

The Monoshone Watershed

Quarterly Water Quality Update

Issue No. 1

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Caring About Philadelphia's Water Resources

The City of Philadelphia cares greatly about the streams that define its neighborhoods. We recognize that streams are critical human habitats, in addition to ecosystems that support aquatic life.

The Philadelphia Water Department (PWD) initiated a number of pollution prevention programs in the Monoshone Watershed in 1999. Since then, we have seen reductions in the levels of bacteria that indicate the presence of sewage at the seven stormwater outfalls that drain into the Monoshone Creek.

Much of this work is supported by local environmental organizations such as the Senior Environment Corps (SEC) and Chestnut Hill College (CHC). As a result of this partnership, PWD is publishing a quarterly water quality update to share bacteria sampling results at Outfall 5 and at a point downstream on the Monoshone, just south of RittenhouseTown.

This report is the first of those quarterly issues.

What is a WATERSHED?

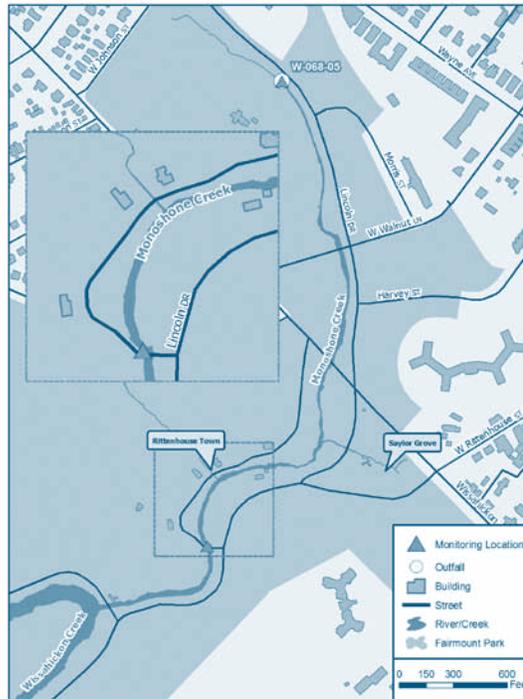
A watershed is the land surrounding a system of rivers (or streams or creeks), or a particular river, that, when it rains, sheds the runoff into that waterway. Everything you do impacts your watershed. Runoff from garden fertilizers, hazardous substances like used motor oil, and trash dumped into one area of a river bank can pollute water many miles downstream. Protecting and preserving our watersheds helps protect our water resources.

About the Monoshone Creek Watershed

PWD is working to protect the Monoshone Creek Watershed. One way we are doing this is through a number of programs focused on the basic problems of separate sewer systems in urban areas. This is a system in which one sewer collection system is dedicated to sanitary collection, such as waste from bathrooms and kitchens, and the other is dedicated to stormwater runoff collection, such as the rainwater that goes into the storm drains.

The Challenges of a Separate Sewer System

Separate storm sewers systems drain directly to waterways such as rivers, creeks, and streams. Urban environments can be challenging for these storm sewers, as the stormwater runoff can contain litter, gasoline, oils, fertilizers, animal wastes, and other pollutants that are washed from our lawns and streets into storm drains. In addition, high volumes of stormwater runoff are delivered to streams during intense rain storms, which harm stream habitats for fish and other wildlife.



Overview of the Monoshone Watershed: This map shows the Monoshone Creek and the locations of the Water Department's stormwater outfalls along the creek. Outfall Number 5, which receives the largest volume of stormwater runoff due to the size of the drainage area, is the location where PWD takes its quarterly fecal coliform sample. At the same time, a sample will be taken just south of Historic RittenhouseTown.

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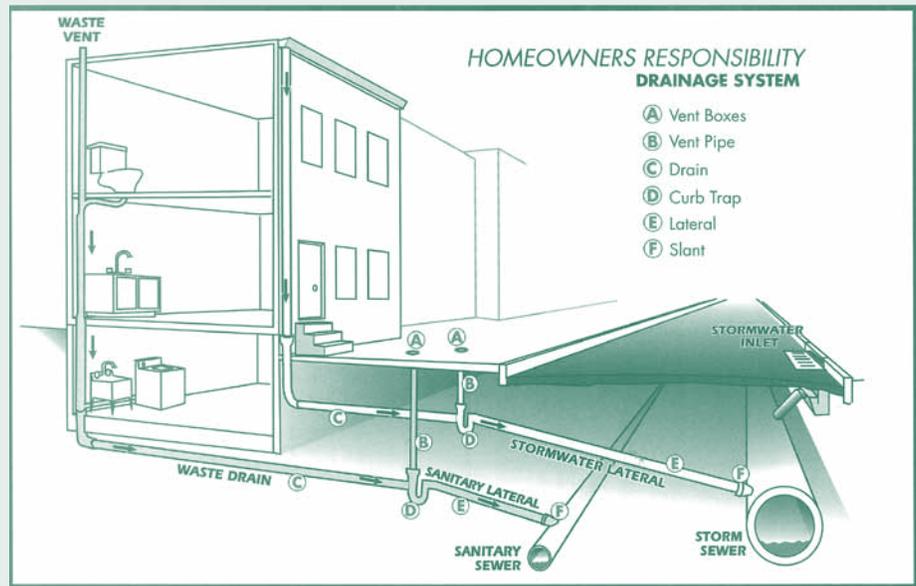
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Our projects in the Monoshone Creek Watershed include the inspection and repair of defective sewer lateral pipes; the relining of the sanitary sewer under Lincoln Drive; stream channel restoration; the creation of the Saylor Grove Treatment Wetland demonstration project; and the initiation of the Wissahickon Watershed Partnership.

