

2025 Annual Status Report

Long Term 2 Enhanced Surface Water Treatment Rule Watershed Control Program Plan

Baxter and Queen Lane Drinking Water Treatment Plants
Delaware and Schuylkill Rivers, Philadelphia, PA

Prepared by the Philadelphia Water Department

December 2025

This report was produced for the Pennsylvania Department of Environmental Protection in accordance with the Environmental Protection Agency National Primary Drinking Water Regulations: Long Term 2 Enhanced Surface Water Treatment Rule.

DISCLAIMER:

This annual status report is provided as of December 2025. It is being provided to the Pennsylvania Department of Environmental Protection (PADEP) to document PWD's completion of certain Watershed Control Plan (WCP) initiatives during 2025 in connection with the requirements of the Long Term 2 Enhanced Surface Water Treatment Rule. The WCP presents a comprehensive source water protection approach to reducing levels of infectious Cryptosporidium in finished drinking water. By presenting this information, PWD has not undertaken any obligation to update the report beyond its date. As such, the information is subject to change without notice. There is no assurance that the programs or initiatives set forth herein or referenced in this report will be realized or come to fruition, and subsequent or actual plans or proposals may differ, perhaps materially, from the descriptions contained herein. The data and information provided are not warranted as to completeness or accuracy and are subject to change without notice. This report is provided for PADEP's information and convenience only.

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List of Acronyms

| | |
|---------|---|
| AEU | Animal Equivalent Unit |
| APHIS | Animal and Plant Health Inspection Service |
| BCCD | Berks County Conservation District |
| BCWSA | Berks County Water and Sewer Association |
| BMP | Best Management Practice |
| CAC | Citizens Advisory Council |
| CAFO | Concentrated Animal Feeding Operation |
| CDC | Community Design Collaborative |
| CNMP | Comprehensive Nutrient Management Plan |
| CSO | Combined Sewer Overflow |
| CREP | Conservation Reserve Enhancement Program |
| DRBC | Delaware River Basin Commission |
| DRIP | Delaware River Improvement Partnership |
| EPA | United States Environmental Protection Agency |
| EWS | Early Warning System (Delaware Valley) |
| FWWIC | Fairmount Water Works Interpretive Center |
| GCCW | <i>Green City, Clean Waters</i> |
| LTCPU | Long Term Control Plan Update |
| LT2 | Long Term 2 Enhanced Surface Water Treatment Rule |
| MS4 | Municipal Separate Storm Sewer System |
| NLCD | National Land Cover Database |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resource Conservation Service |
| PA DEP | Pennsylvania Department of Environmental Protection |
| PDE | Partnership for the Delaware Estuary |
| PEC | Pennsylvania Environmental Council |
| PHS | Pennsylvania Horticultural Society |
| PWD | Philadelphia Water Department |
| SAN | Schuylkill Action Network |
| SAS | Schuylkill Action Students |
| SRDC | Schuylkill River Development Corporation |
| SRG NHA | Schuylkill River Greenways National Heritage Area |
| SRRF | Schuylkill River Restoration Fund |
| SWA | Source Water Assessment |
| SWPP | Source Water Protection Plan |
| WCP | Watershed Control Plan |
| WSS | Watershed Sanitary Survey |
| WTP | Water Treatment Plant |
| WWTP | Wastewater Treatment Plant |
| USDA | United States Department of Agriculture |

1.0 Executive Summary

This document serves as a yearly report for the Philadelphia Water Department's (PWD) Queen Lane and Baxter drinking water treatment plants to maintain compliance with the Long Term 2 Enhanced Surface Water Treatment Rule (LT2). In 2025, PWD continued to implement its Watershed Control Plan (WCP) for the Queen Lane intake in the Schuylkill River Watershed in compliance with LT2. The plan aims to reduce *Cryptosporidium* loadings in the Schuylkill River watershed from priority sources such as wastewater effluent, agriculture, animal vectors, and urban stormwater runoff. Source water protection initiatives as well as structural control measures were identified and implemented as part of the WCP to achieve a target *Cryptosporidium* load reduction. Additionally, PWD received approval in Summer 2021 of its Watershed Control Plan Update to expand *Cryptosporidium* control strategies into the Delaware River Watershed for the Baxter intake and improve collaborative foundations among stakeholders and create education and outreach programs.

PWD utilizes two key mechanisms to support WCP implementation: the Schuylkill Action Network (SAN), a watershed-wide collaborative consisting of stakeholders from public, private, and non-profit sectors; and the Schuylkill River Restoration Fund (SRRF), a public-private partnership created to fund the implementation of on-the-ground environmental restoration projects in the Schuylkill River watershed. PWD supports facilitation of the Schuylkill Action Network, with its annual contract amount increasing from \$217,000 to \$300,000 beginning in fiscal year 2026. PWD has been contributing annually to the SRRF to fund projects that best align with PWD planning priorities. This contribution had historically been \$100,000 but was increased to \$250,000 beginning in 2024.

Progress towards the WCP objectives is summarized below by priority sources along with highlights from the inception of the WCP.

Priority Source: Wastewater Effluent

In 2024, PWD completed its most recent triennial update to the Watershed Sanitary Survey (WSS), a comprehensive report detailing the status of wastewater treatment technologies and sewage system planning efforts throughout the Schuylkill River watershed and Baxter area of interest. PWD continues to track developments related to Act 537 sewage facility planning and updates the WSS accordingly. Additionally, PWD engages wastewater utilities through its continued participation in the SAN Pathogen and Point Source workgroup and as the owner of the Delaware Valley Early Warning System for the lower Delaware River watershed.

In 2025, the SAN Pathogen and Point Source Workgroup strengthened communication between and provided educational resources to wastewater and drinking water utilities to improve source water protection efforts. The group facilitated data and information sharing to document wastewater treatment technologies and improvements and investigated evolving source water issues – including unregulated contaminants. PWD also helps plan and coordinate the biennial Water Utility Forum, a day-long event where water utilities throughout southeast Pennsylvania meet to discuss source water issues. This 2024 Water Utility Forum was the first to expand geographically and invite utilities outside

of the Schuylkill River watershed. The next event, likely to be held in 2026, may include Delaware River water utilities as planning committee members.

PWD began outreach to water utilities in the Baxter area of influence in 2023, holding an in-person meeting with Lehigh County Authority (LCA) to discuss watershed protection, source water monitoring, and the Delaware Valley Early Warning System. In 2024, DRBC formally approved and convened a Source Water Protection subcommittee, on which PWD holds the position of reserved member. PWD attended DRBC's inaugural Subcommittee on Source Water Protection (SSWP) meeting on November 14, 2024, and accepted the position of chair of the new subcommittee. The initial meeting convened nearly one dozen water and wastewater utilities along the lower Delaware River, along with regulatory partners. This initial meeting focused on available spill modeling and coordinated spill response for future events. On May 20, 2025, a second SSWP meeting was held virtually. Speakers from PWD and DRBC presented on salinity, including salt impacts to water systems, modeling and monitoring efforts, and approached to salt management. A meeting planned for November 2025 was postponed to early 2026 due to impacts from the federal shutdown and unapproved PA state budget affecting partner availability.

Priority Source: Agriculture

PWD supports agricultural best management practice installation through annual contributions to the Schuylkill River Restoration Fund (SRRF) and participation on the grant advisory committee. In 2025, \$140,000 from PWD's annual contribution funded three large watershed protection projects on agricultural properties in the Schuylkill River watershed. These priority projects were selected for the implementation of agricultural best management practices to support WCP *Cryptosporidium* control objectives.

- The Klinedell Farm, a dairy operation in the headwaters of the Tulpehocken Creek in Myerstown, Lebanon County, received a \$100,000 SRRF grant to construct a 6-month capacity manure storage facility and other agricultural best management practices (BMPs). PWD contributed half of the total amount of the award for the Klinedell Farm to Lebanon County Conservation District, with Constellation Energy contributing the remaining half.
- The Hemsley Farm property, a beef operation in the headwaters of the Maiden Creek Watershed in Kempton, Berks County, received a \$99,475 SRRF grant to construct a 6-month capacity manure storage facility and other agricultural BMPs. PWD directed \$50,000 to Berks Nature for the Hemsley Farm project, with Constellation Energy and Aqua splitting the remaining award amount.
- Courtesy Stable, an equine boarding facility in the Wissahickon Creek watershed in Philadelphia, received a \$40,000 SRRF grant to implement stormwater control mechanisms and to regrade and stabilize 1.7 acres of sloped heavy use areas. PWD contributed the total award amount.

PWD continues to be an active participant in the SAN Agricultural Workgroup to coordinate efforts among watershed partners with similar environmental protection objectives. Through the SAN, education and outreach materials are developed and additional stakeholders are engaged to promote

the implementation of agricultural best management practices and nutrient management plans throughout the watershed. In the last year, SAN partners continued to help develop and implement Comprehensive Nutrient Management Plans (CNMP) for agricultural properties across the Schuylkill River watershed.

Priority Source: Animal Vectors

At PWD facilities and Fairmount Park properties, Canada geese—known mechanical vectors of *Cryptosporidium*—were removed and nests and eggs treated through a partnership with the US Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS). Wildlife management activities were also conducted on several PWD properties, including Philadelphia's three drinking water treatment plants.

In FY25, 1,825 geese were dispersed or removed from FDR Park and Centennial/Concourse Park. An additional 919 geese were dispersed or removed from Peter's Island and Pleasant Hill Park, both priority locations near Philadelphia drinking water intakes.

Priority Source: Urban Stormwater

Stormwater best management practices (BMPs) were not directly included in the scope of the WCP. Stormwater projects are already implemented through a variety of other programs, including stormwater ordinances and MS4 permits. Stormwater management practices are implemented throughout the City of Philadelphia as part of PWD's *Green City, Clean Waters* (GCCW) program, a 25-year plan to reduce stormwater pollution through the installation of green infrastructure. Additionally, the Rain Check program informs Philadelphia residents about the benefits of stormwater management tools and how to select the best options for their property. In FY25, a total of 31 workshops were held with 1,012 participants. As a result of the FY25 program, a variety of stormwater management tools were installed on residential properties, including 17 installations of permeable pavers to allow for better infiltration of stormwater, 82 downspout planters, 1 rain garden planting, and 337 rain barrels.

Through the SAN, riparian buffer planting and education and outreach events have been organized throughout the watershed. In 2025, the SAN Agriculture workgroup held four quarterly meetings and welcomed a new workgroup co-chair from Berks County Conservation District. The group also attended and tabled at the annual Berks County Fair. The SAN Stormwater Workgroup organized a tour of four green stormwater infrastructure projects in Reading, PA. The Pathogens and Point Source Workgroup continued to meet and engage with our shared source water topics of interest, including road salt and salinity.

The Future of the WCP

The second round of LT2 compliance sampling ended in March 2017. Each PWD intake on the Schuylkill and Delaware Rivers was sampled bimonthly for a period of 2 years. *Cryptosporidium* results from the Queen Lane Water Treatment Plant achieved an average result less than the 'Bin 1' threshold value of

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0.075 oocysts per liter; however, the Queen Lane Water Treatment Plant remains classified as 'Bin 2' due to sampling results obtained from the first round of LT2 monitoring. The Queen Lane Water Treatment Plant will continue to achieve individual and combined filter effluent performance requirements as approved by PA DEP to maintain compliance with the first round of LT2 sampling. The second round of LT2 compliance sampling placed the Baxter Water Treatment plant on the Delaware River in Bin 2. The same microbial toolbox options selected for Queen Lane were selected for Baxter to ensure that PWD maintains compliance with the LT2 regulation. PWD will continue ongoing initiatives outlined in the WCP through its existing Source Water Protection Program framework. PWD submitted a WCP Update to PA DEP in October 2020 that expands WCP efforts into targeted areas of the Delaware River watershed. The updated plan was approved in June 2021. WCP Annual Status Reports include progress updates relevant to the expanded scope of work.

2.0 Introduction

In April 2011, the Philadelphia Water Department (PWD) completed a Watershed Control Plan (WCP), and after receiving approval from the Pennsylvania Department of Environmental Protection (PA DEP) the WCP went into effect December 2012. The WCP presents a comprehensive source water protection approach to reducing levels of infectious *Cryptosporidium* in source water (US EPA, 2006). The elements of the WCP were achieved through previously established and ongoing efforts of the PWD Source Water Protection Program and through WCP actions aimed to specifically reduce levels of *Cryptosporidium* in the Schuylkill River watershed, a PWD drinking water source. A proposed Watershed Control Plan Update, expanding the geographic scope into priority areas of the Delaware River Watershed, was submitted in October 2020 and approved in June 2021.

The following report documents PWD completion of WCP initiatives during 2025. The existing framework of the plan and its underlying initiatives will continue to be maintained and developed to further reduce sources of pathogens, nutrients, and sediment into area waters.

3.0 Background

The US Environmental Protection Agency (EPA) published the first source water quality-based drinking water regulation on January 5, 2006. The Long Term 2 Enhanced Surface Water Treatment Rule (LT2), a series of amendments to the Safe Drinking Water Act, serves to protect the public from waterborne illness caused by *Cryptosporidium* and other microbial pathogens in drinking water. In the United States, *Cryptosporidium* has been the cause of several outbreaks of Cryptosporidiosis, a gastrointestinal disease particularly dangerous for immunocompromised individuals.

