Volume 1

Green Cities, Clean Waters (CSO LTCP Update) Advisory Committee Invitation Packet

September 26, 2007

Re: Invitation to Join PWD's Green Cities – Clean Waters Advisory Committee

Dear Potential Committee Member:

The Philadelphia Water Department (PWD) is beginning a two year process to update its Combined Sewer Overflow Long Term Control Plan (CSOLTCP). To assist us with the development of strategies, public information and outreach materials regarding this plan, we are convening a public advisory committee to guide and provide input about the program and the communication strategies that will be developed to ensure successful public participation. We are hoping that you are interested in joining this committee, as the perspective that you will provide, as a representative of your organization and/or neighborhood, will be invaluable.

You are invited to participate in the first advisory committee meeting, scheduled for Tuesday, November 13, 10 a.m. to 12 p.m., at the Fairmount Water Works Interpretive Center. This meeting will focus on providing advisory committee members with a background on PWD's approach to meeting the requirements (and our own goals for our region's rivers and streams) of the National CSO Policy, a general assessment of the City's combined sewer system, and a timeline for future meetings and meeting topics. We expect that the advisory committee will meet twice a year over a two year period (although advisory committee members would certainly be welcome at all CSO Long Term Control Plan Update (LTCPU) public meetings).

I have enclosed two backgrounders – one on the LTCP and one on the LTCPU - to give you a sense of the program and the elements we will be striving to share with the public. I have also enclosed the directions to the Fairmount Water Works Interpretive Center.

Please give me a call at 215-685-4944 or e-mail me at joanne.dahme@phila.gov with questions and to confirm your attendance at the first advisory committee meeting. We look forward to working with you to make this an exciting public process.

Sincerely yours,

JOANNE DAHME
Watersheds Programs Manager

(Turn Over)

THE FAIRMOUNT WATER WORKS INTERPRETIVE CENTER

We're looking forward to your visit To the Fairmount Water Works Interpretive Center!

640 Waterworks Drive Philadelphia Pennsylvania 19130
Fairmount Water Works Delaware Watershed Address: 02040202

Information & Reservations: 215-685-0723
Contributions: Ed Grusheski, 215-685-6110

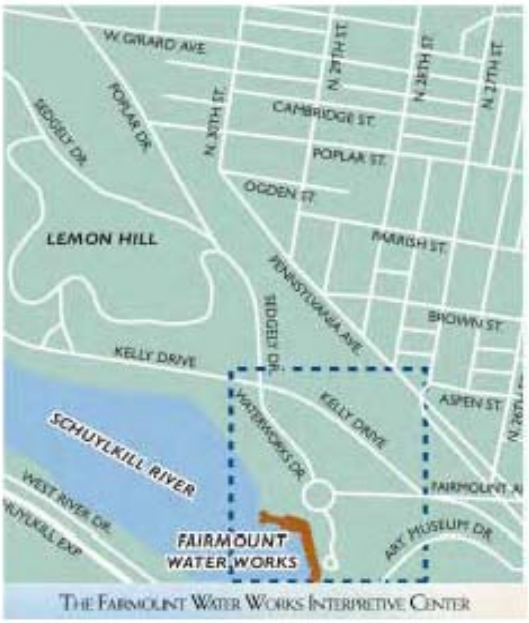
Facilities: The FWWIC is an ideal site for workshops, lectures, seminars, conferences and some private events. The entire site is Americans with Disabilities Act accessible.

Directions from the West (From I-76)

1. Take the SPRING GARDEN STREET/HAVERFORD EXIT 0.2 Miles
2. Turn Left on SPRING GARDEN STREET 0.3 Miles
3. Continue on W RIVER DRIVE 0.0 Miles
4. Continue on BENJAMIN FRANKLIN PARKWAY 0.1 Miles
5. Bear Left on EAKINS OVAL 0.1 Miles
6. Bear Left on BENJAMIN FRANKLIN PARKWAY 0.2 Miles
7. Bear Right towards KELLY DRIVE 0.1 Miles
8. Turn Left at light on WATERWORKS DRIVE 0.3 Miles

From The East (From I-95)

1. I-95 South to Philadelphia VINE STREET EXPRESSWAY
2. Exit on to NORTH BROAD STREET 0.5 Miles
3. Turn Right onto VINE STREET 3.6 Miles
4. Bear Left on BENJAMIN FRANKLIN PARKWAY 0.2 Miles
5. Bear Left on EAKINS OVAL 0.1 Miles
6. Bear Left on BENJAMIN FRANKLIN PARKWAY 0.2 Miles
7. Bear Right towards KELLY DRIVE 0.1 Miles
8. Turn Left at light on WATERWORKS DRIVE 0.3 Miles



THE CSO LONG TERM CONTROL PLAN

GREEN CITIES
CLEAN WATERS

History and Background

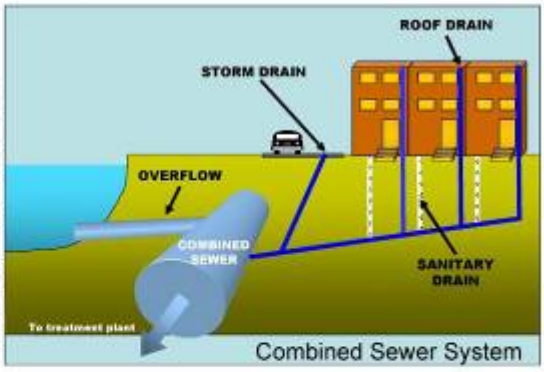
The City of Philadelphia

INTRODUCTION

Philadelphia is fortunate to have an abundance of creeks, open space, parkland and beautiful rivers. The Schuylkill and Delaware Rivers are not only scenic; they are the drinking water source for Philadelphia residents. These waterways, however, suffer from pollution from various sources, both within and outside the City limits. One such pollution source: Combined Sewer Overflows (CSOs)*.

What are Combined Sewers Overflows?

A combined sewer system is a wastewater collection system owned by a municipality which transports wastewater* from homes, businesses and industry, stormwater* from the approximately 75,000 storm drains on our streets and property roof leaders through a single-pipe system to a Water Pollution Control Plant (WPCP).



Combined Sewer System

During dry weather conditions (when it is not raining) and during very small storm events, combined sewers* can adequately transport this mixture of sanitary wastewater and stormwater to one of the City's three WPCPs for treatment.

Under heavier rainfall conditions, however, the flow in combined sewers may exceed the capacity of the pipe or treatment facility. As a result, a portion of the wastewater and stormwater may be diverted directly to a nearby stream or river so as to prevent the flooding of homes and streets. This is what is known as a Combined Sewer Overflow (CSO). During heavy rainfalls or sudden snowmelts, Philadelphia may experience these overflows in various locations throughout the City from any of its 164 permitted combined sewer outfalls. These overflows may exceed water quality standards (WQS)*, threaten aquatic life and habitat, and impair the use and enjoyment of the water body.

The definitions of words with an asterisk* can be found in the glossary at the end of this publication.

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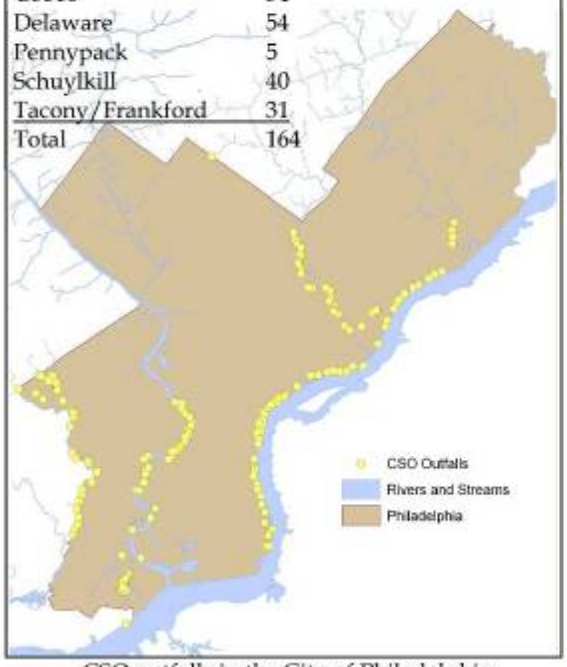
Watershed	Number of CSO Outfalls
Cobbs	34
Delaware	54
Pennypack	5
Schuylkill	40
Tacony/Frankford	31
Total	164



CSO outfalls in the City of Philadelphia

What is the Combined Sewer Overflow Program?

The fundamental goal of the Philadelphia Water Department's (PWD) combined sewer overflow program is to improve and preserve the water environment in the Philadelphia area and to fulfill the PWD's obligations under the Clean Water Act and the Pennsylvania Clean Streams Law by implementing technically viable, cost-effective improvements and operational changes.

The PWD's strategy to attain these goals has three primary phases: aggressive implementation of a comprehensive program for Nine Minimum Controls (NMCs); planning, design and construction of numerous capital projects that would further enhance system performance and reduce CSO volume and frequency; and a commitment of significant dollars for services and resources toward comprehensive watershed based planning and analyses that would identify additional priority actions to further improve water quality in Philadelphia area water bodies.

These three phases successively provide comprehensive programs that follow the direction of the EPA CSO Policy and its guidance documents and are consistent with the requirements of the Clean Water Act. The NMCs and the capital improvement program have resulted in implementation of the highest level of cost-effective, technology-based improvements. They have provided a substantial reduction in CSO volume and frequency and a significantly greater percentage of combined sewer flow transported and treated at the PWD's three wastewater treatment plants.

Combined Sewer Overflow at Crescentville in Philadelphia

Nine Minimum Controls (NMCs) System "Tune-Up"

In the first phase of the PWD's CSO strategy, and in compliance with its National Pollutant Discharge Elimination System (NPDES)* permits, the PWD submitted to the Pennsylvania Department of Environmental Protection (PADEP) on September 27, 1995, CSO Documentation: Implementation of Nine Minimum Controls (NMCs).

The NMCs are low-cost actions or measures that can reduce CSO discharges and their effect on receiving waters*, do not require significant engineering studies or major construction, and can be implemented in a relatively short time frame. This program ensures that our existing sewer system is operating to the best of its ability, providing a "tune-up" to the existing infrastructure.

To provide information needed for the development of the NMCs program, the PWD instituted a $6.5 million project to upgrade its comprehensive system flow monitoring network. This program provides information necessary to identify and eliminate dry weather overflows, monitor system performance and operation, and configure and calibrate computer hydraulic models needed to develop the NMCs and long-term CSO control plans.

Extensive data from the PWD's Geographic Information System (GIS), flow monitoring system, the U.S. Army Corps of Engineer's Storage, Treatment, Overflow, Runoff Model (STORM), and the EXTRAN and RUNOFF blocks of the U.S. EPA Stormwater Management Model (SWMM) were used to support each phase of the CSO program. These tools were developed to support concept engineering through implementation and post-construction monitoring. The monitoring system, models, and GIS have and will serve as the basis for planning improvements and enhancing operation of the sewerage system over the long-term.

For more details on the NMCs, please visit the U.S.EPA on-line at: http://cfpub.epa.gov/npdes/home.cfm?program_id=5.

Capital Projects
Design and Build New Combined Sewer System Components

The second phase of the PWD's CSO strategy had been focused on technology-based capital improvements to the City's sewerage system that have and will further increase its ability to store and treat combined sewer flow, reduce inflow to the system, eliminate flooding due to system surcharging, decrease CSO volumes and improve receiving water quality. The recommended capital improvement program is the result of a detailed analysis of a broad range of technology-based control alternatives. The capital improvement plan encompasses the three major areas of the City that are affected by CSOs: the Northeast, Southeast and Southwest drainage districts. Capital projects were selected by the PWD to provide significant CSO load reduction.

The total estimated cost of the selected capital improvement projects is in excess of $48 million. However, to date, current expenditures and estimates of future estimates bring this number to over $100 million. Hydraulic and hydrologic model simulations indicate that annual CSO volumes will be reduced by over two billion gallons system-wide in a typical hydrologic (average rainfall) year, upon completion of all these projects.

These significant, technology-based projects may not, in and of themselves, bring receiving waters into compliance with all water quality standards. Additional management plans, actions and projects needed to attain water quality standards will be defined through the process of watershed planning, as discussed below. However, these projects will not only reduce overall loadings, but will hopefully encourage other

point* and non-point source* dischargers to implement similar technologies, over and above what their current permit mandates, while the development of a comprehensive watershed management plan proceeds.

For more details on the capital projects, please view the 2006 CSO Annual Report on-line at: http://www.phillyriverinfo.org.

Watershed Management & Watershed Partnerships - Integrated, Regional Watershed Planning & Implementation

The third component of the City's CSO strategy involves a substantial commitment by the City to conduct watershed planning to identify long term improvements throughout the watershed, including possibly additional CSO controls that will result in further improvements in water quality, and ultimately, the attainment of water quality standards. The need for this watershed initiative is rooted in the fact that insufficient physical, chemical and biological information currently exists on the nature and causes of water quality impairments, sources of pollution, and appropriate remedial measures. In addition, Philadelphia is downstream, meaning that the headwaters, some tributaries, and upper segments of our rivers and streams reside in municipalities north of Philadelphia. We do not always know the source, nor can we control stormwater runoff* or other pollutants* flowing into our streams above the city's boundaries. This creates a unique challenge in our goal to attain water quality standards, especially with respect to the effects of wet weather discharges and receiving water dynamics.

