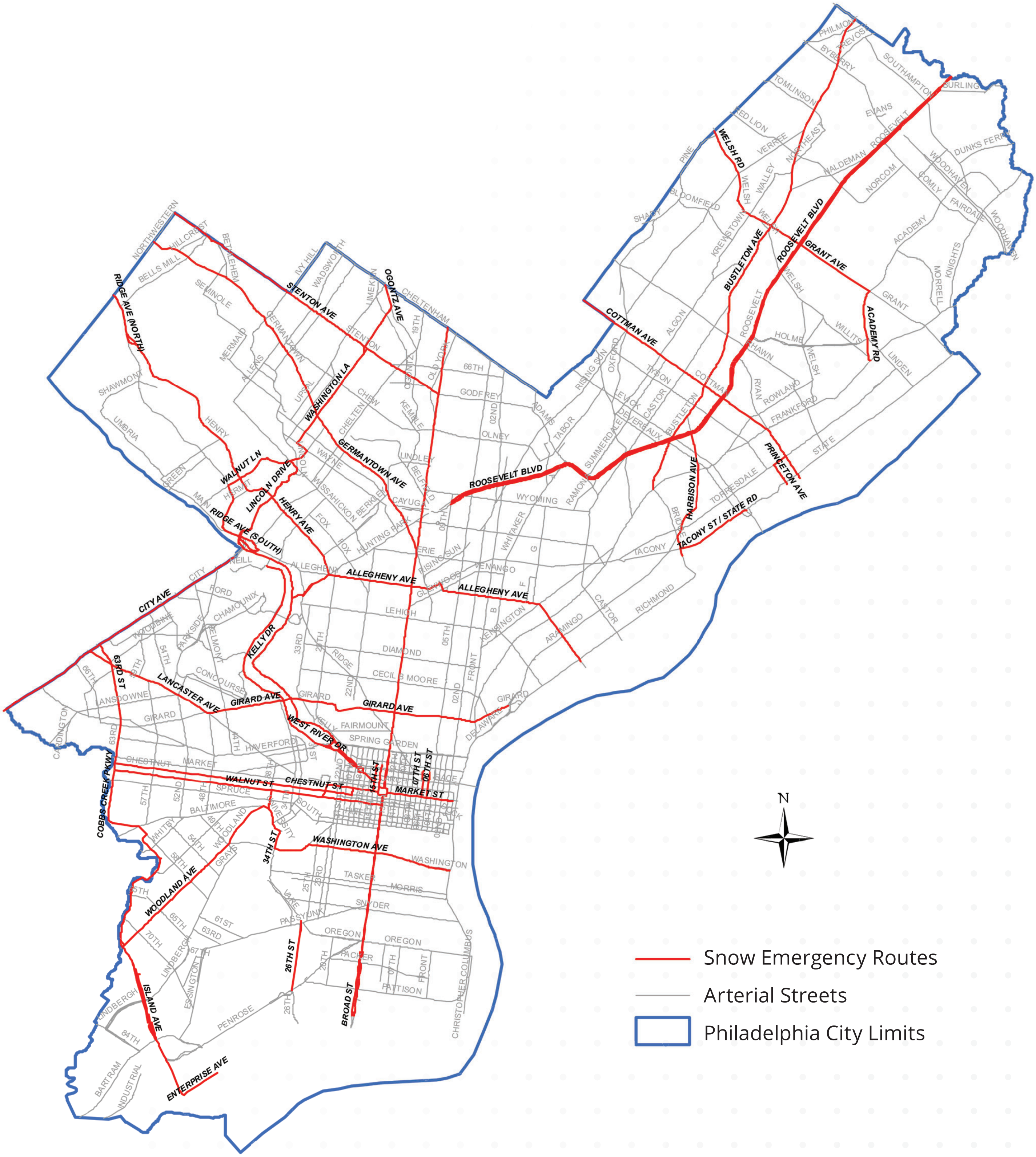
2.5 Record Keeping

Police Department and the Parking Authority personnel will keep records of the location of the relocated vehicles.

2.6 Snow Emergency Routes

Reference Map and Route Table

CITY OF PHIADEPHIA
SNOW EMERGENCY ROUTES



ON	FROM	FROM HUNDRED	TO	TO HUNDRED
06TH ST	I-676 OFF RAMP	300 N	MARKET ST	UNIT BLOCK
07TH ST	MARKET ST	UNIT BLOCK	I-676 ON RAMP	300 N
15TH ST	I-676 OFF RAMP	300 N	MARKET ST	UNIT BLOCK
16TH ST	MARKET ST	UNIT BLOCK	I-676 ON RAMP	300 N
20TH ST	CHESTNUT ST	UNIT BLOCK	MARKET ST	UNIT BLOCK
26TH ST	I-676 ON/OFF RAMPS	2500 S	PENROSE AVE	3800 S
34TH ST	UNIVERSITY AVE	1100 S	GRAYS FERRY AVE	1100 S
38TH ST	WALNUT ST	200 S	UNIVERSITY AVE	200 S
63RD ST	CITY AVE	2100 N	WALNUT ST	100 S
ACADEMY RD	FRANKFORD AVE	9100	GRANT AVE	9400
ALLEGHENY AVE	HUNTING PARK AVE	2900 W	I-95 ON/OFF RAMPS	2800 E
BEN FRANKLIN PKWY	ART MUSEUM CIRCLE	2300	16TH ST	1600
BRIDGE ST	HARBISON AVE	2100	I-95 ON RAMP	2300
BROAD ST	CHELTENHAM AVE	7200 N	I-95 ON/OFF RAMPS	3800 S
BUSTLETON AVE	FRANKFORD AVE	5200	ROOSEVELT BLVD	6300
BUSTLETON AVE	ROOSEVELT BLVD	UNIT BLOCK	COUNTY LINE	UNIT BLOCK
CHESTNUT ST	COBBS CREEK PKWY	6200	20TH ST	2000
CITY AVE	CITY BOUNDARY	7700	I-76 ON RAMPS	3800
COBBS CREEK PKWY	WALNUT ST	200	WOODLAND AVE	2100
COTTMAN AVE	I-95 OFF RAMP	5000	FILLMORE ST	UNIT BLOCK
ENTERPRISE AVE	ISLAND AVE	8400	I-95 ON/OFF RAMPS	8200
GIRARD AVE	LANCASTER AVE	4700W	I-95 ON/OFF RAMPS	800 E
GERMANTOWN AVE	BROAD ST	UNIT BLOCK	NORTHWESTERN	UNIT BLOCK
GRANT AVE	WELSH RD	1300 E	ACADEMY RD	3000 E
GRAYS FERRY AVE	34TH ST	3300	WASHINGTON AVE	2600
HARBISON AVE	BRIDGE ST	5200	ROOSEVELT BLVD	6500
HENRY AVE	CATHEDRAL RD	8500	HUNTING PARK AVE	3000
HUNTING PARK AVE	HENRY AVE	3000 W	KELLY DR	3300
ISLAND AVE	WOODLAND AVE	2200	ENTERPRISE AVE	4000
KELLY DR	LINCOLN DR	4600	ART MUSEUM CIRCLE	2300
LANCASTER AVE	CITY AVE	6300	GIRARD AVE	4800
LINCOLN DRIVE	RIDGE AVE	3600	WISSAHICKON AVE	5900
MARKET ST	SCHUYLKILL AVE	2300	I-95 ON RAMP	100
OGONTZ AVE	WASHINGTON LN	7400	CHELTENHAM AVE	8000
POPLAR ST	WEST COLLEGE AVE	2500	GIRARD AVE	2400
PRINCETON AVE	TORRESDALE AVE	4700	I-95 ON/OFF RAMPS	5000
RIDGE AVE (NORTH)	NORTHWESTERN AVE	9100	CATHEDRAL RD	8600