All of these projects are designed to help control stormwater runoff and stop pollutants from getting into our waterways.

For the Monoshone Creek and our other stream systems throughout the City – the Cobbs, the Tacony, the Wissahickon, the Pennypack and the Poquessing – this restoration will take some time. Each stream system has its own challenges.

In an urban environment, it is impossible to clean a river or stream to the point where there is no bacteria in that waterway. Animal wastes and other urban pollutants that are picked up by rainfall will always be a factor. Our challenge is to work with the City of Philadelphia and our community partners to achieve streams that are healthy for fish and wildlife, and are a joy to see and touch. That is a vision that the City champions.



The diagram above depicts a home plumbing system. The homeowner's responsibility for maintenance and repair includes all internal plumbing and fixtures, and extends to the items labelled "A" through "F." PWD is responsible for the sanitary sewers and storm sewers, as well as the stormwater inlets.

LONG TERM BACTERIA TRENDS MEASURED AS FECAL COLIFORM AT OUTFALL 5

Outfall 5 Lincoln & Morris	Date	Fluoride (milligrams per liter)	Fecal Count (# per 100 milligrams)
2007			
Outfall 5	3/26/07	0.33	2,000
Outfall 5	5/16/07	0.46	2,300
Outfall 5	9/17/07	0.97	3,800
Outfall 5	10/22/07	0.69	22,000
2008			
Outfall 5	3/13/08	0.12	360
Outfall 5	4/23/08	0.35	3,000
Outfall 5	9/15/08	0.57	138,000
Outfall 5	12/3/08	0.53	191,000

As the sampling above results illustrate, fecal coliform numbers are often in the low thousands which means we all still have much work to do. But at the same time, we have witnessed a marked improvement from sampling results taken a decade ago. Often, a high result is an indicator that there is a problem within the City's sewer or a property lateral(s), resulting in sewage entering the creek. PWD inspects the sewers in this area to track down and repair potential problems

Strategies For a Healthy Future

Meeting the challenges we face is a step-by-step process. In order to have success tomorrow, we need to put a number of small programs in place today. These programs will result in consistent, incremental improvements.

Revitalized, healthy streams will become a reality through the many approaches that the City has embraced. These strategies look at traditional pollutant sources such as property sewer lines and aging infrastructure, and how we can repair and maintain these to prevent pollution. Our strategies also include innovative programs that make green, sustainable development part of our everyday city planning.

Looking at the Numbers: What We Do on the Land Impacts Our Water

Bacteria sampling measures the levels of fecal coliform per 100 milliliters.

Fecal Coliform are bacteria that indicate the presence of sewage. The water quality standard is 200 fecal coliforms/100 ml – an extremely difficult goal to consistently meet in urban streams. Typical sources of high fecal coliform counts in the Monoshone Creek include stormwater runoff, improperly connected house laterals, clogged sewer pipes, and leaking septic systems.

Fecal coliform bacteria are used as an indicator of the presence of sewage in streams and rivers.

Fluoride is a naturally occurring element, but high levels can indicate that treated water is finding its way into the creek. A fluoride concentration above 0.5 milligrams per liter may be an indicator of a leaking lateral(s), a sewer problem, or a leaking water service line or main.

PWD and the PA Department of Environmental Protection (PA DEP) measure water quality improvements over the long term. Our goal is to ensure that bacteria levels continue to decline as we put watershed protection programs in place and alter the way the urban landscape impacts our waterways. This topic will be covered in our next issue.

Responding to Emergency Events

PWD investigates and responds to incidents such as accidental spills, illegal dumping activities and sewer emergency repairs. These emergencies may result in large spikes in bacteria volumes. When high bacteria sampling results are discovered, they indicate to PWD that something unusual is happening in the drainage area, or that there may be a problem with a property lateral or with the City's sewer collection system.

