

Annual



Published Spring 2011

Drinking Water Quality Report 2010

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.



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Partnership for Safe Water
American Public Works Association
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National Association of Clean Water Agencies
Water Environment Federation
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This report is available online at
<http://www.phila.gov/water>

Customer Information Hotline:
215-685-6300

The Philadelphia Water Department

The Philadelphia Water Department (PWD) is pleased to present our annual Water Quality Report. This report, published in April 2011, includes water quality information for the 2010 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.

U.S. Environmental Protection Agency (EPA)/ 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

The Philadelphia Water Department (PWD) consistently produces high quality drinking water, substantially better than the drinking water quality standards set by State and Federal regulations. As a member of the Partnership for Safe Water* since 1996, PWD has adopted, as standard practice, treatment goals far stricter than the regulatory requirements.

In 2008, the Baxter, Queen Lane and Belmont Water Treatment Plants were honored with the Partnership for Safe Water 10-Year Director's Award in recognition of PWD's decade long commitment to achieving and maintaining the highest possible drinking water quality.

The turbidity of Philadelphia's water is 80 percent less than the maximum of 0.30 NTU allowed by State and Federal regulations and is 40 percent less than the Partnership for Safe Water turbidity goal of 0.10 NTU.

Since 1998, PWD's average turbidity level (measure of water clarity) of drinking water has been at or below 0.06 nephelometric turbidity units (NTU).

Through our participation in this program, we have surveyed our treatment plants, treatment processes, operating and maintenance procedures and management oversight practices, which have helped to enhance our water system's ability to prevent Cryptosporidium, Giardia and other microbial contaminants from entering the water we treat.

**The Partnership for Safe Water is a voluntary optimization program conceived and initiated by the U.S. Environmental Protection Agency, the American Water Works Association, the Association of Metropolitan Water Agencies and advocated by the Pennsylvania Department of Environmental Protection. Pennsylvania leads the nation in participation in this program and the Philadelphia Water Department is one of Pennsylvania's leaders.*

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>.

Research and Monitoring:

Cryptosporidium and Giardia

Cryptosporidium and *Giardia* are microscopic organisms found in rivers and lakes throughout the United States. When ingested, or contracted in another way than through the water, *Cryptosporidium* and *Giardia* can result in diarrhea and abdominal cramps. However, these are also symptoms of intestinal diseases caused by many bacteria, viruses and 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. Immuno-compromised individuals are encouraged to consult with their doctors about taking appropriate precautions to avoid infections.

PWD works closely with the Philadelphia Department of Public Health to ensure that our tap water is free of pathogens that can be found in rivers. The Philadelphia Department of Public Health monitors for those who are diagnosed with diseases and would contact the Water Department if there were any concerns that the drinking water may be contributing to illnesses.

The 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. In 2010, PWD conducted 33 tests on Philadelphia's finished water. A total of 30,354 liters of the finished water were sampled at the Baxter Water Treatment Plant. In two of the tests at the Baxter Water Treatment Plant, one *Cryptosporidium* oocyst was detected, however there was no evidence that this oocyst was still viable and a threat to human health. No *Cryptosporidium* were detected at the Queen Lane or Belmont Water Treatment Plants where a combined total of 61,747 liters of the finished water were sampled. No *Giardia* were detected in any of the finished water samples at the water treatment plants.

The Water Department's Office of Watersheds manages a source water protection program that looks at protecting the rivers in the City as well as further upstream of Philadelphia. PWD is involved in an innovative project with Lehigh University to identify the sources of *Cryptosporidium* in our watersheds. *Cryptosporidium* can originate from other sources such as dogs, geese, cows, horses, etc. By identifying the sources of *Cryptosporidium* in the watershed, PWD is taking a proactive approach in improving the rivers' water quality.

Pharmaceuticals in Drinking Water

The Philadelphia Water Department has been supporting and conducting research on pharmaceuticals and personal care products in drinking water since 2004. This issue exists throughout the United States, and even worldwide, wherever pharmaceuticals are utilized. Pharmaceuticals get into drinking water because people use medications, 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 wastewater and from there, back into the waterways that serve as our nation's drinking water sources.