LT2 requires public drinking water systems with surface water sources, or groundwater sources influenced by surface water, to monitor monthly for *Cryptosporidium* at each supply intake for two years. The observed *Cryptosporidium* concentrations categorize each intake into one of four 'Bins.' Public water systems placed in Bin 1 indicate the lowest concentrations of *Cryptosporidium* and require no additional treatment. Public water systems placed in Bins 2, 3 and 4 require 4-log, 5-log and 5.5-log removals, respectively. A log removal represents a reduction in pathogen concentration during treatment by calculating the logarithm of the ratio of the influent and effluent concentrations; for example, 1-log removal represents 90% reduction, 2-log represents 99%, 3-log represents 99.9%, and so on. Public water systems using conventional treatment processes, coagulation, flocculation, sedimentation, filtration, are assumed to achieve a 3-log removal. Therefore, additional 1-log, 2-log or 2.5-log treatment credit(s) is required of a conventional treatment facility if placed in Bins 2 through 4. The EPA provides a "microbial toolbox" describing options to earn additional treatment credits including source water protection and management programs, pre-filtration processes, treatment performance programs, additional filtration components and inactivation technologies.

PWD *Cryptosporidium* monitoring data categorized each of Philadelphia's three drinking water treatment plants (WTPs) into Bins. During the first round of LT2 compliance sampling, Baxter and Belmont achieved Bin 1 status with average oocyst concentrations less than 0.075 per liter. However, Queen Lane data resulted in an average oocyst concentration of 0.076 per liter, falling into Bin 2. Since

Queen Lane uses conventional treatment processes and automatically receives a 3-log removal credit, an additional 1-log removal credit was required. PWD selected to use the combined filter effluent for 0.5-log credits, the individual filter effluent for 0.5-log credits, and the development and implementation of a WCP for 0.5-log back up credits. PWD submitted a WCP to the PA DEP in April 2011 and received approval in December 2012.

From April 2015 through March 2017, LT2 Round 2 monitoring occurred. Results from this sampling period classified the Queen Lane WTP as Bin 1. However, the ongoing initiatives outlined in the plan as well as annual status reporting and triennial Watershed Sanitary Survey updates are being continued to maintain the 0.5-log backup treatment credit. PWD results from Round 2 sampling reclassified the Baxter Water Treatment Plant on the Delaware River as a Bin 2 facility. The full results of LT2 Round 1 and Round 2 monitoring are summarized below in Table 3-1.

Table 3-1: LT2 Rounds 1 and 2 Monitoring Results

| | Round 1 Result (oocysts per L) | Round 1 Bin | Round 2 Result (oocysts per L) | Round 2 Bin |
|-------------------|---|--------------------|---|--------------------|
| Baxter | 0.023 | 1 | 0.087 | 2 |
| Belmont | 0.073 | 1 | 0.063 | 1 |
| Queen Lane | 0.077 | 2 | 0.067 | 1 |

*Results less than 0.075 oocysts per L classified as Bin 1

PWD treatment is selecting the same IFE and CFE filter performance options as selected for the Queen Lane WTP for an additional 1-log treatment credit at Baxter. Additionally, this document expands ongoing WCP for the Queen Lane intake to include priority areas influencing the Baxter intake to achieve a 0.5-log backup credit to ensure Baxter's compliance with LT2 regulation. In October 2020, PWD submitted a Watershed Control Plan Update to protect both the Baxter and Queen Lane intakes. The updated plan was approved in June 2021. A timeline of critical LT2 events starting with the second round of *Cryptosporidium* monitoring in April 2015 is shown in Table 3-2 along with links to annual status reports detailing progress towards WCP goals.

Table 3-2: LT2 WCP Timeline

| Action | Reporting | Due Date |
|---|---|---------------------------------|
| Second round of <i>Cryptosporidium</i> monitoring | | April 2015 to March 2017 |
| First triennial Watershed Sanitary Survey Submitted | Watershed Sanitary Survey | December 2015 |
| Annual Status Report Submitted to State | 2015 Annual Status Report | January 2016 |
| Annual Status Report Submitted to State | 2016 Annual Status Report | January 2017 |
| Round 2 Bin Classification | | October 2017 |
| Annual Status Report Submitted to State | 2017 Annual Status Report | January 2018 |
| First Update to the Watershed Sanitary Survey Submitted | 2018 Watershed Sanitary Survey | January 2018 |
| Letter of intent to submit WCP (Baxter) | | October 2018 |
| Annual Status Report Submitted to State | 2018 Annual Status Report | January 2019 |
| Annual Status Report Submitted to State | 2019 Annual Status Report | January 2020 |
| WCP Update Submitted to State | LT2 Watershed Control Plan Update for Baxter and Queen Lane Intakes | October 2020/Approved June 2021 |
| Annual Status Report Submitted to State | 2020 Annual Status Report | January 2021 |
| Approval of WCP Update by State | | June 2021 |
| Second Update to the Watershed Sanitary Survey | 2021 Watershed Sanitary Survey | January 2022 |
| Annual Status Report Submitted to State | 2021 Annual Status Report | January 2022 |
| Annual Status Report Submitted to State | 2022 Annual Status Report | January 2023 |
| Annual Status Report Submitted to State | 2023 Annual Status Report | January 2024 |
| Third Update to the Watershed Sanitary Survey | 2024 Watershed Sanitary Survey | January 2025 |
| Annual Status Report Submitted to State | 2024 Annual Status Report | January 2025 |
| Annual Status Report Submitted to State | 2025 Annual Status Report | January 2026 |

Note: Shading indicates milestones that have been completed at the time of the report's preparation.

4.0 Watershed Control Program Updates

As outlined in the Watershed Control Plan Update, the *Cryptosporidium* control strategies within PWD's Watershed Control Plan include the following broader categories:

- **Capital Improvements at PWD Drinking Water Treatment Plants** – Includes the planning, design, and construction of treatment upgrades to enhance drinking water treatment abilities
- **Watershed Protection Initiatives** – Consists of various research, coordination, and on-the-ground projects to address priority sources of *Cryptosporidium*
- **Education and Outreach** – Includes tasks to support the goal of raising awareness of source water protection issues
- **Stakeholder Engagement and Partnership Building** – Outlines tasks associated with the feasibility evaluation of a Delaware River Watershed Collaborative and/or funding mechanism

The sections that follow provide further detail on the progress made in each control strategy.

4.1 Capital Improvements at Philadelphia's Water Treatment Plants

Since the development of the Watershed Control Plan, the Philadelphia Water Department has developed a comprehensive Water Revitalization Plan that reviews existing drinking water treatment, pumping, distribution, and supply infrastructure in the context of anticipated regulatory and environmental drivers. The objective of the plan is to develop a strategic, long-term capital improvement strategy that anticipates the capacity, treatment, and resiliency needs of the future. This planning process requires reevaluation of projects and priorities on an ongoing basis. The implementation of UV treatment at each of PWD's three drinking water treatment plants will continue to be evaluated.

4.2 Watershed Protection Program Initiatives

The Philadelphia Water Department has a robust Watershed Protection Program that includes source water protection, climate change adaptation planning, and water quality modeling. The Watershed Protection Program uses a multi-barrier approach that includes emergency preparedness systems, public and private communication networks, computer modeling systems, laboratories, regional and national partnerships, and the development and implementation of formal plans to achieve watershed protection goals.

In the Watershed Control Plan Update, PWD outlines ongoing and proposed initiatives from the Schuylkill River watershed Source Water Protection Plan (SWPP) that are relevant to the control of *Cryptosporidium* upstream of the Queen Lane intake as well as programs and initiatives in the Delaware River watershed to protect the Baxter intake. This section discusses the contribution PWD has made toward each of the ongoing and proposed initiatives by each priority source category during 2025.

4.2.1 Wastewater Discharge/Compliance

Effluent from WWTPs upstream of the Queen Lane intake is a source of *Cryptosporidium* in the watershed (PWD, 2002; PWD, 2011). Table 4-1 outlines planned watershed protection projects and tasks aimed to support the goal of pathogen reduction for the priority source of wastewater discharges. Table 4-1 also includes initiatives for the Delaware River Watershed proposed in the Watershed Control Plan Update submitted in October 2020. Progress towards each initiative is detailed in the sections that follow.

Table 4-1: Planned Implementation Schedule – Watershed Protection Control Strategies to Address Wastewater Discharges

| Control Strategy: Watershed Protection | | | |
|---|--|-------------------------------|-----------------------|
| Priority Source - Wastewater Discharger Compliance | | | |
| Initiatives | Target Watershed | Target Completion Date | Report Section |
| Collaborate on <i>Cryptosporidium</i> source tracking studies | Various | On hold | 4.2.1.1 |
| Continue to regularly review and update Philadelphia's Act 537 Plan | Lower Delaware River | Ongoing | 4.2.1.2 |
| Implement initiatives outlined in the annual Combined Sewer Management and Stormwater Management report | Lower Delaware and tidal Schuylkill River Watersheds | Ongoing | 4.2.1.3 |
| Maximize usage for the Delaware Valley Early Warning System while maintaining the system's ongoing O&M needs | Lower Delaware and Schuylkill River Watersheds | Ongoing | 4.2.1.4 |
| Continue to support efforts identified in the SAN Pathogens/Compliance Workgroup's Annual Workplans | Schuylkill River | Ongoing | 4.2.1.5 |
| Update discharger information from Source Water Assessments to reassess vulnerability from upstream dischargers | Schuylkill and Delaware Rivers | Ongoing | 4.2.1.6 |
| Track installation of wastewater treatment upgrades and improvements upstream of Philadelphia's intakes | Schuylkill and Delaware Rivers | Ongoing | 4.2.1.7; 4.2.1.8 |
| Work with professional organizations and industry groups e.g., NACWA, WaterRF, et al., to support related research and advocacy efforts | Various | Ongoing | 4.2.1.19 |
| Continue to strengthen relationships with upstream wastewater dischargers | Delaware River | Ongoing | 4.2.1.10 |

4.2.1.1 *Cryptosporidium Monitoring and Source Tracking Studies*

PWD worked with Lehigh University for more than a decade to support ongoing research on *Cryptosporidium* in Philadelphia source water. The collaboration between PWD and Lehigh University consisted of developing sampling programs to better understand the occurrence, sources and vectors of *Cryptosporidium* in the Schuylkill River watershed. Sampling programs were designed to answer research questions and improve and expand methods for field sample collection and laboratory analysis of *Cryptosporidium*. PWD contributed field sample collection support, project management and oversight. PWD regularly communicated with project partners at Lehigh to create solutions for issues

encountered in the field and lab, incorporate improvements, and expand the project. An article detailing some of the outcomes of research collaboration, “Biofilm Sampling for Detection of *Cryptosporidium* Oocysts in a Southeastern Pennsylvania Watershed” was published 2020 in *Applied and Environmental Microbiology*.

4.2.1.2 Philadelphia's Act 537 Plan

Act 537 is the Pennsylvania Sewage Facilities Act. The program addresses existing and future sewage disposal needs through proper planning, permitting and design of sewage facilities. The Philadelphia Act 537 Plan was last updated in 2009.

4.2.1.3 Combined Sewer Overflow (CSO) and Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit Annual Report

Each year, PWD submits a report to PA DEP summarizing activities and programs pertaining to the management of stormwater in combined and separate sewers in accordance with the CSO and MS4 NPDES permits. A major component of PWD CSO NPDES permit requirements is the implementation of the Long-Term Control Plan Update (LTCPU), also called the *Green City, Clean Waters* program. *Green City, Clean Waters* is a 25-year program that includes a green stormwater infrastructure-based approach to reduce pollutants discharged by the combined sewer system. The most recent fiscal year annual report is available on <http://water.phila.gov/reporting/>.

4.2.1.4 Early Warning System

The Delaware Valley Early Warning System (EWS) is a web application created by the Philadelphia Water Department that provides rapid communication of surface water pollution events or surface water quality changes within the lower Delaware River and Schuylkill River watersheds. The EWS seeks to improve the safety and dependability of the water supply for approximately 6.8 million people living in the EWS coverage area.

The EWS members consist of more than 518 registered users from 62 organizations, representing drinking water suppliers, industrial facilities, wastewater systems, emergency response and government agencies.

EWS Reports and Notifications

The EWS utilizes a fully automated email and telephone notification system to notify all downstream members when water quality events are reported and to communicate downstream arrival times. The EWS utilizes real-time information about streams and rivers from USGS and NOAA to provide predictive spill modeling that estimates the downstream travel path of the event, and time of travel for a spill or discharge to reach downstream intakes. Like the notification system, the spill model operates in a fully automated mode when an event is reported. The EWS website is a password protected system that is fully functional on smart phones and tablets.

Decision Support

EWS modeling results are used to build lists and maps showing estimated arrival times at drinking water and industrial facility intakes. This information is posted to the EWS website to support decision making and regional response.

The EWS provides critical information to water system and industrial operators who may need to either make changes to treatment processes or to close intakes in response to a surface water contamination event. The EWS allows members to review available information about reported pollution events, including the event's location, time of spill, spill path, arrival time at downstream intakes, and risk level. It provides a description of the event, information about event response, and the status of the event report. Users can update the details for a reported event at any time.

Water Quality Events of Concern to EWS

Water quality events of concern to EWS members include accidental and illicit discharges, as well as natural changes in water quality that can significantly affect drinking water sources. Such events include truck and vehicle accidents on roadways that drain to nearby streams and rivers, railway accidents, on-water accidents (involving boats and tankers), spills on properties (especially industrial sites) near waterways, runoff from fires/firefighting, wastewater system discharges and sewer overflows, releases of impounded sediments, failures of waste product basins, and unauthorized discharges.

Flood Forecast Viewer

The EWS Flood Forecast Viewer (FFV) adds another predictive tool to the EWS. The FFV was developed to increase users' awareness of possible water quality impacts that are often associated with flooding events. Flooding can cause damage to tanks and other chemical storage vessels, interruptions to drinking water and wastewater treatment processes, sewer overflows, and flow across industrial sites that can affect water quality. The FFV displays information about flood conditions predicted by NOAA 24 hours in the future on major waterways in the EWS service area and notifies users of anticipated flooding conditions near member intakes.