These watershed realities have led to a broader, national recognition of the need for regional, watershed-based planning and management to properly define water quality standards and goals. Therefore, the PWD has adopted a holistic approach – a watershed management approach to control pollution to rivers and streams. This approach evaluates the impacts of both point and non-point pollution sources and aims to find regional, watershed solutions to restore water quality. Because watersheds are defined by natural features and do not adhere to political boundaries, the PWD believes that watershed management is the most practical and effective way to manage pollution and improve water quality. Through PWD's watershed management plans, water quality impairments are identified and addressed via comprehensive watershed based planning, stream water quality analysis, baseline water quality monitoring and the assessment of watershed-wide pollutants. Consequently, the major sources of the impairments are explored, modeled, and defined to understand how to attain regulatory water quality standards and establish programs that will continue to monitor and ensure permanent improvements in water quality.

A watershed refers to the land that drains stormwater (rain or melting snow) to a specific body of water, such as a river or stream.

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The PWD forms partnerships with its suburban neighbors, businesses and industries, community and non-profit groups and all other watershed stakeholders to evaluate our regional watersheds and to develop an effective watershed management plan. To be successful, watershed management plans must be adopted and implemented by all participating stakeholders and their constituents.

To date, the PWD has initiated the formation of watershed partnerships in all of the City's watersheds. The combined sewer watersheds include the Darby-Cobbs Watershed Partnership, Tookany/Tacony – Frankford Watershed Partnership and Pennypack Watershed Partnership, while the separate sewer watersheds include the Poquessing Watershed Partnership and the Wissahickon Watershed Partnership. The Schuylkill Watershed is represented by the Schuylkill Action Network (SAN), a partnership of the City of Philadelphia, federal and state agencies, and local watershed groups protecting the drinking water supply in the Schuylkill River watershed. This fall, the remaining watershed partnership will be formed - the Delaware Direct Watershed Partnership.

Tacony Creek

*Glossary**

Combined Sewer Overflow (CSO)

A mixture of wastewater and runoff found in combined sewers during rainfall or snowmelt events that spills to the environment untreated. CSOs enter the environment either directly or through a storm sewer, as the result of the capacities of the interceptor sewers and/or treatment plants being exceeded.

Combined Sewer System (CSS)

A wastewater collection and treatment system where domestic and industrial wastewater is combined with storm runoff. Although such a system does provide treatment of stormwater, in practice, the systems may not be able to handle major storm flows.

Indirect Discharge

The introduction of pollutants into a municipal sewage treatment system fro any non-domestic source (i.e., any industrial or commercial facility) regulated under Section 307(b), (c), or (d) of the CWA.

Industrial Sources

Non-municipal, or industrial sources, often generate wastewater that is discharged to surface waters. The types of wastewaters generated at a facility depend on the specific activities undertaken at a particular site, and may include manufacturing or process wastewaters, cooling waters, sanitary wastewater, and stormwater runoff.

National Pollutant Discharge Elimination System (NPDES)

A provision of the Clean Water Act which prohibits discharge of pollutants into waters of the United States unless a special permit is issued by EPA, a state, or, where delegated, a tribal government on an Indian reservation.

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Glossary continued

Non-Point Source
Diffuse pollution sources (ie, without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by storm water. Common nonpoint sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

Point Source
Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation (CAFO), landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant
Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water [40 CFR 122.2].

Receiving Waters
All distinct bodies of water that receive runoff or wastewater discharges, such as streams, rivers, ponds, lakes, and estuaries. The "Water of the United States" as defined in 40 CFR 122.2 into which the regulated stormwater discharges.

Runoff
Water from precipitation or irrigation that flows over the ground and into bodies of water. It can contribute to soil erosion and carry harmful pollutants.

Sanitary Sewer
A pipe or conduit (sewer) intended to carry wastewater or water-borne wastes from homes, businesses, and industries to the POTW.

Sanitary Sewer Overflow (SSO)
Untreated or partially treated sewage overflows from a sanitary sewer collection system.

Stormwater
Water that accumulates on land as a result of storms, and can include runoff from urban areas such as roads and roofs.

Stormwater Discharge-Related Activities
Activities that cause, contribute to, or result in stormwater point source pollutant discharges, including excavation, site development, grading, and other surface disturbance activities; and measures to control stormwater, including the siting, construction, and operation of BMPs to control, reduce, or prevent stormwater pollution.

Wastewater
The spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter. Water Pollution: The presence in water of enough harmful or objectionable material to damage the water's quality.

Water Quality Standards
State-adopted and EPA-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

For more information, please visit us at www.phillyriverinfo.org

THE CSO LONG TERM CONTROL PLAN *UPDATE*

GREEN CITIES
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Clean Water Benefits and the Balanced Approach

The City of Philadelphia

INTRODUCTION

The Philadelphia Water Department (PWD) wants to transform Philadelphia's urban landscape into a vibrant, green community where people want to live and work. By merging the vision of a "green city" with "clean water" we can benefit not only our watershed environment, but the region's economic health, quality of life and sustainability.

The PWD is well suited to the development and implementation of a watershed approach to Combined Sewer Overflow (CSO) control. The PWD owns and operates the City's sanitary sewers, storm sewers, combined sewers and wastewater treatment plants. In cooperation with the Philadelphia City Planning Commission, the PWD regulates stormwater management during the construction and post-construction phases of most development and redevelopment projects.

In 2007, the PWD began to revaluate its CSO Long Term Control Plan (LTCP) and capital improvements program to integrate additional projects that reduce CSO frequency and volume. The CSO Long Term Control Plan Update (LTCPU) involves the development of additional management alternatives to ensure capture and treatment of sanitary sewer system flows and the reduction of discharges from CSOs, building on the experience and progress gained from the implementation of our original CSO LTCP.

Benefits of Clean Water

The resources, amenities and socioeconomic impacts that result from the watershed management approach are endless. A "Green Cities - Clean Water" strategy will stimulate tourism, recreation, and riverfront development, along with the resulting economic benefits and jobs. Cleaner rivers create increased civic pride in the riverfront area, higher property values, and greater potential for valuable riverfront projects.

The definitions of words with an asterisk* can be found in the glossary at the end of this publication.

An exciting day of fishing at the annual Philly Fun Fishing Fest!

Paddlers take to their boats for the Schuylkill Regatta.

For more information, please visit us at www.phillyriverinfo.org

THE LONG TERM CONTROL PLAN *UPDATE*

Clean Water Benefits and the Balanced Approach

Fact Sheet #2

CSO Long Term Control Plan Update (CSO LTCPU)

Philadelphia's CSO LTCPU seeks to achieve the regulatory requirements of the National CSO Control Policy through a comprehensive watershed-based approach. The Long Term Control Planning Guidance set forth by the U.S. EPA supports the implementation of a comprehensive watershed management approach and recognizes that the major advantage in using such an approach is that it identifies multiple solutions (land-water-infrastructure based) that are cost effective measures which result in site specific improvements to problems caused by the impacts of CSO and non-CSO sources of pollution on water quality.

The CSO Long Term Control Plan Update Falls under the "Green Cities - Clean Waters" Program.

The National CSO Control Policy

The National CSO Control Policy requires that the CSO LTCPU consist of the following nine elements:

- Characterization, monitoring, and modeling of the combined sewer system as the basis for selection and design of effective CSO controls
- A public participation process that actively involves the affected public in the decision-making to select long-term CSO controls
- Consideration of sensitive areas as the highest priority for controlling overflows
- Operational plan revisions to include agreed-upon long-term CSO controls
- Evaluation of alternatives that will enable the permittee, in consultation with the National Pollutant Discharge Elimination System (NPDES)* permitting authority, Water Quality Standards (WQS)* authority, and the public, to select CSO controls that will meet the Clean Water Act (CWA)* requirements
- Cost/performance considerations to demonstrate the relationships among a comprehensive set of reasonable control strategies
- Maximization of treatment at the existing wastewater treatment plant for wet weather flows
- An implementation schedule for CSO controls
- A post-construction compliance monitoring program adequate to verify compliance with water quality-based CWA requirements and to achieve the effectiveness of CSO controls.

A Successful CSO Program: The Balanced "Land-Water Infrastructure" Approach

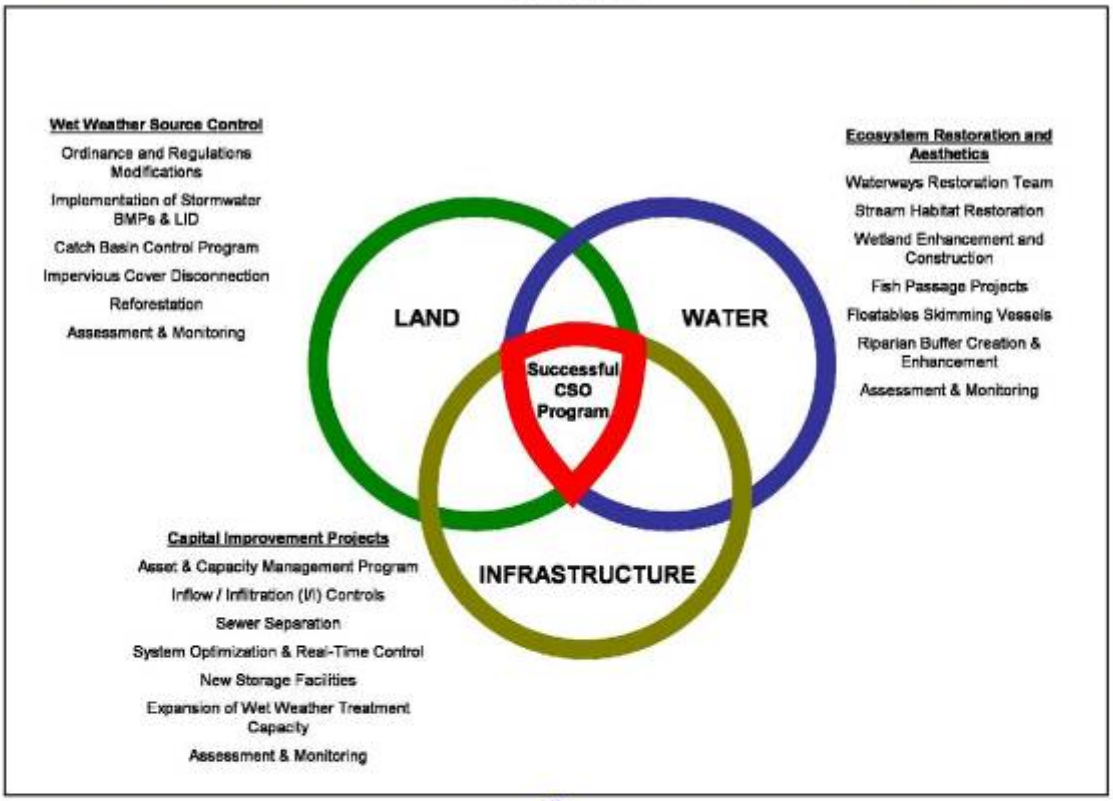
The Philadelphia Water Department is committed to a balanced "land-water-infrastructure" approach to achieve its watershed management and CSO control goals. This method includes infrastructure-based approaches where appropriate, but also includes a range of land-based stormwater management techniques and the physical reconstruction of aquatic habitats, where appropriate.

The ultimate goal of PWD's approach is to restore and protect our rivers and streams including the floodplains, riparian buffers, stream channels, streambeds, wildlife, vegetation and other biomarkers that define a

THE LONG TERM CONTROL PLAN *UPDATE*

Clean Water Benefits and the Balanced Approach

Fact Sheet #2



healthy stream ecosystem that have been degraded as a result of urbanization within the City of Philadelphia and in the surrounding counties, while achieving full regulatory compliance in a cost-effective manner. The "Land-Water-Infrastructure" approach is made up of the following three programs, all of which enable the PWD to accomplish its goals under the CSO LTCPU.

LAND:
Wet Weather Source Control

The Wet Weather Source Control program promotes the use of Low Impact Development (LID)* and other structural and non-structural controls to reduce CSO volume through evaporation*, transpiration*, infiltration* and detained release* to the combined sewer system for treatment. The goal of our LID program, unlike past practices, is to keep stormwater runoff out of our sewer systems. One way that PWD is meeting its goals for this program is through the enactment of our recent stormwater management regulations for new development and redevelopment, established in 2006. These regulations focus on restoring a more natural balance between stormwater runoff and infiltration by requiring the capture of the first one inch of rainfall, reducing pollutant loads through infiltration and/or detention and controlling runoff rates at levels that minimize stream bank erosion. Site designers can ensure the level of stormwater management performance required through the use of a variety of land-based practices that mimic the natural environment, (e.g., redirecting runoff from impervious surfaces* to green areas, bioretention*, subsurface storage* and infiltration, green roofs, swales*, and tree canopy).