The pharmaceuticals detected in Philadelphia are in extremely low concentrations. There is currently no indication that any trace concentrations of such chemicals would 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.

The Drug Enforcement Agency (DEA) sponsored its second national take-back day on April 30, 2011, in coordination with State and local law enforcement agencies. The national take-back day provided an opportunity for the public to surrender expired, unwanted or unused pharmaceuticals and other medications to law enforcement officers for proper disposal. To find out about future take-back events, visit DEA's website at www.dea.gov or call 215-238-5172.



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.

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

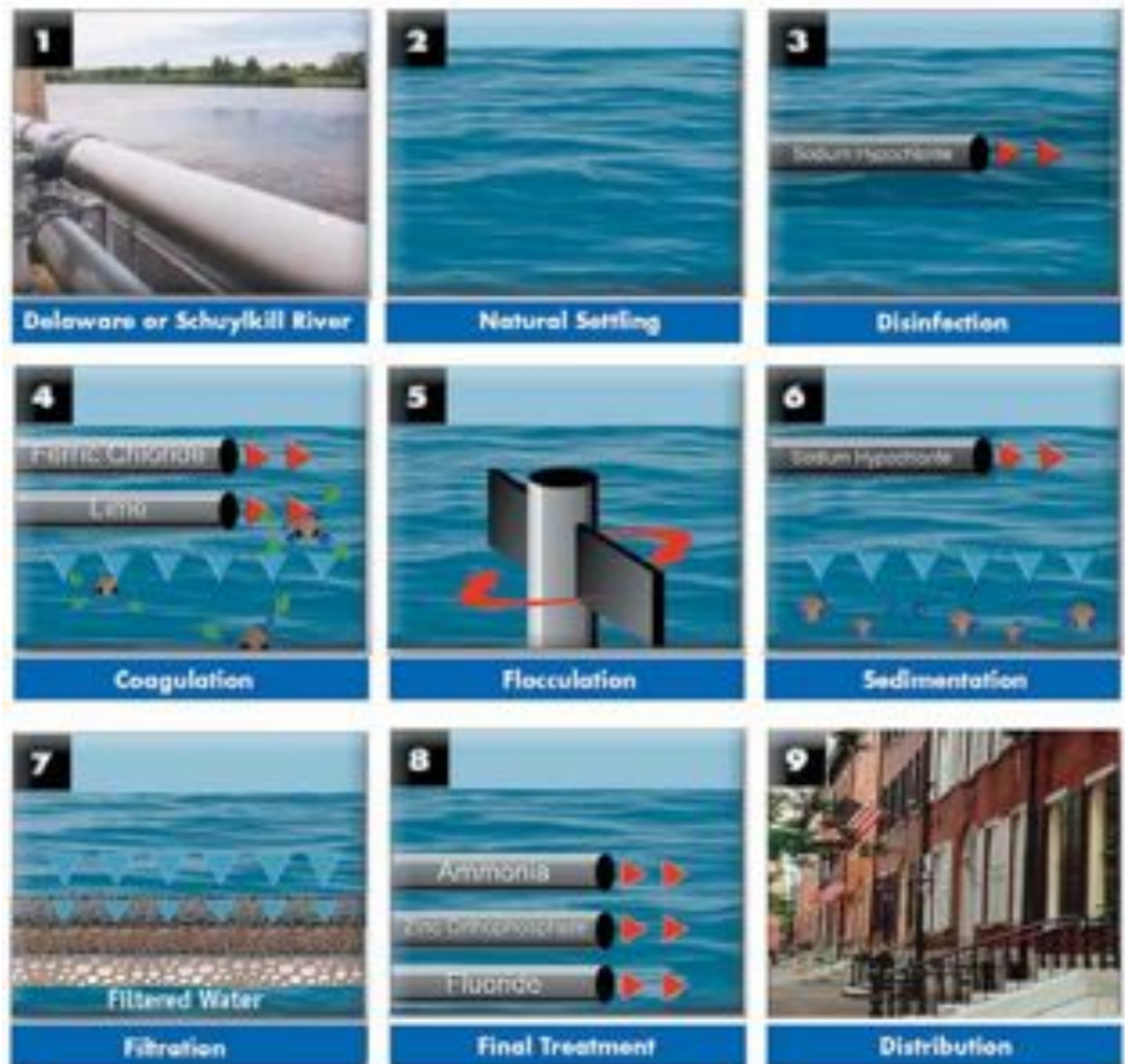
The river water is coagulated. Chemicals are added to the water to cause smaller particles in the water to join together, and the pH is adjusted to aid in coagulation. This process makes the particles heavier so that they will settle to the bottom of the basin.