ON	FROM	FROM HUNDRED	TO	TO HUNDRED
RIDGE AVE (SOUTH)	WALNUT LN	5600	CITY AVE ON RAMP	4500
ROOSEVELT BLVD	09TH ST	800 W	CITY BOUNDARY	16000 E
SCHUYLKILL AVE	MARKET ST	UNIT BLOCK	WALNUT ST	100
SEDGLEY AVE	ALLEGHENY AVE	1000 W	ALLEGHENY AVE	900 W
STENTON AVE	NORTHWESTERN AVE	9600	BROAD ST	1400
TACONY ST/STATE RD	BRIDGE ST	5200	TACONY-PALMYRA BRIDGE	6300
TORRESDALE AVE	COTTMAN AVE	7200	PRINCETON AVE	7100
UNIVERSITY AVE	38TH/39TH ST	300/400	34TH ST	600
WALNUT LN	WAYNE AVE	400 W	RIDGE AVE	500
WALNUT ST	BROAD ST	1400	COBBS CREEK PKWY	6200
WASHINGTON AVE	GRAYS FERRY AVE	2600	CHRISTOPHER COLUMBUS BLVD	UNIT BLOCK
WASHINGTON LN	WAYNE AVE	200 W	OGONTZ AVE	2000 E
WAYNE AVE	WALNUT LN	6100	WASHINGTON LN	6200
WELSH RD	CITY BOUNDARY	UNIT BLOCK	GRANT AVE	1100
WEST COLLEGE AVE	POPLAR ST	900	GIRARD AVE	900
WEST RIVER DRIVE	ART MUSEUM CIRCLE	2300	FALLS BRIDGE	2700
WISSAHICKON AVE	LINCOLN DR	6000	WALNUT LN	6000
WOODLAND AVE	COBBS CREEK PKWY	7200	UNIVERSITY AVE	3800


57 RISING SUN-OLNEY
7461
5619
SEPTA

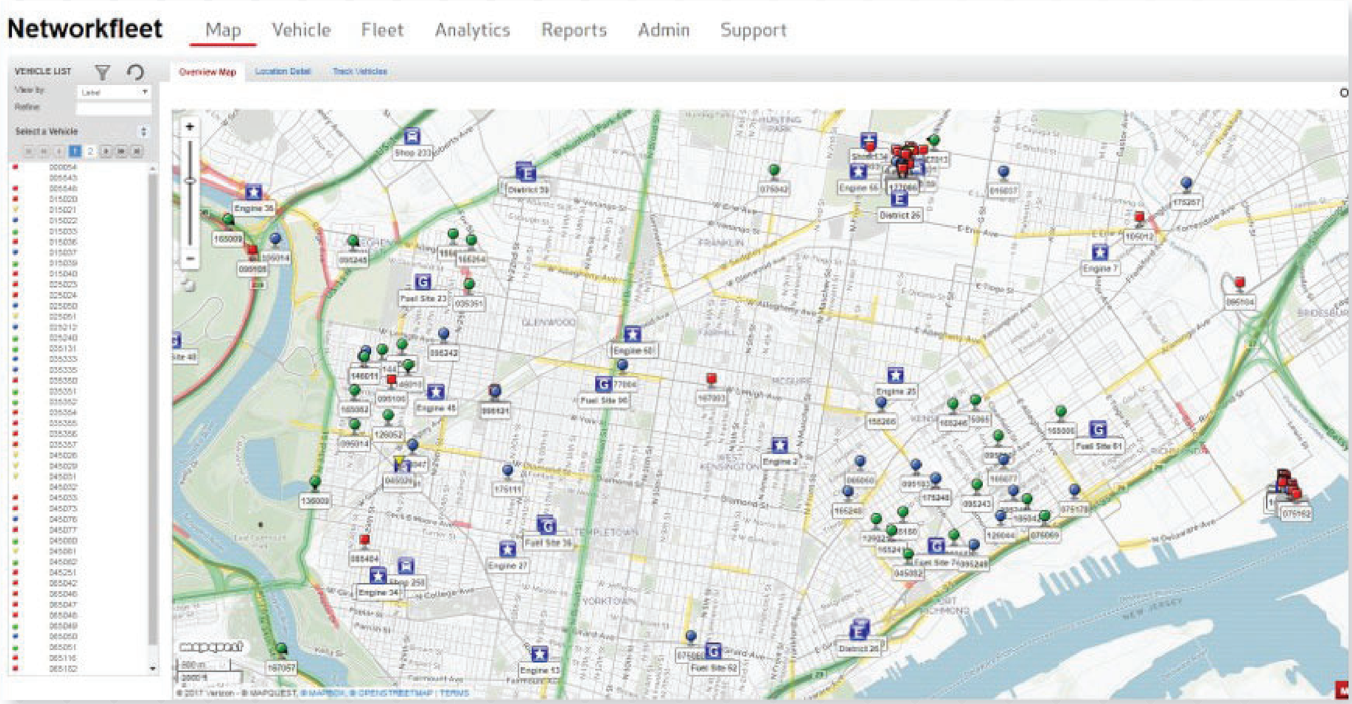
SECTION 3
TECHNOLOGY

NEW TECHNOLOGY TOOLS

GPS Tracking

In 2018, the Streets Department began using GPS in all its snow vehicles (city and contractors). The goal was to integrate the software with operations as a method to track completion of snow routes. Using automated dashboards and real-time reporting, the Department can track the number of times a route has been cleared and record historical information that allow the snow operations teams to review past performance on snow removal and if need be adjust their responses based on the severity of each storm.