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Our planned Low Impact Development (LID) programs will include:

.Large-scale implementation of green, attractive measures to manage stormwater at the source on public land and streets to reduce demands on sewer infrastructure

•Requirements and incentives for green, attractive measures to manage stormwater at the source on private land and streets to reduce demands on sewer infrastructure

•A large-scale street tree program to improve appearance and manage stormwater at the source on City streets

•Incentives to preserve open space for use for stormwater management at the source

Infiltration garden at Buckman Heights in Portland, Oregon

Green roof at The Fencing Academy of Philadelphia

Naturalized stormwater detention basin at Black Rock in Upper Providence Township

Porous parking lot at Johnson & Johnson Pharmaceutical Research and Development campus

Rain Garden at Wissahickon Creek installed as part of the Valley Green Environmental Restoration program

A rain barrel installed at a Philadelphia residence

WATER:
Ecosystem Restoration and Aesthetics

The Ecosystem Restoration and Aesthetics program focuses on projects that contribute to the improvement of the aesthetic and ecological integrity of CSO receiving waters.

Such watershed-based approaches include stream bed and bank stabilization and reconstruction, aquatic habitat creation, plunge pool removal, improvement of fish passage, and floodplain reconnection. Restoring designated uses and ultimately removing streams from the state's list of impaired waters will require the restoration of the functions of a healthy aquatic ecosystem. These functions may be impossible to restore without restoration of the physical channel and the habitat required to support them.

PWD is designing and implementing projects that will restore and/or create stream and wetland habitat through programs that focus on stream habitat restoration, wetland enhancement and construction, fish passage projects and riparian buffer creation and enhancement.

Cobbs Creek at Marshall Road

Before

The creek at Marshall Road suffered from severely eroded banks (*triangle*) and exposed infrastructure (*star*).

In Progress

After

The natural design of the creek and healthy riparian buffer provides many benefits, including improved habitat for aquatic animals.

INFRASTRUCTURE:
Capital Improvement Projects

The Capital Improvement Projects program continues to build CSO capital improvement projects that were planned during the previous CSO permit cycle in addition to new projects to continue to increase the capture and treatment of combined sewage.

These construction projects include traditional storage, conveyance, and treatment measures within the combined sewer collection and treatment system, (e.g., the installation of inflatable dams, underground sewage storage tanks, and storm relief sewers.) Similar in-system construction will continue to be considered along with land-based and water-based measures, and they may be identified as the most cost-effective and feasible solutions in some situations.

However, if used alone, infrastructure-based measures can not address the root causes of impairment in urban streams. For example, the Cobbs Creek and Tookany/Tacony-Frankford Integrated Watershed Management Plans conclude that while some water quality problems exist, the primary causes of impairment in these streams are modified flow patterns and habitat degradation resulting from the urban development of our once natural watersheds. Controlling volume and quality of stormwater runoff is key for restoring the ecosystems of our streams. The Pennsylvania Department of Environmental Protection's (PADEP) integrated impairment listings agree with these findings.

Infrastructure-based measures are typically focused on removing loads of specific pollutants in our piping systems rather than restoring natural flow conditions and habitat. Controlling stormwater runoff (before it enters the sewer system) through rain gardens, tree infiltration trenches, bioswales* and other land-based practices that recreate the natural environment, is essential for achieving healthy streams. It is for this reason that PWD's strategies include a well defined evaluation of infrastructure solutions combined with LID.

From a story in the Philadelphia *Inquirer's* "Today" Magazine. January 29, 1961. *Research credit Adam Levine.*

Additional examples of our capital improvements program include the Real Time Control Center, Water Pollution Control Plant (WPCP) Wet Weather Treatment Maximization, In-Line System Storage Projects, an Asset & Capacity Management Program, Inflow/Infiltration (I/I) Controls, Sewer Separation, and New Storage Facilities.

Additional Watershed Projects

The PWD integrated and adaptive approach has the added benefit of meeting other stakeholder water resources needs more universally. These programs and projects include: River Conservation Plans, the Watershed Information Center, Integrated Water Use Status Networks, Interpretive Signage, Interpretive Centers, Basin-Specific Stormwater Management Plans (Act 167*) and Sewage Facility Planning. For more information on the CSO LTCP, please visit: http://www.phillyriverinfo.org

The encapsulation of Mills Creek in 1883. *Research credit Adam Levine.*

*Glossary**

Act 167
The Pennsylvania Stormwater Act 167 of 1978 says that each county must prepare a stormwater management plan for each of its designated watersheds in consultation with the municipalities located within the boundaries of the watershed.

Bioretention
A vegetated depression located on the site that is designed to collect, store and infiltrate runoff. Typically includes a mix of amended soils and vegetation.

Detention System
Temporary storage of stormwater to control the rate of release, allow for infiltration and provide treatment.

Evaporation
A change of liquid to vapor form.

Impermeable
Not easily penetrated. The property of a material or soil that does not allow, or allows only with great difficulty, the movement or passage of water.

Impervious Surface
Those surfaces in the landscape that can not infiltrate rainfall, such as rooftops, pavement, sidewalks, driveways and compacted earth. Lawns with underlying soils compacted by heavy machinery are considered impervious.

Infiltration
The penetration of water through the ground surface into sub-surface soil or the penetration of water from the soil allowing for the recharge of our groundwater table and the baseflow of streams.

Low Impact Development (LID)
A design strategy with the goal of maintaining or replicating the pre-development hydrologic regime through the use of design techniques that mimic the natural environment.

National Pollutant Discharge Elimination System (NPDES)
A provision of the Clean Water Act which prohibits discharge of pollutants into waters of the United States unless a special permit is issued by EPA, a state, or, where delegated, a tribal government on an Indian reservation.

Pervious or Permeable Surfaces
Soil or other material that allows infiltration or passage of water or other liquids.

Subsurface Storage
Retaining or detaining water underground. Stored water can be released at a later time into natural waterways to reduce peak storm flows, or allowed to slowly infiltrate to recharge groundwater.

Swale / Bioswale
Open, vegetated drainage channel designed to detain, treat and/or infiltrate stormwater.

Transpiration
The process by which water vapor is lost to the atmosphere from living plants.

Water Quality Standards (WQS)
State-adopted and EPA-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

Clean Water Act (CWA)

Introduction to the Clean Water Act as given by the EPA

The Clean Water Act (CWA) is the cornerstone of surface water quality protection in the United States. (The Act does not deal directly with ground water nor with water quantity issues.) The statute employs a variety of regulatory and nonregulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

For many years following the passage of CWA in 1972, EPA, states, and Indian tribes focused mainly on the chemical aspects of the "integrity" goal. During the last decade, however, more attention has been given to physical and biological integrity. Also, in the early decades of the Act's implementation, efforts focused on regulating discharges from traditional "point source" facilities, such as municipal sewage plants and industrial facilities, with little attention paid to runoff from streets, construction sites, farms, and other "wet-weather" sources.

Starting in the late 1980s, efforts to address polluted runoff have increased significantly. For "nonpoint" runoff, voluntary programs, including cost-sharing with landowners are the key tool. For "wet weather point sources" like urban storm sewer systems and construction sites, a regulatory approach is being employed.

Evolution of CWA programs over the last decade has also included something of a shift from a program-by-program, source-by-source, pollutant-by-pollutant approach to more holistic watershed-based strategies. Under the watershed approach equal emphasis is placed on protecting healthy waters and restoring impaired ones. A full array of issues are addressed, not just those subject to CWA regulatory authority. Involvement of stakeholder groups in the development and implementation of strategies for achieving and maintaining state water quality and other environmental goals is another hallmark of this approach.

Advisory Committee Meeting #1

CSOLTCPU Advisory Committee
November 13, 2007

Agenda

1. Welcome & Introductions

2. Purpose of the Advisory Committee
   - topics the committee will be covering over the next two years
   - timeline for committee work
   - public outreach projects

3. Presentation on CSO Policy and PWD's Approach

4. Questions on Presentation

5. Presentation on PWD outreach projects/materials

6. Recommendations for public outreach

7. Next Steps
   - Public Meeting
   - Interest in subcommittee work

Philadelphia PWD Water Department

PWD CSOLTCPU Public Advisory Committee
Meeting #1
November 13, 2007

Please Sign In

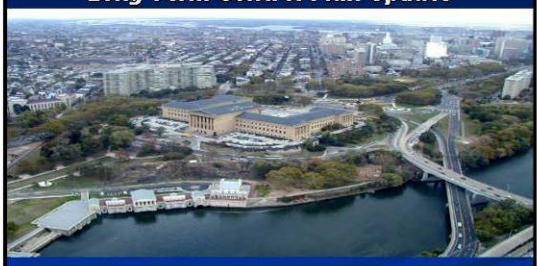
Name	Organization	Email
Thu Tran	Community Legal Services, Inc.	ttran@clsphila.org
SAM SIMKINS	WASH. WEST CIVIC	SSIMKINS@ESTATEWORKS
ROBIN MANN	SIERRA CLUB	robinmanne earthlink.net
SARAH ROBB GRIECO	TTF Watershed Partnership	sarah@ttfwatershed.org
JOAN BLAUSTEIN	FAIRMOUNT PARK	JOAN.BLAUSTEIN@PHILA.GOV
Christine Knapp	PennFuture / Next Great City	Knapp@pennfuture.org
Patricia Starr	PEC	pstarr@pecpa.org
Sarah Thorp	DRCC	Smthorp@drcc-phila.org
Joseph Syrnick	SRDC	joseph.syrnick@srdc.net

LTCPU Steering Committee Public Outreach Presentation Comments – 11/13/07

- Too much technical jargon – **Starr**
- Why does this matter to the public – **Mann**
- Slide 7 Wow (graphic with the location of 164 outfalls) – **RobbGrecco**
- Start with photos not technical stuff – **Starr**
- From the civic group side, Who will fix my problems, I don't care about the regulatory issues, talk more about the personal impacts of overflows (basement) – **Simpkins**
- Talk first about what the problems are, then go into the solutions – **Thorp**
- What is the regulatory process – who approves, EPA, who lobbies, how can each 'hood get more money – **Tran**
- Show this as an investment to our City – Get them to care – **Starr**
- Show Cost-effectiveness – **Mann**
- City incentives for green roofs on private property – **Mann**
- LTCPU – had 10 yrs to study, these are the investments made, it's an ongoing process, now it's time for a mix of solutions – **Blaustein**
- Give them clear alternatives for the future – **Blaustein**
- Adaptive Management Approach – **Neukrug**
- Tell them what we have done and what we are doing. We are standing at a fork in the road now. Tell them the story of the choices. Give them the problem and two alternative solutions. Focus on the stuff we have done. – **Starr**
- Remember the anger from affected citizens (flooding). We are walking a fine line with the citizens. Make the story clear. Cut the # of slides in half or third – **Knapp**
- SFR vs CSO – big difference of what we are on the hook to solve in the LTCPU – **Smullen**
- Show a few slides discussing SFR, but clearly state that this is not what we are talking about in the rest of the presentation., acknowledge the seriousness of the flooding issue – **Starr**
- What are the long term health risks, what are you doing about public notification – **Mann**
- Put signs up high like they did in Pittsburgh – **Blaustein**
- Do dogs drink the water? – **Neukrug**

Green Cities…Clean Waters

Long Term Control Plan Update



Public Advisory Committee Meeting #1
November 13th, 2007

1

Agenda

- Welcome and Introductions
- Purpose of the Advisory Committee
- Preview of 1st Public Meeting Presentation
- Questions on Presentation
- Presentation on PWD outreach projects / materials
- Recommendations for public outreach
- Next Steps

2

LTCPU Public Advisory Committee

- Guidance about the content for the required general public meetings
- Guidance on the outreach materials
- Input on desired benefits and outcome of the program
- Involvement in CSO control alternatives process
- Feedback on cost, affordability, and potential rate impacts

3

Preview of 1st Public Meeting Agenda

- What is the Combined Sewer Overflow Long Term Control Plan (CSOLTCP) and why is it being updated?
- What are the required contents of the LTCP Update (LTCPU)?
- How is PWD addressing combined sewer overflows (CSOs) and other wet weather issues?

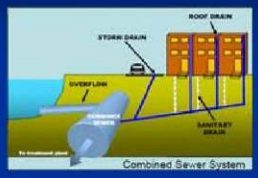
4

PWD's Responsibilities

- Drinking Water Treatment and Delivery
- Wastewater (Sewage) Collection and Treatment
- Stormwater Collection
- Regulation of Stormwater Management During and after Construction

5

What is a CSO – Combined Sewer Overflow?



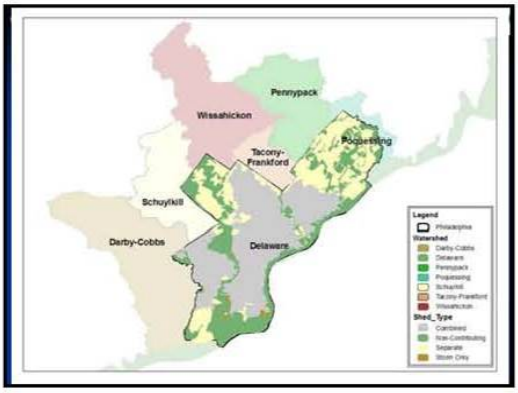
- A pipe that, during storms, discharges untreated wastewater from a sewer system that carries both sanitary wastewater and stormwater.
- The overflow occurs because a system does not have the capacity to transport and treat the increased flow caused by stormwater runoff.