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.

Photo by B. Krist for GPTMC

What do we look for?

EPA, PADEP and Safe Drinking Water Regulations 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 10.

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.

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.

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.

SODIUM IN TAP WATER

	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Average	25 ppm or 6 mg per 8 oz. glass of water	46 ppm or 11 mg per 8 oz. glass of water	49 ppm or 12 mg per 8 oz. glass of water
Range	12 - 54 ppm 3 - 13 mg per 8 oz. glass of water	24 - 74 ppm 6 - 17 mg per 8 oz. glass of water	23 - 115 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	89 ppm or 5 gpg	143 ppm or 8 gpg	166 ppm or 10 gpg
Minimum	64 ppm or 4 gpg	104 ppm or 6 gpg	85 ppm or 5 gpg
Maximum	195 ppm or 11 gpg	193 ppm or 11 gpg	203 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	36 ppm	67 ppm	68 ppm
Minimum	20 ppm	42 ppm	43 ppm
Maximum	51 ppm	94 ppm	85 ppm



2010 DRINKING WATER QUALITY

Listed on pages eight and nine are our Drinking Water Quality Results for 2010. All results are better than the recommended Federal levels designed to protect public health. By reporting these results in the tables below, we are meeting a requirement of the EPA. Please see the glossary on page 10 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.

LEAD AND COPPER - 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	Violation	Source
Lead	90% of homes must test less than 15 ppb	0	6 ppb	3 out of 97	No	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	No	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	Violation	Source
Barium	2 ppm	2 ppm	0.030 ppm	0.024 - 0.030 ppm	No	Discharges of drilling wastes; discharge from metal refineries; erosion of natural deposits
Chromium	100 ppb	100 ppb	1 ppb	0 - 1 ppb	No	Discharge from steel and pulp mills; erosion of natural deposits
Cyanide	200 ppb	200 ppb	83 ppb	0 - 83 ppb	No	Discharge from steel/metal factories; discharge from plastics and fertilizer factories
Fluoride	2 ppm	2 ppm	1.0 ppm	0.95 - 1.0 ppm	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate	10 ppm	10 ppm	3.9 ppm	0.65 - 3.9 ppm	No	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits

BACTERIA IN TAP WATER We collect an average of over 400 samples per month, which is more than the 360 samples required by EPA.						
	Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Percent or Total Number of Positive Samples	Monthly Range (% or #)	Violation	Source
Total Coliform	5% or fewer of monthly samples are positive	0	1.83%	0 - 1.83%	No	Naturally present in the environment
Fecal Coliform or E coli	0	0	2	0 - 1	No	Human or animal fecal waste

Unregulated contaminants that we monitored for:

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-diethylamine (NDEA),N-nitroso-di-n-propylamine (NDPA),N-nitroso-methylethylamine (NMEA),N-nitroso-pyrrolidine (NPYR),N-nitroso-dimethylamine (NDMA)

In 2010, 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.

None of the unregulated contaminants we monitored for were detected at any of the sampling locations.