Helping Utilities Manage Source Water Issues

The EWS continues to serve as an invaluable communication tool to advance public health and safety. Since its inception in 2004, the EWS has provided the user group with more than 600 notifications about potential impacts to surface water supply in the lower Delaware River Basin. Some examples of recent EWS support to members include:

- Notifying and sharing flooding and water quality information during Hurricane Ida in August 2021.
- Providing critical information to the many drinking water suppliers and government organizations responding to the Trinseo chemical spill to the Delaware River in March 2023
- Estimating impacts at the Baxter WTP intake after an industrial fire at SPS Technologies factory in Abington, PA in February 2025.

EWS user training is readily available by request to PWD.

4.2.1.5 SAN Pathogens and Point Source Workgroup

The purpose of the SAN Pathogens and Point Source Workgroup is to facilitate and strengthen communication and coordination among regulatory agencies, downstream water users, and basin stakeholders regarding Clean Water Act and Safe Drinking Water Act goals. PWD regularly attends quarterly SAN Pathogens and Point Source Workgroup meetings and serves as a workgroup co-chair. A quarterly e-newsletter was established in 2019 to improve information sharing among stakeholders. The group continues to be a key mechanism for information exchange among stakeholders on emerging contaminant research, upcoming regulation, and wastewater treatment advancements. The service area of some utility partners in this workgroup, including Aqua PA and PA American Water, comprises areas within the lower Delaware River watershed, part of the expanded geographic scope of the WCP to include Baxter's area of influence.

4.2.1.6 Priority Discharger List

In preparation of the 2020 Watershed Control Plan Update, the 2002 priority *Cryptosporidium* point source list from PWD's Source Water Assessments for the Schuylkill and Delaware River Watersheds was updated to account for changes in treatment technologies. The updated priority *Cryptosporidium* discharger lists for the Schuylkill River and Delaware River Watershed areas of influence are shown in Table 4-2 and Table 4-3.

Table 4-2: Priority Dischargers of *Cryptosporidium* in the Schuylkill River Watershed (Updated from 2020 Watershed Control Plan Update)

| Priority Discharger | Watershed |
|--|------------------|
| Abington Twp WWTP | Schuylkill River |
| Swamp Creek STP (Berks Montgomery Municipal Authority) | Schuylkill River |
| Birdsboro Borough MA Schuylkill | Schuylkill River |
| Conshohocken STP | Schuylkill River |
| E. Norriton/Plymouth/Whitpain JSA | Schuylkill River |
| Exeter Twp STP | Schuylkill River |
| Hamburg Borough Wastewater Treatment Plant | Schuylkill River |
| Limerick Twp Municipal Authority | Schuylkill River |
| Montgomery County Sewer Authority | Schuylkill River |
| Norristown Municipal STP | Schuylkill River |
| Pennridge Wastewater Treatment Authority | Schuylkill River |
| Phoenixville Borough STP | Schuylkill River |
| Pottstown Borough | Schuylkill River |
| Sinking Spring Borough Municipal Authority | Schuylkill River |
| Upper Gwynedd-Towamencin Municipal Authority | Schuylkill River |
| Upper Merion Municipal Utility Authority | Schuylkill River |

| | |
|--|------------------|
| Upper Merion Twp Authority- Matsunk WPCC | Schuylkill River |
| Valley Forge Sewer Authority | Schuylkill River |
| Whitemarsh Twp SA | Schuylkill River |
| Antietam Valley Municipal Authority | Schuylkill River |
| Borough of Souderton | Schuylkill River |
| Bridgeport Borough | Schuylkill River |
| Lower Frederick Township Treatment Plant | Schuylkill River |
| Lower Salford Twp Authority (West Branch Skippack Creek) | Schuylkill River |
| Maidencreek Township Authority | Schuylkill River |
| North Coventry Municipal Authority STP | Schuylkill River |
| Oley Township Municipal Authority | Schuylkill River |
| Schwenksville Borough Authority | Schuylkill River |
| Spring City Borough Sewage Plant | Schuylkill River |
| Telford Borough Authority | Schuylkill River |
| Spring TWP MA | Schuylkill River |
| Wyomissing Valley JMA | Schuylkill River |

Table 4-3: Priority Dischargers of *Cryptosporidium* in the Delaware River Watershed Area of Influence (Updated from 2020 Watershed Control Plan Update)

| Priority Discharger | Watershed |
|---|----------------|
| Bethlehem City | Delaware River |
| Beverly Sewerage Authority | Delaware River |
| Bordentown Sewerage Authority | Delaware River |
| Bristol Township Sewerage Treatment Plant | Delaware River |
| Burlington City STP | Delaware River |
| Catasauqua Borough Authority | Delaware River |
| Cinnaminson Township Sewerage Authority | Delaware River |
| Delran Sewerage Authority | Delaware River |
| Easton City | Delaware River |
| Ewing-Lawrence SA | Delaware River |
| Florence Township STP | Delaware River |
| Hamilton Township WPCF | Delaware River |
| Mount Holly Municipal Utilities Authority | Delaware River |
| Mt. Laurel Municipal Utilities Authority | Delaware River |
| Riverside Township Sewerage Authority | Delaware River |
| Warminster Twp Municipal Authority | Delaware River |

4.2.1.7 *Wastewater Treatment Upgrades and Improvements*

Several originally prioritized NPDES dischargers have either undergone, or are approved to undergo, upgrades and improvements to their treatment facilities. A detailed list containing update and improvement information is presented below in Table 4-4.

Table 4-4: Planned upgrades and Improvements to the Schuylkill River and Delaware River Source Water Assessments' Priority Dischargers of *Cryptosporidium*

| Facility | Owner | Subwatershed | Priority | System Improvements |
|--|--|-------------------|---------------------|--|
| Conshohocken Borough STP | Borough of Conshohocken | Schuylkill River | Highest - A | <ul style="list-style-type: none"> • Improvements to plant, pump stations and collection system outlined in 5-year capital improvement plan • In 2018 awarded CFA grant of \$341,559 to help rehabilitate the Regional Sanitary Sewer Interceptor • Replacement of 9 rotating biological contractor units planned for FY23; belt filter press replacement planned for FY26 |
| Lower Perkiomen Valley Regional Sewer Authority | Montgomery County Sewer Authority | Perkiomen Creek | Highest - A | <ul style="list-style-type: none"> • The Perkiomen Middle Interceptor project consisted of the installation of 3.2 linear miles of ductile iron sewer pipe for conveyance to the LPVRSA Oaks WWTP required to meet the growing region's future sewage needs |
| Fritz Island Wastewater Treatment Plant | City of Reading | Schuylkill River | Highest - A | <ul style="list-style-type: none"> • The Reading Wastewater Treatment plant is working on a \$100 million upgrade needed to accommodate capacities determined in an Act 537 special study and the City's Consent Decree with the Department of Justice |
| Sinking Spring Borough STP | Municipal Authority of the Borough of Sinking Spring | Cacoosing Creek | Moderately High - B | <ul style="list-style-type: none"> • \$1.7M PA Infrastructure Investment Authority loan to replace 2,950 ft of sanitary sewer line and eliminate raw sewage discharges into Cacoosing Creek |
| Upper Gwynedd Township Wastewater Treatment Facility | Upper Gwynedd Twp | Wissahickon Creek | Highest - A | <ul style="list-style-type: none"> • Currently implementing Wastewater Improvement Program • WIP will expand the sewer infrastructure to allow UGT the ability to divert the wastewater currently being sent to the Towamencin Municipal Authority back to Upper Gwynedd Township's Wastewater Treatment Plant – reducing SSOs and allowing rate payer money to be invested in the township. |
| TMA Wastewater Treatment Facility | Towamencin Municipal Authority | Towamencin Creek | Highest - A | <ul style="list-style-type: none"> • Awarded \$200,000 in CFA funding in March 2019 for a Biosolids Process Transformation and Optimization Planning Study, leading to the adoption of a sustainable biosolids treatment, handling and disposal process within 5 yrs |
| Whitemarsh WPCC | Whitemarsh Township Authority | Schuylkill River | Highest – A | <ul style="list-style-type: none"> • In 2018 awarded CFA grant of \$323,000 to assist with the rehabilitation of the wastewater treatment plant |
| Lansdale WWTP | Borough of Lansdale | Neshaminy Creek | Highest – A | <ul style="list-style-type: none"> • UV treatment system being installed. Expected completion late 2023. |

Note: This is not an exhaustive list of all planned facility upgrades in the areas of influence

4.2.1.8 Wildcat Sewer Abatement

Wildcat sewers discharge sewage directly into creeks and streams without any treatment. These sources discharge pathogens into the Schuylkill River watershed and can be a source of *Cryptosporidium*. PWD supports the SAN in efforts to identify and abate wildcat sewers through participation in the SAN Pathogens and Point Source Workgroup. In 2015, PWD completed a Watershed Sanitary Survey (WSS), required under LT2 to maintain the WCP credit. As part of the WSS, PWD compiled available information from the PENNVEST database, news sources, community announcements, and personal communication with a contracted engineering firm on projects addressing wildcat sewers in the Schuylkill River watershed. The wildcat sewer project update serves as a working document and is included in the latest update to the Schuylkill River Watershed Sanitary Survey as well as on the SAN Workgroup Hub as a standalone worksheet.

4.2.1.9 Collaboration with Industry Organizations

PWD has a long-standing partnership with professional/industry organizations. In the 2020 Watershed Control Plan Update, PWD proposes leveraging these partnerships to conduct research and advocacy efforts to further LT2 compliance goals. PWD maintains active membership in the American Water Works Association and PWD staff regularly meet with Water Research Foundation representatives to better understand and define research priorities.

4.2.1.10 Wastewater Treatment Partnerships

4.2.1.10.1 Wissahickon Clean Water Partnership

In summer 2016, The City of Philadelphia joined 13 Wissahickon Creek watershed municipalities and four wastewater treatment plant operators to form a Wissahickon Clean Water Partnership (WCWP). The WCWP collectively developed a TMDL alternative for nutrients that the partnership determined will likely better address aquatic life impairments in the Wissahickon Watershed compared to a traditional phosphorus TMDL. The municipal participants represent over 98% of the watershed area, providing a powerful stakeholder group that is uniquely positioned to develop a coordinated plan to improve water quality in the watershed. The project was funded in part by The William Penn Foundation through the Pennsylvania Environmental Council. PWD has been providing key technical support by sharing important historical water quality information about the Wissahickon Creek, as well as dedicating staff resources towards conducting a comprehensive reference watershed analysis. This analysis demonstrates the impact of multiple impairments in the Wissahickon relative to other Southeastern PA reference watersheds with comparable conditions. PWD continues to work in the partnership towards proposing stormwater project funding and crediting allocations in addition to taking an active role in the formation of a municipal consortium.

With encouragement from PA DEP and EPA, the WCWP has prepared a comprehensive Water Quality Improvement Plan (WQIP) for this highly visible, urbanized watershed that will include a long-term program to achieve significant water quality improvements through an adaptive management process. The WQIP provides evidence that phosphorus alone may no longer be a major driver of watershed impairments and proposes alternative stormwater management processes and goals to improve water quality in the Wissahickon. The proposed stormwater management projects and treatment upgrades

may reduce pathogens, nutrient loading, and improve the overall condition of the watershed for aquatic life. Also significant is the establishment of a partnership framework that transcends municipal boundaries to facilitate future collaborative efforts. The Wissahickon Water Quality Improvement Plan (WQIP) was submitted to PA DEP in July 2025 and is currently under review.

4.2.1.10.2 Delaware Estuary Water Quality Improvement Partnership

The Philadelphia Water Department has developed the Delaware Estuary Water Quality Improvement Partnership (DEWQIP) with other large regional municipal utilities to share strategic utility planning and technology evaluations in response to potential changes in water quality criteria that could impact acceptable levels of DO in local waterways, while also being mindful of other emerging issues impacting Water Pollution Control Plant effluent. Dissolved oxygen, or DO, is influenced by several factors, including ammonia-containing discharges and the presence of excess nutrients in rivers and streams. Understanding infrastructure capabilities, limitations, and affordability is critical to further reducing pollutants in the Delaware Estuary in the future. The DEWQIP continued to meet in 2025, following a reissuance of the facilitation contract by PWD, which is committing \$300,000 per year to the partnership. The DEWQIP has established a foundation for communication and data sharing among the municipal dischargers, with future possibilities to leverage the DEWQIP as a vehicle to collectively address additional wastewater permitting-related concerns.

4.2.2 Agricultural Land Use and Runoff

Stormwater runoff containing manure from agricultural land is a source of *Cryptosporidium* and pathogens in the Schuylkill River watershed (PWD, 2002; PWD, 2011). PWD efforts to address agricultural runoff occur upstream of Philadelphia because the agricultural land within the city and upstream of the intakes is minimal and best management practices (BMPs) have previously been installed at Northwestern Stables, Belmont Stables, Courtesy Stables, Monastery Stables and W.B. Saul High School (PWD, 2011). In the [Watershed Control Plan Update](#) (2020), opportunities to address agricultural sources of runoff in the lower Delaware River watershed are also identified.