6

Watershed	Number of CSO Outfalls
Cobbs	34
Delaware	54
Pennypack	5
Schuylkill	40
Tacony/Frankford	31
Total	164

Collection System Statistics

% Combined Sewer	60%
% Separate Sewer	40%
% Impervious – Citywide	47.4%
% Impervious – STREETS (10,000 acres)	23%
Miles of sewer	2,955
# of Street Inlets	75,000
# of CSOs	164
Annual CSO Volume	18 BG/yr
Rain Events per Year	80/yr
# of Stormwater Outfalls	457
Annual SW Volume	12 BG/yr



Philadelphia Historic Streams
300 miles

Infrastructure Constructed

Philadelphia Streams Today
100 miles (33%)

What is the Long Term CSO Control Plan (LTCP) and why is it being updated?

What is the Long Term CSO Control Plan (LTCP)?...

- Implemented in Three Phases
  - Nine Minimum Controls (NMCs)
  - Capital Program (Infrastructure)
  - Watershed-Based Planning Initiative
    - Improving Water Quality
    - Attaining Water Quality Standards

Green Cities…Clean Waters

Nine Minimum Controls (NMCs) System "Tune-Up"

"The NMCs are low-cost actions or measures that can reduce CSO discharges and their effect on receiving waters, do not require significant engineering studies or major construction, and can be implemented in a relatively short time frame."

1. Proper Operation and Maintenance
2. Maximization of Storage
3. Review and Modification of Pretreatment
4. Maximization of Flow to Treatment Plants
5. Elimination of CSOs During Dry Weather
6. Control of Solids and Floatables
7. Pollution Prevention
8. Public Notification
9. Monitoring

Green Cities…Clean Waters

… and why is the LTCP being updated?

Long Term CSO Control Plan Update (LTCPU)

- Summary of Characterization and Problem Identification in Areas Impacted by CSOs
- Identification of New CSO Control Alternatives
  - Land-Based Stormwater Management
  - Stream and River Corridor Restoration
  - Traditional Infrastructure for Storage, Transmission, Centralized/Distributed Treatment
- Detailed Evaluation of Effectiveness, Cost, and Affordability
- Long-Term Plan for Implementation

What are the required contents of the LTCP Update?

Green Cities…Clean Waters

Regulatory Framework: Clean Water Act and National CSO Control Policy

- Nine Minimum Controls
- Long Term CSO Control Plan
  - System Characterization
  - Public Participation

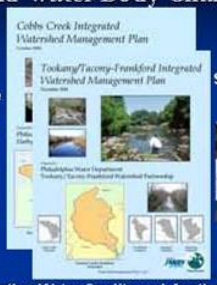
  } Today's Meeting

- Consideration of Sensitive Areas
- Evaluation of Alternatives
- Cost/Performance Consideration
- Operational Plan
- Maximizing Treatment at Existing Plants
- Implementation Schedule
- Post-Construction Compliance Monitoring Program
- Water Quality Standards Review

Green Cities…Clean Waters

Watershed and Water Body Characterization

Living Resources
Designated Uses
Regulatory Compliance



Stakeholder Goals
Quality of Life

Dry Weather Water Quality and Aesthetics
Stream and Stream Corridor Living Resources
Wet Weather Water Quality and Quantity

Green Cities…Clean Waters

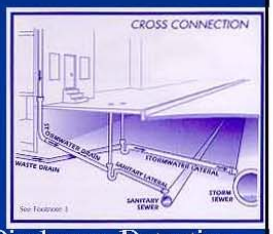
Target A – Dry Weather Water Quality and Aesthetics

- Streams need to look good, be accessible, and become an amenity to the community
- Stream water quality during dry weather (about 60-65% of the time) should improve

Problem: Dumping and Trash

Solution: Waterways Restoration Team - removing trash

Problem: Dry Weather Discharges



Solution: Illicit Discharge, Detection, and Elimination (IDD&E) Programs

Problem: poor public access to streams

Solution: Upper Cobbs Creek Area Greenway

Solution: Fairmount Park Trails Master Plan

Problem: Can we increase resident awareness?

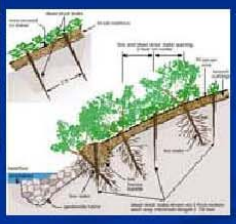
Solution: Active Community Stewardship

Solution: Public Education

Target B – Healthy Living Resources

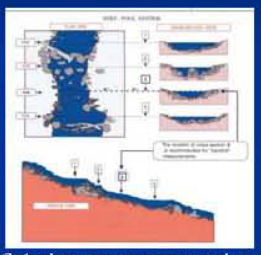
- Focus on improved aquatic habitat and healthy fish populations
- Stream restoration (bank, channel, riparian, corridor)
- Fish passage (fish ladders, dam modification)

Problem: Bank erosion, a typical urban stream problem

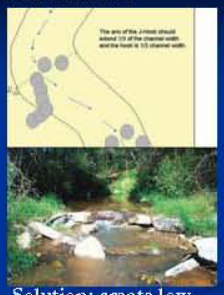


Solution: Bioengineered Bank Stabilization

Problem: Bed erosion and lack of channel habitat diversity



Solution: stream restoration of steps and pools



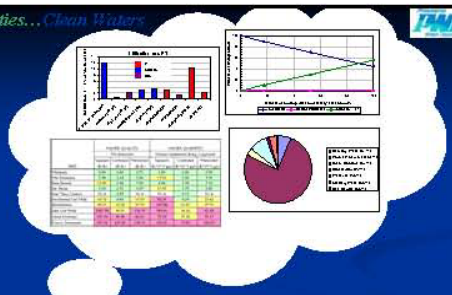
Solution: create low flow refuges

Problem: degraded wetlands

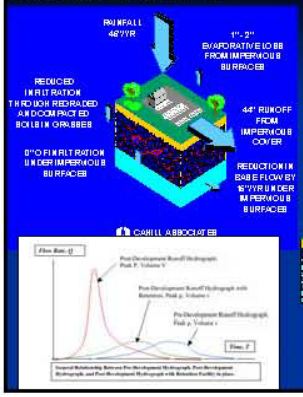
Solution: Wetland Restoration/Creation

Target C – Wet Weather Water Quality and Quantity

- Most difficult target to achieve: reduced discharge, improved water quality during and after storms; frequency of flooding
- Start now with phased implementation of measures to meet initial pollutant load reduction targets
- *Implement a mix of approaches*



Many solutions dealing with wet weather possible



Goal: Restore More Natural Hydrology

How is PWD addressing combined sewer overflows (CSOs) and other wet weather issues?

The Old Approach – Big Tanks and Tunnels

- Are we going to build on yesterday's mistakes?
- Is this approach sustainable?
- Can we reach our environmental goals?
- Can we get a better value for limited $$$?

PWD's Watershed-Based CSO Program

- Vision: Transform Philadelphia's urban landscape into a vibrant, green community where people want to live and work.
- Benefits of clean water
  - healthy river and stream ecosystems
  - tourism, riverfront development, jobs, growth
  - recreation and health
  - increased property values

Watershed-Based CSO Program

Streambank and Habitat Restoration
Constructed Wetlands
Baseflow Augmentation
Floatables (Skimming Vessels
Stream Cleanup Teams
Assessment & Monitoring

Low-Impact Development and Re-Development, AND
Stormwater BMPs
Regional Stormwater Facilities
Riparian Buffer Creation & Enhancement;
Reforestation
Green Building Technology
Water Conservation
Assessment & Monitoring

Community

WATER

INFRASTRUCTURE

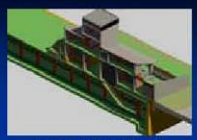
New Storage Facilities
New Treatment Capacity
Real-Time Control
Sewer Separation
Inflow / Infiltration Controls
Catch Basin Controls
In-line Metering
Swirl Concentrators
Assessment and Monitoring

33

INFRA

- Asset & Capacity Management Program
- Inflow / Infiltration (I/I) Controls
- Sewer Separation
- System Optimization & Real-Time Control
- New Treatment Capacity
- New Storage Facilities

34



Tank - Venice Island

WPCP Wet Weather Capacity Expansion

Thermal Imaging Studies

Sewer/Stream Separation - USACE Mill Creek Feasibility Study

In-System Storage

35

Infrastructure Summary

- Necessary part of CSO mitigation
- These projects are a large part of PWD's Capital Program
- Innovative
- But…
  addresses only a small part of the environmental goal

36

LAND

- Implementation of Stormwater BMPs
- Low Impact Development & Redevelopment (LID)
- Catch Basin Control Program
- Impervious Cover Disconnection
- Reforestation
- Green Building Technology & Water Conservation
- New Stormwater Management Regulations

BIOMIMICRY: Engineering Natural Systems

- Disconnectivity
- Stormwater Harvesting
- Bioretention Systems

- Infiltration Systems
- Open Swales
- Permeable Paving
- Vegetated (Green) Roofs

Low Impact Development Program

Stormwater Detention (ex. Vacant Land Management)

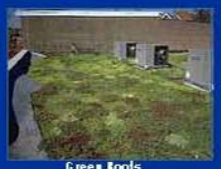
Green Streets

Infiltration Trenches & Basins

Bioretention (ex Rain Garden)

Permeable Paving

New SW Regulations



Green Roofs

Cisterns & Rain Barrels

Land Summary

- Land based initiatives keep the water out of the sewers
- Long-term sustainable solution that will protect our waterways
- But...
  we need to restore the damage done to our waterways from 200 years of urban impacts

WATER

- Waterways Restoration Team
- Stream Habitat Restoration
- Constructed Wetlands
- Fish Passage Projects
- Floatables Skimming Vessels
- Riparian Buffer Creation & Enhancement

Future Meeting Topics

- Meeting #2 – CSO Control Options – Low Impact Development (green infrastructure) and Capital Improvements, What Other Cities Are Doing, Prototype Examples
- Meeting #3 – Alternatives Analysis and Affordability
- Meeting #4 – Review of Draft Plan

Today's Agenda

- Welcome and Introductions
- Purpose of the Advisory Committee
- Preview of 1st Public Meeting Presentation
- Questions on Presentation
- Presentation on PWD outreach projects / materials
- Recommendations for public outreach
- Next Steps

Today's Agenda

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- Next Steps

Advisory Committee Meeting #2

CSOLTCPU Advisory Committee
February 20, 2008

Agenda

1. Welcome & Introductions
2. Preview of Updated Public Meeting Presentation
3. Philly RiverCast
4. Questions and Answers

Sign In	CSO LTCP Advisory Committee Meeting #2	February 20, 2008
Name	**Email**	**Affiliation**
Tiffany Ledesma Groll	ledesmagrolltd@cdm.com	Consultant to PWD
Melanie Garrow	Melanie.garrow@phila.gov	PWD
Laura Rozumalski	Laura.Rozumalski@phila.gov	PWD
Sarah Thorp	sarahthorp@drcc.phila.org	DRCC
Christine Knapp	knapp@pennfuture.org	Pennfuture
David Burke	daburke@state.pa.us	PA-DEP
Dwayne Myers	myersrd@cdm.com	CDM/PWD
Bill Cesanak	cesanakwe@cdm.com	CDM/PWD

Comments for February 20th Meeting

1. Take out the acronyms- don't say "CSO," say Combined sewer overflow – Sarah R.G.
2. CSO vs Separate – make the colors different. (H2O for stormwater- blue & poop brown, then combine colors)
3. Take time on CSO vs. Separate diagrams, BUT ALSO VERY IMPORTANT to point out NPS pollution with CSO effect. + pros and cons of each
4. Fix diameter of CSO & separate into 2 pipes where it comes out of house – Burke
5. After Green vs. Gray go back to sewer diagram and add green and show H2O coming out -Burke
6. Old Maps → New maps = Good (we should still treasure & preserve what we still have & bring back what is lost – Burke
7. Stream Natural vs. Urban → Different isn't visible in photos because you can't see development in 2nd pair; show aerial?
8. 4" Rain vs. 3" → impact? → MAJOR STORM! 4" over 3 hours vs. 4" over 24 hours…explain clear difference & emphasize impact – Sarah R.G.

- Average storm is ½ in – Melanie
- Snow comparison?

9. "Piping" is creek- EXPLAIN that burying creek and creek runs through pipe
10. How to get involved → go to very end again x2 & Add "next steps"- why you want to get involved & why are they here?
11. What can they do?

- Good Practices- rain barrel, explain why these practices are beneficial.

12. Vision of what their street can look like – list things like plant trees, rain barrels, you can do it, grass… etc.
13. Role of public? Do you like the idea of spending $ on green stuff? & gray stuff? Mix?
14. Additional Tables? Recycling Table, Anti Litter Campaign?
15. Stream Restoration & other green > cut out 1-2 i.e. keep Portland and Chicago.
16. Don't use toxic, use "unsanitary" & "filthy" in history section!