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	Violation	Source
Total Trihalomethanes (TTHMs)	80 ppb	40 ppb Range of individual test results: 13 - 77 ppb	42 ppb Range of individual test results: 11 - 131 ppb	51 ppb Range of individual test results: 14 - 136 ppb	No	Byproduct of drinking water disinfection
Total Haloacetic Acids (THAAs)	60 ppb	31 ppb Range of individual test results: 14 - 65 ppb	22 ppb Range of individual test results: 9 - 54 ppb	25 ppb Range of individual test results: 7 - 52 ppb	No	Byproduct of drinking water disinfection

TOTAL ORGANIC CARBON (Tested at Water Treatment Plants)					
Treatment Technique Requirement	Baxter WTP One Year Range	Belmont WTP One Year Range	Queen Lane WTP One Year Range	Violation	Source
Percentage of Removal Required	35 - 45%	25 - 35%	25 - 45%	No	Naturally present in the environment
Percentage of Removal Achieved	42 - 48%	41 - 49%	41 - 45%	No	Naturally present in the environment

TURBIDITY – A MEASURE OF CLARITY (Tested at Water Treatment Plants)					
	Baxter WTP	Belmont WTP	Queen Lane WTP	Violation	Source
Treatment Technique Requirement <i>95% of samples must be at or below 0.300 NTU</i>	100% below 0.300 NTU	100% below 0.300 NTU	100% below 0.300 NTU	No	Soil runoff, river sediment
Highest Single Value for the year	0.096 NTU	0.081 NTU	0.090 NTU	No	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. PWD continuously operates and monitors water quality from a total of 160 filters at three drinking water treatment plants. For a 13-hour period, August 12 - 13, 2010, we did not monitor the turbidity level on one of our filters at the Belmont WTP, and therefore cannot be sure of the quality of the drinking water from this filter during that time. This monitoring interruption occurred because the turbidity instrument at the filter was left in the hold position following a routine calibration check. Once the turbidimeter instrument was restored, subsequent monitoring showed no filter problems. During the 13-hour period of the single filter monitoring interruption, the combination flow from all 26 filters at Belmont WTP was continuously sampled and monitored with no change in turbidity levels. No water quality emergency occurred due to the interruption in monitoring, and this notice is for informational purposes only.

TOTAL CHLORINE RESIDUAL – Samples taken every three hours.					
Sample Location	Minimum Residual Disinfectant Level	Lowest Level Detected	Range	Violation	Source
Baxter WTP	0.2 ppm	1.80 ppm	1.80 - 2.60 ppm	No	Water additive used to control microbes
Belmont WTP	0.2 ppm	1.30 ppm	1.30 - 2.28 ppm	No	
Queen Lane WTP	0.2 ppm	0.40 ppm	0.40 - 2.90 ppm	No	

TOTAL CHLORINE RESIDUAL – over 400 samples collected throughout the City every month.					
Sample Location	EPA MRDL/MRDLG	Average	Range	Violation	Source
Distribution System	4.0 ppm	2.63 ppm	2.25 - 2.80 ppm	No	Water additive used to control microbes

VOLATILE AND SYNTHETIC ORGANIC CHEMICALS (VOC and SOC)						
Chemical	(EPA's MCL)	(EPA's MCLG)	Highest	Range	Violation	Source
Atrazine	3 ppb	3 ppb	0.13 ppb	0 - 0.13 ppb	No	Runoff from herbicide used on row crops
Bis(2-Ethylhexyl)phthalate	6 ppb	6 ppb	0.29 ppb	0 - 0.29 ppb	No	Discharge from rubber and chemical factories

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.

MRDL (Maximum Residual Disinfection Level): The highest level of disinfectant that is allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfection Level Goal): The level of a disinfectant in drinking water below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Minimum Residual Disinfectant Level: The minimum level of residual disinfectant required at the entry point to the distribution system.

Minimum Residual Disinfectant Level: The minimum level of residual disinfectant required at the entry point to the distribution system.

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

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.



1. 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.

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.

SCHUYLKILL RIVER WATER QUANTITY ANALYSIS:

The Schuylkill River Water Quantity Analysis is a continuation of the Water Department's Source Water Assessment and Protection Planning processes. The analysis focuses on the factors that influence water availability in the Schuylkill River. This analysis will identify how, where and in what amounts water is used throughout the watershed. Due to the downstream location of Philadelphia, it is critical that the Water Department understand the amount of water available from upstream in relationship to the amount of water needed for Philadelphia's drinking water, industries and other uses.

