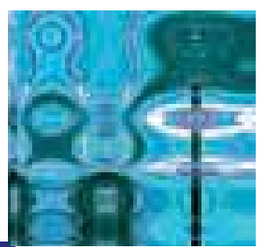
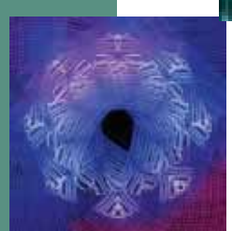
Annual

Drinking Water Quality Report 2009





This report is being mailed to you as a requirement of the federal Safe Drinking Water Act. NOTE: Industrial and commercial customers, including hospitals, medical centers, and health clinics, please forward this report to your Environmental Compliance Manager.

Philadelphia's water is safe and healthy to drink for most people. For people with special health concerns, please see the information on page two.

Philadelphia Water Department
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- American Water Resources Association
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- Partnership for Safe Water
- American Public Works Association
- Association of Metropolitan Water Agencies
- National Association of Clean Water Agencies
- Water Environment Federation
- Water Environment Research Foundation
- Water Research Foundation

This report is available online at http://www.phila.gov/water

Customer Information Hotline: 215-685-6300

PWD's Public Water System Identification #PA1510001

The Philadelphia Water Department

The Philadelphia Water Department (PWD) is pleased to present our annual Water Quality Report. This report, published in April 2010, includes water quality information for the 2009 calendar year.

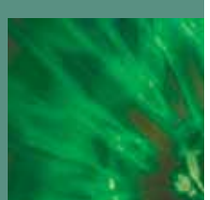
The good news is – your tap water is top quality. Our Water Quality Report provides our customers with a summary of where Philadelphia's drinking water comes from, how it is treated and the results of water quality monitoring performed by us on a daily basis.

The U.S. Environmental Protection Agency (EPA) requires all water utilities to produce and distribute water quality reports on an annual basis.

We have consistently performed better than all drinking water standards developed by the EPA to protect public health.

How do we do this? We use proven treatment practices at our water treatment plants and we participate in groundbreaking research while keeping water rates among the lowest in the region.

Para obtener una copia del informe en Español sobre los resultados más recientes de la calidad del agua publicado por el Departamento de Agua de Philadelphia, llame al 215-685-6300.



People With Special Health Concerns

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS and other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

Environmental Protection Agency/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline: 800-426-4791.

Our standards are the highest: our drinking water consistently performs better than all drinking water standards developed by the EPA to protect public health.

Where does Philadelphia's drinking water come from?

Philadelphia is located in the Delaware River Watershed, which begins in New York State and extends 330 miles south to the mouth of the Delaware Bay. The Schuylkill River is part of the Delaware River Watershed.

Map Courtesy of the Delaware River Basin Commission. Delaware River Basin Commission Map Collection.

The water that we treat comes from the Schuylkill and Delaware rivers. Rivers are surface water supplies. Philadelphia does not use groundwater. Each river contributes approximately one-half of the City's overall supply. We produce approximately 250 million gallons of high-quality drinking water for our customers on a daily basis.

PWD has three water treatment plants that process untreated river water. Depending on where you live, you receive drinking water from one of these three plants. The Queen Lane Plant is located in East Falls and its water comes from the Schuylkill River. Its intake is located along Kelly Drive. The Belmont Plant is located in Wynnefield and its water also comes from the Schuylkill River. Its intake is located along Martin Luther King, Jr. Drive. The Baxter Plant is located in Torresdale and its water comes from the Delaware River. Its intake is located at the plant on the Delaware River.

Safeguarding the water you drink

At their sources, the Delaware and Schuylkill Rivers are generally clean. But as the rivers flow downstream, they pick up contaminants from many sources – stormwater runoff washes pollutants on the land into the rivers, and communities and industries discharge used water back into the rivers. Today, the City enjoys watersheds that are cleaner and healthier than they have been in well over a century. Although we have seen a dramatic improvement in the water quality of the City's two major rivers since the passage of the federal Clean Water Act in the early 1970s, there is still more work that needs to be done to protect our drinking water sources from pollution.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (EPA) has regulations that limit the amount of certain contaminants in water provided by water suppliers. The Food and Drug Administration establishes limits for contaminants in bottled water that must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791) or from their website (http://www.epa.gov/safewater).

Partnership for Safe Water

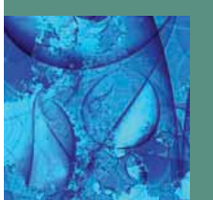
Employees of the Philadelphia Water Department's three water treatment plants have earned a Director's Award for maintaining an elite status of 10 consecutive years of compliance in the Partnership for Safe Water. This award is presented to utilities across the country which meet or go beyond the water quality goals established by the Partnership for Safe Water.

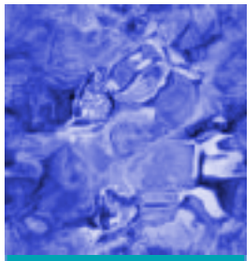
Dating back to 1996, the Philadelphia Water Department was one of the first utilities to join this unique partnership between the drinking water industry and the EPA to make voluntary improvements in the nation's drinking water quality. This program was designed to be much more rigorous than the requirements of State and federal laws.

The turbidity of Philadelphia's water is 80 percent less than the maximum amount allowed by State and federal regulations, and our average results are 40 percent less than the Partnership's voluntary goal of 0.10 ntu (See Glossary on page 9).

The Partnership for Safe Water established a turbidity goal of less than 0.10 ntu. Today, all three of our water treatment plants continue to lower their ntu levels, achieving a total annual average of 0.06 ntu.

Through our participation in this program, we have surveyed our treatment plants, treatment processes, operating and maintenance procedures, and management oversight practices to learn how we can improve our water system. We have already made many of the improvements, and we will continue to apply others. These improvements have helped to enhance our water system's ability to prevent Cryptosporidium, Giardia and other microbial contaminants from entering the water we treat.





How do drinking water sources become polluted?

Across the nation, sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water (such as rain and melting snow) travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production. They can also come from gas stations, urban stormwater runoff (from streets and parking lots) and septic systems.
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

Why is chlorine used to disinfect the drinking water?

State and federal laws require the disinfection of all public water supplies. EPA and health agencies recognize that using chlorine is the most effective way to protect public health from disease-causing organisms that can be found in rivers and streams. However, chlorine can chemically react with natural materials in rivers to form disinfection byproducts, such as trihalomethanes and haloacetic acids.

We have been adjusting our treatment process over the years to reduce this chemical reaction. But we also ensure that the treated water that is distributed through the City's water mains to your homes has a "chlorine residual." This residual continues to protect your water against bacteria and other organisms on its journey to your home tap.