1. Darby Cobbs

- 34 outfalls
- 2004 wmp completed

2. Schuylkill

- 40 overflows
- Sewer water as t.s. & sewer Water Protect. Plan- completed in 2006

3. Tookany/Tacony-Frankford

- 31 in TF section
- WMP completed 2007

4. Pennypack

- Only 5 CSOs
- WMP started in 07. To be completed in 2008

5. Delaware

-54 in DE Direct
- started RCP last year

6. Poquessing

- 0 outfalls, served by separate sewer system RCP complete last year & wmp to start this fall

(Refer to the Public Meeting Series # 1 of this volume for complete set of slides.)

Advisory Committee Meeting #3

CSOLTCPU Advisory Committee
October 8, 2008

Agenda

1. Welcome & Introductions

2. Water Quality Characterization, Problem Analysis & Goals for Our Watersheds

3. Combined Sewer Overflow (CSO)Cast

4. Questions and Answers on presentation

5. Preview of "Green Cities, Clean Waters" Art Exhibit

Philadelphia PWD Water Department

PWD CSOLTCPU Public Advisory Committee
Meeting #3
October 8, 2008

Please Sign In

Name	Organization	Email
Tiffany Ledesma Groll	Consultant to PWD	ledesmagrolltd@cdm.com
Darlene Smith	Consultant to PWD	
Melanie Garrow	PWD	melanie.garrow@phila.gov
CASEY THOMAS	PWD	CASEY.THOMAS@PHILA.GOV
Marc Cammarata	PWD-OOW	Marc.cammarata@phila.gov
Dwayne Myers	CDM	myersrd@cdm.com
Maribel Hiraldo	CLS	MHiraldo@CLSPhila.org
SAM SIMKINS	AFSCME	SSIMKINS@EARTHRESOURCES.COM
Lara Kelly	NLNA	lara kelly@comcast.net
Sarah Robb Grieco	TTF	Sarah@tfwatershed.org
Thu Tran	CLS	ttran@clsphila.org
Suzanne.Biemiller	Mayor's Office of Sust.	suzanne.biemiller@phila.gov
JOAN BLAUSTEIN	FAIRMOUNT PARK	JOAN.BLAUSTEIN@PHILA.GOV
Patrick Starr	PEC	pstarr@pecpa.org
Phyllis MARTINO	Impact Services	pmartino@impactservices.org
Laura Baumanski	PWD	laura.baumanski@phila.gov

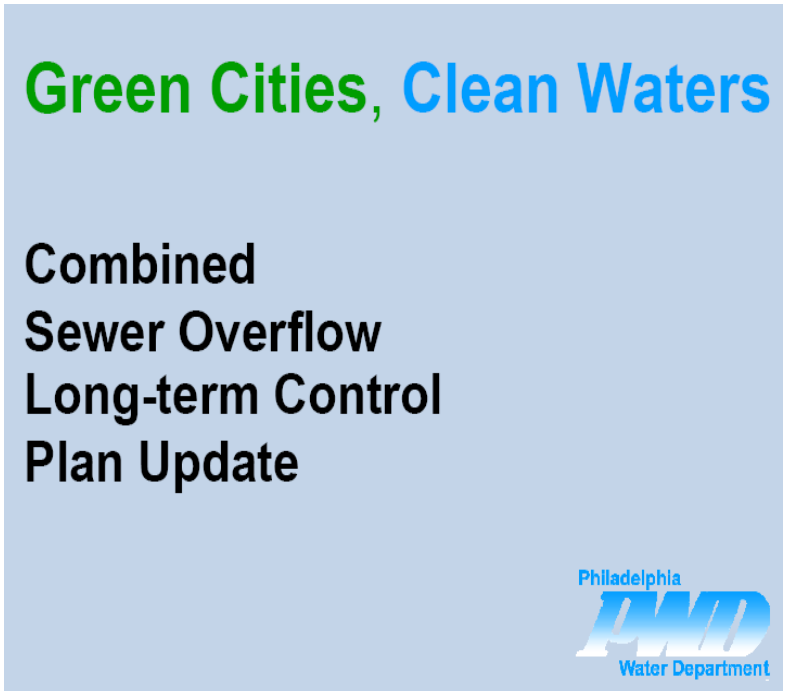
CSO LTCPU Advisory Board Meeting Comments 10.08.2008

Intro Presentation

- What do we want from the public?
- Targeting the public: what is the cost to them and how will it benefit them and their children
- Explain what PWD does and how this is an additional but necessary part of their role as a water utility provider
- Emphasize recreation, quality of life, increase in property value in using green infrastructure
- Contrast green and gray more explicitly
- Big investment in infrastructure is necessary, but how do we do this?
- Slide 30- call out features or what is being shown

Characterization Presentation

- Maps- provide landmarks, parks, streets, neighborhood names for reference
- Redo Tookany/Tacony- Frankford map
- Slide 4- take out or switch with previous
- Emphasize recreation
- Connect public actions to their effect (e.g. what pour down the drain, flush the toilet- goes into sewer system)
- Homeowner Stormwater Management Manual could be referred to
- Mark green streets slides with call outs to different features



(Refer to the Public Meeting Series # 2 of this volume for complete set of slides.)

Advisory Committee Meeting #4

CSO LTCPU Adv. Committee Mtg. 4/9/09

FAIRMOUNT WATER WORKS INTERPRETIVE CENTER

VISITOR SIGN-IN SHEET

~~DATE~~ Affiliation	NAME e-mail	~~PURPOSE FOR VISIT~~	~~TIME IN~~
PWD Consultant	Tiffany Ledesma Grott, ledesmagrollltd@cdm.com		
FAIRMOUNT PARK	JOAN BLAUSTEIN JOAN.BLAUSTEIN@PHILA.GOV		
TTF	SARAH ROBBGERETO sarah@tttfwatershed.org		
TTF	Katie Donnelly katie@tttfwatershed.org		
PWD consultant	Marcos Boletta MBoletta@cdm.com		
PWD Drexel COOP	Ralph Hernandez rch39@drexel.edu		
PennFuture	Rachel Vassar vassar@pennfuture.org		
NLC Clean & Green	Lara Kelly trash@nlna.org		

CSO Advisory Meeting 4-9-09

Slide Target C- Change RT Control to Inflatable dam
Slide Cost vs Benefit- Phrase it down
Slide RTB – make it plural
Take out RTB and add a text saying it is underground
Slide green homes – make sure its local plants
Slide Green public facilities – Change green walls to living walls
Slide green programs – make components readable
Slide Enhanced Aquatic life – Show that it is a fish ladder
Slide Alternatives – Take out TTF CSO…
Take out TBL
Add pics, take out legends, Bigger Pipe instead of increased transmission
Slide Survey – Take out notes and acronyms
Slide CSO – take out CSO, spell it out
Slide Benefit – Text centered, bullets fixed, animation needs to be faster.

-City spend Billions, how does the public wants us to spend the money?
-Gray before and after photos with green before and after photos
-Explain all elements
-Pics of green components before the green program slide so the public will know what they are.
-Picture of Street overflowing
-Should we be biased towards green since were incorporating both green and gray?
-Add incentives for going green
- Fix all animations and layouts

Adv. Ct. Meeting Comments 4/9/09

-Too technical, remove "Satellite", "Transmission", "DO" or explain what it means – **Lara**
-Make it simpler – **Rachel**
-RTB slide, spell it out on 2nd slide – **Sarah**
-No acronyms at all – **Katie**
-Too much impervious language, explain it at the beginning – **Sarah**
-3 Alternatives, explain what the headings mean and how they differ – **Sarah**
-Green, Bigger pipe, mini treatment plant – **Marc**
-More neutral but discuss green benefits better –**Marc**
-List more green benefits – **Marc**
-More construction, detail so the public knows – **Rachel**
-Green Streets, components of each – **Katie**
-Explain green components thru pics – **Joan B**
-Explain how each components impact stormwater management – **Joan B.**
-Insert Stormwater slides, impervious vs pervious, stormwater runoff slides – **Joan B.**
-What is a CSO? Spell it out. – **Lara**
-Summarize slide: Cost vs Benefit, green vs gray – **Sarah**
-Overview 30 mins. New topic 2nd presentation; advertize as such – **Rachel**
-how do you want the city to tell us what you think? Be upfront. – **Marissa**
-Explain what other cities have done in our position. This is new so we need public input. – **Marissa**
-Show partnerships and others are green, so what is the additional value? – **Rachel**
-More biased go green – **Rachel**
-history of CSO slides, why not there now? – **Rachel**

(Refer to the Public Meeting Series # 3 of this volume for complete set of slides.)

Advisory Committee Meeting #5

Philadelphia Water Department

CSO LTCP Update Advisory Committee Meeting
August 5, 2009

Please Sign In

Name	Organization	Email
DENNIS R. WINTERS	SIERRA CLUB	dennis.winters@verizon.net
Rachel Vassar	PennFuture	vassar@pennfuture.org
Lisa Simon	Simon PR/PWD	lsimon@simonpr.com
JOAN BLAUSTEIN	FAIRMOUNT PARK	JOAN.BLAUSTEIN@PHILA.GOV
Marc Commerota	PWD - OOW	marc.commerota@phila.gov
DAVID BURKE	PA DEP	daburke@state.pa.us
Maggie Allio	PWD consult - OOW	alliomL@cdm.com
PAUL PACETTE	PA ENV. COUNCIL	PPACETTE@PECPA.ORG
Khiet Luong	PA Env. Council	kluong@prr.pa.org
Patrick Starr	PA Env Council	pstarr@pecpa.org
Joanne Dahme	PWD	joanne.dahme@phila.gov
Tiffany Ledesma Groll	Consultant to PWD	ledesmagrolltd@phila.gov

Green Cities, Clean Waters Advisory Committee Meeting

August 5, 2009

The purpose of the meeting was to review the draft summary report CSO LTCP Update and to discuss how to improve outreach on the CSO LTCP Update upcoming final round of meetings.

Key comments made on draft summary report CSO LTCPU:

- "This plan is a marvelous illustration of a real world watershed approach and we plan to use it as a model for watershed planning for counties and municipalities across Pennsylvania." – Patrick Star, PEC
- "This plan addresses social justice and equity issues" [that other CSO programs do not]- Patrick Star
- "This plan really builds on the first LTCP in 1997 that laid the groundwork for the watershed approach." - David Burke, DEP
- "Biggest Public Works Project in the foreseeable future." - Joan Blaustein, Fairmount Park
- "Fairmount Park will be planting 300,000 trees to meet the GreenWorks Challenge. Their primary purpose is to improve water quality and reduce stormwater runoff." Joan
- "The Green Program allows Philadelphia residents to see what they are paying for" – Unknown

Brainstorming results on increasing public participation at final round of public meetings:

- Give away water ice
- Write Op-ed in Inquirer
- Get Inquirer to write articles
- Conduct press briefing to draw environmental bloggers
- Have ANS Urban Sustainability Forum contact promote through listserv

Public Meetings
Notifications & Media Coverage

Philadelphia
PWD
Water Department

GREEN CITIES, CLEAN WATERS PROGRAM:

COMBINED SEWER OVERFLOW LONG-TERM CONTROL PLAN PUBLIC MEETINGS

Please join the Philadelphia Water Department (PWD) for a series of public meetings on our Combined Sewer Overflow Long-Term Control Plan Update entitled "Green Cities, Clean Waters".

Learn about the City's combined sewer system, and PWD's proposed strategies for significantly reducing combined sewer overflows to our rivers and streams. Give us your feedback on these strategies that are designed to combine 'gray' solutions, such as underground infrastructure and 'green' solutions such as tree infiltration trenches.

1ST MEETING

WHEN: Wednesday, April 2 from 5:45 – 7:45 p.m.

WHERE: Port Richmond Library
(2987 Almond Street, Philadelphia, 19134)

2ND MEETING

WHEN: Thursday, April 10 from 6:00 – 8:00 p.m.

WHERE: Fels Community Center
(2407 S. Broad Street, Philadelphia, 19148)

3RD MEETING

WHEN: Thursday, April 24 from 6:00 – 8:00 p.m.

WHERE: School of the Future
(4021 Parkside Avenue, Philadelphia, 19104)

Learn how you can help protect our local sources of drinking water and help Philadelphia Go Green!

For more information, please contact Tiffany Ledesma

Philadelphia
PWD
Water Department

GREEN CITIES, CLEAN WATERS PROGRAM:
COMBINED SEWER OVERFLOW LONG -TERM CONTROL PLAN
PUBLIC MEETING

Please join the Philadelphia Water Department (PWD) for a public meeting on our Combined Sewer Overflow Long-Term Control Plan Update entitled: "Green Cities, Clean Waters"

This meeting is a follow-up to the previous round of meetings held last spring.

At this meeting, PWD will present the problems of the creeks and rivers, the sources of pollution and the vision behind the goals that will help transform the City.