Table 4-5: Planned Implementation Schedule – Watershed Protection Control Strategies to Address Agricultural Runoff

| Control Strategy: Watershed Protection | | | |
|--|--|------------------------|----------------|
| Priority Source – Agricultural Runoff | | | |
| Initiatives | Target Watershed(s) | Target Completion Date | Report Section |
| Coordinate with watershed partners to develop Comprehensive Nutrient Management Plans for WB Saul High School, Fox Chase Farm, and Manatawna Farm. | Wissahickon and Pennypack Creeks, Schuylkill River | Ongoing | 4.2.2.1 |
| Work with USDA/NRCS, PA Dept of Agriculture and the Philadelphia School District to implement best management practices at WB Saul High School. | Wissahickon Creek | Ongoing | 4.2.2.1 |

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| | | | |
|--|--------------------------------------|-------------------------------------|-----------|
| Work with USDA/NRCS, PA Dept of Agriculture and the Philadelphia School District to implement best management practices at Fox Chase Farm | Pennypack Creek | Ongoing | 4.2.2.1 |
| Work with Northwestern, Courtesy Stables, and Monastery Stables to implement conservation planning practices | Wissahickon and Pennypack Creeks | Some work completed; effort ongoing | 4.2.2.1 |
| Develop maintenance plans or MOUs for PWD's in-city agricultural BMPs | Wissahickon and Pennypack Creeks | Ongoing | 4.2.2.1 |
| Reassess land use in the Schuylkill River Watershed with each update of the National Land Cover Database | Schuylkill River | Ongoing | 4.2.2.2.1 |
| Reassess land use in the priority Delaware River Watershed sub-basins with the 2025 National Land Cover Database (NLCD) | Delaware River | Completed | 4.2.2.2.2 |
| Actively participate in the SAN Agricultural Workgroup and support initiatives outlined in the Annual Workplans | Schuylkill River | Ongoing | 4.2.2.3 |
| Identify priority projects and available funding sources; work with SAN partners to best utilize Farm Bill funds; Promote drinking water protection in existing funding programs | Schuylkill and Delaware Rivers | Ongoing | 4.2.2.6 |
| Assess status of CAFO NPDES permits in the delineated Area of Influence | Schuylkill River | Ongoing | 4.2.2.3 |
| Participate in nutrient management trainings and conferences to further develop expertise and enhance liaison role to Philadelphia's agricultural properties | Wissahickon and Pennypack Watersheds | Ongoing, when available | 4.2.2.5 |

4.2.2.1 Philadelphia In-City Agricultural Best Management Practices

4.2.2.1.1 W.B. Saul High School

In 2016, Saul High School created a 501(c)(3) as a mechanism to acquire funding for projects identified in their school master plan. PWD began collaborating with Saul and other stakeholders in 2018 to facilitate

the implementation of BMPs to reduce sediment, pathogen, and nutrient loading in the Schuylkill watershed. Construction of BMPs at Saul began in 2019, when the construction of a swale and culvert diverting runoff from the adjacent Henry Avenue was completed. The diversion system connects to a highway inlet at the top of the Saul High School access drive and conveys diverted flow below pastureland adjacent to the Wissahickon Valley Park.

4.2.2.1.2 Fox Chase Farm

In the Watershed Control Plan Update submitted in October 2020, Fox Chase Farm is identified as a potential project opportunity in the Pennypack Creek watershed of the Upper Delaware Estuary sub-basin. Project implementation should follow future establishment of a funding mechanism for private projects in the Delaware River watershed, analogous to the Schuylkill River Restoration Fund.

4.2.2.1.3 Philadelphia Stables

There are several horse stables located throughout the City of Philadelphia. These locations provide opportunities for best management and conservation practices. Water quality benefits include sediment and erosion control, nutrient management and pathogen controls. Figure 4-1 shows the locations of horse stables on public land along the Schuylkill River (2), Wissahickon Creek (3), and Pennypack Creek (1).

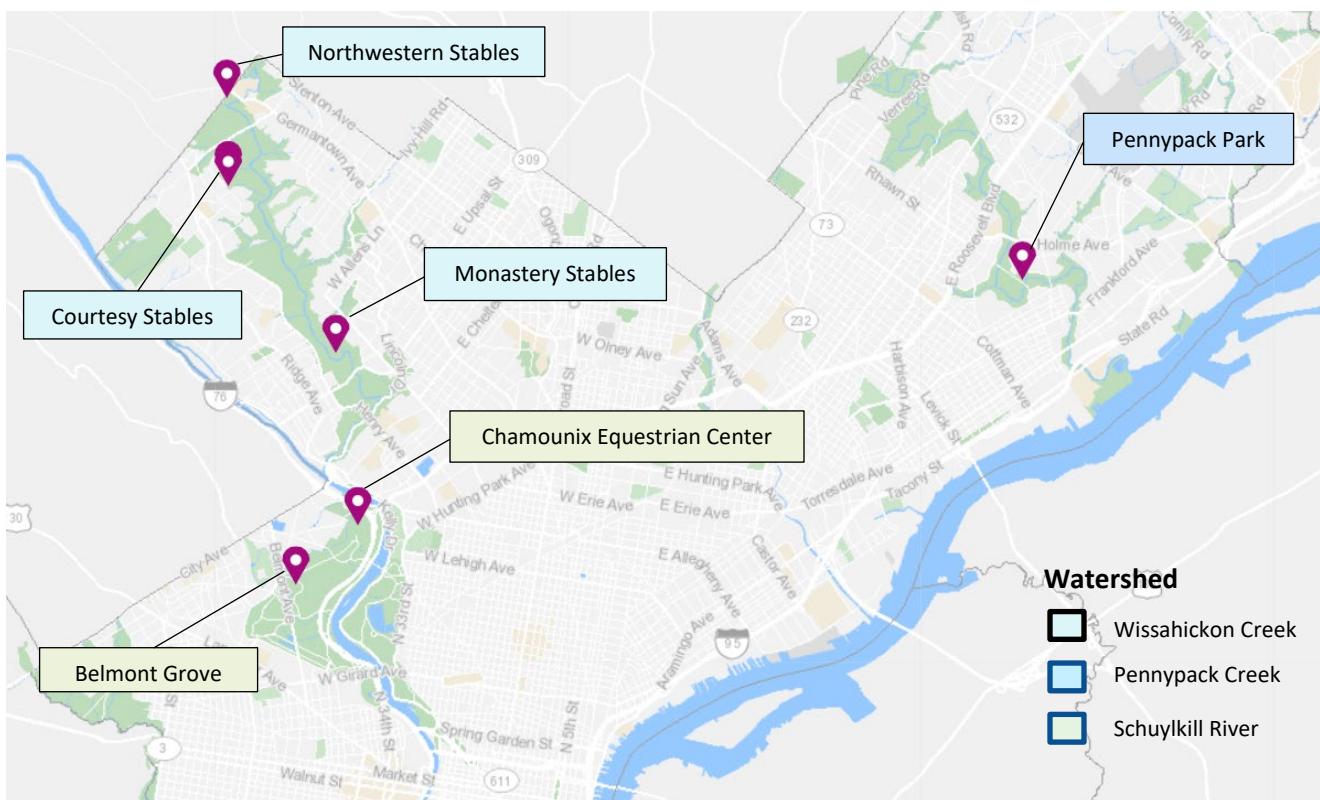


Figure 4-1: Horse Stables in Philadelphia (Adapted from Philadelphia Parks and Recreation 2020)

Northwestern Stables

In 2019, PWD contributed \$50,000 through the SRRF toward stormwater management projects at Northwestern Stables. The property on which the non-profit stables sit drains into a small tributary of the nearby Wissahickon Creek, which then discharges into the Schuylkill River upstream of the Queen Lane intake. Following recommendations from the NRCS, Northwestern Stables implemented various BMPs including diverting street runoff through a newly constructed trench drain and 200 ft of outlet pipe; roof gutter installation, downspout connection repairs, and underground pipe installation to manage 22,000 ft² of impervious roof area; planting 12,000 ft² of vegetated buffers; and grading and stabilization of ~41,000 ft² of paddock area. In 2020, construction of the stormwater management and paddock stabilization project at Northwestern Stables was completed. Before and after photos of the three main heavy use areas are shown in Figure 4-2. In 2021, Northwestern Stables was the host of the Schuylkill River Restoration Fund grant announcements and project showcase event. Attendees were able to speak to the landowners as well as NRCS staff to get a better understanding of the planning and design considerations.



Pre-Construction Heavy Use Area 1



Post Construction Heavy Use Area 1



Pre-Construction Heavy Use Area 2



Post Construction Heavy Use Area 2



Pre-Construction Heavy Use Area 3



Post Construction Heavy Use Area 3

Figure 4-2: Pre and Post Construction Photos from Northwestern Stables Stormwater Management and Paddock Stabilization Project

Courtesy Stable

In 2025, PWD contributed \$40,000 through the SRRF toward stormwater management projects at Courtesy Stable. The property on which the non-profit stables sit drains into a small tributary of the nearby Wissahickon Creek, which then discharges into the Schuylkill River upstream of the Queen Lane intake. Following recommendations from the NRCS, Courtesy Stable sought funding to both implement various stormwater control mechanisms to divert street runoff and to regrade and restabilize 1.7 acres of sloped heavy use areas. Construction should begin within the next year and further updates will be provided in future annual report publications.

4.2.2.2 Land Use Assessments

4.2.2.2.1 Schuylkill River Watershed

In 2024, the United States Geological Survey released the latest iteration of the National Land Cover Database (NLCD). PWD completed land use assessments using the newest NLCD 2024 data and will continue to cite this data until NLCD releases updated Land Cover data. The land use categories are broken out in Table 4-6. Definitions of the land cover classifications are available from the [Multi-Resolution Land Characteristics Consortium](#). The 2024 dataset is mapped for the Schuylkill River Watershed in Figure 4-3. A total of 26.8% of the Schuylkill River Watershed land cover is attributed to agricultural uses (e.g., pasture/hay and cultivated crops). More information on the National Land Cover Database project can be found on the Multi-Resolution Land Characteristics Consortium website at <https://www.mrlc.gov/data>.

Table 4-6: Land Cover Classification Areas in the Schuylkill River Watershed (NLCD 2024)

| Schuylkill River Watershed Land Cover (NLCD 2024) | | | |
|---|------|-----------------------|-----------------|
| Land Use Classification | Code | 2024 Area (sq. miles) | % of Total Area |
| Open Water | 11 | 14.7 | 0.8% |
| Developed Open Space | 21 | 281.0 | 14.7% |
| Developed Low Intensity | 22 | 190.5 | 10.0% |
| Developed Medium Intensity | 23 | 109.5 | 5.7% |
| Developed High Intensity | 24 | 41.2 | 2.2% |
| Barren Land | 31 | 17.1 | 0.9% |
| Deciduous Forest | 41 | 629.6 | 32.9% |
| Evergreen Forest | 42 | 3.4 | 0.2% |
| Mixed Forest | 43 | 70.4 | 3.7% |
| Shrub/Scrub | 52 | 6.9 | 0.4% |
| Grassland/Herbaceous | 71 | 9.8 | 0.5% |
| Pasture/Hay | 81 | 269.5 | 14.1% |
| Cultivated Crops | 82 | 241.8 | 12.7% |
| Woody Wetlands | 90 | 24.8 | 1.3% |
| Emergent Herbaceous Wetlands | 95 | 1.0 | 0.1% |
| Total | | 1,915.1 | 100% |

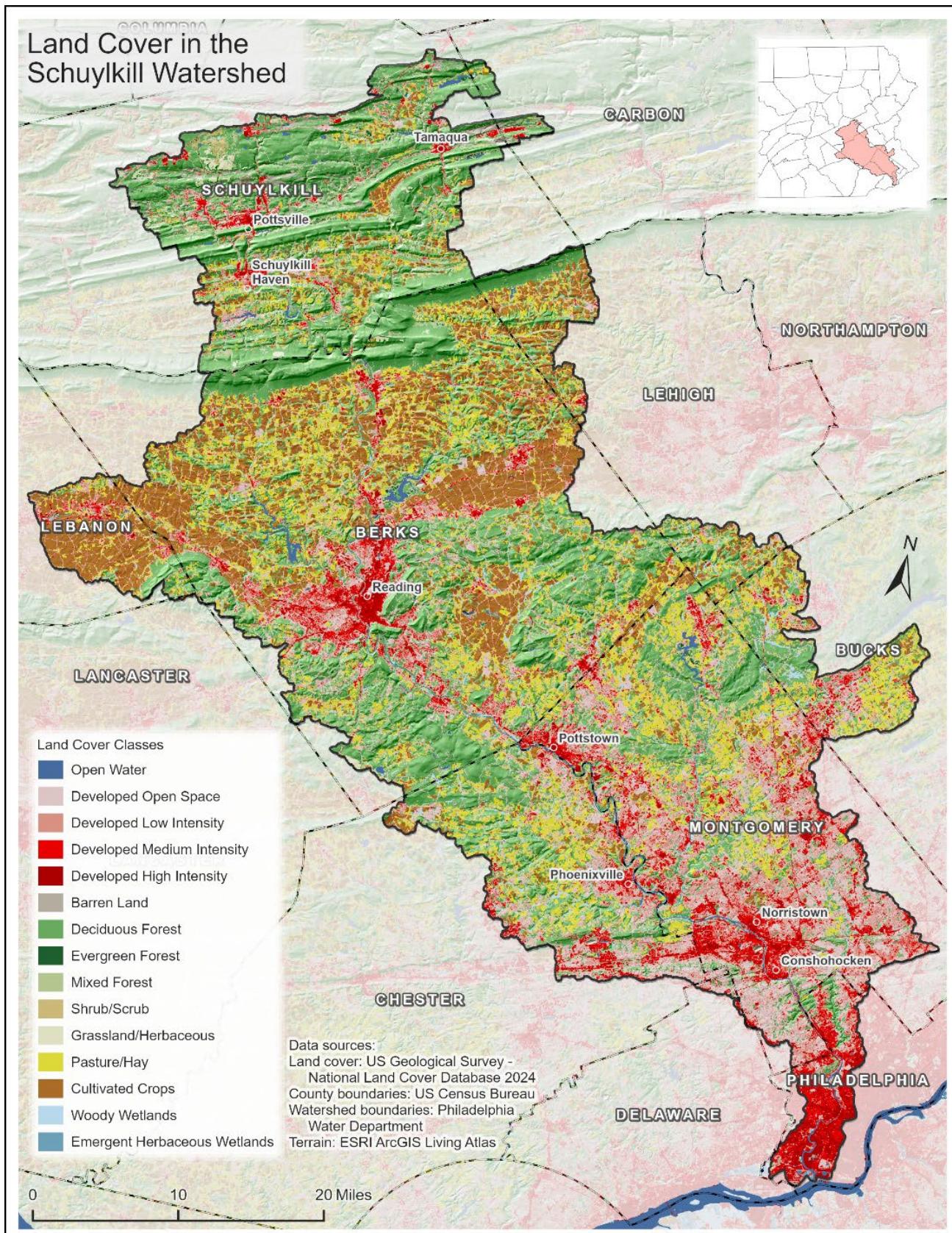


Figure 4-3: Land Use in Schuylkill River Watershed (NLCD 2024)

4.2.2.2.2 Delaware River Watershed

A land use analysis of the Baxter intake's area of influence in the Delaware River Watershed was completed using the 2024 NLCD.