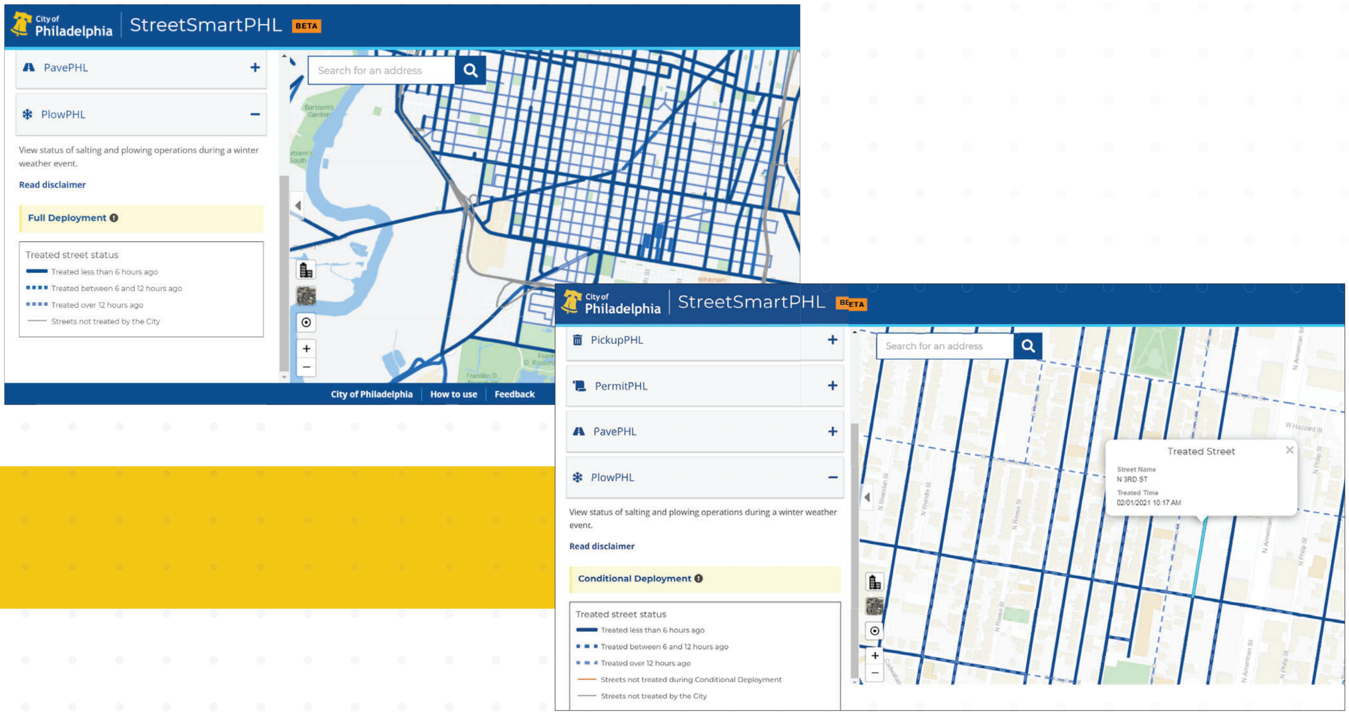
To complement the tracking, Streets Department Field Supervisors and Navigators input three-hour route data updates on run numbers, sequences completed, salt fills and missed location sequences. The data is used to generate a Route Status Map to assess progress. The routes are then inspected and determined if passable.



Cameras

The Streets Department also began using mobile visual monitoring to view snow operations in real-time. Video footage from cameras installed at the Department's Transportation Operations Center, Police Department and PennDOT are used to track and document progress of route completion. The cameras allow "live" visual viewing to determine which streets have already been plowed and which streets may still require snow removal. Visual monitoring provides real-time data of the location of vehicles as they navigate through a storm, and it helps to improve route completion by providing drivers advance warning of any traffic delays and any potential safety hazards on the road.

Each of the tools allow the Snow Operations Teams to provide more effective and efficient service to residents. They also provide valuable insight into how the snow fleets are being used and improves communication between operation teams while out in the field.



PlowPHL

In 2019, the Streets Department unveiled StreetSmartPHL which answers the question, “Are you Street Smart?” by connecting residents and stakeholders to near real-time information related to permits, paving, snow plowing, and trash and recycling collections. The fourth component on the StreetSmartPHL platform is PlowPHL. PlowPHL is a public facing web map designed to provide residents with real-time status of their street during a snowstorm by:

- Tracks vehicles assigned to a route for plowing and salting during a highways, conditional or full deployment
- Map highlights which streets can expect to receive treatment
- Color-coded dashed and continuous lines display how long it has been since the last treatment: less than 6 hours, between 6 and 12 hours, more than 12 hours

SnowCat

As part of its snow operations on residential streets the Streets Department uses skid steers or “SnowCats” as part of its snow operations to service small/narrow streets. The “SnowCats” are also equipped with GPS to provide status updates of treated routes every three hours.

311 Complaints

311 complaints tracked and mapped to determine effectiveness during storms, equipment need and route planning.

SECTION 4
SNOW/PLOW ROUTES

Highway Snow Operations (Map Location)