Give us your feedback on these strategies and let your voice be heard!

WHEN: Thursday, October 23 from 5:30 – 7:30 p.m.
WHERE: Fairmount Water Works Interpretive Center
640 Waterworks Drive, Philadelphia, 19130
(behind the Philadelphia Museum of Art)

Learn how you can help protect our local sources of drinking water and help Philadelphia Go Green!

For more information, please contact Tiffany Ledesma Groll at (215) 499-3756 or visit www.phillyriverinfo.org.

Water Department

GREEN CITIES, CLEAN WATERS PROGRAM:

HEAR ABOUT THE CITY'S PLANS TO REDUCE POLLUTION AND PROTECT YOUR DRINKING WATER!

Please join the Philadelphia Water Department (PWD) for two public meetings on the Combined Sewer Overflow Long-Term Control Plan Update entitled: "Green Cities, Clean Waters"

- Hear about the vision for a greener, cleaner Philadelphia and how it affects your community;
- Find out how you can help protect your drinking water;
-Provide feedback on your future!

At the public meetings on December 4 and 10, PWD will review the sources of pollution that affect the creeks and rivers in your communities, and present its plan to transform Philadelphia into a green oasis!

Join us to hear the vision and strategies, and let your voice be heard!

1st Meeting:
WHEN: Thursday, December 4 from 5:30 – 7:30 p.m.
WHERE: Cobbs Creek Community Environmental Education Center
(700 Cobbs Creek Parkway, Philadelphia 19143)

2nd Meeting:
WHEN: Wednesday, December 10 from 6:00 – 8:00 p.m.
WHERE: Center in the Park
(5818 Germantown Avenue, Philadelphia, 19144)

For more information, please contact Tiffany Ledesma Groll at (215) 499-3756 or visit www.phillyriverinfo.org.

Philadelphia
PWD
Water Department

GREEN CITIES, CLEAN WATERS PROGRAM: COMBINED SEWER OVERFLOW LONG-TERM CONTROL PLAN PUBLIC MEETINGS

Please join the Philadelphia Water Department (PWD) for a series of public meetings on our Combined Sewer Overflow Long-Term Control Plan Update entitled "Green Cities, Clean Waters."

Learn about the City's combined sewer system, and PWD's proposed strategies for significantly reducing combined sewer overflows to our rivers and streams. Give us your feedback on these strategies that are designed to combine 'gray' solutions, such as underground infrastructure and 'green' solutions such as tree infiltration trenches.

1st Meeting:

WHEN: Tuesday, **June 2**, from 6 to 8 p.m.

WHERE: FELS South Philadelphia Community Center
(2407 South Broad Street, Philadelphia, 19148)

2nd Meeting:

WHEN: Thursday, **June 4**, from 6 to 8 p.m.

WHERE: Waterview Recreation Center
(5826 McMahon Street, Philadelphia, 19144)

3rd Meeting:

WHEN: Wednesday, **June 10**, from 6 to 8 p.m.

WHERE: Northern Liberties Community Center
(700 North 3rd Street, Philadelphia, 19123)

Learn how you can help protect our local sources of drinking water and help Philadelphia Go Green!

For more information, please contact Tiffany Ledesma Groll
at 215-499-3756 or visit www.phillyriverinfo.org

Mount Airy Independent

8/13/09

Community Calendar

GREEN CITIES, CLEAN WATERS

Free Library, Central Branch, 1901 Vine St. "Green Cities, Clean Waters" exhibit offers ideas on improving drinking water, greening neighborhoods. Free. Through August 21. Monday-Thursday 9 a.m. – 9 p.m., Friday 9 a.m. – 6 p.m. Info: 215-499-3756.

Mount Airy Independent

8/13/09

Give Your Views on Water Issues

Philadelphia's waterways supply essential drinking water and destinations to play, fish, relax and reconnect. That's why the Philadelphia Water Department is submitting a 20-year plan to the Environmental Protection Agency that outlines how to improve our waters and green our city. Citizens are strongly encouraged to attend a public meeting and provide important feedback to City planners.

Meetings will be held from 6 to 8 pm throughout the City. Water ice will be provided to attendees.

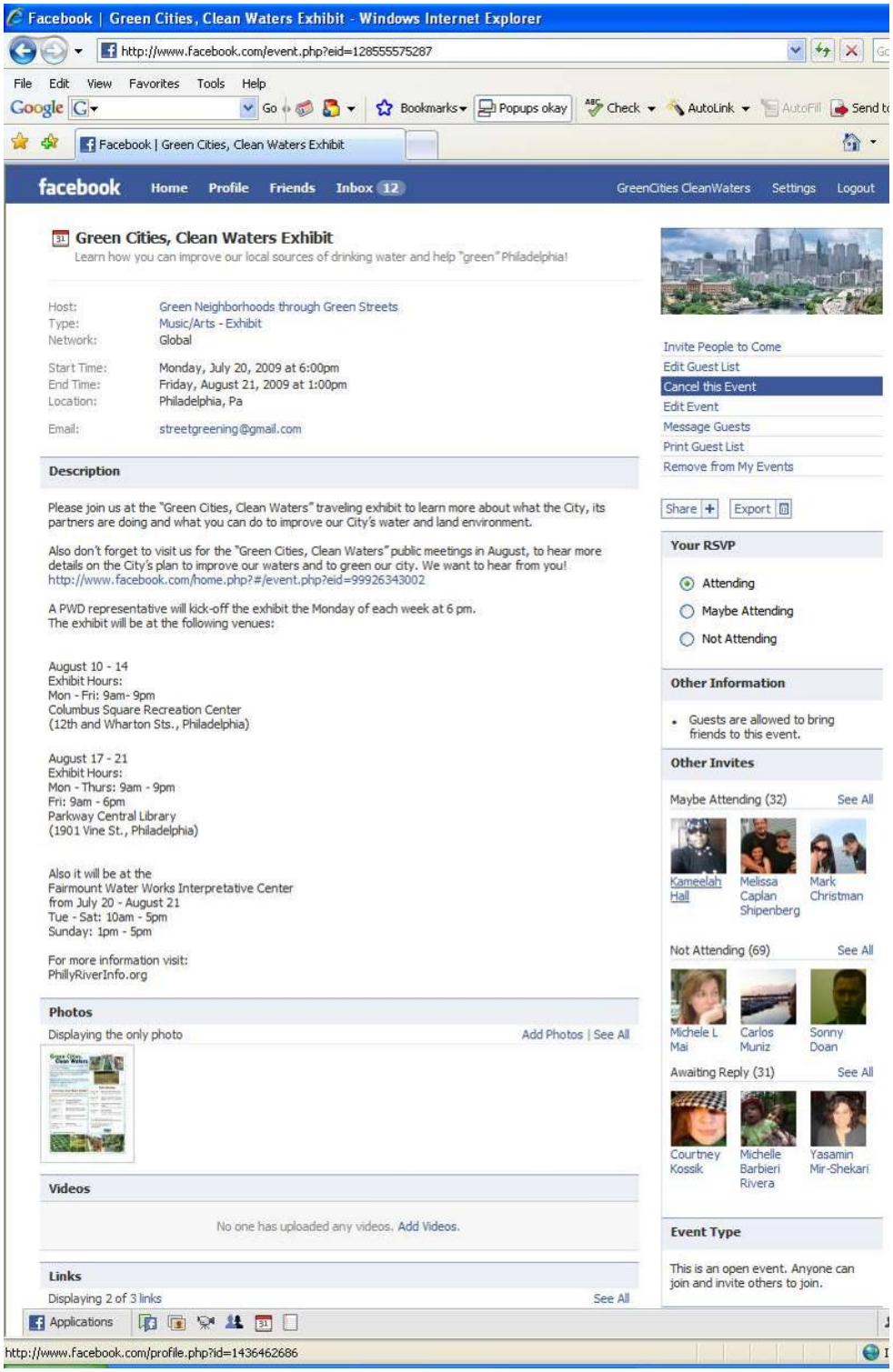
In the Northwest, the meeting will take place August 18 at Waterview Recreation Center, 5826 McMahon Street.

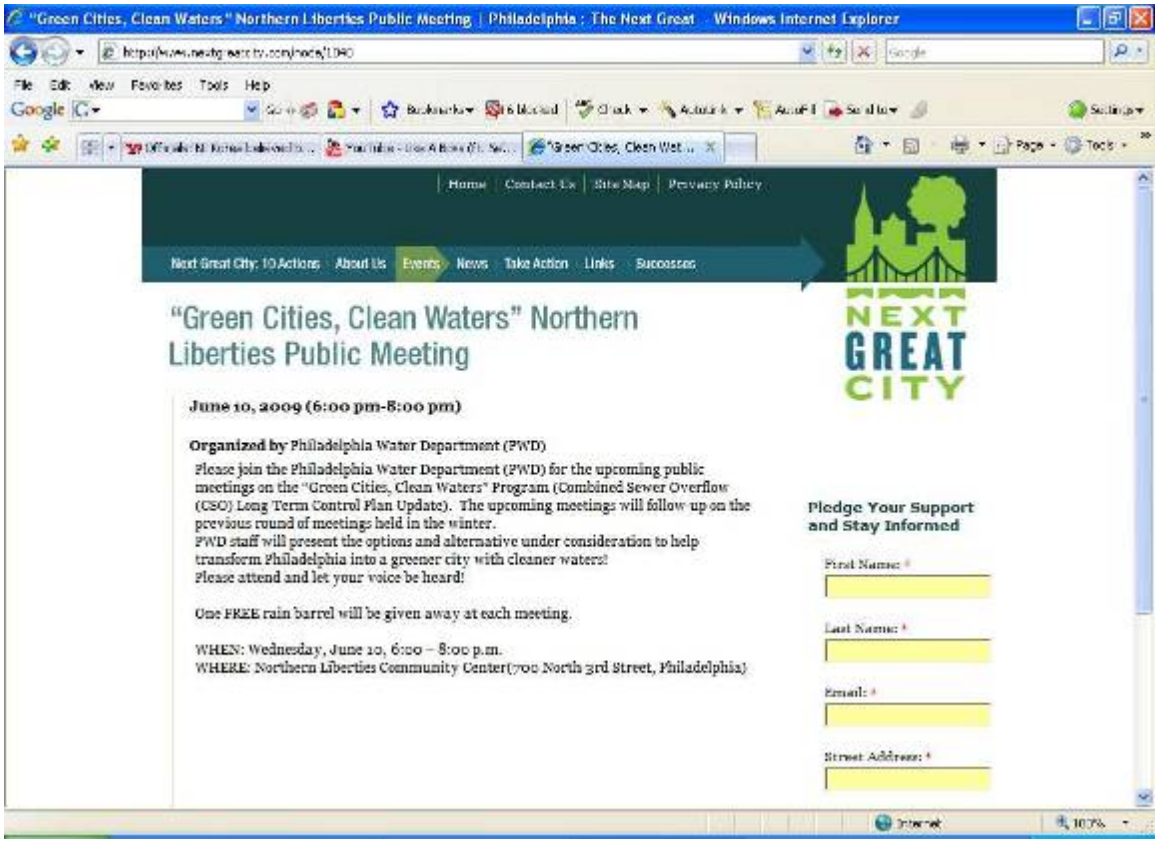
Other meetings will be held August 19 at the Northern Liberties Community Center, 700 North 3rd Street; August 20 at Columbus Square Recreation Center, 12th and Wharton streets; and August 25 at Mercy Hospital, 54th and Cedar streets, 7th Floor Chapel Conference Room

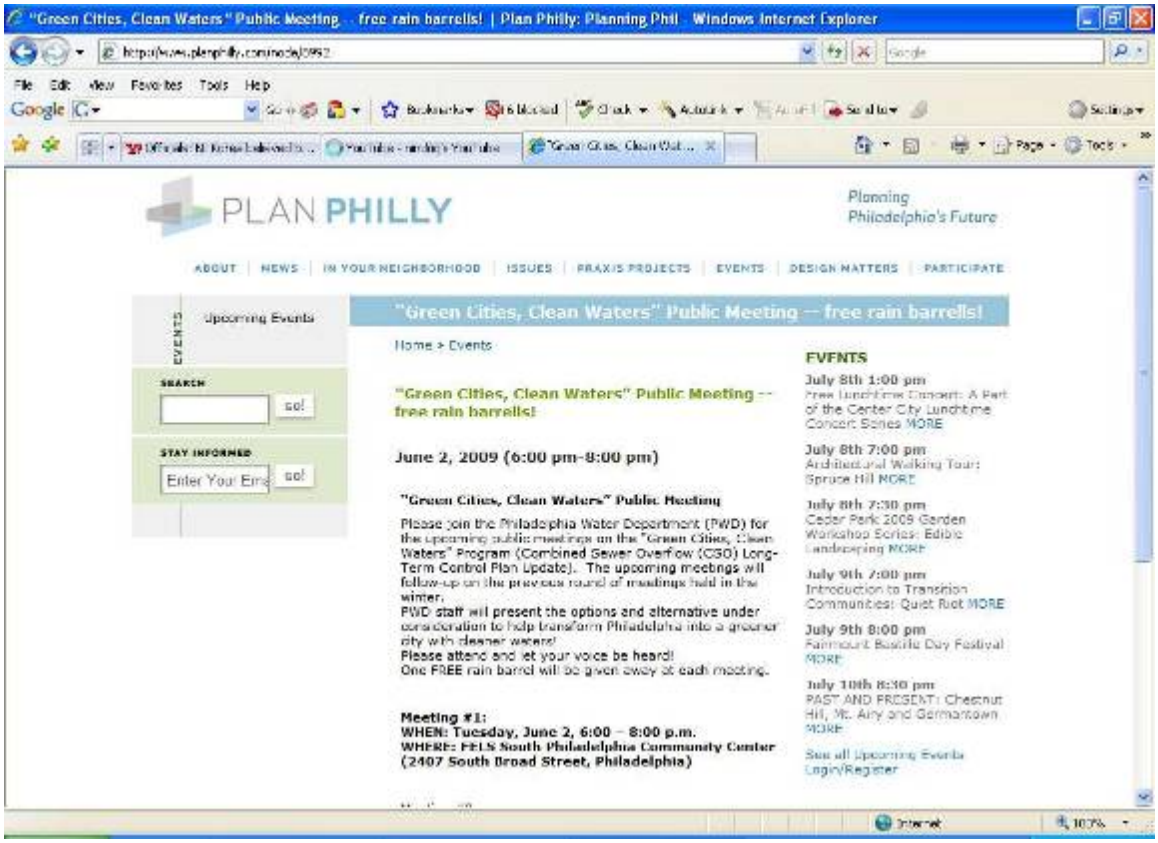
The Green Cities, Clean Waters program commits $1.6 billion over 20 years to capture 80 percent of the sewage and storm water that flows into the Schuylkill and Delaware Rivers and the Tacony and Cobbs creeks. A major part of the solution focuses on greening our streets, schools and public facilities.