We now use sodium hypochlorite, a safer form of chlorine similar to household bleach, to disinfect the water at our treatment plants.

Lead in drinking water

It is important to minimize the intake of lead from dust inhalation, food and water. Children are particularly susceptible to the health effects of lead poisoning. Lead is most commonly found in dust, paint and contaminated soil. To a lesser extent, lead can also occur in tap water. Components of plumbing may have lead in them. You may be surprised to learn that brass fixtures, valves and faucets contain lead. Many homes still have lead solder that was once used to join copper pipe together. Some homes in Philadelphia still have lead service lines and, when disturbed, these lines can contribute to lead in tap water. It is the homeowner's responsibility to maintain, repair and replace the service lines.

Our primary role in helping you minimize your intake of lead is to reduce the corrosive effects of tap water on materials that contain lead. Water is corrosive and encourages the dissolving of lead from these materials. The Philadelphia Water Department has a permit with the PA Department of Environmental Protection (PA DEP) for operating under optimized corrosion control. Under this permit, we maintain the pH of water between 6.8 and 7.8. We also maintain the amount of the corrosion inhibitor, zinc orthophosphate, at greater than 0.12 mg/L (0.12 ppm) as phosphorus. These conditions minimize lead leaching from plumbing materials.

Currently, every three years the Philadelphia Water Department tests for tap water lead at more than 50 representative taps of vulnerable homes in the City. We do this according to the requirement of the EPA's Lead and Copper Rule. The testing results are used to determine if our corrosion control treatment technique is working, so that water has minimum potential for lead to leach from plumbing materials. So far, our test results show that our treatment techniques keep lead levels to a minimum. For the 2008 test results, please see the chart on page 8. If you would like to participate in our 2011 sampling, please contact our Customer Information Hotline at 215-685-6300.

These test results could change in any year, however, because Philadelphia is required to meet other regulations for tap water quality. Sometimes these water quality changes can affect the corrosion potential of the water. If such a change were to occur, the Philadelphia Water Department would notify its customers of the change while it works to return to minimum corrosion conditions again. Water utilities all over the country are in the same position as Philadelphia, trying to balance all of the regulatory requirements and changes at one time so that their customers receive the best quality water possible. We are committed to reducing the corrosive effects of plumbing and lead levels in water. Additional information is available from the EPA's Safe Drinking Water Hotline at 800-426-4791 or from their website at http://www.epa.gov/safewater.

What do we look for?

Under Primary and Secondary Safe Drinking Water Regulations, EPA and PA DEP require drinking water utilities to monitor about 100 regulatory parameters. These regulatory parameters are defined with their maximum contaminant level (MCL) and maximum contaminant level goal (MCLG) under federal rules such as: Total Coliform Rule, Surface Water Treatment Rule, Disinfectants and Disinfection Byproducts Rule, Lead and Copper Rule and Radionuclides Rule. We monitored for the regulatory parameters listed below. Tables on pages 8 and 9 summarize monitoring results for parameters found at detectable levels. Please see a glossary of terms and abbreviations on page 9.

Inorganic Chemicals:

Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, free cyanide, fluoride, lead, mercury, nitrate, nitrite, selenium and thallium.

Synthetic Organic Chemicals:

Alachlor, atrazine, benzo(a) pyrene, carbofuran, chlordane, dibromochloropropane, di(2-ethylhexyl) adipate, di(2 ethylhexyl) phthalate, endothall, ethylene dibromide, hexachlorocyclopentadiene, lindane, methoxychlor, oxamyl, pentachlorophenol, picloram and simazine.

Volatile Organic Chemicals:

Benzene, carbon tetrachloride, o-dichlorobenzene, p-dichlorobenzene, 1,2-dichloroethane, 1-1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, dichloromethane, 1,2-dichloropropane, ethylbenzene, monochlorobenzene, styrene, tetrachloroethylene, toluene, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene and total xylenes.

SODIUM IN TAP WATER

	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Average	20 ppm or 5 mg per 8 oz. glass of water	41 ppm or 10 mg per 8 oz. glass of water	42 ppm or 10 mg per 8 oz. glass of water
Range	15 - 33 ppm 4 - 8 mg per 8 oz. glass of water	25 - 85 ppm 6 - 20 mg per 8 oz. glass of water	25 - 112 ppm 6 - 27 mg per 8 oz. glass of water

NOTE: We conducted monitoring for sodium throughout the year, although federal regulations do not require it.

HARDNESS IN TAP WATER

	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Average	82 ppm or 5 gpg	139 ppm or 8 gpg	163 ppm or 10 gpg
Minimum	56 ppm or 3 gpg	110 ppm or 6 gpg	126 ppm or 7 gpg
Maximum	105 ppm or 6 gpg	223 ppm or 13 gpg	204 ppm or 12 gpg

Hardness defines the quantity of minerals such as calcium and magnesium in water. These minerals react with soap to form insoluble precipitates and can affect common household chores such as cooking and washing. Philadelphia's water is considered "medium" hard.

ALKALINITY IN TAP WATER

	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Average	35 ppm	61 ppm	63 ppm
Range	22 - 45 ppm	47 - 81 ppm	40 - 81 ppm

Temperature and Cloudiness: The temperatures of both the Schuylkill and Delaware rivers vary seasonally from approximately 32 degrees to 78.8 degrees Fahrenheit. PWD does not treat the water for temperature. Cloudiness most commonly happens in the winter, when the cold water in the mains is warmed up quickly by household plumbing. Cloudiness is visible during aeration, when the water flowing from your tap into a glass appears cloudy. This temporary condition is a result of dissolved air being released from the water and being suspended in the water in the glass. This encourages the dissolved air to come out of the water.

Appealing to Your Senses

We also test for aluminum, chloride, color, iron, manganese, pH, silver, sulfate, total dissolved solids and zinc to ensure that tap water meets all water quality taste and odor guidelines so that your water looks, tastes and smells the way it should.

Research and Monitoring:

Cryptosporidium and Giardia

Cryptosporidium and *Giardia* are microscopic organisms found in surface water throughout the U.S. When ingested, *Cryptosporidium* and *Giardia* can result in diarrhea, fever, nausea and abdominal cramps. However, these are also symptoms of many intestinal diseases caused by bacteria, viruses or parasites. Most healthy individuals can overcome such illnesses within a few weeks. However, immuno-compromised people are at a greater risk of developing a life-threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding taking appropriate precautions to avoid infection. *Cryptosporidium* and *Giardia* must be ingested to cause disease and they may be spread through means other than drinking water.