Go to the Streets Department's Intranet site
http://streetsweb.city.phila.local/

Select "Streets GIS"
http://streetsweb.city.phila.local/streets_gis.html

Select "Divisional Maps"
ftp://streetsweb.city.phila.local/Maps/

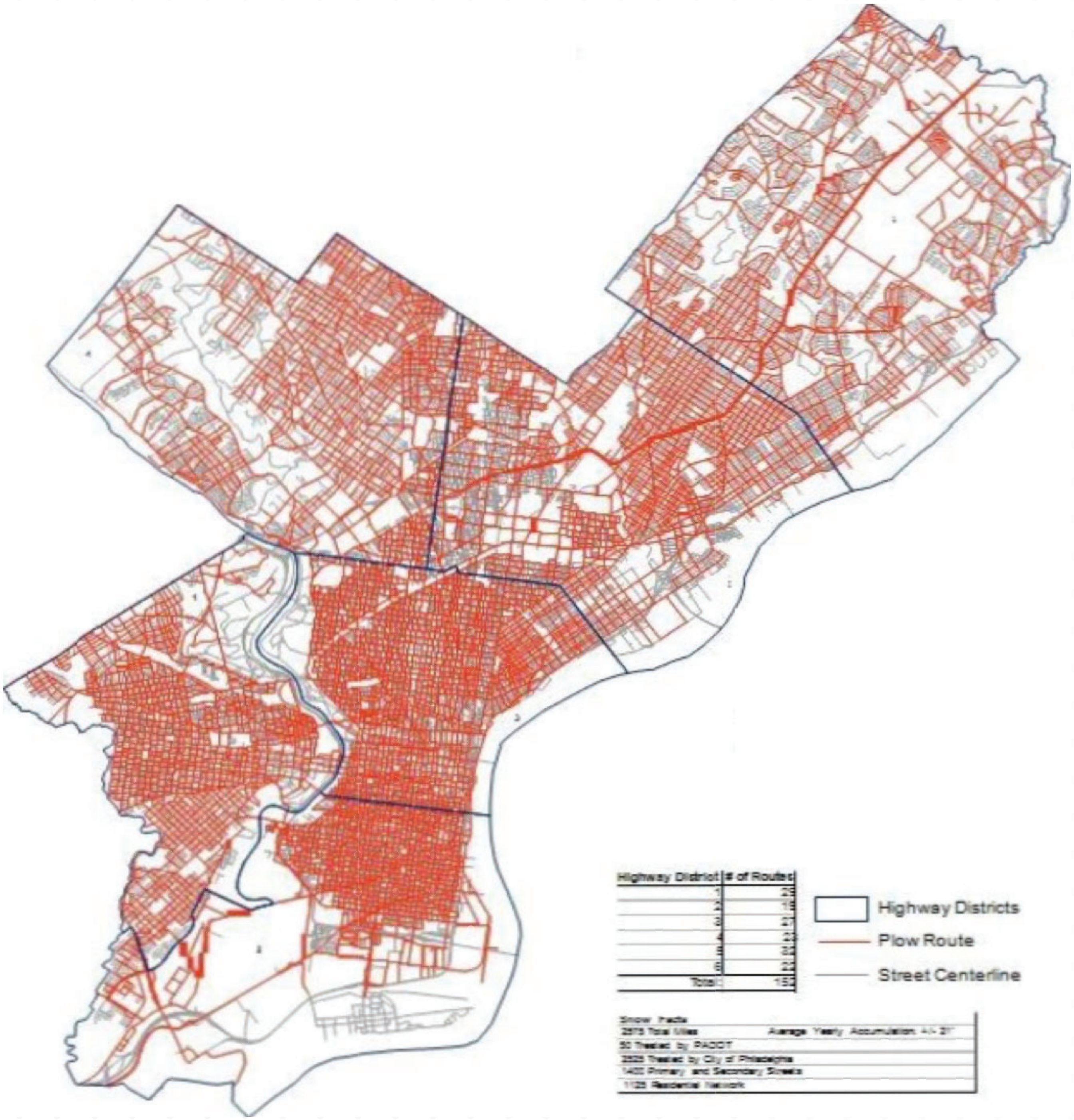
Select "Highways"
ftp://streetsweb.city.phila.local/Maps/Highways/

Select "Snow"
ftp://streetsweb.city.phila.local/Maps/Highways/Snow/

Select "Snow Maps"
ftp://streetsweb.city.phila.local/Maps/Highways/Snow/Snow%20Maps/

Select:
"Directory Overviews"
"Directory Plow Trip Packs"

PRIMARY AND SECONDARY SNOW PLOW ROUTES



Highway District	# of Routes
1	26
2	18
3	27
4	23
5	33
6	22
Total	152

Snow Facts	
2575 Total Miles	Average Yearly Accumulation +/- 21"
50 Treated by PADOT	
2525 Treated by City of Philadelphia	
1400 Primary and Secondary Streets	
1125 Residential Network	

SECTION 5
KEY INFORMATION

VISIT PHILADELPHIA®

SECTION 6
RESIDENTIAL STREET SYSTEM

Deployment Maps

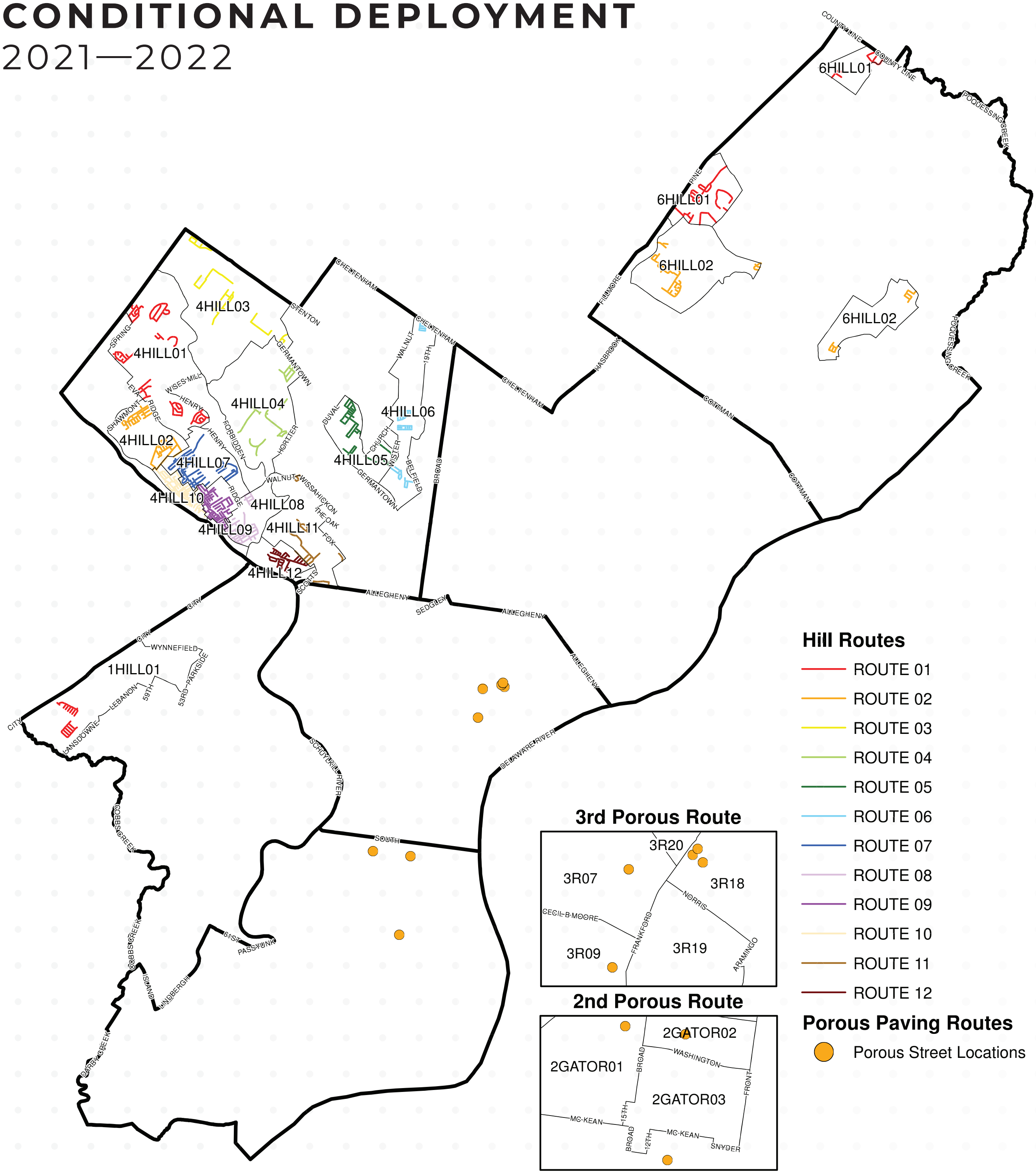
- Conditional Hill – Deployment Route Summary
- Conditional Hill – Deployment by Department
- Full – Deployment Route Summary
- Full – Deployment by Department