"The program is designed to make our waterways cherished and thriving destinations, and lay the groundwork for revitalizing Philadelphia in areas of public health, recreation, housing and neighborhood values," says Joanne Dahme, Public Affairs Manager for PWD. "But we need citizens to tell us what they think before we present to the EPA on September 1."

For more information, visit www.PHILLYRIVERINFO.org/CSOLTCPU or call 215-499-3756.


Facebook | Green Cities, Clean Waters Exhibit - Windows Internet Explorer
http://www.facebook.com/event.php?eid=128555575287
File Edit View Favorites Tools Help
Facebook | Green Cities, Clean Waters Exhibit
facebook Home Profile Friends Inbox 12 GreenCities CleanWaters Settings Logout
Green Cities, Clean Waters Exhibit
Learn how you can improve our local sources of drinking water and help "green" Philadelphia!
Host: Green Neighborhoods through Green Streets
Type: Music/Arts - Exhibit
Network: Global
Start Time: Monday, July 20, 2009 at 6:00pm
End Time: Friday, August 21, 2009 at 1:00pm
Location: Philadelphia, Pa
Email: streetgreening@gmail.com
Description
Please join us at the "Green Cities, Clean Waters" traveling exhibit to learn more about what the City, its partners are doing and what you can do to improve our City's water and land environment.
Also don't forget to visit us for the "Green Cities, Clean Waters" public meetings in August, to hear more details on the City's plan to improve our waters and to green our city. We want to hear from you!
http://www.facebook.com/home.php?#/event.php?eid=99926343002
A PWD representative will kick-off the exhibit the Monday of each week at 6 pm.
The exhibit will be at the following venues:
August 10 - 14
Exhibit Hours:
Mon - Fri: 9am- 9pm
Columbus Square Recreation Center
(12th and Wharton Sts., Philadelphia)
August 17 - 21
Exhibit Hours:
Mon - Thurs: 9am - 9pm
Fri: 9am - 6pm
Parkway Central Library
(1901 Vine St., Philadelphia)
Also it will be at the
Fairmount Water Works Interpretative Center
from July 20 - August 21
Tue - Sat: 10am - 5pm
Sunday: 1pm - 5pm
For more information visit:
PhillyRiverInfo.org
Photos
Displaying the only photo
Add Photos | See All
Videos
No one has uploaded any videos. Add Videos.
Links
Displaying 2 of 3 links
See All
Invite People to Come
Edit Guest List
Cancel this Event
Edit Event
Message Guests
Print Guest List
Remove from My Events
Share
Export
Your RSVP
Attending
Maybe Attending
Not Attending
Other Information
Guests are allowed to bring friends to this event.
Other Invites
Maybe Attending (32) See All
Kameelah Hall
Melissa Caplan Shipenberg
Mark Christman
Not Attending (69) See All
Michele L Mai
Carlos Muniz
Sonny Doan
Awaiting Reply (31) See All
Courtney Kossik
Michelle Barbieri Rivera
Yasamin Mir-Shekari
Event Type
This is an open event. Anyone can join and invite others to join.
Applications
http://www.facebook.com/profile.php?id=1436462686


"Green Cities, Clean Waters" Northern Liberties Public Meeting | Philadelphia : The Next Great - Windows Internet Explorer
Home | Contact Us | Site Map | Privacy Policy
Next Great City: 10 Actions | About Us | Events | News | Take Action | Links | Successes
NEXT GREAT CITY
"Green Cities, Clean Waters" Northern Liberties Public Meeting
June 10, 2009 (6:00 pm-8:00 pm)
Organized by Philadelphia Water Department (PWD)
Please join the Philadelphia Water Department (PWD) for the upcoming public meetings on the "Green Cities, Clean Waters" Program (Combined Sewer Overflow (CSO) Long Term Control Plan Update). The upcoming meetings will follow up on the previous round of meetings held in the winter.
PWD staff will present the options and alternative under consideration to help transform Philadelphia into a greener city with cleaner waters!
Please attend and let your voice be heard!
One FREE rain barrel will be given away at each meeting.
WHEN: Wednesday, June 10, 6:00 – 8:00 p.m.
WHERE: Northern Liberties Community Center(700 North 3rd Street, Philadelphia)
Pledge Your Support and Stay Informed
First Name: *
Last Name: *
Email: *
Street Address: *


"Green Cities, Clean Waters" Public Meeting -- free rain barrels! | Plan Philly: Planning Phil - Windows Internet Explorer
PLAN PHILLY
Planning Philadelphia's Future
ABOUT | NEWS | IN YOUR NEIGHBORHOOD | ISSUES | PRAXIS PROJECTS | EVENTS | DESIGN MATTERS | PARTICIPATE
EVENTS
Upcoming Events
SEARCH
go!
STAY INFORMED
Enter Your Em
go!
"Green Cities, Clean Waters" Public Meeting -- free rain barrels!
Home > Events
"Green Cities, Clean Waters" Public Meeting -- free rain barrels!
June 2, 2009 (6:00 pm-8:00 pm)
"Green Cities, Clean Waters" Public Meeting
Please join the Philadelphia Water Department (PWD) for the upcoming public meetings on the "Green Cities, Clean Waters" Program (Combined Sewer Overflow (CSO) Long-Term Control Plan Update). The upcoming meetings will follow-up on the previous round of meetings held in the winter.
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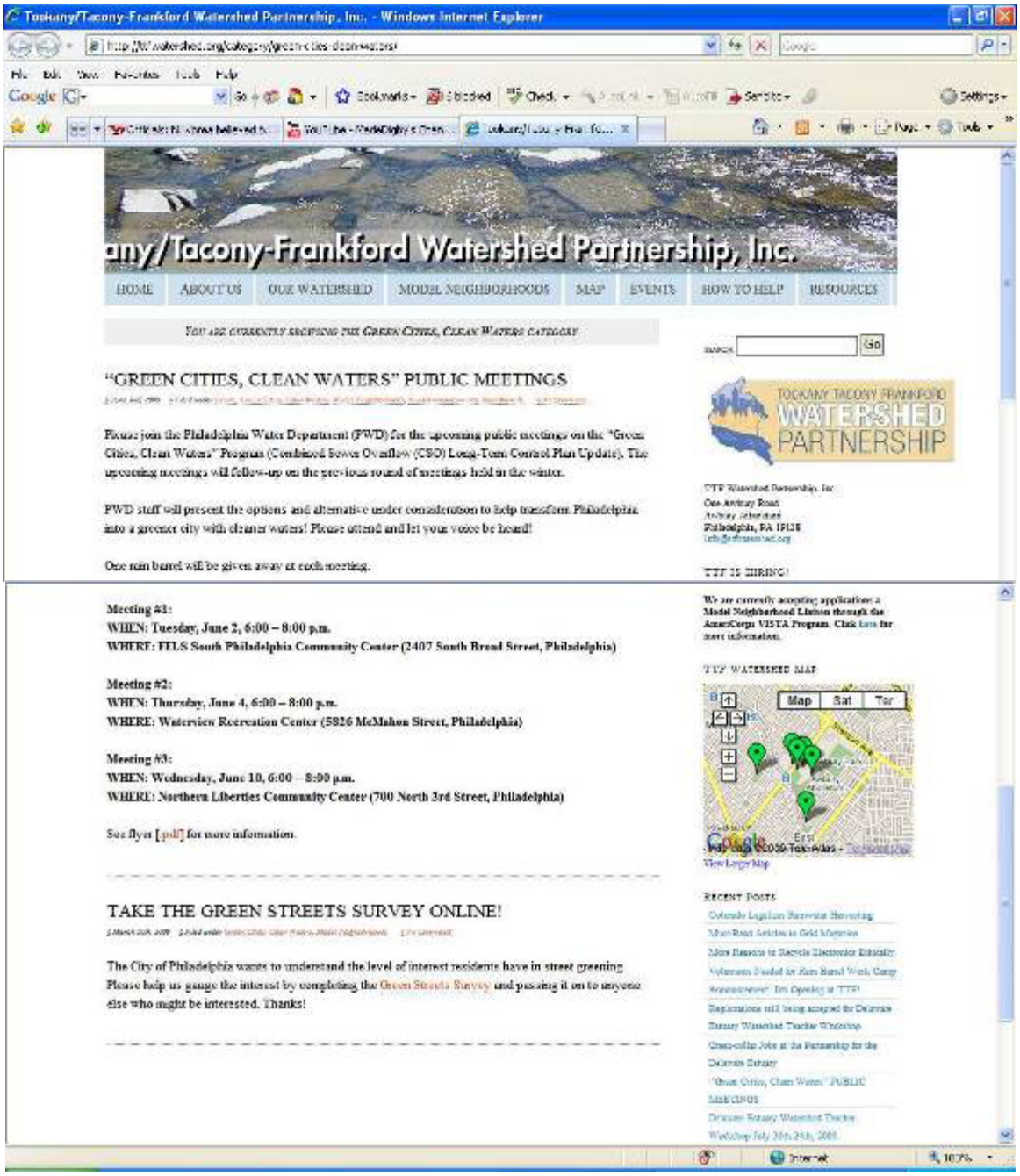
One FREE rain barrel will be given away at each meeting.
Meeting #1:
WHEN: Tuesday, June 2, 6:00 – 8:00 p.m.
WHERE: FELS South Philadelphia Community Center (2407 South Broad Street, Philadelphia)
EVENTS
July 8th 1:00 pm
Free Lunchtime Concert: A Part of the Center City Lunchtime Concert Series MORE
July 8th 7:00 pm
Architectural Walking Tour: Spruce Hill MORE
July 8th 7:30 pm
Cedar Park 2009 Garden Workshop Series: Edible Landscaping MORE
July 9th 7:00 pm
Introduction to Transition Communities: Quiet Riot MORE
July 9th 8:00 pm
Fairmount Bastille Day Festival MORE
July 10th 6:30 pm
PAST AND PRESENT: Chestnut Hill, Mt. Airy and Germantown MORE
See all Upcoming Events
Login/Register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HOME
ABOUT US
OUR WATERSHED
MODEL NEIGHBORHOODS
MAP
EVENTS
HOW TO HELP
RESOURCES
"GREEN CITIES, CLEAN WATERS" PUBLIC MEETINGS
Please join the Philadelphia Water Department (PWD) for the upcoming public meetings on the "Green Cities, Clean Waters" Program (Combined Sewer Overflow (CSO) Long-Term Control Plan Update). The upcoming meetings will follow-up on the previous round of meetings held in the winter.
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WHERE: FELS South Philadelphia Community Center (2407 South Broad Street, Philadelphia)
Meeting #2:
WHEN: Thursday, June 4, 6:00 – 8:00 p.m.
WHERE: Watersion Recreation Center (5826 McMahon Street, Philadelphia)
Meeting #3:
WHEN: Wednesday, June 10, 6:00 – 8:00 p.m.
WHERE: Northern Liberties Community Center (700 North 3rd Street, Philadelphia)
See flyer [pdf] for more information.
TAKE THE GREEN STREETS SURVEY ONLINE!
The City of Philadelphia wants to understand the level of interest residents have in street greening. Please help us gauge the interest by completing the Green Streets Survey and passing it on to anyone else who might be interested. Thanks!
TOCKANY TACONY FRANKFORD WATERSHED PARTNERSHIP
TTF IS HIRING!
We are currently accepting applications a Model Neighborhood Liaison through the AmeriCorps VISTA Program. Click here for more information.
TTF WATERSHED MAP
Map
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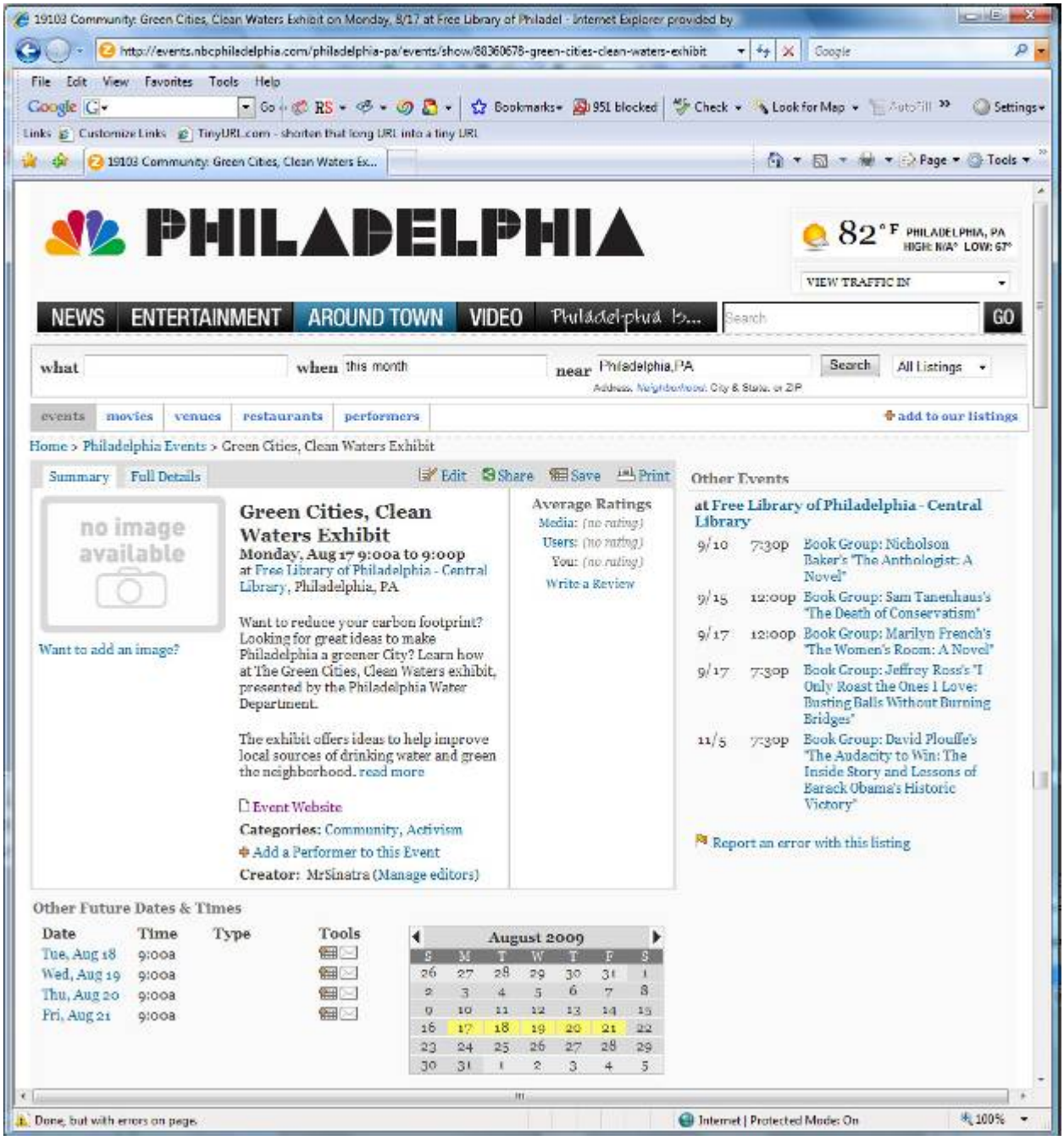
View Larger Map
RECENT POSTS