The Philadelphia Water Department is one of the nation's leaders in *Cryptosporidium* research and was one of the first utilities in the U.S. to monitor for the organism. PWD labs are using state-of-the-art research technology, not yet approved by the EPA for regulatory reporting. In 2009, we conducted 36 tests on Philadelphia's finished water. In one of these tests, PWD labs detected a damaged *Cryptosporidium* oocyst. There was no evidence that this oocyst was still viable and a threat to human health. No *Giardia* cysts were detected in finished water in 2009.

We are working closely with the Philadelphia Department of Public Health to ensure that our tap water is free of pathogens that can be found in rivers. In addition to routinely monitoring for *Cryptosporidium*, we are involved in an innovative project with Lehigh University to identify the sources of *Cryptosporidium* in our watersheds. As part of the project, we collect water samples upstream of our drinking water intakes. We isolate the Cryptosporidium oocysts and conduct DNA analyses to determine whether the oocysts originate from human sources or from other species such as dogs, cats, deer, geese, cows, horses, etc.

Research with Lehigh University on sources of *Cryptosporidium* in Philadelphia's watershed continued through 2009. Lehigh University reported that about one half of the *Cryptosporidium* found in the rivers were not a threat to human health although they can infect wildlife and waterfowl. By identifying the sources of *Cryptosporidium* in the watershed, we are taking a proactive approach in improving the river water quality.

Pharmaceuticals in Drinking Water

The Philadelphia Water Department has been conducting research on pharmaceuticals in drinking water since 2004. Attention to this issue has increased greatly, along with recent advances in technology to detect very low concentrations of trace contaminants in water. However, these advanced detection capabilities are still limited to specialized research laboratories. The Philadelphia Water Department has stayed at the forefront of this issue by participating voluntarily in national research studies and establishing analysis capabilities with advanced laboratories.

This issue exists throughout the United States, and even worldwide, wherever pharmaceuticals are utilized. Pharmaceuticals get into drinking water because people now take more medications than ever, both prescription and over the counter. Only a small portion of these substances is absorbed in the body. The rest passes through the body, eventually making its way into the rivers and streams that serve as our nation's drinking water sources.

The pharmaceuticals detected in Philadelphia are in extremely low concentrations. For example, a person would need to drink eight glasses of water a day for more than 40,000 years to obtain the equivalent of a single child's dose (80 mg) of Tylenol. There is currently no indication that such trace concentrations pose any public health risk. The Philadelphia Water Department will continue to stay abreast of this issue to ensure the safety of our drinking water and the protection of our watersheds.

You can help keep unused pharmaceuticals out of the water supply by paying attention to how you dispose of unused medications. Look for take-back programs that may be established near you, either through pharmacies, or through household hazardous waste collection programs. For more information, please visit: www.phila.gov/water/Pharmaceuticals_in_D.html.

Drinking Water Treatment

Like the majority of water utilities in the U.S., we use a multi-step treatment process at all three of our drinking water treatment plants. This Water Treatment Process diagram provides a brief description of drinking water treatment in Philadelphia.

How Do We Treat the Water So That You May Drink It?

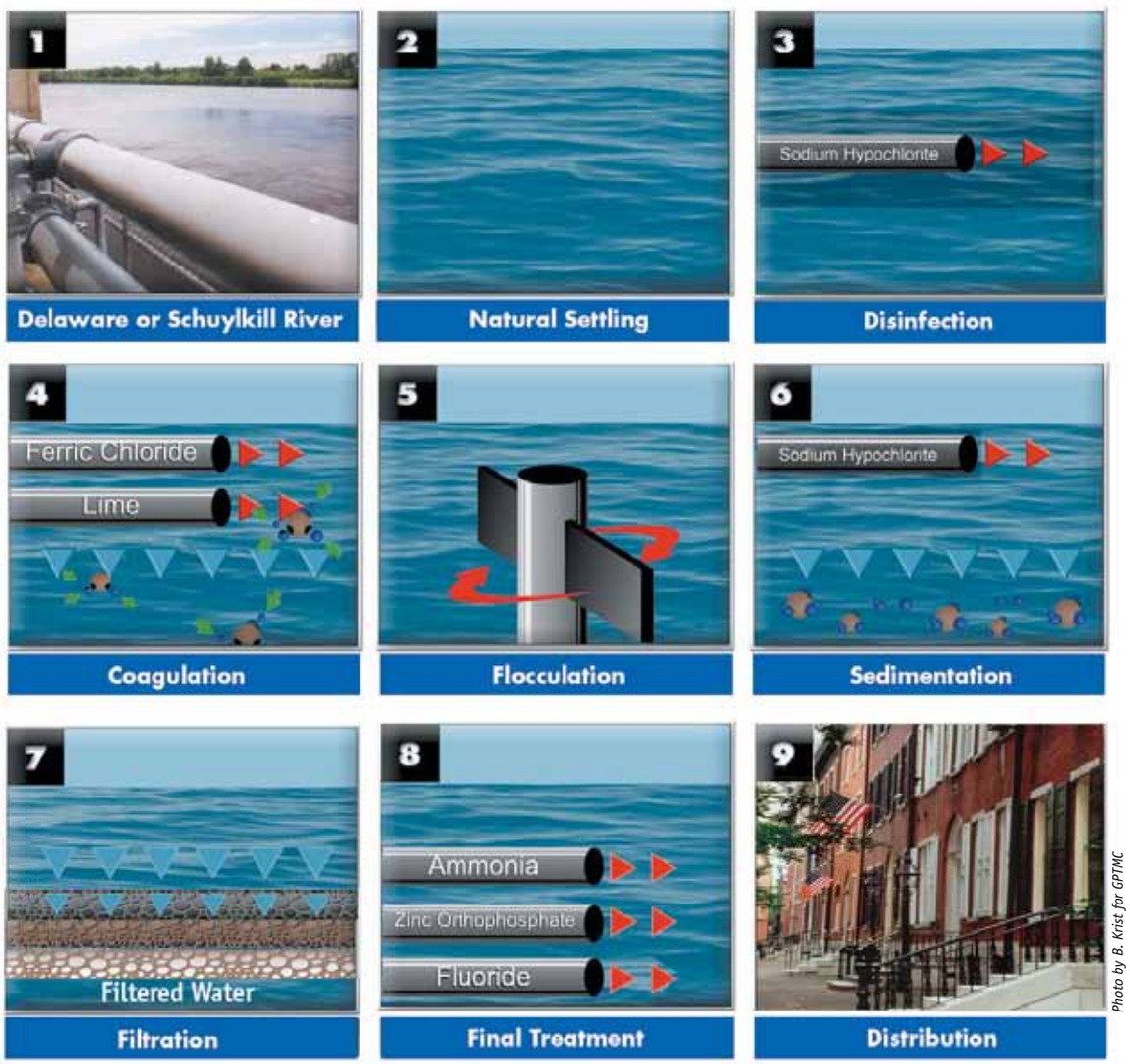


Photo by B. Krist for GPTMC

1. The River
The source of the water is from either the Delaware or Schuylkill River.

2. Natural Settling
After it has been pumped from the river, water is stored in reservoirs or basins for about 24 hours, to allow sediments to settle.