Office Location & Phone List

Support Departments – Manager Contacts

RESIDENTIAL PLAN CONDITIONAL DEPLOYMENT

2021—2022

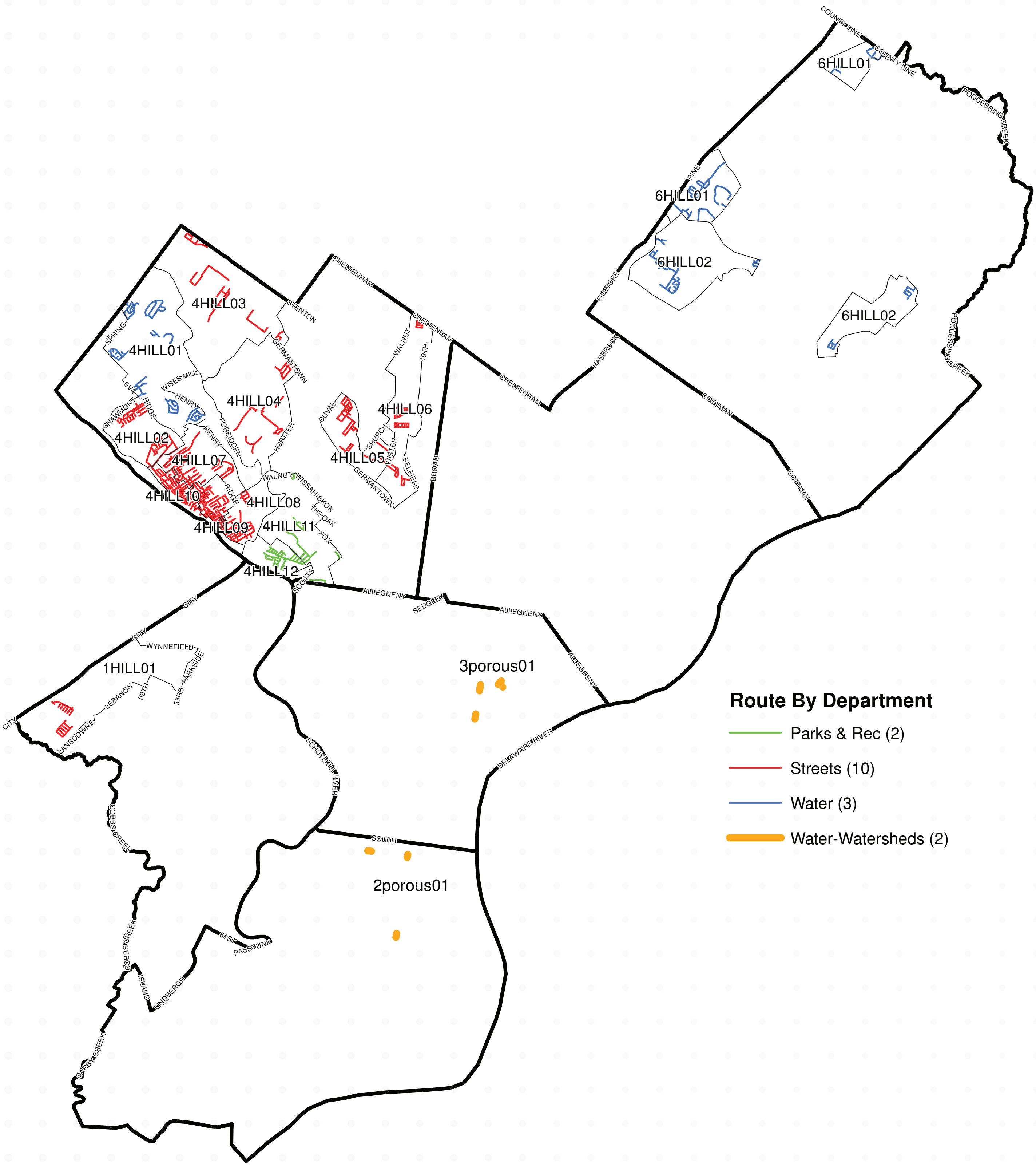


Operaton	District	Deployment	Miles Serviced	
Hill	1st	1 Route	2.42	72.06
	4th	12 Routes	59.53	
	6th	2 Routes	10.11	
Porous Streets	2nd	1 Route	0.18	0.45
	3rd	1 Route	0.27	