The sub-basins of the Delaware River Watershed within the Baxter Water Treatment Plant's Area of Influence (AOI) are delineated in the 2020 [PWD Watershed Control Plan Update](#). The Baxter intake AOI covers a total of 2,873 square miles and includes the Lehigh Valley sub-basin and the Pennsylvania side of the Upper Central, Lower Central, and Upper Estuary sub-basins comprising 47%, 28%, 9%, and 15% of the land area in the AOI, respectively. The largest land cover type in the Baxter AOI is deciduous forest, which comprises 41% of the land cover in the Baxter AOI. In contrast to the Schuylkill River watershed, only 14% of the Baxter AOI land cover is attributed to agricultural uses (e.g., pasture/hay and cultivated crops). Table 4-7 and Figure 4-4 show the NLCD 2024 land use data for the Baxter Water Treatment Plant area of influence. More information on the National Land Cover Database project can be found on the Multi-Resolution Land Characteristics Consortium website at <https://www.mrlc.gov/data>.

Table 4-7: Land Cover Classification Areas in the Baxter Area of Influence (NLCD 2024)

| Baxter Water Treatment Plant Area of Influence Land Cover (NLCD 2024) | | | |
|---|------|--------------------------|-----------------|
| Land Use Classification | Code | 2024 Area (square miles) | % of Total Area |
| Open Water | 11 | 45.8 | 1.6% |
| Developed Open Space | 21 | 360.1 | 12.5% |
| Developed Low Intensity | 22 | 268.0 | 9.3% |
| Developed Medium Intensity | 23 | 159.2 | 5.5% |
| Developed High Intensity | 24 | 66.0 | 2.3% |
| Barren Land | 31 | 20.1 | 0.7% |
| Deciduous Forest | 41 | 1171.7 | 40.8% |
| Evergreen Forest | 42 | 29.7 | 1.0% |
| Mixed Forest | 43 | 210.7 | 7.3% |
| Shrub/Scrub | 52 | 7.5 | 0.3% |
| Grassland/Herbaceous | 71 | 12.2 | 0.4% |
| Pasture/Hay | 81 | 221.6 | 7.7% |
| Cultivated Crops | 82 | 177.1 | 6.2% |
| Woody Wetlands | 90 | 120.1 | 4.2% |
| Emergent Herbaceous Wetlands | 95 | 3.4 | 0.1% |
| Total | | 2,873 | 100% |

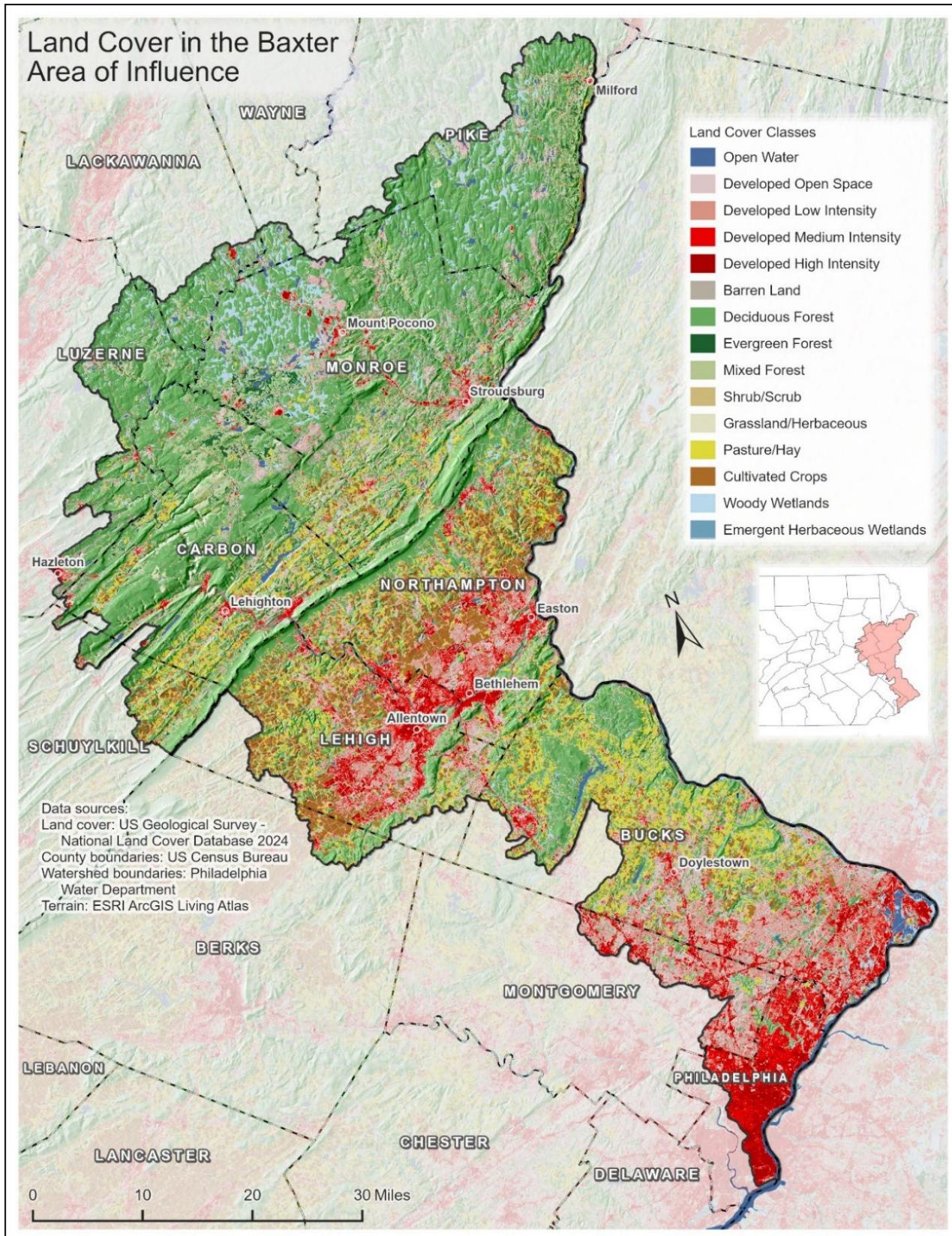


Figure 4-4: Map of Land Use in the Baxter Intake's Area of Influence in the PWD Watershed Control Plan Update (2020), (NLCD 2024)

4.2.2.3 SAN Agriculture Workgroup

PWD contributions to the Schuylkill River Restoration Fund (SRRF) and involvement in the SAN Agriculture Workgroup are the main vehicles for identifying and implementing agricultural best management practices in Philadelphia's source watersheds. Through the SAN Agriculture Workgroup, PWD is kept informed about the progress of recent SRRF grant recipients and potential future high priority agricultural BMP projects. The workgroup also develops education and outreach materials including *A Farmer's Guide for Healthy Communities* (available on the SAN website at www.Schuylkillwaters.org) and engages fellow stakeholders to promote the implementation of agricultural best management practices and the development of Comprehensive Nutrient Management Plans throughout the watershed.

In 2025, PWD regularly attended quarterly workgroup meetings which were held both in-person and virtually.

4.2.2.4 CAFO Identification in the Area of Influence

Concentrated animal feeding operations (CAFOs) are agricultural operations where animals are confined in small land areas. CAFOs have the potential to contribute *Cryptosporidium* contaminated runoff to the Schuylkill River watershed. In 2022, PWD retrieved updated CAFO data from PA DEP, including number of animal equivalent units and primary animal for each operation. As of November 2022, a total of 86 CAFOs exist in the Schuylkill River watershed, representing more than 69,000 animal equivalent units (AEUs, 1 AEU = 1,000 lbs. of animal weight). These totals mark a significant increase from 2019 data, during which 36 CAFOs representing more than 25,000 AEUs existed in the Schuylkill River watershed.

Following the first full implementation year of the approved Watershed Control Plan update, in 2022 PWD for the first time also retrieved CAFO data from PA DEP for the Baxter intake's area of influence. Within this area, 8 CAFOs represent more than 3,400 AEUs.

A map depicting 2022 data for both the Schuylkill River watershed and the Baxter intake's area of influence is shown below in Figure 4-5. Due to a lack of significant changes from year to year, this dataset will be updated every 5 years.

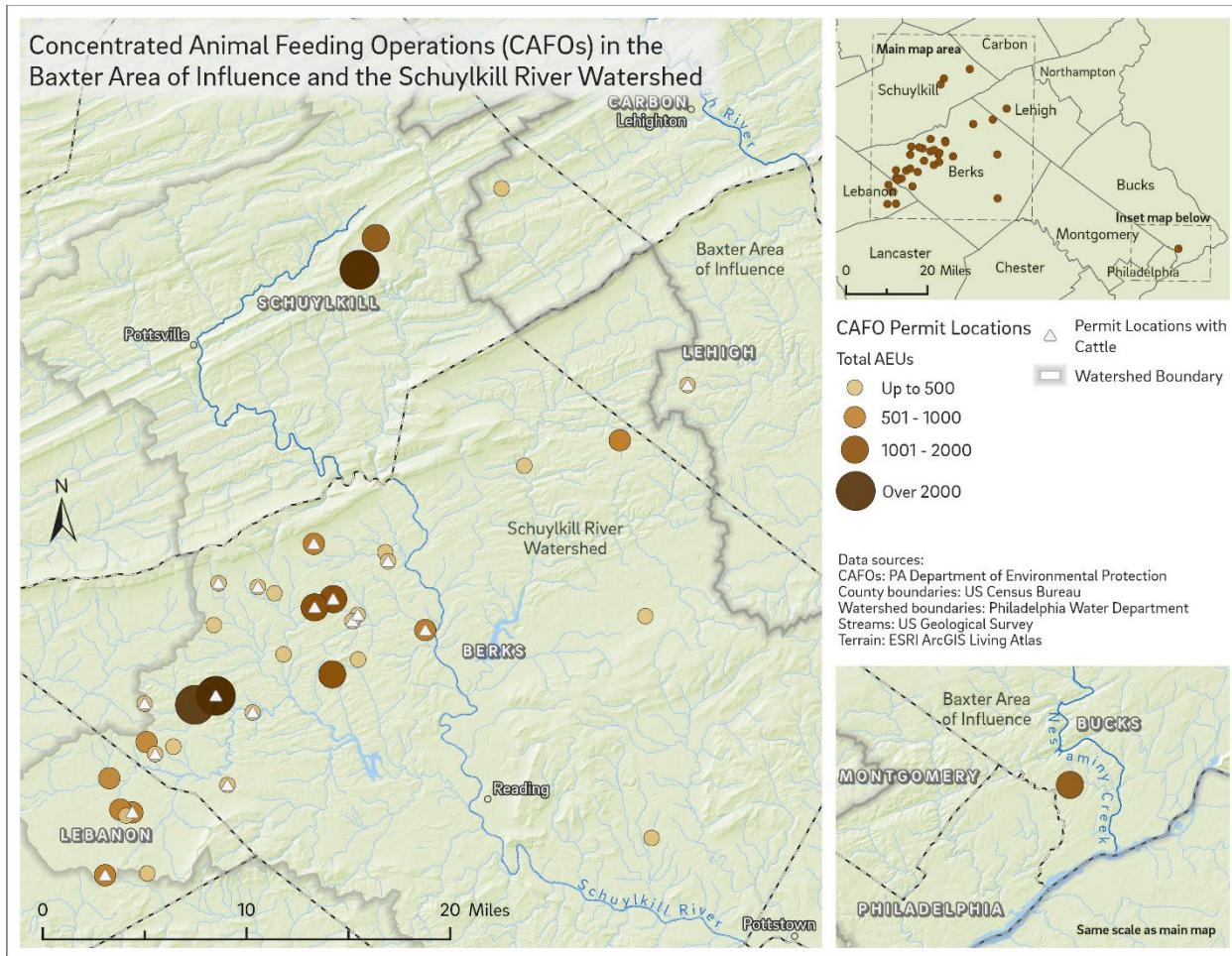


Figure 4-5: Concentrated Animal Feeding Operations in the Schuylkill River Watershed and Baxter Area of Influence by Total Animal Equivalent Units (AEUs) (PA DEP 2022)

4.2.2.5 Schuylkill River Restoration Fund Grants for Agricultural BMP Projects

In the WCP, PWD outlines several actions to reduce *Cryptosporidium* in the Schuylkill River watershed from agricultural runoff. These include the installation of agricultural BMPs, including manure storage basins and vegetated buffers, on select farms in the Schuylkill River watershed. PWD contributions to the Schuylkill River Restoration Fund (SRRF) and involvement in the SAN Agriculture Workgroup are the main vehicles for identifying and implementing projects.