3. Disinfection
Sodium hypochlorite, a chemical compound containing chlorine, is added to kill disease-causing organisms.

4. Coagulation
The river water is coagulated. Chemicals are added to the water to cause smaller particles in the water to join together, and the pH is adjusted to aid in coagulation. This process makes the particles heavier so that they will settle to the bottom of the basin.

5. Flocculation
The water is mixed gently to make sure the added chemicals are well blended and react with all of the smaller particles. The particles combine to form "floc" which settle to the bottom of the basin.

6. Sedimentation
The newly joined particles or "floc" settle by gravity and are removed from the bottom of the mixing tanks. More sodium hypochlorite is added for disinfection.

7. Filtration
The water flows by gravity through filters of sand and crushed coal, which remove very small particles that might never settle by gravity.

8. Final Treatment
Fluoride is added to help prevent tooth decay. Zinc orthophosphate is added to minimize rusting of metal pipes by the water. Ammonia is added to reduce the flavor of chlorine and to help the sodium hypochlorite to persist in the water while it travels through the water main system, or to remain active in the water all the way to our customers' faucets.

9. Distribution
The treated water is distributed through 3,137 miles of water mains to 480,000 households in Philadelphia.

2009 DRINKING WATER QUALITY

METALS - *Tested at Customers' Taps - Testing is done every 3 years. Most recent tests were done in 2008.*

	EPA's Action Level for representative sampling of customer homes	Ideal Goal (EPA's MCLG)	90% of PWD customers' homes were less than	No. of homes considered to have elevated levels	Source
Lead	90% of homes must test less than 15 ppb	0	6 ppb	3 out of 97	Corrosion of household plumbing
Copper	90% of homes must test less than 1.3 ppm	1.3 ppm	0.3 ppm	0 out of 97	Corrosion of household plumbing

INORGANIC CHEMICALS (IOC) – PWD monitors for IOC more often than required by EPA.

	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Result	Range of Test Results for the Year	Source
Nitrate	10 ppm	10 ppm	4.05 ppm	0.73 - 4.05 ppm	Fertilizer runoff, sewage
Barium	2 ppm	2 ppm	0.043 ppm	0.027 - 0.043 ppm	Metal refineries or natural deposits
Cyanide	200 ppb	200 ppb	66 ppb	58 - 66 ppb	Discharge from steel/metals, plastics and fertilizer factories
Fluoride	4.0 ppm	4.0 ppm	1.02 ppm	1.00 - 1.02 ppm	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Chromium	100 ppb	100 ppb	7 ppb	4 - 7 ppb	Discharge from steel and pulp mills; erosion of natural deposits

BACTERIA IN TAP WATER

NOTE: None of the samples with Total Coliforms tested positive for E. coli.

	Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Monthly Results	Source
Total Coliform (360+ monthly samples)	Presence of coliform bacteria in 5% or fewer of monthly samples	0	Highest % of positive samples: 0.60	Naturally present in the environment.

DISINFECTION BYPRODUCTS IN TAP WATER

	Highest Level Allowed (EPA MCL) One Year Average	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average	Source
Total Trihalomethanes (TTHMs)	80 ppb	35 ppb Range of individual test results: 16 - 59 ppb	46 ppb Range of individual test results: 18 - 87 ppb	44 ppb Range of individual test results: 20 - 44 ppb	Byproduct of drinking water disinfection
Total Haloacetic Acids (THAAs)	60 ppb	35 ppb Range of individual test results: 16 - 57 ppb	34 ppb Range of individual test results: 15 - 61 ppb	32 ppb Range of individual test results: 13 - 67 ppb	Byproduct of drinking water disinfection

TOTAL ORGANIC CARBON (Ratio of Removal Achieved Divided by Removal Required)

Treatment Technique One Year Average	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average	Source
Must be greater than or equal to 1	1.44	1.62	1.81	Naturally present in the environment.

CLARITY CHARACTERISTICS – Tested at Water Treatment Plants

Turbidity (measure of clarity)	Baxter WTP	Belmont WTP	Queen Lane WTP	Source
Treatment Technique Requirement *95% of samples must be at or below 0.300 NTU*	100% below 0.300 NTU	100% below 0.300 NTU	100% below 0.300 NTU	Soil runoff, river sediment
Highest Single Value for the year	0.107 NTU	0.104 NTU	0.072 NTU	Soil runoff, river sediment

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. On September 1, 2009, we did not continuously monitor for turbidity level at the effluent of one of our filters at the Queen Lane WTP, and therefore cannot be sure of the quality of the drinking water from this filter or the health effects during that time. The length of the period that we did not continuously monitor the effluent of this one filter (out of 160 filters) was less than 6 hours, and subsequent monitoring showed no problems. The monitoring violation occurred because the filter turbidity monitor failed and plant staff took longer than anticipated to replace it. The combined plant filter effluent was continuously monitored during this time and the turbidity did not change. No water quality emergency existed due to this monitoring violation, and this notice is for informational purposes only.

TOTAL CHLORINE RESIDUAL – over 400 samples collected throughout the city every month

Total Chlorine in Tap Water	EPA Maximum Residual Disinfectant Level	One Year Average	Range of Highest Levels Detected at Taps
Chloramine	4.0 ppm	1.65 ppm	2.20 - 2.62 ppm

VOLATILE AND SYNTHETIC ORGANIC CHEMICALS (VOC and SOC)

Chemical	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Result	Range of Test Results	Source
Ethylene Dibromide	50 ppt	0 ppt	17 ppt	0 - 17 ppt	Discharge from petroleum refineries

UNREGULATED CONTAMINANT MONITORING REGULATION (UCMR)

Chemical	Testing Period	Average	Range	Location
N-nitroso-diethylamine (NDEA)	9/2009 - 12/2009	4 ppt	0 - 13 ppt	Distribution system
N-nitroso dimethylamine (NDMA)	9/2009 12/2009	1.6 ppt	0 - 2.9 ppt	Distribution system

The group of chemicals called Nitrosamines can form spontaneously by reaction of precursor amines with nitrosating agents (nitrate and related compounds), or by action of nitrate-reducing bacteria. Foods such as bacon and malt beverages can contain nitrosamines; there is also evidence that they form in the upper GI tract.