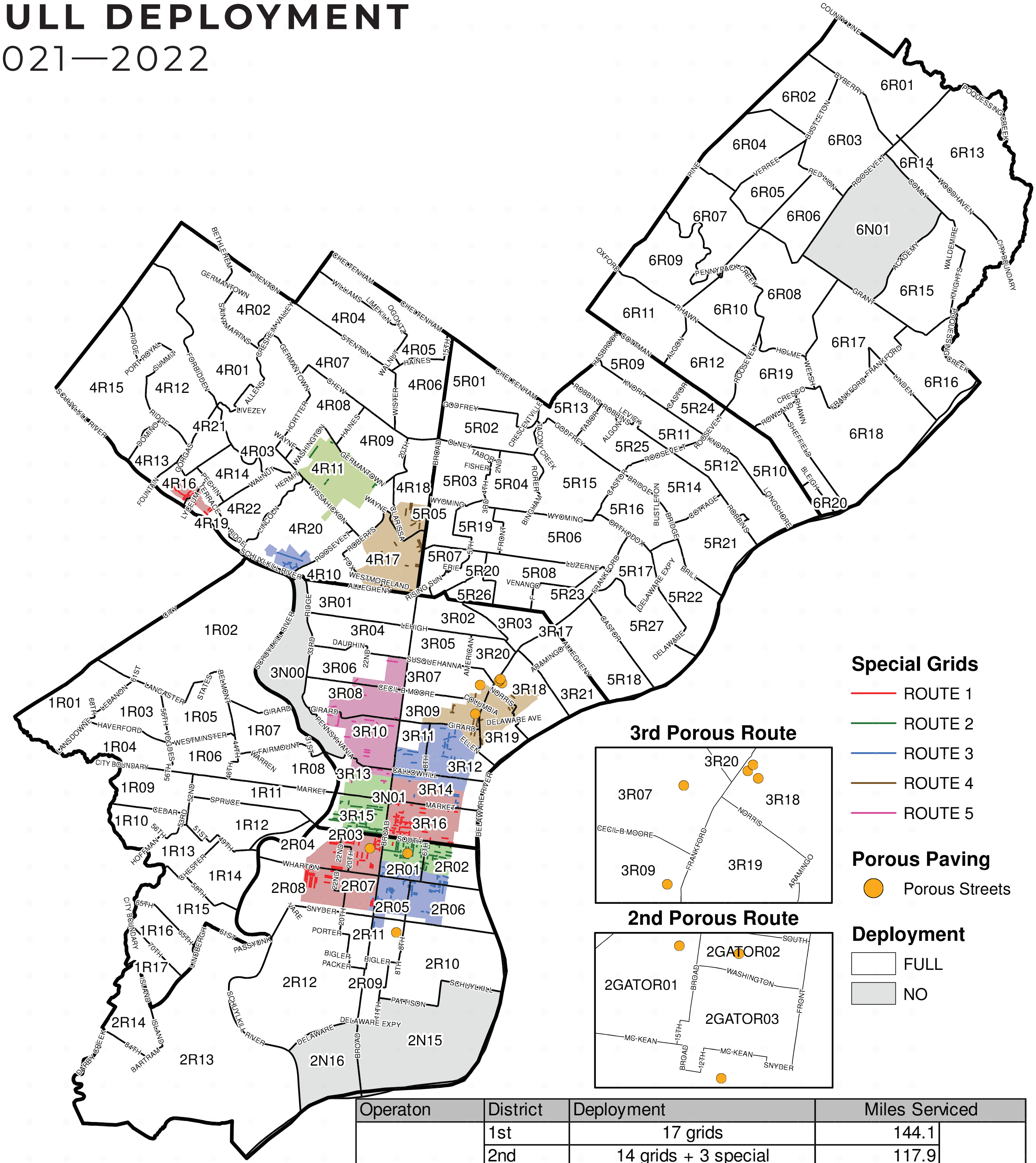
Map Created: 11/19/2021 - MxS

CONDITIONAL DEPLOYMENT BY DEPARTMENT

2021—2022



RESIDENTIAL PLAN
FULL DEPLOYMENT
2021—2022

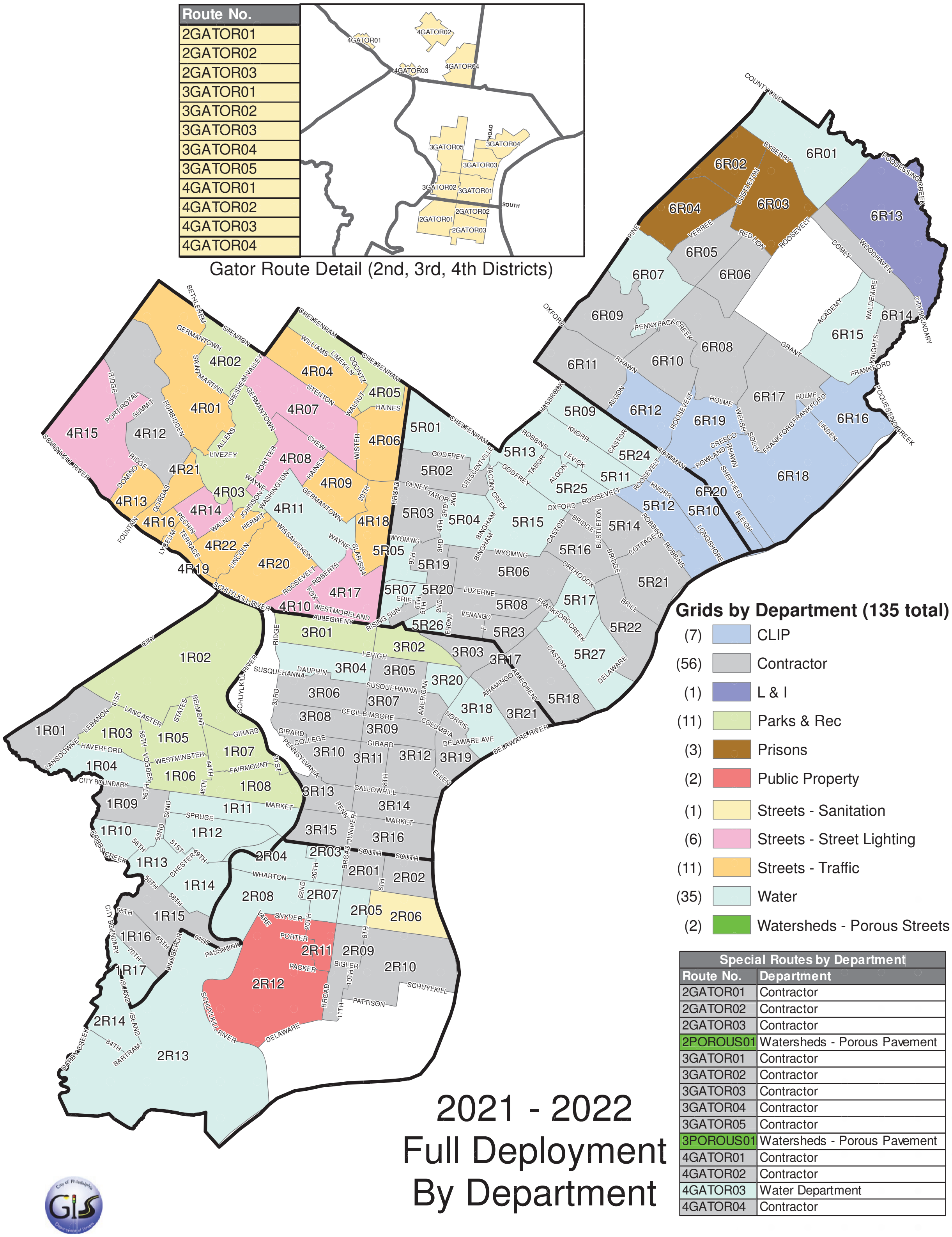


Operaton	District	Deployment	Miles Serviced	
Full	1st	17 grids	144.1	1132.8
	2nd	14 grids + 3 special	117.9	
	3rd	21 grids + 5 special	197.2	
	4th	22 grids + 4 special	206.3	
	5th	27 grids	253.8	
	6th	20 grids	213.5	
	Summary	133 Routes		
Porous Streets	2nd	1 Route	0.18	0.45
	3rd	1 Route	0.27	
	Summary	2 Routes		

Map Created: 11/22/2021 - MxS

FULL DEPLOYMENT BY DEPARTMENT

2021—2022



Grids by Department (135 total)

(7)	▨	CLIP
(56)	▨	Contractor
(1)	▨	L & I
(11)	▨	Parks & Rec
(3)	▨	Prisons
(2)	▨	Public Property
(1)	▨	Streets - Sanitation
(6)	▨	Streets - Street Lighting
(11)	▨	Streets - Traffic
(35)	▨	Water
(2)	🟩	Watersheds - Porous Streets

Special Routes by Department

Route No.	Department
2GATOR01	Contractor
2GATOR02	Contractor
2GATOR03	Contractor
2POROUS01	Watersheds - Porous Pavement
3GATOR01	Contractor
3GATOR02	Contractor
3GATOR03	Contractor
3GATOR04	Contractor
3GATOR05	Contractor
3POROUS01	Watersheds - Porous Pavement
4GATOR01	Contractor
4GATOR02	Contractor
4GATOR03	Water Department
4GATOR04	Contractor

2021 - 2022
Full Deployment
By Department

Map Created: 11/22/2021 - MxS

SECTION 7

SNOW LIFTING ACCOUNTING PROCEDURES

SNOW LIFTING RECORDS

In 2021 the Streets Department successfully completed snow lifting operations with city forces. With the success of the existing lifting operations, Streets leadership has decided to continue this practice in the same manner until circumstances are deemed necessary to change. The following steps will be put in place if lifting operations are implemented.