In 2006, Exelon, SAN, and the Schuylkill River Greenways National Heritage Area (SRG NHA) established the Exelon Restoration Fund, now named the SRRF. The SRRF provides grants to support projects that improve and protect water quality throughout the Schuylkill River watershed. Initially, Exelon provided all the funding to fulfill a requirement in its DRBC docket for the Wadesville Mine Demonstration Project. Beginning in 2009, PWD became the second annual contributor to the SRRF. Partnership for the Delaware Estuary (PDE) became a member and contributor in 2010 and Aqua PA followed in 2012. In 2021, Pennsylvania American Water Company signed on to contribute annual funds to the SRRF and officially made its first contribution in 2022. Members of the SAN serve as technical experts in the grant

selection process to support the review of project applications for their benefit to the Schuylkill River watershed. SRG NHA oversees the SRRF and distributes grant money.

PWD had historically contributed approximately \$100,000 to the SRRF each year but increased its annual contribution to \$250,000 beginning in 2024. Priority projects are selected for the implementation of agricultural best management practices to support WCP *Cryptosporidium* control objectives. To meet the WCP objectives specified for the first five years of plan implementation, PWD supported the construction of either manure storage basins or vegetated buffers at 10 separate agricultural operations in the watershed through its participation in the SRRF.

Recognizing the water quality benefits of reducing pathogens, nutrients, and sediment, PWD continues to support the implementation of conservation practices on agricultural properties. SRRF projects that have received PWD grant funding in the past five years are listed in Table 4-8.

Table 4-8: Additional Schuylkill River Restoration Fund Agriculture Projects

| Farm | Subwatershed | Award Year | BMP Work Completed or In Progress |
|--------------------------|-------------------|------------|--|
| Klinedell Farm | Tulpehocken Creek | 2025 | Manure storage facility, roofed heavy use area, animal trails and walkways, stormwater controls |
| Hemsley Farm | Maiden Creek | 2025 | Manure storage facility, roofed heavy use area, animal walkway with vegetated diversion, stormwater controls |
| Courtesy Stable | Wissahickon Creek | 2025 | Stormwater controls and heavy use area regrading and restabilization |
| Weinsteiger Farm | Perkiomen Creek | 2024 | Roofed manure stack pad, roofed heavy use area, roof runoff structures, animal trails and walkways, water pipeline, stream bank exclusion fencing |
| Masemore Farm | Perkiomen Creek | 2024 | Roofed liquid manure storage facility, heavy use area, roof runoff structures, 2,100 linear feet of stream bank exclusion fencing |
| Bitler-Vista Grande Farm | Maiden Creek | 2024 | Manure storage tank, rain gutters and stormwater controls |
| Sterner Dairy Farm | Middle Creek | 2024 | Roofed manure storage facility, slatted underground liquid manure storage system, decommissioning of leaking manure storage system, roof runoff structures, stream bank exclusion fencing and establishment of riparian buffer |
| Phillips Farm | Maiden Creek | 2023 | Manure storage facility, a roofed barnyard and heavy use area, installation of a water well to allow for the elimination of animal access to the tributary, and a 35- foot riparian buffer |
| Burkholder Farm | Saucony Creek | 2023 | Manure storage facility, a roofed barnyard and heavy use area, and a stormwater control system |
| Last Chance Angus Farm | Maiden Creek | 2023 | Manure storage facility, a roofed barnyard and heavy use area, over 1,500 linear feet of streambank fencing, a designated animal stream crossing, and revegetation around the new structures |
| Watts Farm | Hay Creek | 2023 | 2,000 linear feet of livestock exclusion fencing, 1,400 linear feet of in-stream habitat and streambank protection, paddock fencing and 500 feet of vegetated livestock walkway for rotational grazing, and the transition of six acres of marginal pasture lands along 1,800 linear feet of stream into riparian forest |
| Lynnacres Dairy | Maiden Creek | 2022 | Liquid manure storage facility, a roofed heavy use area, 8,315 linear feet of streambank fencing, two steam crossings, and riparian buffer plantings |
| Hollinger Farm | Manor Creek | 2022 | Roofed manure storage area, a heavy use area, rain gutters, and other stormwater controls |
| Pond View Farm | Maiden Creek | 2022 | Roofed manure storage area, 1,600 linear feet of streambank fencing, rain gutters, roof leaders, and a lined stormwater outlet |

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|-------------|-----------------|------|---|
| Bolton Farm | Saucony Creek | 2021 | Liquid manure storage basin, two manure transfer systems, a reception pit, a concrete heavy use area, and 650 linear feet of stream bank fencing |
| Miller Farm | Manatawny Creek | 2021 | Liquid manure storage basin, a dry manure storage, a reception pit, two manure transfer systems, a concrete heavy use area, stormwater controls, 400 linear feet of paddock fencing, 310 linear feet of stream bank fencing, and a designated stream crossing |

PROJECTS FUNDED TO REDUCE NON-POINT SOURCE POLLUTION FROM AGRICULTURAL LANDS

In 2025, PWD partially or fully funded three new agricultural projects in the Schuylkill River Watershed:

KLINEDELL FARM, 2025 SRRF GRANT RECIPIENT

The Klinedell Farm is a dairy operation located in the headwaters of the Tulpehocken Creek in Myerstown, Lebanon County. The farm sits atop limestone formations connecting groundwater to nearby surface water and intermittent streams provide direct connections during and following rain events. Currently, all solid manure and mortality compost stemming from the farm's 250 cows is stored outdoors without stormwater controls. During wet weather, nutrients, sediment, and pathogens run off into ephemeral tributaries of the Tulpehocken Creek, which eventually drains into the Schuylkill River.



Figure 4-6: Current Manure and Mortality Compost Storage at Klinedell Farm

The shovel-ready project suite includes the installation of a 6-month-capacity manure storage facility, a roofed heavy use area, designated animal trails and walkways, and comprehensive stormwater control structures. The project has a cash match from the Agricultural Conservation Assistance Program (ACAP) of \$400,000. PWD is contributing half of the total grant request of \$100,000 for this project, with Constellation funding the remainder.

HEMSLEY FARM, 2025 SRRF GRANT RECIPIENT

The Hemsley Farm is a beef operation located in the headwaters of the Maiden Creek in Kempton, Berks County. Pine Creek, a tributary to the Perkiomen Creek, flows adjacent to the farm's property. Currently, the farmer utilizes an inadequate and outdated manure storage system for the farm's 65 or more cows. The property also has inadequate stormwater control measures in the farm's heavy use and barnyard areas. Nutrients, sediment, and pathogens run off uncontrolled into Pine Creek, which eventually drains into the Schuylkill River.

The shovel-ready project suite includes the installation of a 6-month-capacity manure storage facility, a roofed heavy use area, comprehensive stormwater control structures, and an animal walkway with a vegetated diversion to prevent access to Pine Creek. The project has a cash match from NRCS EQIP of over \$270,000. PWD is contributing roughly half the total grant request of \$99,475 for this project, with Constellation and Aqua splitting the remaining award amount.

COURTESY STABLE, 2025 SRRF GRANT RECIPIENT

Courtesy Stable is located adjacent to the Wissahickon Valley Park in Philadelphia. Situated on a hillside, runoff from the playground and paved streets that are uphill of and border the stable have caused frequent erosion of the heavy use and paddocks areas. With minimal stormwater controls, runoff from these areas readily flows into a small stormwater basin at the base of the property, which has an overflow structure that discharges to a small tributary to the Wissahickon Creek. During heavy storm events that exceed the basin's capacity, nutrients, sediment, and pathogens are discharged to the Wissahickon Creek. The project proposal includes the installation of stormwater control mechanisms and the regrading and stabilization of the stable's 1.7 acres of heavy use areas. The project has cash and in-kind match totaling \$10,000. PWD is contributing the total award of \$40,000 for the project.

IN-CITY PROJECTS FUNDED TO REDUCE NON-POINT SOURCE POLLUTION

In 2025, PWD fully funded two in-city stormwater management projects:

MANAYUNK CANAL TOWPATH RESTORATION, 2025 SRRF GRANT RECIPIENT

After being closed for roughly 80 years, flow is being restored to the long-stagnant Manayunk Canal in Philadelphia. Through a \$21 million PENNVEST loan, PWD completed reconstruction of the Manayunk Canal Feeder Gate House in the spring of 2025. This PWD project will benefit both water quality and aesthetics of the canal, which runs along the Schuylkill River Trail in a highly trafficked and visible neighborhood. Long neglected due to aesthetic issues, sections of the canal's towpath (which makes up a section of the Schuylkill River Trail) are littered with invasives and are prone to erosion during frequent flood events. The project suite includes stabilization of 600 linear feet of streambank utilizing 60 coir logs, approximately 4,800 square feet of riparian buffer restoration using native plantings, and the creation and distribution of educational signage and materials. Manayunk Development Corporation also plans to engage the public through volunteer events and stewardship efforts. The project has cash and in-kind match totaling \$37,500. PWD is contributing the total award of \$41,250 for the project.

STORMWATER MANAGEMENT AT WOODMERE ART MUSEUM, 2025 SRRF GRANT RECIPIENT

Woodmere Art Museum sits atop a ridge that borders the Wissahickon Valley Park in Philadelphia. Currently, there are few stormwater controls on its grounds and sediment and rainwater quickly run off the property and downhill towards the Wissahickon Creek. The museum is rehabilitating a historic property as part of its property expansion and intends to incorporate green stormwater measures. Woodmere is constructing a 25,000 cubic foot stormwater retention tank to meet the city's Flood Control and Water Quality Volume requirements but intends to exceed those requirements through the

implementation of green, permeable parking surfaces, a large rain garden, and the incorporation of educational signage and programming aimed at water quality and environmental stewardship.

The shovel-ready project suite includes the construction of the stormwater retention bed, a 1,100 square foot rain garden, extensive permeable parking surfaces, and the planting of over 100 trees and 300 shrubs.

The project has a cash match of over \$1,638,000 through charitable foundations and individual donors. PWD is contributing the total grant request of \$25,000, to be directed specifically towards the “above and beyond” components of the project suite, including the rain garden and permeable parking surfaces.

4.2.3 Animal Vectors

Animals in the Schuylkill River watershed serve as mechanical vectors of *Cryptosporidium*, transferring viable oocysts from original hosts. Geese are particularly effective vectors, as identified in PWD and Lehigh University source tracking studies (Jellison et al., 2009; Jellison, 2010a). The SWPP details ongoing and proposed initiatives that aim to reduce the impact of animal vectors near each of its drinking water treatment intakes and expand implementation of animal vector control in the Schuylkill River and lower Delaware River watersheds.

Table 4-9: Planned Implementation Schedule – Watershed Protection Control Strategies to Address Animal Vectors

| Control Strategy: Watershed Protection | | | |
|---|--|------------------------|----------------|
| Priority Source - Animal Vectors | | | |
| Initiatives | Target Watershed | Target Completion Date | Report Section |
| Maintain education and outreach initiatives concentrating on animal vectors of source water contamination | Lower Schuylkill and Delaware River Watersheds | Ongoing | 4.2.3.1 |
| Implement goose control measures on Fairmount Park Properties, including Peter's Island | Wissahickon Creek and Lower Delaware | Ongoing | 4.2.3.2 |
| Implement waterfowl management programs at Philadelphia Water Department Facilities | Lower Schuylkill and Delaware River Watersheds | Ongoing | 4.2.3.2 |
| Continue to support source tracking research | Various | Ongoing | 4.2.1.1 |
| Support efforts to publish scientific journal article to raise awareness and contribute to the state of the science | Various | Ongoing | 4.2.1.1 |
| Redesign and install "Do –Not Feed Geese" educational signage in priority locations | Pennypack and Wissahickon Creeks | Ongoing | N/A |

4.2.3.1 Education and Outreach on Threat of Animal Vectors in the City

PWD provides education and outreach efforts concerning the management of animal vectors. In partnership with PDE, PWD conducts outreach focused on educating dog owners on the importance of picking up pet waste. The Dog Waste Reduction Program educates dog owners about the negative impacts of dog waste on local waterways and the overall environment. During 2025, the program consisted of the Spokesdog Competition, Best Friends Partner Program, social media campaigns, and participation in pet-related outreach events in the city. The 2025 Spokesdog Competition was held on June 8 and included dog waste trivia, PWD trivia, and trick and costume contests. Through the Best Friends Partner Program, PDE distributed 600 copies of PWD's dog waste publications and 400 PWD-branded dog waste bag rolls to 4 vet clinics and animal shelters in the city. The program also partnered with ACCT Philly (The Animal Care and Control Team of Philadelphia) to provide 1,500 copies of a dog waste bill insert to include with dog licensing paperwork for City of Philadelphia dog owners. On a monthly basis, PDE provided educational social media posts to each of the partner organizations to promote on their own accounts. Sharing content on social media helps to increase the reach of the program by informing Philadelphia dog owners about the connection between dog waste, clean water, and best practices for disposal. The 2025 social media campaign reached over 35,000 accounts. Finally, PDE and PWD tabled at events like Manayunk Development Corporation's Dog Day of Summer, which enables PDE and PWD to share information directly with dog owners about why picking up dog waste is essential to watershed protection.

4.2.3.2 Wildlife Management at Fairmount Park and PWD Properties

To address animal vectors of *Cryptosporidium*, PWD is committed to geese management through the WCP. PWD has active contracts with the United States Department of Agriculture (USDA) for geese management at Fairmount Park properties and PWD facilities. Geese management is conducted at Fairmount Park properties including Peter's Island, Pleasant Hill Park, Concourse and Centennial Park, and FDR Park. Geese management is also conducted at PWD facilities including the Belmont WTP, Queen Lane WTP, Baxter WTP, Southeast WWTP, Southwest WWTP, Northeast WWTP, and Oak Lane Reservoir. A total annual budget of \$160,000 is reserved for wildlife management initiatives throughout Fairmount Park and PWD facilities. These locations are displayed in Figure 4-7.