In 2009, PWD performed special monitoring as part of the Unregulated Contaminant Monitoring Regulation (UCMR), a nationwide monitoring effort conducted by the EPA. Unregulated contaminants are those that do not yet have a drinking water standard set by EPA. The purpose of monitoring for these contaminants is to help EPA decide whether the contaminants should have a standard.

Unregulated contaminants not detected at any of the sampling locations:

acetochlor, acetochlor ESA, acetochlor OA, alachlor, alachlor ESA, alachlor OA, metolachlor, metolachlor ESA, metolachlor OA, dimethoate, terbufos sulfone, 1,3-dinitrobenzene, 2,4,6-trinitrotoluene, 2,2',4,4',5,5'-hexabromobiphenyl (245-HBB), 2,2',4,4',6-pentabromodiphenyl ether (BDE-100), 2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-153), 2,2',4,4'-tetrabromodiphenyl ether (BDE-47), 2,2',4,4',5-pentabromodiphenyl ether (BDE-99), hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), N-nitroso-di-n-butylamine (NDBA),N-nitroso-di-n-propylamine (NDPA), N-nitroso-methylethylamine (NMEA), N-nitroso-pyrrolidine (NPYR)

Listed on pages eight and nine are our Drinking Water Quality Results for 2009. All results are better than the recommended federal levels designed to protect public health. By reporting these results in the tables above, we are meeting a requirement of the EPA. Please see the glossary on page nine for definitions of abbreviations used in the tables. Some contaminants may pose a health risk at certain levels. Others, such as turbidity, are used as indicators for treatment plant performance. For information about potential risks, please visit our website (http://www.phila.gov/water), or call us at 215-685-6300. We will be happy to mail them to you.

GLOSSARY

Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. The action level is not based on one sample; instead, it is based on many samples.

Alkalinity: A measure of the water's ability to resist changes in the pH level and a good indicator of overall water quality. Although there is no health risk from alkalinity, we monitor it to check our treatment process.

E. coli (Escherichia coli): A type of coliform bacteria that are associated with human and animal fecal waste.

GPG – Grains Per Gallon: A unit of water hardness. One grain per gallon is equal to 17.1 parts per million.

MCL - Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG - Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

mg/L - Milligrams per liter: One milligram per liter is equal to one part per million.

ntu - nephelometric turbidity units: Turbidity is measured with an instrument called a nephelometer. Measurements are given in nephelometric turbidity units.

pCi/L - Picocuries per liter (a measure of radioactivity).

ppb - part per billion: One part per billion is equivalent to one green apple in a barrel with 999,999,999 red apples.

ppm - part per million: One part per million is equivalent to one green apple in a barrel with 999,999 red apples.

ppt - part per trillion: One part per trillion is equivalent to one green apple in a barrel with 999,999,999,999 red apples.

SOC – Synthetic Organic Chemical: Organic compounds, such as pesticides and herbicides, that are commercially made.

Total Coliform: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present.

THAAs -Total Haloacetic Acids: A group of chemicals called disinfection byproducts, which form during chlorination.

TOC - Total Organic Carbons: A measure of the carbon content of organic matter. The measure provides an indication of how much organic material in the water could potentially react with chlorine to form THAAs and TTHMs.

TTHMs - Total Trihalomethanes: A group of chemicals called disinfection byproducts, which form during chlorination. TTHMs form when natural organic matter in the rivers, such as leaves and algae, decompose and combine chemically with the chlorine added for disinfection. Levels of TTHMs vary seasonally.

Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

Turbidity: A measure of the clarity of water related to its particle content. Turbidity serves as an indicator for the effectiveness of the water treatment process. Low turbidity measurements, such as ours, show how we remove particles that cannot be seen by the human eye.

VOC – Volatile Organic Chemical: Organic compounds that include gases and volatile liquids.

WTP: Water Treatment Plant

Clean Water, Healthy City:

1. How Clean Is Philadelphia's Drinking Water Source?

Today, the City enjoys rivers that are cleaner and healthier than they have been in well over a century. Although we have seen dramatic improvements since the passage of the federal Clean Water Act in the early 1970s, there is still more work to be done.

2. How Do We Protect Our Water Supply?

The Philadelphia Water Department has an extensive drinking water supply protection program. The focus of the program is to implement projects and partnerships that address ways to improve our waterways. This program provides a model for upstream communities to follow, thereby ensuring comprehensive source water protection.

Green Philadelphia: We can't keep rain from falling, but we can manage it better once it does. We have a stormwater management program that emphasizes rain barrels, green roofs and green streets. These vegetated features manage rain where it hits the ground similar to the way a natural system –– such as a forest or meadow –– would handle the rain runoff. This helps slow down and filter rainwater to improve water quality.

Storm Drain Markings: Philadelphia has an extensive storm drain marking program that aims to minimize dumping of pet waste, toxins and other pollution into storm drains –– and ultimately into our water supply.

Parks for Waterways Protection: Philadelphia's Fairmount Park was created over 100 years ago to safeguard the City's water supply and it continues to play that role. Our partners at Fairmount Park were recently awarded $1.8 million in stimulus funds to support the natural lands in the Park system, strengthening the Park as a protective buffer and helping further our efforts to safeguard our drinking water.

Goose Management: In 2004, the Water Department planted a meadow in the area surrounding the Belmont Water Treatment Plant intake on the Schuylkill River to deter geese. Prior to the project, as many as 100 geese would descend on this area, attracted by the long grass and food from picnickers. By deterring the geese, the meadow has reduced their impact on the Belmont Plant intake and diverted more than 25 tons of goose manure annually.

Pharmaceuticals Reduction: The Water Department tests for pharmaceuticals in our raw and finished drinking water and is committed to monitoring long into the future. We continually look for ways to reduce sources of pharmaceuticals into our waterways. One program is focused on developing an education program that promotes responsible disposal of unused pharmaceuticals to prevent flushing and misuse of leftover medication. A pilot project at a Philadelphia Senior Care Center collected over 14 types of medication in just a couple of hours.

Working with Upstream Communities: The Water Department collaborates extensively with neighboring communities to improve our waterways. Our efforts include:

- Working with regional land trusts and conservancies to ensure that forested lands, which help purify our source water, are permanently protected for drinking water supply protection.
- Lobbying for policies that preserve forests and emphasize water resource protection.
- Providing support to the Schuylkill Action Network, a partnership of organizations, businesses and governments that work together to protect and enhance the Schuylkill River. For more information on the SAN, visit http://www.schuylkillwaters.org.
- Collaborating with the State of Pennsylvania to ensure regulations are enforced for wastewater treatment plants that discharge upstream of Philadelphia.
- Participated in the development of an extensive web-based Early Warning System for the Schuylkill and Delaware Rivers that improves communication in the event of spills and accidents and is comprised of partnerships between water suppliers, industries with water intakes and government agencies.
- Developed RiverCast, the first and only internet-based system in the United States that provides the public with a bacteria-forecasting system created for recreational activities.
- Worked with several State and local stakeholders to rehabilitate the Fairmount Dam Fishway Facility, the largest fish passage structure in the Schuylkill River Watershed and, as the farthermost downstream passageway, is especially critical to the overall success of restoring fish passage on the Schuylkill River and its tributaries.