1. Snow Equipment Rental Form (77-298)

a. The District Engineer will be responsible for recording the following information for each piece of equipment assigned to their location.
   1. Highway District
   2 Contractor
   3. Who notified you
   4. Day of the week
   5. Time called
   6. Type of equipment ordered
   7. Operation to be performed by the equipment
   8. Where the equipment is to be assigned

b. The contractor will assign the equipment and the operator as directed by the Streets Department, and record the license number of the equipment, and the name and address of the operator on the 77-298 form. The form will be given to the contractor operator to be used as his assignment and time record.

c. The District Engineer will give the 77-298 form to his inspector assigned to the operation. The inspector will be told to report at the designated time and location for the start of operations. The inspector will sign-in the equipment assigned to him on the 77-298 form, recording the following information:
   1. Equipment license number
   2. Contractor's employee name
   3. Contractor's employee address
   4. Starting time
   5. Phone number

The contractor's operator will indicate on the 77-298 form the Time Started.

d. The inspector will call his District Engineer at hourly intervals and inform him of the progress being made. When the assignment is completed the inspector and the contractor's operator will each note **Time Stopped** on their form.

e. The City of Philadelphia will pay only for the operating time for the contractor's equipment. Stand-by time or lost time will be entered under "Penalty Time" and an explanation of the cause under “Penalty Remarks”. When additional assignments are given to the inspector, he will complete “Location From To” on form 77-298. He will give this information to the contractor’s operator, who will note this added assignment on his copy of form 77-298.

f. Whenever the contractor replaces a piece of equipment, or replaces an operator, the contractor will initiate a new form 77-298. The inspector at the worksite will then prepare a new form 77-298 to cover the replacement. Procedures will then proceed as previously outlined.

g. When a form 77-298 is completed, the city inspector will sign his copy and the contractor’s operator copy. The inspector’s copy of the form will be returned at the end of his tour of duty to his District Engineer.

h. When a form 77-298 is completed, the contractor’s operator will sign his copy and the city inspector’s copy. The operator’s copy of the form will be returned to his employer.

i. The reverse side of form 77-298 can be used for remarks or explanations of unusual situations. On forms 77-298 containing the time record for dump trucks the city inspector will note on the reverse side the following information:
   1. The time the dump truck leaves the work location to unload
   2. The time the dump truck returns to the work location from unloading.

j. When the District Engineer receives the city inspector’s forms, his personnel will enter on each line the “Total Working Hours”. This is the number of hours at the site (start-finish) less the “penalty time” lost. Appropriate travel time will be added for each piece of equipment.

k. The District Engineer will check the city inspector’s form and will then forward them to the Snow Contractor Liaison of Department of Streets. The contractor will use his copies of the form 77-298 to prepare his invoice, in triplicate, will be drawn on the Accounting Division, Office of the Director of Finance, Room 1330 Municipal Services Building, and sent directly to Administrative Office, Highway Division, Department of Streets for pre-auditing. The invoice will contain the following information and will be submitted for each 24-hour period:
   1. Contractor’s name and address
   2. Snow Event
   3. Number of pieces, kind and class of equipment in operation
   4. Location of operations, i.e.: streets on which equipment operated
   5. Dates and hours of work at specified rate per hour for
      a. Equipment with operator
         - Regular Time
         - Premium Time
      b. Foreman
         - Regular Time
         - Premium Time
      c. Laborers
         - Regular Time
         - Premium Time
      d. Travel time for equipment only (rate times the standard level travel time allowed)

l. The Snow Contractor Liaison, Highway Division, Department of Streets will summarize the form 77-298 and prepare a receiving report (form 71-20) in the usual manner for each 24-hour period. The receiving report and supporting form 77-298 will be forwarded to the Accounting Division.

m. Time calculations for equipment and personnel will be based on full 15- minute periods. For example, a piece of equipment operating for 4 hours and 27 minutes will be paid for 4½ hours.

2. Contractor Labor-Snow Emergency Form (77-298)

a. Procedures applicable to “Snow Equipment Rental”, form 77-298 are also applicable to “Contract Labor – Snow Emergency”, form 77-298 except as indicated below.

b. The contractor’s foreman will maintain the contractor’s time record for the foreman and the labor crew.

3. The Chief Highway Engineer will terminate Snow lifting operations.

4. This procedure will also be included with the rental of loaders for the salt domes if needed.

SECTION 8

SNOW REMOVAL COST ACCOUNTING PROCEDURE

SNOW AND SALTING COST ACCOUNTING PROCEDURES

A. Purpose

The Purpose of this procedure is to (1) provide a means for determining the cost of plowing and salting city streets and legislative routes within the city street system, and (2) provide a method for allocating these costs to both legislative routes and city streets. Most of this data is kept in the SSIS. Hard copies are not necessary to be kept.

B. Scope

The use of the forms described in this procedure shall apply to ALL agencies involved during snow and salting operations. Since the methods of attaching snow and ice storms vary, the accounting for costs will be compiled separately. The Department of Parks & Recreation shall report to the Department of Streets the cost of plowing and salting the Kelly Drive (Legislative Route #67292).

C. Definitions

1. Light snow requiring only de-icing techniques shall be considered **Salting Operations**
2. Snow operations shall include storms of such magnitude that plowing and de- icing operations are necessary.
3. The Snow Season will extend from October to April of the following year.

D. Cost Accounting Policies

1. The cost of snow emergency headquarters and agencies outside the Department of Streets (other than Department of Parks & Recreation) shall be allocated to snow. Snow headquarters is normally opened when storm conditions require plowing operations. Even though there is preliminary salting, the entire cost will be allocated to Snow Operations. However, if only salting is required, the cost of snow headquarters and that of other agencies will be allocated to Salting Operations.
2. The ratio of State and City costs shall be calculated by comparing the sum of the City and State plow miles in Snow Operations. For salting, the ratio shall be computed by applying the percentage of City and State salt route miles to the tons of salt required for each route. Plow miles and salt route miles shall be the product of the linear mileage and the number of cuts or passes made by the vehicle.
3. For Streets Department, the labor cost will be the actual hourly labor cost for each employee. The vehicle cost will be the average hourly operational cost of a vehicle by type as determined by PennDOT/FEMA. Fleet Managements will supply these costs.