The following sewage causing events and PWD follow up actions took place between September 2007 and December 2008. These events are related to the periodic spikes in high fecal counts in the Monoshone Creek:

September 2007: A choke in the manhole at Walnut and Kingsley Street resulted in a backup through the manhole and into the street. PWD's Sewer Maintenance Unit flushed and cleaned the manhole and sewer.

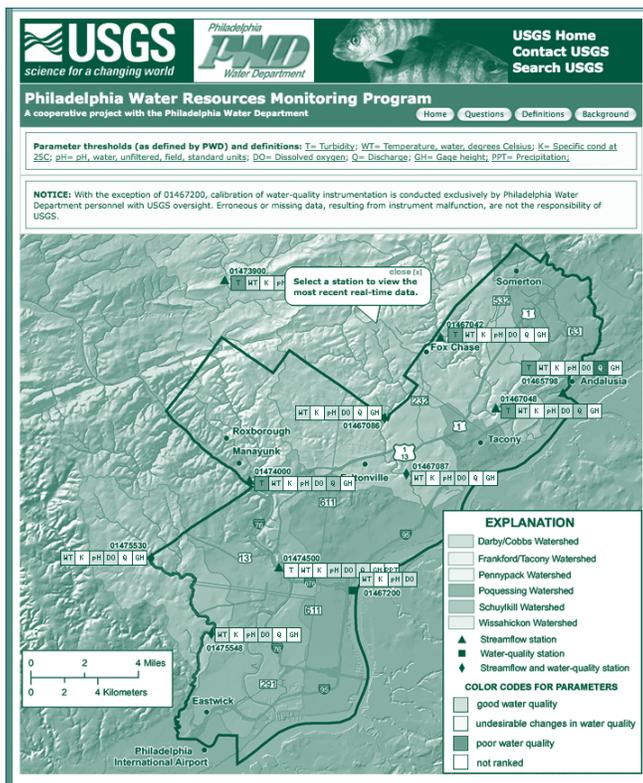
December 2007: A choke in the manhole at Walnut and Kingsley Street resulted in a backup through the manhole and into the street. PWD's Sewer Maintenance Unit flushed and cleaned the manhole and sewer.

September 2008: The sanitary lateral from the Park building in Blue Bell Park was found to be connected to the storm sewer, resulting in periodic sewage flows into the creek. PWD Sewer Maintenance cleaned the area. Fairmount Park made the necessary repairs and connected the building's sanitary lateral to the sanitary sewer.

December 2008: PWD's Industrial Waste Unit investigated an apparent discharge into the outfall by Saylor's Grove. The source of the discharge was traced to improper oil/grease disposal practices by the Burger King restaurant on Chelton Avenue. The practice was brought to the attention of the restaurant and district managers. PWD is continuing to monitor the outfall to ensure this practice doesn't happen again.

A number of these events were reported to the PWD by the public. We appreciate and rely on the public to call our hotline number at 215-685-6300 whenever they see a sewage or water leak on the street or in a stream.

Welcome to the Philadelphia Water Department's "Water Resources Monitoring Program" website (see below). The link is: <http://pa.water.usgs.gov/pwd/>



PWD has entered into a cooperative agreement with the United States Geological Survey (USGS) to develop a long-term monitoring system for our watersheds.

As you can see on the above map, which is displayed on the front page of the project website, each station, including Schuylkill at Fairmount Dam, has water quality information which includes Dissolved Oxygen, pH, Conductivity, Water Temperature and, in some instances, Turbidity.

This program was instituted as part of our comprehensive watershed monitoring program and will continue as an integral component of PWD's Storm Water and Combined Sewer Overflow (CSO) permits' monitoring requirements, as well as our Source Water Protection Program.

Under the agreement, PWD assumes the responsibilities of the water quality instrumentation while USGS continues to perform the operations and maintenance on the stations.

With this data, PWD will track spatial (upstream vs. downstream) patterns in water quality as well as temporal (day vs. night, historical, and interannual variation) patterns.

This will allow us to determine changes in water quality and quantity as we progress with the implementation of our integrated watershed management plans, as well as serving as a barometer for changes in global climate and sea level changes.

Next Issue: Information on PWD's Low Impact Development Green Infrastructure Program will be featured. This issue will appear in September, 2009.

For More Information:

PWD's Annual Stormwater and Combined Sewer Overflow (CSO) Annual Report and other watershed management and comprehensive characterization reports can be found at: www.phillyriverinfo.org.

For up to date information on the recreational water quality of the Schuylkill River, go to <http://www.phillyrivercast.org/>.

Here's What You Can Do:

Join a watershed partnership. For information, go to: www.phillyriverinfo.org.

Visit the Fairmount Water Works Interpretive Center, both on line at www.fairmountwaterworks.org, or in person at 640 Water Works Drive in Philadelphia.