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>.
- Helping prioritize agricultural areas for installing stream bank fencing and stream crossings for livestock containment, manure storage units and riparian buffers on streams to prevent contamination of waterways.
- Collaborating with the State of Pennsylvania to ensure regulations are enforced for wastewater treatment plants that discharge upstream of Philadelphia.
- Participating in the development of an extensive web-based Early Warning System for the Schuylkill and Delaware Rivers. This system improves communication in the event of spills and accidents, and is comprised of partnerships between water suppliers, industries with water intakes and government agencies.
- Monitoring and evaluating natural gas development activity to ensure continued protection of our drinking water supply.

2. 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 have 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.

Recreation is also an important sign of the health of our waterways. PWD is continually looking for ways to increase responsible river recreation. RiverCast, for example, is the first and only internet-based system in the United States that provides the public with a bacteria-forecasting system created for recreational activities. See www.phillyrivercast.org for more information.

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>

Marcellus Shale Drilling

One of the Philadelphia Water Department's (PWD) core missions is the provision of safe, high quality drinking water to our nearly two million customers in the Philadelphia region. Philadelphia's drinking water sources are the Delaware and Schuylkill rivers, and our pledge to our customers extends to the stewardship of our region's water resources. To this end, PWD has embraced a watershed protection approach that tracks and evaluates events and practices that may cause immediate or long-term impacts on water quality. It is with an eye towards potential long-term repercussions that PWD is closely following the discussions surrounding natural gas drilling.

Our watershed protection ethic is not new. We have been a leader in this holistic practice since the mid-nineteenth century, when the Fairmount Park system was formed to protect the Schuylkill River from pollution. Today, watershed protection is a core function of the Department as we have championed regional watershed planning with our upstream municipalities and counties to develop a sustainable plan that addresses water quality – and quality of life – for everyone in the Delaware and Schuylkill watersheds. We have completed drinking water protection plans that look at the chronic and acute impacts of:

- New and redevelopment and the impact of clearing of natural lands
- Acid mine drainage
- Aging sewer infrastructure
- Agricultural practices on water quality
- Volume demand in growing communities and utilities
- Accidents and spills involving hazardous materials

Natural gas drilling — because it is a new technology in the Delaware River Basin with still evolving regulations around all aspects of water quality protection — has our full attention. At this point in time, we believe that the current regulatory framework, if enforced, is adequate to protect our water supply from immediate threats. We are watching, monitoring and evaluating upstream activities. If something appears to be imminently dangerous to our water supply, we will raise alarms.

The Water Department has communicated and is in continual discussion with the U.S. Environmental Protection Agency (EPA), the PA Department of Environmental Protection (PADEP), and the Delaware River Basin Commission (DRBC) concerning our water supply concerns relating to Marcellus Shale drilling. We have shared with our regulating partners that we expect complete respect by the natural gas industry of current and future regulations designed to protect our water resources and public health.

However, the long-term impacts from drilling on the water quality of the Delaware Basin are not well understood. In particular, the impacts of wastewater discharge on drinking water quality – even under the improved regulations under the State's wastewater treatment requirements – are not known. With this in mind, PWD is requesting the following actions before drilling is allowed to take place in the basin:

1. Advanced notification of accidents and spills relating to Marcellus Shale (i.e., a commitment by all dischargers, facilities and transporters of wastewater from fracturing to join the Delaware Valley Early Warning System).
2. Baseline monitoring to observe long-term impacts with funding support from the gas industry.
3. No discharges of wastewater from fracturing above Philadelphia's intakes on the Schuylkill and Delaware Rivers.
4. Restoration and reforestation of all lands that are impacted by gas drilling and related activities, including access roads, when drilling is complete, as required on State game lands and forests.
5. A cumulative impact study of the long-term implications of natural gas drilling for Philadelphia's drinking water supply.
6. A task force to help guide items 1-5. The task force should represent a diversity of stakeholders including the gas industry.
7. A commitment by PADEP and DRBC to consider the recommendations from the cumulative impact study and to update regulations accordingly.