4. Standby time prior to plowing or salting will be charged at the district City - State ratio of the actual storm.
    a. In the event that standby personnel are not used, the cost will be shared in the ratio of existing City-State miles or roadway.
    b. For snow, this ratio shall be City 58.6%, State 41.4%; for salting operations City 66.5%, State 33.5%. These ratios are subject to change when snow and salt routes are revised.

5. The cost of snow removal on legislative routes is not chargeable to PennDOT since $2.5 million is paid to the City on an annual basis for this service.

E. Forms

The following forms will be used in conjunction with this procedure. Instructions for the use of these forms are described in the body of the procedures.

77-307 Rev. 4/71, 77-307A – Report on Snow Plowing/Salting
77-360 = Salting Report

Time and Costing Snow and Salting Operations, formerly recorded on forms 77-308 Rev. 8/98 and 77-308A, are now recorded in the Snowstorm Information System (SSIS), a MS Access database designed by the IT unit of the Streets Department.

F. Snow Operations

All personnel reporting for snow duty will sign in on the approved time sheet for their department or agency. Prior to leaving the yard the inspector will receive Form # 77-307 Rev. 4/71 which will delineate the route.

Each District prior to the snow season will type on Form 77-307 Rev. 4/71 the following information:

1. Legislative route number if the street segment is part of the State highway system.
2. The street that is to be plowed or salted.
3. The “from – to” limits of plowing or salting.
4. The mileage of the street segment.
5. The route number or letter.

The inspector (plowing) or the truck driver (salting) will complete the following items:

6. The date and day of the week.
7. The operation, plowing or salting, day or night
8. Driver’s name
9. Truck number
10. The number of cuts or passes required
11. Time reported for duty
12. Time started plowing/salting
13. Time finished plowing/salting

If the inspector/driver works on more than one route, items (12) and (13) are to be completed for the time spent on the route – **NOT THE TOTAL TIME**. Item (11) is time reported for duty and will not change even though the route may change.

14. Any delays in route
15. Cause of delay
16. The inspector/driver will sign his name to the report

The inspector supervisor in district will calculate item (17) Total Miles plowed for each segment, total all miles plowed and determine the City and State shares, item (18).

19. Will be used during salting operations

The Highway district office will then determine the ratio of City and State plow miles for each route, and by summing the routes, the district ratio.

The time of ALL personnel combating a storm will be accounted for in the SSIS (previously tracked on form 77-308 rev. 8/72).

The District or Area Office completes this information as follows:

1. Organization – 5th Highway, Area 2, Water Department, etc.
2. Condition
3. Date personnel called in and released
4. Time personnel called in and released
5. Employee name
6. Employee number
7. Function – the particular function the person was performing (e.g.: plow driver, inspector plow, auto repair, install chains, etc.)
8. Vehicle number – if applicable
9. Hours – the district office will enter the actual number of hours worked in the appropriate column (regular, time and a half, double time)
10. Vehicle cost – the hourly operating cost multiplied by the operating hours. The Accounting Section will supply these costs.

The Sanitation Area office will complete items #1 through #10.

During severe storms when contractor personnel are called to augment City personnel, it is the responsibility of the Highway District Engineers to ensure that the contractors submit the following necessary information required when invoicing the City:

1. Number of pieces, kind and class of equipment in operation
2. Number of foremen, operators, laborers, regular hours worked, premium hours worked, hourly rates
3. Location of operations (e.g.: streets on which equipment operated)
4. Dates and hours of work at specified hourly rates

At the time invoices are received by Highway District Offices it will be the responsibility of each Highway District Engineer to call and discuss with the Snow Contractor Liaison cost applicable to the State as per existing agreements between the Commonwealth of Pennsylvania and the City of Philadelphia with respect to snow plowing and salting operations.

G. Salting Operations

Since the rate of salt expended on a street varies by such factors as the type of spreader and size and speed of vehicle, the use of miles salted by itself is not an indication of the labor required to complete a route. Therefore, for Salting Operations, the City - State ratio will be used and defined in Section “D”.

Personnel called-in to combat an ice storm will sign in on the authorized sign-in sheet for the Highway yard. The streets repair supervisor will issue the salt truck operator Form # 77-307 rev. 4/71, which delineates the route. The equipment operator will complete the form as described under Snow Operations and will note in column (10) the number of passes necessary for each street segment. Upon completion of the route the operator will sign the form and return it to the streets repair supervisor.

The streets repair supervisor will perform the following tasks:

1. Complete SSIS information as described under Snow Plowing for each person in his district.

H. Responsibilities

1. Accounting Section Streets Department
    a. The Accounting Section will determine the average fringe rates to be applied to labor, retrieve PennDOT vehicle rates, and distribute the information to all divisions of the Streets Department.

   b. SSIS will accumulate the cost of each snow and ice storm. The Accounting Section will prepare any cost reports required by PennDOT on a schedule determined by PennDOT.

2. Sanitation Division Streets Department
    a. Each Sanitation District will be responsible for accurately entering all necessary data in SSIS and marking the storm data complete. All data must be in the system within 24 hours of the close of each storm.
    b. Time sheets and supporting data will be kept in the Area office. These will be filed chronologically by date of storm for every snow season. Records will be kept for four (4) years after the snow season.
    c. Sanitation Headquarters will summarize the payroll cost of each storm and submit these costs to the Budget Officer within two (2) days after the storm.

3. Highway District Offices
    a. For Snow Operations the Highway district office will calculate the plow miles for each route on Form # 77-307 rev. 4/71 and determine the City / State ratio for each route and the district as a whole.
    b. For Snow Operations the District Office and Yards will be responsible for accurately entering all necessary data in SSIS and marking the storm data complete. All data must be in the system within 24 hours of the close of each storm.
    c. For Salting Operations, the street repair supervisor will forward form 77-360 and form 77-307 to the office of the Assistant Chief Engineer Maintenance.
    d. After Salting Operations, the office of the Assistant Chief Engineer will be responsible for making sure all data is entered into SSIS and marking the storm data complete. All data must be in the system within 24 hours of the close of each storm and inform the Chief Highway Engineer and the Accounting Officer of the information available.
    e. The Assistant Chief Engineer will submit the report out of the SSIS system

4. Other Agencies
    a. When other agencies are involved in snow or salting operations, they will submit the required SSIS information to the Chief Highway Engineer immediately after the storm. The labor cost for these agencies will be the actual wage rates for the employees assigned to snow duty. SSIS will add fringe benefits and overhead.

CONCLUSION

The system described herein provides a standard system for allocating the cost of snow and salting operations. Deviations from the system will be authorized only when the Chief Highway Engineer, the Accounting Officer and Budget Officer agree to the change.

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