Safeguarding Philadelphia's Drinking Water Sources

Recreation and Ecology: What do fish have to do with high quality drinking water? Plenty. A river without fish is a sign of an unhealthy waterway. Fish and other water critters can also provide signals when the water supply has suffered an otherwise undetectable spill. Similarly, a river full of kayakers and rowers signals a vibrant, clean water supply. The Water Department works with numerous local partners to ensure conditions in our rivers are ripe for abundant fish. We also strive to promote human use of our rivers by removing trash in our waterways and improving river access.

Recent renovations to our Fairmount Dam Fishway Facility on the Schuylkill River has been a major reason for increased numbers of fish in the river.

- Total numbers of fish counted in 2009 were the highest ever recorded.
- A total of 36,418 fish representing 23 species were counted.
- This was nearly double (95% increase) the number passed prior to fishway renovations.

3. How Can I Help Protect Our Source Water?

- Be cautious with the amount of water you use in order to lessen demand on our rivers.
- Keep trash out of storm drains and take your trash with you after boating or picnicking along the rivers.
- Avoid feeding geese and other wildlife, especially near waterways.
- Pick up after your dog.
- Do not flush unused pharmaceuticals. Instead, mix them with kitty litter or coffee grounds and dispose of them in the trash. For more information about pharmaceuticals in drinking water, visit: http://www.phila.gov/water/pdfs/pharm-20080915.pdf.

Do You Know...

...what lies below?

Fire protection for the city of Philadelphia is provided through nearly **25,200 fire hydrants**.

Philadelphia's three water treatment plants treat approximately **250 million gallons** of top quality drinking water each day which is then conveyed through **3,137 miles** of water mains.

Philadelphia's three wastewater treatment plants treat approximately **490 million** gallons of wastewater that is collected from the homes, businesses and land in the City each day through **3,599 miles** of sewers.

If Philadelphia's water and sewer mains were put in a straight line, they would stretch from Philadelphia to San Francisco and back!

...how much water flows?

2/3 of the water used in an average home is used in the bathroom.

3% of the water on Earth is fresh water and only 1% is available for human consumption.

66% of the human body is water.

75% of a living tree is water.

Typically, 3 to 7 gallons of water are used for every toilet flush.

On average, a person uses 2 gallons of water to brush his or her teeth each day.

A 10-minute shower uses about 55 gallons of water.

A leaking faucet can waste up to 100 gallons of water a day.

...why tap water works for you?

If you pay $1 for a 20-ounce bottle of water, that works out to $6.40 a gallon. Philadelphia's water costs less than 1 cent per gallon.

The Schuylkill and Delaware Rivers:

Source Water Assessments

The Pennsylvania Department of Environmental Protection has been conducting assessments of all potentially significant sources of contamination to all public drinking water sources. The Philadelphia Water Department has prepared assessments to support local and State efforts to protect the quality of Philadelphia's drinking water sources.

Through the Schuylkill River source water assessment report, the State drinking water program has found that our water supply is potentially most susceptible to challenges caused by discharges of treated and untreated sewage upstream, polluted runoff from urban areas and agricultural lands, transportation accidents and spills and abandoned mine drainage. Most of these potential sources are located watershed-wide, but abandoned mine drainage originates over 100 miles upriver near the source of the Schuylkill River in Schuylkill County. Much closer to Philadelphia, the Wissahickon Creek requires special protection from potential sources of pollution due to its impact on source water quality at the Queen Lane intake.

The Delaware River source water assessment report identified population growth, forest clearing, impact of sea level rise, climate change and changes in flow management on the vulnerability of our Baxter intake to salt intrusion, as the activities of greatest concern for our water supply on the Delaware.

Source Water Protection Plans

The Schuylkill and Delaware River Source Water Protection Plans provide a comprehensive framework for implementing a watershed-wide effort to improve source water quality. The Plans prioritize sources of contamination to Philadelphia's raw water supply and outline several approaches to reducing them.

One major component of the Schuylkill Plan is a build-out scenario of the Schuylkill River Watershed that looks at the possible impacts of significant development in the watershed on source water quality. Under current zoning, low-density housing could increase drastically as agricultural and forested lands are developed. This scenario helped us to see the importance of land preservation for source water protection, and has led to the development of a tool which prioritized land for protection based on its importance for improving water quality.

The Delaware River Plan brought to the forefront the need for the ongoing protection of our Baxter drinking water intake from salt intrusion from the Delaware Bay. To date, we have had ample protection from salt intrusion due to the large quantity of fresh water coming down the Delaware River. We will closely examine new policies and projected changes from climate change, sea level rise and population growth in order to ensure protection of Baxter's intake from salt intrusion well into the future.

Historically, we have developed and maintained emergency response plans to address accidents and spills that could potentially impact the water supply, especially the Delaware River, since it is a working river with barges, railroads and many other transportation activities on or adjacent to it. We now have an automated early warning system which has greatly enhanced our emergency preparedness and response. Through our award-winning Source Water Protection Program, we also work with upstream partners such as watershed organizations, regulatory agencies, planning commissions, municipalities, and water suppliers to improve water quality throughout the entire 15,000 square-mile watershed to keep our water supply as clean as possible. Our Schuylkill and Delaware River Protection Plans outline our many strategies for protecting and enhancing the quality of the Schuylkill and Delaware Rivers as the sources of drinking water for future generations.

If you would like to receive a copy of the source water assessment summaries, or would like to know how to get involved in protecting your water supply or watershed, please call the Philadelphia Water Department at 215-685-6300, visit our website at www.phila.gov/water, or see Table 2 on page 14.

We welcome your ideas and opinions

We participate in nearly 200 public and community events a year, including presentations made at schools, on-going educational programs and other environmental celebrations.

We offer ways for individuals, families, students, seniors, community groups and others to participate in learning about protecting water.

We greatly benefit from our citizens advisory council, which has been working with us over the last few years to improve our communications with our customers. Citizens representing business and industry, education, environmental advocacy, senior citizens, regulatory agencies, and civic and community groups have assisted us in developing public information about a variety of topics, including drinking water quality and stormwater pollution prevention.