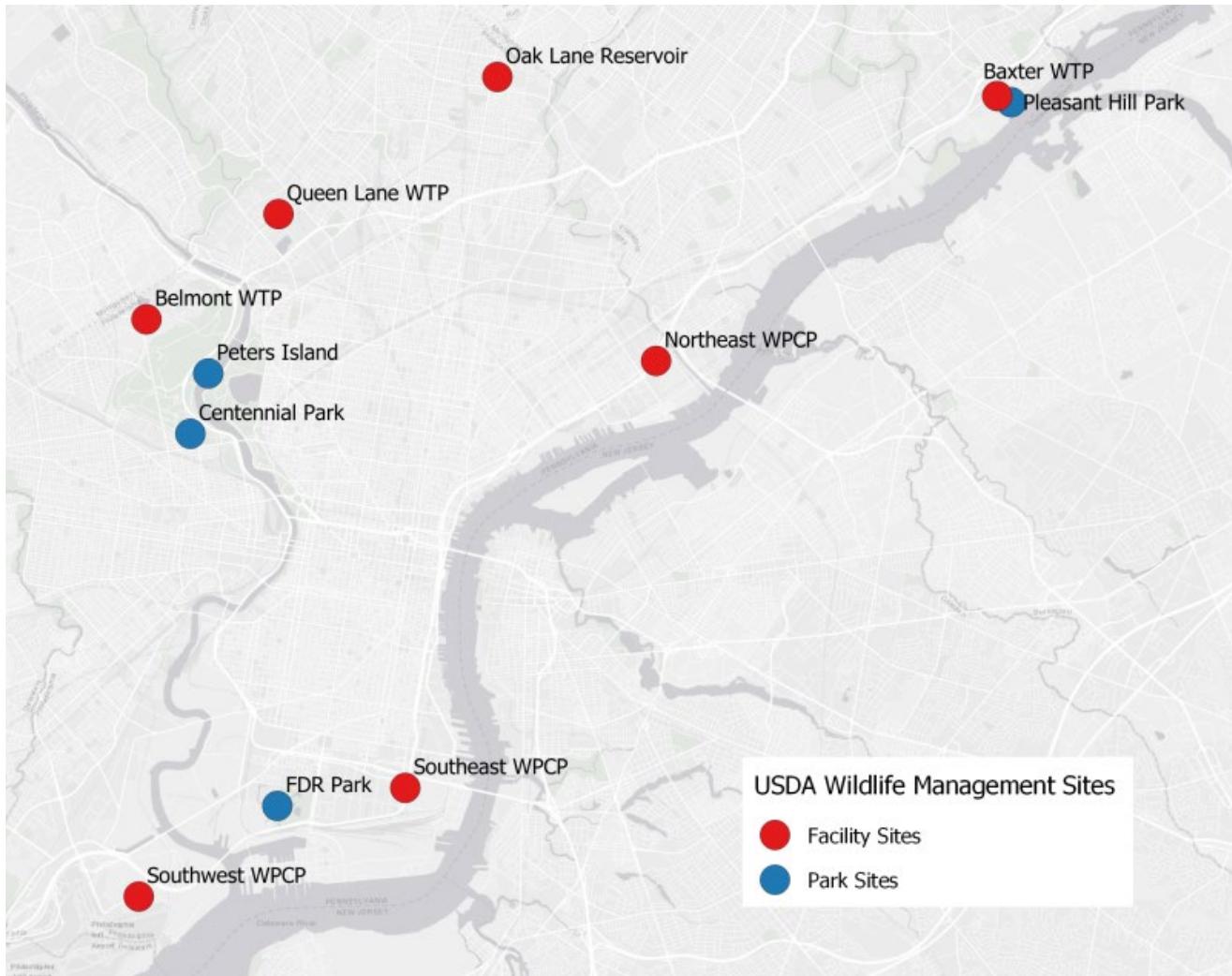


Figure 4-7: Map of USDA-APHIS Wildlife Management Sites

On Fairmount Park properties and PWD facilities, the geese are harassed and dispersed or removed from the site. Geese are dispersed using a range of harassment techniques including physical harassment, electronic harassment devices, pyrotechnics, lasers, and paintball guns. At all locations, any nests and eggs are treated with 100% food grade corn oil that stops embryo development by preventing air from passing through the shell.

In the last year, goose control measures were maintained at several Fairmount Park locations, including Pleasant Hill Park, FDR Park, Concourse and Centennial Park, and Peter's Island under a PWD contract with the USDA-APHIS (Table 4-10). Under this contract, geese are harassed or removed from the site and eggs and nests are treated to reduce the population.

Table 4-10: Wildlife Management Data for Philadelphia Parks for FY25

| | Peter's Island | Centennial Park | Pleasant Hill Park | FDR Park and Golf Course |
|-------------------------|----------------|-----------------|--------------------|--------------------------|
| Geese Dispersed/Removed | 471 | 44 | 448 | 1,781 |
| Nests Removed | 1 | 0 | 2 | 0 |
| Eggs Removed | 4 | 0 | 11 | 0 |

Also, under a PWD contract with the USDA APHIS, goose control measures were maintained at the three drinking WTPs, three WWTPs and Oak Lane Reservoir. Under this contract, geese are harassed or removed from the site and eggs and nests are treated to reduce the population. Additional measures are taken to control other wildlife populations at PWD facilities.

4.3 Education and Outreach

Education and outreach initiatives are a critical component of PWD SWPP because point and nonpoint source discharges and land management throughout the Schuylkill River watershed influence water quality at the Queen Lane and Belmont intakes. Many education and outreach initiatives are implemented through PWD watershed partnerships, which are maintained by various programs within PWD. The education and outreach control strategy aims to raise awareness of source water protection issues in Philadelphia and throughout Philadelphia's source watersheds. Table 4-11 details initiatives and planned implementation timelines for the in-city education and outreach.

Table 4-11: Planned Implementation Schedule – In-City Education and Outreach Control Strategies

| Control Strategy: Education and Outreach Goal - Continue to raise awareness of source water protection issues in Philadelphia | | | |
|--|------------------|------------------------|----------------|
| Objectives and Tasks | Target Watershed | Target Completion Date | Report Section |
| Continue to submit a comprehensive annual water quality report that emphasizes critical source water issues | NA/Citywide | Ongoing (Annually) | 4.3.1.1 |
| Continue to maintain the FWWIC and promote source water protection through the center's exhibits and programs | NA/Citywide | Ongoing | 4.3.1.2 |
| Continue to operate and maintain Philly RiverCast and promote the web-based recreational warning system | NA/Citywide | Ongoing (Seasonal) | 4.3.1.3 |
| Implement in-City stormwater education programs | NA/Citywide | Ongoing | 4.3.1.4 |
| Continue to implement pet waste education program in the City of Philadelphia | NA/Citywide | Ongoing | see 4.2.3.1 |

4.3.1 Annual Water Quality Report

PWD annually distributes source water protection information to customers in the annual Drinking Water Quality Report. The most recent [report](#) published in 2025 shares 2024 water quality data and information on the Schuylkill and Delaware River source watersheds. PWD takes a proactive approach to customer education and goes beyond reporting requirements by including robust overviews of source water and watershed protection efforts.

4.3.2 Fairmount Water Works Interpretive Center

The Fairmount Water Works Interpretive Center (FWWIC) is a PWD educational center that presents the history of the Schuylkill River and the influence of human activities on water quality and quantity through innovative exhibits and interactive educational programs. FWWIC, PWD, Academy of Natural Sciences and PDE have partnered to develop a Freshwater Mussel Recovery Program. Freshwater

mussels filter water and improve water quality. The program aims to rebuild populations of native mussels through hatchery propagation to improve water quality in the Schuylkill and Delaware River watersheds. Additional program information is available online at the [FWWIC Mussel Hatchery website](#). Installation of a research and education-focused hatchery at the FWWIC was completed in 2017 and over the course of the past several years, tens of thousands of individual mussels consisting of five distinct species have been successfully propagated. Innovative research at the demonstration hatchery has also led to new scientific discoveries and novel propagation techniques that will be implemented at a larger production hatchery currently in the planning phases. Ultimately, mussels will be reintroduced into the city's waterways in significant numbers so that the ecosystem services provided by their filter feeding can improve ambient water quality.

4.3.3 Philly RiverCast

PWD continues to promote and maintain Philly RiverCast. The website, [www.phillyrivercast.org](#), has received more than 1.6 million visits since its launch in 2005. In 2022, PWD launched a revamped version of the website to modernize its appearance and enhance the user experience. PWD continues to assist individuals and recreational groups in interpreting RiverCast ratings.

4.3.4 In-City Stormwater Education and Outreach

PWD continues to help Philadelphia residents manage stormwater and beautify their homes through the Rain Check program, a collaborative effort with the Pennsylvania Horticultural Society (PHS). As part of the program, residents attend a workshop to learn about stormwater tools and how to select the most appropriate management tools for their property. Once the property owner identifies the most suitable stormwater management practices, PWD and PHS will help connect them with a contractor to assist with the installation, and Rain Check provides a portion of the project cost. In FY2025, Rain Check held 31 workshops throughout Philadelphia with a total of 1,012 participants. Stormwater controls installed are itemized in Table 4-12.

Table 4-12: Rain Check Program Progress

| Stormwater Management Practice | Total FY2022 Installations | Total FY2023 Installations | Total FY2024 Installations | Total FY2025 Installations | Cumulative Total (Fall 2014 - July 2023) |
|--------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--|
| Permeable pavers | 33 | 25 | 14 | 17 | 455 |
| Downspout planters | 114 | 164 | 146 | 82 | 1,243 |
| Rain gardens | 5 | 8 | 1 | 1 | 100 |
| Rain barrels | 454 | 422 | 414 | 337 | 5,721 |

Source: Ben Bristol, personal communication, September 18, 2025.

Table 4-13 details initiatives and planned implementation timeline for watershed-wide education and outreach programs to support the LT2 WCP goals.

Table 4-13: Planned Implementation Schedule – Watershed Education and Outreach Control Strategies

| Control Strategy: Education and Outreach | | | |
|---|-------------------------------------|------------------------|---------------------|
| Education and Outreach Goal - Raise awareness of source water protection issues throughout Philadelphia's source watersheds | | | |
| Objectives and Tasks | Target Watershed | Target Completion Date | Report Section |
| Continue to participate in the SAN workgroups and support initiatives outlined in each group's workplan | Schuylkill River | Ongoing | 4.5.1.5 |
| Continue to collaborate with the PDE on various education and outreach initiatives | Schuylkill and Lower Delaware River | Ongoing | 4.5.1.6 |
| Continue to promote the use of the Delaware Valley Early Warning System among industries, wastewater dischargers, and water suppliers | Schuylkill and Lower Delaware River | Ongoing | 4.2.1.4 and 4.2.1.5 |
| Work with Philadelphia and regional schools to identify opportunities to enhance conservation practice education in the curriculum | Wissahickon and Pennypack Creeks | Ongoing | 4.5.1.7 |

4.3.5 Schuylkill Action Network Collaboration

PWD maintains a professional services contract with the Partnership for the Delaware Estuary, which incorporates facilitation of the SAN, including workgroup meetings, communication, and project coordination. Previously set at a contract amount of \$217,000, a budgetary increase to \$300,000 began in PWD fiscal year 2026. This increased budget is intended to help fund further partnership outreach and facilitation in the lower Delaware River watershed within Baxter's area of interest. PWD also sits on

the SAN's Planning and Executive Steering Committees, assisting in the planning of annual events and drafting strategic planning documents. PWD regularly attends quarterly SAN Pathogens and Point Source and Agriculture Workgroup meetings, and PWD personnel serve as a co-chair on the Pathogens and Point Source Workgroup.

The SAN workgroups provide a mechanism for PWD to engage and collaborate with stakeholders to address priority sources of *Cryptosporidium*, such as agricultural runoff and wastewater effluent. Through the SAN Agriculture Workgroup, PWD is kept informed about the progress of recent SRRF grant recipients and potential future high priority agricultural BMP projects. Through the SAN Pathogens and Point Source Workgroup, PWD can track changes related to wastewater discharge throughout the watershed. PWD and other workgroup partners also share information about water quality, treatment technology improvements, regulatory updates, effective water management best practices, and contaminants of emerging concern (CECs).

4.3.6 Collaboration with Partnership for the Delaware Estuary

PWD continues to contribute financial resources toward collaboration efforts with Partnership for the Delaware Estuary (PDE) on several education and outreach initiatives. Initiatives include engaging Philadelphia residents in the prevention of stormwater pollution to the Schuylkill and Delaware Rivers and facilitating coordinated action, communication, and projects for the Schuylkill Action Network (SAN) and Delaware River Improvement Partnership (DRIP).

PDE hosted what was formally known as the annual Pennsylvania Coast Day at Penn's Landing in Philadelphia, which was renamed the Delaware River Festival beginning in 2019. This celebration of the Delaware River also included partners and activities across the river in Camden, NJ. The 2025 Delaware River Festival took place on Saturday, September 27, and brought roughly 1,500 attendees to the Philadelphia and Camden waterfronts. Attendees were offered free access to the Independence Seaport Museum and RiverLink ferry rides. The event also featured activities from 40 environmental organizations, including face painting and pedal boat rides. Attendees won a variety of water-themed prizes, including reusable water bottles, water books and activities, and planting kits. Key event information was available in English, Spanish, Simplified Chinese, and Vietnamese. Following the event, feedback from attendees, staff and exhibiting organizations as well as metrics from advertising mechanisms were utilized to identify strengths of this year's event and areas for future improvement.