Rest assured, we will continue to be a leader in watershed protection and to uphold our pledge to our citizens to provide them with safe, top quality drinking water and to protect and preserve the water resources of our region.

Source Water Assessments

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.

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 Table 2 on page 14 of this report, or go to <http://www.phillywatersheds.org/what-were-doing/documents-and-data/watershed-plans-reports>

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

Over the past seven years, the Fairmount Water Works Interpretive Center (FWWIC) has become the region's premier ecotourism center and is recognized by the Pennsylvania Department of Environmental Protection as The Delaware River Basin's Official Watershed Education Center and as a Gateway Center for the Schuylkill River National and State Heritage Area. With more than 245,000 visitors to date, the Fairmount Water Works Interpretive Center has become the destination for innovative water and watershed education programming in the Delaware Valley.

Water in Our World Exhibits:

Water in Our World is the overarching theme that unites the exhibits at the Fairmount Water Works Interpretive Center. Through the use of both high-tech interactive exhibits and user-friendly panels, visitors are engaged in learning about the many fascinating aspects of water by:

- Watching an award-winning film that tells the story of the Fairmount Water Works history;
- Flying on a virtual helicopter ride up the Delaware Bay to the headwaters of the Delaware and Schuylkill Rivers and learning how our activities on the land affect water quality;
- Witnessing a simulation of the rise and fall of tides in the Schuylkill River with an actual working model of the Fairmount Water Works;
- Going outside to cast a discerning eye at the river and calculate where the river is in the tidal cycle and collect a sample of river water;
- Experiencing Seeing is Believing in the FWWIC's state-of-the-art Water Lab where you can observe the teeming "unseen" life in a water sample at 400 times magnification;
- Visiting Pollutionopolis, America's dirtiest City;
- Following a flush through the City's sewer system;
- Making rain fall and seeing the affects of rainfall on the watershed; and
- Viewing fish and animals migrating up the Schuylkill River via a television camera installed in the new fishway located on the riverbank opposite the Interpretive Center.

School Programs Include:

- Water In Our World
- Land and Water: A Delicate Balance
- From Street to Stream: Slow the Flow
- Building as Machine: Water for the City
- Seeing is Believing: A Drop in the Bucket
- **New!** Green City, Clean Waters: Following Nature's Lead

Lifelong Learning:

To engage our adult audience, we offer guided group tours of both the historic Fairmount Water Works and the Interpretive Center's exhibits.

On a monthly basis, we offer the Schuylkill Soundings speakers' series, which presents lively and thought-provoking events featuring artists, writers and environmental professionals who share our passion for water.

On an annual basis, we celebrate the United Nations' World Water Day, Earth Day, Drinking Water Week and the Spring Shad Run. In addition, our collaboration with the Mayor's Office of Sustainability is helping Philadelphia reach its goal of being the nation's greenest City.

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 and 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 PADEP	717-626-0228 484-250-5900
Illegal Dumping & Related Pollution Activities	PADEP Neighborhood Services	484-250-5900 215-685-9500
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>

Delaware River and Schuylkill River Source Water Assessments
<http://www.phillywatersheds.org/what-were-doing/documents-and-data/watershed-plans-reports>

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

Philadelphia river and watershed information
<http://www.phillyriverinfo.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 Tacony Creek Park	A, C, E, P, T	215-745-8903	http://friendsoftaconycreekpark.org
Friends of the Manayunk Canal	A, C, E, P, T	215-466-4587	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
Environmental Alliance for Senior Involvement	A, C, E, P, T	703-241-4927 x218	http://www.easi.org
Philadelphia Canoe Club	R, F, T	215-487-9674	http://www.philacanoec.org
Friends of Fairmount Fish Ladder	F	215-683-3608	email: epac99@aol.com
Cobbs Creek Environmental Education Center	A, C, E, P, T	215-685-1900	http://www.cobbscreek.org
Wissahickon Restoration Volunteers	A, C, E, P, T	215-951-0330 x2101	http://wissahickonpatrails.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 Council	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
Tookany/Tacony-Frankford (TTF) Watershed Partnership	A, C, E, P, T	215-208-1613	http://tffwatershed.org/

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/2011



ABOVE: A rain barrel installed in the backyard of a South Philadelphia home.