Interested citizens are welcome to attend our Water Quality Education Citizens Advisory Council meetings. Call our Hotline at 215-685-6300 to confirm the meeting dates, times and locations.

Getting Involved

If you would like to help protect your water supply or watershed, please call the Philadelphia Water Department at 215-685-6300, visit our website at www.phila.gov/water, or see Table 2 on page 14.

How to contact us

You can write to us at:
Philadelphia Water Department
ARAMark Tower
1101 Market Street, 3rd Floor
Philadelphia, PA 19107-2994

You can call our Customer Information Hotline at 215-685-6300.

Explore Water in Our World at the Fairmount Water Works Interpretive Center!

Excitement at the Fairmount Water Works Interpretive Center (FWWIC) is everywhere – in the galleries, the theater, special exhibitions and by the river's edge. People of all ages are invited to join us in discovering the wonders of water in our world. The Fairmount Water Works stopped pumping water in 1909, but it now has an exciting new life housing the Interpretive Center's exhibits and theater. Activity abounds in the galleries, on the deck, and by the river as school children, families and other visitors explore the water right outside our window.

Our exhibits and programs serve the entire Philadelphia region; the Interpretive Center has been recognized by the Pennsylvania Department of Environmental Protection as the Delaware River Basin's official Watershed Education Center. Did you know that you can drink the same water that dinosaurs drank? Come to our Interpretive Center where you can pilot a helicopter up the Delaware River, make it rain, peak inside a 48-inch water main, visit Pollutionopolis and more!

Hands-on Learning

We offer a number of school programs, ideal for all grades. Our programs are inter-disciplinary, meet Pennsylvania and New Jersey standards and include:

Water in Our World –
An orientation to the Interpretive Center that is the perfect introduction to the world of water for teachers focusing on environmental issues.

From Street to Stream: Slow the Flow –
Our indoor and outdoor lesson that focuses on stormwater runoff, watersheds and the different kinds of land pollution that affect water quality.

Land and Water: A Delicate Balance –
In this introduction to stewardship, students come to understand the relationship of land use and water quality. Students use maps to understand the development of land over time and plan fictional communities that would protect water quality.

Building as Machine: Water for the City –
In this hands-on lesson, students become waterpower engineers as they build simple machines and explore the Water Works' original drawings and turbine.

School programs include:

History of the Manayunk Canal: Industrial Revolution, Environmental Devolution –
This full day class is designed for grades 4 through 8, with walking tours and examination of 100-year-old documents. Students will understand the devastating impact of industrialization in Manayunk on the drinking water supply in Philadelphia.

Seeing is Believing: A Drop in the Bucket –
Through this new career-based science education program, middle and high school students explore the microscopic world of water in a laboratory environment through freshwater sampling. And with the use of state-of-the-art videoconferencing equipment, students can communicate directly with PWD's Lab scientists and engineers working in the field.

Lifelong Learning

Our adult programs include lectures and seminars from nationally and internationally known scientists and writers. Guided group tours for adults of both the historic Fairmount Water Works and the Interpretive Center's exhibits are available. The Schuylkill Soundings speakers' series, which is held on the third Wednesday of every month from 5:30 pm – 7:30 pm, presents PWD scientists, experts, invited writers, artists and lecturers who share our passion for protecting our water environment.

Visit Us Soon!

The Interpretive Center is located at 640 Water Works Drive, below the Art Museum. Our hours are Tuesday through Saturday, 10:00 am to 5:00 pm, and Sunday from 1:00 pm to 5:00 pm. We are closed on Mondays and city holidays. Admission is free.

The Center is ADA accessible. To schedule classroom tours or to check out the Center's Saturday Family Programs, Sunday Film Series, Schuylkill Soundings offerings, visit our website: www.fairmountwaterworks.org.

Clean water begins and ends with you

Always recycle or dispose of unwanted household hazardous wastes properly. Don't pour motor oil, antifreeze or other toxic materials down storm drains. Water that enters our storm drains often flows directly to our local streams and rivers. So, don't pollute! Recycle these household hazardous materials safely and help protect our waterways. Also, don't flush paint thinners, insect sprays, herbicides and other harmful chemicals down the sink. Contact the Streets Department to get a schedule of their Household Hazardous Materials Drop-off Events where you can dispose of these materials safely without polluting your drinking water supply.

TABLE 1: Who to Call to Report Various Situations

Situation	Who To Call	Phone
Dead Fish	Fish & Boat Commission Fish & Boat Waterways Officer PADEP	717-626-0228 717-587-0414 484-250-5900
Illegal Dumping & Related Pollution Activities	PADEP Phila. Environmental Police Unit	484-250-5900 215-686-3082
Sewage Spills	PADEP PWD	484-250-5900 215-685-6300
Oil & Gas Spills/ Accidents	PADEP PWD	484-250-5900 215-685-6300

Important telephone numbers and Internet addresses

Philadelphia Water Department
215-685-6300
http://www.phila.gov/water

Philadelphia Streets Department
215-686-5560
http://www.phila.gov/streets

U.S. Environmental Protection Agency (Safe Drinking Water Hotline)
800-426-4791
http://www.epa.gov/safewater

Schuylkill River Source Water Assessment
http://www.phillywatersheds.org

Schuylkill Action Network
http://www.schuylkillactionnetwork.org

Philadelphia river and watershed information
http://www.phillywatersheds.org

RiverCast
http://www.phillyrivercast.org

Fairmount Water Works Interpretive Center
215-685-0723
http://www.fairmountwaterworks.org

TABLE 2 – Places To Go To Get Involved In Protecting Your Local Streams, Rivers and Water Supply

Organization	Activity Types	Phone Number	Website Address
Friends of the Pennypack	A, C, E, P, T	215-934-PARK	http://balford.com/fopp
Friends of the Wissahickon	A, C, E, P, T	215-247-0417	http://www.fow.org
Friends of Fox Chase Farms	A, C, E, P	215-728-7900	http://www.foxchasefarm.org
Friends of the Manayunk Canal	A, C, E, P, T	215-483-9238	http://www.manayunkcanal.org
Schuylkill Environmental Education Center	A, B, C, E, P, T	215-482-7300	http://www.schuylkillcenter.org
Partnership for the Delaware Estuary	A, B, C, E, P, S,T	1-800-445-4935	http://www.delawareestuary.org
Philadelphia Canoe Club	R, F, T	215-487-9674	http://www.philacanoe.org
Friends of Fairmount Fish Ladder	F	215-683-0217	email: epac99@aol.com
Cobbs Creek Environmental Education Center	A, C, E, P, T	215-685-1900	http://www.cobbscreekcenter.org
Wissahickon Restoration Volunteers	A, C, E, P, T	215-951-0330 x2101	http://wissahickonrestorationvolunteers.org
Wissahickon Valley Watershed Association	A, C, E, P, T	215-646-8866	http://www.wvwa.org
Lower Merion Conservancy	A, C, E, P, T	610-645-9030	http://www.lmconservancy.org
Philadelphia Water Department Water Quality Education Citizens Advisory Committee	A, E	215-685-6300	http://www.phila.gov/water
Schuylkill Banks	B,E,L	215-222-6030 x103	http://www.schuylkillbanks.org
Senior Environment Corps	A, C, E, P, T	215-848-4072	http://www.centerinthepark.org/progsec.html