Additionally, PDE promotes and coordinates the annual Schuylkill Scrub initiative, which takes place from March through May in collaboration with Keep Pennsylvania Beautiful. The 2025 Schuylkill Scrub engaged 26,227 volunteers at 1,484 locations. In this three-month period, volunteers removed an estimated 55,195 trash bags of litter and bulk waste from the watershed, as well as 4,022 tires.

From June 14 through June 20, 2025, Schuylkill River Greenways hosted the annual Schuylkill Sojourn, a 112-mile kayak journey from Schuylkill Haven to Philadelphia. The SAN sponsored the 2025 Schuylkill Sojourn Steward, who assists in promoting and documenting the event and connecting participants to stewardship of the river and its watershed.

Additionally, PWD, PDE, Academy of Natural Sciences, and FWWIC partnered to install a freshwater mussel hatchery demonstration project at FWWIC that opened to the public in 2017. See Section 4.3.2 for more detail on the FWWIC.

4.3.7 Educational Partnerships

The 2020 Watershed Control Plan Update commits to working with Philadelphia and regional schools to identify opportunities to enhance conservation practice education.

In FY2023, PWD engineering staff participated as leading members of the Occupational Advisory Council (OAC) for Lincoln High School, a Philadelphia public school adjacent to a tributary to Pennypack Creek. PWD staff played an active role in supporting and enhancing the school's Environmental Engineering career pathway. PWD plans to explore direct partnerships with the school district in the coming years, with the mission of creating student opportunities for internships and post-graduation employment, and to support a yearly work plan that includes procuring guest speakers and facilitating project-based learning.

On April 23, 2025, PWD Office of Watersheds staff lead a stream cleanup and site tour of Sandy Run with students from Lincoln High School. PWD staff spoke to students about their roles within the department and an upcoming ecological restoration project along Sandy Run, describing the issues created by urban stormwater runoff and the department's approach to alleviating those effects. Staff then led the students through a two-hour cleanup along a stretch of the small tributary.

PWD has also partnered with PDE and Philadelphia Public Schools on education and outreach programming focused on freshwater mussel research and reintroduction efforts. These programs are centered on the lifecycle of freshwater mussels and how their filter-feeding can benefit water quality. Programs like Mussel Maniacs and Mussels in the Classroom use the bivalves to encourage interest in natural ecosystems and the many ways in which both humans and animals interact with their environment to affect water quality.

4.4 Stakeholder Engagement and Partnerships

As described in the 2020 Watershed Control Plan Update, stakeholder engagement and partnership initiatives are intended to support the following goals:

- 1) Maintain and strengthen existing watershed partnerships, and
- 2) Develop a framework for a Delaware River Watershed Collaborative.

The first goal focuses primarily on existing Schuylkill River Watershed partnerships and reinvigorating Philadelphia's in-city watershed partnerships. The second goal is to identify and assess the gaps in collaborative efforts to protect and preserve the Lower Delaware River Watershed. Associated objectives and tasks are outlined in Table 4-14.

Table 4-14: Planned Implementation Schedule – Stakeholder Engagement and Partnership Building

| Control Strategy: Stakeholder Engagement and Partnership Building | | | |
|---|--|------------------------|----------------|
| Goal - Continue to strengthen existing partnerships | | | |
| Objectives and Tasks | Target Watershed | Target Completion Date | Report Section |
| Continue to support the Schuylkill River Restoration Fund to achieve implementation of priority projects | Schuylkill River | Ongoing | 4.4.1.1 |
| Champion the Schuylkill River Restoration Fund and work with SAN partners to draw in more funders | Schuylkill River | Ongoing | 4.4.1.2 |
| Promote the Schuylkill River Restoration Fund to potential applicants where appropriate | Schuylkill River | Ongoing | 4.4.1.2 |
| Remain an active participant in watershed partnerships and reinvigorate Philadelphia Watershed partnerships e.g., Friends of the Pennypack and Friends of Fox Chase Farm | Pennypack and Poquessing Creeks | Ongoing | 4.4.1.4 |
| Engage Philadelphia stables in the implementation of erosion and sediment control measures | Wissahickon, Pennypack and Poquessing Creeks | Ongoing | 4.2.2.1.3 |
| Engage water suppliers and agricultural stakeholders in the lower Delaware River watershed to expand or form new working groups modeled after the Schuylkill Action Network | Delaware River (Baxter AOI) | Ongoing | 4.4.1.5 |

4.4.1 Schuylkill River Restoration Fund Grant Advisory Committee

The Schuylkill River Restoration Fund (SRRF) provides grants to government agencies, non-profits, businesses and other organizations to support environmental projects that improve and protect water quality in the watershed. Contributors include Constellation Energy, PWD, Aqua PA, and PA American Water. The Schuylkill River Greenways National Heritage Area (SRG NHA) oversees the SRRF and distributes grant money. Grant recipients from the SRRF are selected by an advisory committee comprised of representatives from Constellation, Aqua PA, PA American Water, DRBC, PWD, EPA, PA DEP, SRG, Partnership for the Delaware Estuary, and the Schuylkill Action Network (SAN).

With less than two percent of the Philadelphia source watershed located within the jurisdiction of the city, taking a partnership approach is critical for PWD. Through the SRRF, PWD can leverage funding and support projects that protect the drinking water for Philadelphia, educate the public on the importance of source water protection, and implement on-the-ground projects that support Watershed Control Plan goals.

On May 21, 2025, the SRRF advisory committee met to hear presentations from SRRF applicants and to select grant recipients. More than \$560,000 was available for 2025 grants. PWD contributed \$250,000 to the SRRF in 2024. In the 2025 SRRF grant round, PWD awarded a total of \$206,250 to the following grant recipients:

- \$50,000 to Lebanon County Conservation District to implement agricultural best management practices at the Klinedell Dairy Farm in the Tulpehocken Creek Watershed
- \$50,000 to Berks Nature to implement agricultural best management practices at the Hemsley Farm in the Maiden Creek Watershed
- \$41,250 to the Manayunk Development Corporation to implement streambank stabilization measures and native riparian plantings along a portion of the Manayunk Canal
- \$40,000 to Courtesy Stable to implement stormwater management and paddocks stabilization practices in the Wissahickon Creek Watershed, and
- \$25,000 to Woodmere Art Museum for the construction of green stormwater infrastructure in the Wissahickon Creek Watershed.

More information on the above projects is in Section 4.4.2.6.

4.4.2 Schuylkill River Restoration Fund Outreach and Promotion

On September 12, 2025, Schuylkill Action Network partners hosted *SRRF 20th Anniversary Celebration and Grant Award Announcement* at Camelot Park in East Greenville, PA. During this event, nearly 70 attendees toured the riparian restoration at Longacre Farm and Camelot Park, and the agricultural BMPs implemented at Masemore Farm. Speakers from contributing agencies, regulatory partners, past recipients, and local political representatives talked about the SRRF's two decades of success and the impact the grant program has had throughout the watershed. The 2025 SRRF grant recipients for projects that enhance the Schuylkill Watershed were also announced by Schuylkill River Greenways.

PWD champions the Schuylkill River Restoration Fund and works with SAN partners to draw in more funders. PWD hopes its own increase in funding to the SRRF this year inspires its water utility partners to follow suit.

4.4.3 Other Watershed Outreach

PWD helped plan and implement the Schuylkill Action Network Annual Meeting, held on November 7, 2025. The event was held in person at Albright College in Reading, PA. The 2025 meeting drew 51 attendees, who represented both returning and novel faces to the SAN. Discussion topics included monitoring and impacts related to salinity, the potential impacts of data centers, and workgroup updates highlighting the activities and progress completed over the prior year. A portion of the meeting

was also dedicated to development of the next iteration of the 5-year strategic plan, with attendees providing input on challenges and opportunities through breakout groups.

In addition to presentations and networking, a highlight of the event was the recognition of PA DEP's Meghan Rogalus as the 2025 SAN MVP for her dedication to improving the Schuylkill watershed and her service to the SAN, where she previously served as the SAN Coordinator. Alexa Smith of the Schuylkill Conservation District was also presented with the Impact Award for her work in the SAN's Abandoned Mine Drainage workgroup and the Schuylkill Acts & Impacts initiative. Finally, Dan Koury was presented with the Lifetime Achievement Award for his many achievements in improving abandoned mine drainage sites throughout the Schuylkill's headwaters.

PWD is an active participant in watershed partnerships and plans to reinvigorate Philadelphia Watershed partnerships. In 2020, a contract was conformed with the Partnership for the Delaware Estuary to work collaboratively with PWD and other key city partners to deepen and expand current outreach programming and develop diverse educational campaigns centered on the prevention of non-point source pollution and source water protection in the Philadelphia portion of the Delaware River Watershed. PDE will also lay the groundwork for the development of stronger partnerships with watershed groups and other stakeholders in the city to increase future engagement in clean water initiatives. At the end of calendar year 2020, PDE was also awarded a \$57,044 Growing Greener grant by PA DEP towards the establishment of a water quality collaborative for the lower Delaware River watershed. In 2021, PWD began working with PDE to engage potential partners through preliminary focus groups, gauging interest in the upcoming collaborative and determining shared goals in the region. PDE was awarded a second Growing Greener grant of \$149,802 for expansion of the Delaware River Improvement Partnership for Water Quality Improvement in Delaware River. Progress towards the development of a Delaware River Watershed Collaborative is further detailed below in Section 4.4.1.5.

4.4.4 Philadelphia Stables Partnerships

In 2020, a comprehensive stormwater improvement and paddock restoration project at Northwestern Stables was completed with the help of \$50,000 in PWD funding towards the SRRF grant award. The SRRF award helped the non-profit Northwestern Stables, Inc. leverage \$143,000 in additional funding and in-kind support towards the project's completion. This project was showcased during the annual Schuylkill River Restoration Fund press event on September 17, 2021.

In 2025, PWD awarded Courtesy Stable \$40,000 through the SRRF to install stormwater control mechanisms and to regrade and restabilize the stable's 1.7 acres of heavy use areas. More information on these projects can be found in Section 4.2.2.1.

4.4.5 Delaware River Watershed Collaborative Development

Since 2023, PWD has met monthly with Partnership for the Delaware Estuary (PDE) staff to develop a framework for a water quality collaborative focused on the lower Delaware River watershed, as outlined in the 2020 Watershed Control Plan Update. PDE staff has historically been tasked with coordinating and facilitating the Schuylkill Action Network (SAN), which serves as a model for the formation of the Delaware River Improvement Partnership (DRIP). Beginning in fiscal year 2026, PWD increased the

budget for watershed partnership coordination from \$217,000 per year to \$300,000 to support increased outreach and coordination with stakeholders from the lower Delaware River watershed.

An agriculture workgroup, “Farm Forward,” kicked off in 2024, attended by water suppliers, county conservation districts, and non-profits interested in agriculture and/or water quality. A workshop focused on selling agricultural BMPs to farmers is being planned for early 2026. PWD hopes to create a queue of potential projects that could be supported by an SRRF-style funding mechanism in the future.

Throughout 2025, representatives from PWD, PDE, PADEP, EPA, and Aqua met monthly to discuss outreach strategies and identify priority partners. Regional workgroups focused on Stormwater and Engagement & Stewardship are planned to be kicked off in early 2026.

Collaboration among regional water utilities in the lower Delaware River watershed was also identified as a high priority. Strengthening these connections should promote opportunities for open dialogue focused on shared regional concerns and create forums to discuss regulatory updates and impacts. In 2024, DRBC formally approved and convened a Source Water Protection subcommittee, comprised of nearly one dozen water and wastewater utilities along the lower Delaware River, along with regulatory partners. PWD holds the positions of both reserved member and subcommittee chair.

4.5 Expectations for 2026

Although the second round of LT2 compliance sampling resulted in an average *Cryptosporidium* concentration within ‘Bin 1’ range, the Queen Lane intake will remain a ‘Bin 2’ facility based on the results from the first round of compliance sampling as mandated by PA DEP regulations. The PWD Queen Lane Water Treatment Plant will continue to employ options from the ‘Microbial Toolbox,’ including achieving individual and combined filter effluent performance requirements to maintain compliance with LT2 regulations. Additionally, PWD will continue ongoing initiatives outlined in the WCP through its existing Source Water Protection Program framework.

In 2026, PWD will maintain programs and activities that allowed it to accomplish its LT2 goals as outlined in the Watershed Control Plan Update, approved June 2021. These include continuing to address WWTP effluent, agricultural land runoff, and animal vectors as priority sources of *Cryptosporidium*, as well as expanding education and outreach in the watershed through source water protection program initiatives. It also includes completing WCP actions that specifically reduce *Cryptosporidium* in the watershed. Specific focus will continue to be on the following:

- Continued partnership with SAN and PDE for project facilitation and collaboration
- Continued funding toward SAN administration and the SAN Coordinator position
- Participation as a reserved member and chair of DRBC’s Source Water Protection subcommittee
- A contribution of ~\$250,000 to the SRRF for 2026 project grants
- Involvement with the SAN Pathogens and Point Source Workgroup to track wastewater discharge related changes in the watershed
- Involvement with the SAN Agriculture Workgroup to identify and contribute to agricultural BMP and CNMP implementation in the watershed

- Involvement and promotion of Farm Forward, including at the planning and steering levels
- Involvement and promotion of other incipient Delaware River Watershed working groups focused on Stormwater and Engagement & Stewardship
- Wildlife management at Fairmount Park properties and PWD facilities

The Watershed Control Plan efforts will be expanded into the Delaware River watershed as outlined in the 2020 WCP update. Continued efforts to coordinate and collaborate among area stakeholders will be a primary aim for the next year.

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