Green Stormwater Infrastructure



ABOVE: A downspout planter is a structure that is designed to allow stormwater from roof gutters to flow through and be used by the plants.

The Philadelphia Water Department's (PWD) 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 combined sewer overflows. Integrating green stormwater infrastructure into a highly developed area like Philadelphia, requires a decentralized and creative approach to planning and design.

Green Homes

Residential roofs consist of a significant amount of impervious (impenetrable) cover in the City. PWD wants to work with homeowners to help them undertake projects to mitigate the impact of roof runoff. The Green Homes Program envisions a number of small scale solutions that homeowners can carry out themselves. These potential projects include installing rain barrels and downspout planters and disconnecting downspouts (rain leaders) to rain gardens. More ambitious homeowners can reduce the amount of impervious surface by installing porous pavement and constructing a green roof. By temporarily holding the stormwater runoff during a rain event, more capacity can be added to the City's sewer system.

Green Homes Tools

The Water Department will use the following tools to assist customers with "greening" their homes:

(continued on next page)



Left:
Volunteers install a rain barrel during the Cobbs Green Homes/ Rebuilding Together Philadelphia event.

Photo credit:
Tiffany Ledesma Groll



Above: Homeowners, the Jenkins Family, received a downspout planter during the Cobbs Green Homes event.

Photo credit: Barry Lewis,
Green Treks

Right: Volunteers install a rain garden during the Cobbs Green Homes/ Rebuilding Together Philadelphia event.

Photo credit:
Tiffany Ledesma Groll



Green City, Clean Waters

Update/2011

(continued from previous page)

Rain Barrel

A rain barrel is a cistern that temporarily collects and stores stormwater runoff from the roof. The water in the rain barrel may be used to water lawns, gardens, window boxes or street trees.

Downspout Planter

A downspout planter is a structure designed to allow stormwater runoff from downspouts to flow through and be absorbed by plants. The planter acts as a device to store water while also creating a space where plants can thrive.

Rain Garden

A rain garden is a garden designed to collect stormwater runoff from impervious surfaces such as roofs, walkways and parking lots. A rain garden is typically moderately depressed with the bottom layer filled with stone so that the water can collect and pond within it. The water irrigates the vegetation and infiltrates into the subsurface stone storage and soil.

On Saturday, November 6, 2010, the Philadelphia Water Department (PWD), Rebuilding Together Philadelphia (RTP) and State and local officials kicked-off the City's first "Green Homes" blocks on the 6000, 6100 and 6200 blocks of Spruce Street. As a component of PWD's Green City, Clean Waters Program, the residents on these blocks volunteered their homes to pilot this program and volunteers and residents installed rain barrels, downspout planters and rain gardens on the properties on these blocks. In addition, PWD will work with the residents over the next few years to monitor the effectiveness and enthusiasm for these stormwater-friendly practices.

Projects, such as the use of rain barrels, have already proven popular in pilot programs and, if implemented and maintained properly on a larger scale, can ultimately impact the health of our creeks and rivers. Additionally, more ambitious (and somewhat more costly) measures should also be considered, including the installation of a green roof or capturing stormwater in larger cisterns for reuse.

The Water Department has committed approximately \$2 billion over the next 25 years to meet its Clean Water Act obligations to significantly reduce the release of stormwater combined with sewage into our rivers and streams. "Green City, Clean Waters" is the Department's innovative and environmentally sustainable plan to improve the operation of our below-ground infrastructure by replacing much of it with above-ground green stormwater infrastructure that is visible and that manages stormwater as it falls on the ground — intercepting it before it flows into the sewer system. PWD, with support of its partners and the citizens of the City, believes this approach can lead Philadelphia toward being a model for urban sustainability in the 21st century.

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