ACTIVITY TYPES

- **A:** Environmental activism
- **B:** Business related protection and education activities
- **C:** Clean-up of trash and litter
- **E:** Environmental education
- **F:** Fishing or fish recreation activities
- **L:** Land conservation and management
- **P:** Planting trees and streambank repair/ protection
- **R:** Rowing, canoeing, and related boating activities
- **S:** Storm drain marking
- **T:** Water quality testing

WATER Wheel

Green City, Clean Waters

Update/2010

Background

On September 1, 2009, the Philadelphia Water Department (PWD) submitted the Green City, Clean Waters plan to the PA Department of Environmental Protection (DEP) and the U.S. Environmental Protection Agency (EPA) to detail how PWD will invest approximately $1.6 billion over the next 20 years to significantly reduce Combined Sewer Overflows (CSOs) – a combination of sewage and stormwater that overflows into our rivers and streams when it rains (see "Combined Sewer Overflows" for more information). To ensure this public investment not only results in clean and beautiful waterways, but also provides tangible, additional benefits to our citizens, PWD is dedicating a large portion of this plan to a green stormwater infrastructure (GSI) approach.

Combined sewer overflow episodes and stormwater runoff volumes have increased over time as land development has led to the replacement of pervious areas with impervious surfaces, such as roadways and buildings, which are characteristic of urbanized landscapes, like Philadelphia. In turn, this affects Philadelphia's watersheds by impairing water quality and degrading stream habitats. Green stormwater infrastructure contributes to alleviating the CSO problem and its effects, by integrating pervious areas that manage stormwater throughout Philadelphia.

ABOVE: *An example of a newly installed residential rain garden.*

BELOW: *Pervious pavement is a specially designed pavement system that allows water to infiltrate through the pavement and prevents it from becoming runoff.*

Photo: Mill Creek Basketball Court, Philadelphia, Pennsylvania

Combined Sewer Overflows (CSOs)

The City of Philadelphia's sewer system is comprised of both combined and separate sewer systems. A combined sewer system (CSS) is simply a single sewer system that carries both sewage and stormwater to a water pollution control plant for treatment before being released to a waterway. During moderate to heavy rainfall events, the system will reach capacity, overflow, and discharge a mixture of sewage and stormwater directly to our streams and rivers from the 164 permitted Combined Sewer Overflow (CSO) outfalls within the City. Sixty percent of the City of Philadelphia, or 64 square miles, is within the combined sewer system drainage area.

The Vision

The Philadelphia Water Department's (PWD) vision behind the Green City, Clean Waters Plan is to unite the City of Philadelphia with its water environment, creating a green legacy for future generations while incorporating a balance between ecology, economics and equity. The green stormwater infrastructure approach is an essential factor in making this vision a reality.

Green Stormwater Infrastructure

Our definition of green stormwater infrastructure includes a range of soil-water-plant systems that intercept stormwater, infiltrate a portion of it into the ground, evaporate a portion of it into the air, and in some cases, release a portion of it slowly back into the sewer system. As a result, less stormwater enters the combined sewer system, ultimately reducing CSOs. Integrating green stormwater infrastructure into a highly developed area like Philadelphia requires a decentralized and creative approach to planning and design.

(continued on next page)

WATER Wheel

Green City, Clean Waters

Update/2010

(continued from previous page)

Various tools can be implemented to accomplish this, including stormwater planters, rain gardens and green roofs. Implementing innovative green stormwater infrastructure (GSI) throughout our City can maximize economic, social and environmental benefits for Philadelphia.

Benefits of Green Stormwater Infrastructure

PWD has undertaken a Triple Bottom Line analysis of the environmental, social and economic benefits of the Green City, Clean Waters plan. This triple bottom line accounting means expanding the traditional financial reporting framework to take into account ecological and social performance so that the total benefits can be evaluated against the financial investment. The figures associated with the following benefits are specific to Philadelphia.

- **Reduced Combined Sewer Overflow events:** approximately 5-8 billion gallons of CSOs avoided per year.
- **Enhanced Groundwater Recharge:** important for maintaining base flow rates in local rivers and streams.
- **Additional habitat and recreation space:** Increase of over 1 million recreational user-days/year.
- **Increased carbon sequestration:** 1.5 billion pounds of carbon dioxide emissions avoided or absorbed.
- **Improved air quality:** on average leading to 1–2 avoided premature deaths, 20 avoided asthma attacks and 250 fewer missed days of work or school/year.
- **Reduced energy and fuel demands:** Reduction of approximately 6 million kWhs of electricity and 8 million kBTU of fuel used per year.
- **Mitigation of Urban Heat Island effect:** trees and vegetation provide shade and naturally cool areas with a dense concentration of surfaces that absorb heat, such as pavement and buildings.
- **Higher property values:** Increase in property values of 2-5% in greened neighborhoods.

PWD's Land-Based Green Programs

The Philadelphia Water Department is developing eight Green Programs, each with a number of associated implementation tools – including technical assistance, design services, policy changes, regulatory tools, funding commitments and incentives to manage stormwater.

- Green Streets
- Green Homes
- Green Schools
- Green Public Facilities
- Green Parking
- Green Open Space
- Green Industry, Business, Commerce and Institutions
- Green Alleys, Driveways, and Walkways

A key to the success of this strategy is taking advantage of the immense opportunity that exists for implementation on publicly-owned land, such as City-owned property, streets, and rights-of-way, which constitute 45% of the impervious land area of the City. With this in mind, our focus will be on implementing Green Streets and Green Public Facilities in the initial phases of the Land-Based Green Programs.

Photo: Fencing Academy of Philadelphia, Philadelphia, Pennsylvania

Photo: Portland State University Portland, Oregon

Photo: Liberty Lands, Northern Liberties, Philadelphia, Pennsylvania

TOP: *A green roof provides natural drainage and absorption, reducing stormwater runoff.*

MIDDLE: *Sidewalk plantings help control stormwater runoff in paved areas.*

BOTTOM: *A garden designed to control stormwater runoff can also be beautiful!*

For more information on Green City, Clean Waters, please visit www.phillywatersheds.org.