19103 Community: Green Cities, Clean Waters Exhibit on Monday, 8/17 at Free Library of Philadel - Internet Explorer provided by
http://events.nbcphiladelphia.com/philadelphia-pa/events/show/80360678-green-cities-clean-waters-exhibit
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82° F PHILADELPHIA, PA
HIGH: N/A° LOW: 67°
VIEW TRAFFIC IN
NEWS ENTERTAINMENT AROUND TOWN VIDEO Philadelphia Is...
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when this month
near Philadelphia, PA
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events movies venues restaurants performers
add to our listings
Home > Philadelphia Events > Green Cities, Clean Waters Exhibit
Summary Full Details
Edit Share Save Print
no image available
Want to add an image?
Green Cities, Clean Waters Exhibit
Monday, Aug 17 9:00a to 9:00p
at Free Library of Philadelphia - Central Library, Philadelphia, PA
Want to reduce your carbon footprint? Looking for great ideas to make Philadelphia a greener City? Learn how at The Green Cities, Clean Waters exhibit, presented by the Philadelphia Water Department.
The exhibit offers ideas to help improve local sources of drinking water and green the neighborhood. read more
Event Website
Categories: Community, Activism
Add a Performer to this Event
Creator: MrSinatra (Manage editors)
Average Ratings
Media: (no rating)
Users: (no rating)
You: (no rating)
Write a Review
Other Events
at Free Library of Philadelphia - Central Library
9/10 7:30p Book Group: Nicholson Baker's "The Anthologist: A Novel"
9/15 12:00p Book Group: Sam Tanenhaus's "The Death of Conservatism"
9/17 12:00p Book Group: Marilyn French's "The Women's Room: A Novel"
9/17 7:30p Book Group: Jeffrey Ross's "I Only Roast the Ones I Love: Busting Balls Without Burning Bridges"
11/5 7:30p Book Group: David Plouffe's "The Audacity to Win: The Inside Story and Lessons of Barack Obama's Historic Victory"
Report an error with this listing
Other Future Dates & Times
Date Time Type Tools
Tue, Aug 18 9:00a
Wed, Aug 19 9:00a
Thu, Aug 20 9:00a
Fri, Aug 21 9:00a
August 2009
S M T W T F S
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23 24 25 26 27 28 29
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What's Happening

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ON THE CALENDAR

Green Cities, Clean Waters

This exhibit explores ways to improve local sources of drinking water and "green" the neighborhood. It also examines the actions the city goverment and associated groups are taking to improve local water and land environments.

Where:
Free Library of Philadelphia - Central Branch
1901 Vine St.
Philadelphia , PA 19103
215-686-5322

- www.library.phila.gov

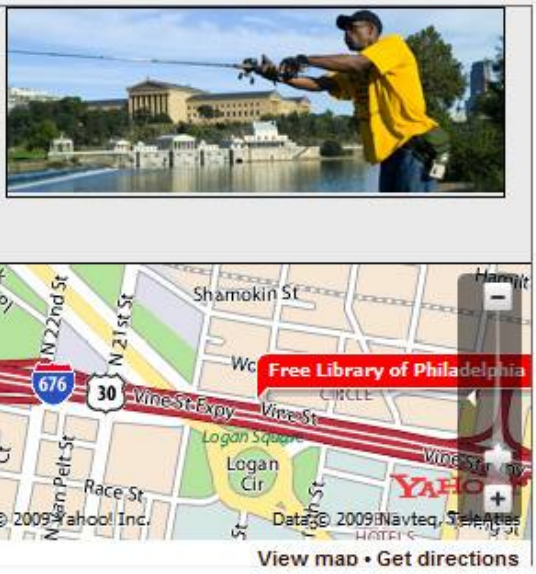
Neighborhood: Rittenhouse Square

- View map
- Get directions

What: History, Science

Starts: Tuesday, August 18 • 9:00 AM to 9:00 PM • **Ends:** Friday, August 21

» Upcoming dates/times



View map • Get directions

Philly.com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Follow
PWD "Green Cities, Clean Waters" exhibit 6 p.m. through Aug 14. Columbus Square Rec Center, 12th and Wharton streets. http://bit.ly/1155UC.
about 2 hours ago from bit.ly
The South Street Headhouse District's S.O.S. Movie Series w/ "Beethoven" 8 p.m. tonight. Second and Lombard streets. http://bit.ly/kVmVJ.
about 3 hours ago from bit.ly
Fox29 John Atwater's photos are in "Artist of the Month" series 6-8 p.m. Aug. 11 JimmyStyle, 1820 E. Passyunk Ave. http://bit.ly/17uDRv.
about 23 hours ago from bit.ly
Health Commissioner Donald F. Schwarz issued an Excessive Heat Watch for Philadelphia today.
10:54 AM Aug 11th from web
Name South Philly Review
Location South Philadelphia, PA
Web http://www.southp...
Bio The Review is a weekly community newspaper that serves the South Philadelphia area with news, sports, features, columns and more.
65 following
137 followers
Tweets 51
Favorites
Actions
block SoPhReview
Following
Internet | Protected Mode: On
100%

Twitter.com

Philadelphia Water Department Intranet Home Page - Windows Internet Explorer

http://pwdnet1/

File Edit View Favorites Tools Help

Philadelphia Water Department Intranet Home Page

Philadelphia Water Department

The Official Intranet Home Page for the Water Department Employees. July 21, 2009 11:52:19 AM

- Mission & Goals
- PWD Organization Chart
- WRB Organization Chart
- PWD Regulations
- Employee Search
- City Directory

PWD Divisions:

- Operations
- Finance & Administration
- Information Science & Technology
- Planning & Engineering
- Public Affairs
- Human Resources

City Sites:

- A to Z
- Board of Ethics
- Capital Program Office
- City Council
- CityNet
- Civil Service Commission
- Director of Finance
- Inspector General
- Law Department
- Labor Relations
- Licenses & Inspections
- MBEC
- Personnel Department
- Procurement StaplesLink.com
- Public Property
- Revenue
- Streets
- Water Revenue Bureau

Mirror Sites:

- www.phila.gov/water

Current NEWS!

Water Commissioner Message NEW!

Q&A About Your New Water and Sewer Charges NEW!

PWD 2008 Annual Financial Report NEW!

Annual Drinking Water Quality Reports NEW!

Mayor Nutter's Budget Address NEW!

Your New Water Bill NEW!

phillystat -- Clean Water...Green City

Reducing Risks: Sodium Hypochlorite Systems Up and Running at Philadelphia's Water and Wastewater Facilities

Letter from the PWD Commissioner: Employee Water Bill

Philadelphia Water Department Flooding Questionnaire

e-News: (Employees' News)

- Green Cities...Clean Waters: Learn how you can improve our local sources of drinking water and help "green" Philadelphia!
- Fire Hydrant Illegal Use / Abuse Reporting
- What is the City Doing to Better Manage Storm Water and Alleviate Property Flooding Caused by Exceptional Storms?
- The Ins and Outs of Sewer Inlets: Keeping storm drains free of debris prevents flooding
- Basement Flooding Due to Heavy Rainfall Intensity
- Health Department Offers Advice for Flood Clean-Up Safety
- Tips to Minimize Property Damage from Heavy Storms
- Meeting the Lead Standard: Philadelphia's water quality continues to meet all state and federal standards. (more...)
- Water Quality Event & Microbial Communication Plan (pdf)
- Is our Water Safe to Drink

Policy & Information

- Residence Requirement
- Memo from the Commissioner: Mandatory Ethics Training for All Employees
- City Press Policy
- City of Philadelphia Law Department - Political Activity Guide 2004
- The Family and Medical Leave Act (FMLA)
- Return to Work -- HEALTHMARK INCORPORATED
- Philadelphia's City Code and Charter

PWD Newsroom

City Employment Info:

- Job Opportunities:
  - *Civil Service/Non-Civil Service
  - *Promotional
- Job Class Specifications
- Pay Ranges

FORMS

- Contract Request Form
- IT Request Form
- Miscellaneous Purchase Order Request Form
- Software Order Form

i-Info/Applications:

- Billing Account Number Look Up Tool
- CATS -- Clothing Allocation Tracking System
- CAPIT -- Capital Program Integrated Tracking System
- City-Wide Requirements Contracts / Memos
- Class 400--Personal Property Inventory
- Class 400--Inventory Surplus
- The Duffy Report: Water | Revenue
- ERV - Engineering Records Viewer
- Health Care Facility Contact List
- LaborX NEW!
- Leave Balance NEW!
- Material Supply Catalog
- MAXIMO 5.2 Web Based Training
- PWD Standby Schedule
- Water Treatment Morning Report
- NEW! WebMail: Intranet iNotes

Quick Links to PWD Unit Sites:

- BLS--Bureau of Laboratory Services
- BRC--Biosolids Recycling Center
- Design
- Construction
- GIS--Geographic Information System
- Office of Watersheds
- Safety
- Survey
- Water & Sewer Squad

http://pwdnet1/pdf/GC_CW20090701.pdf

Local intranet 100%

Green Cities, Clean Waters
Public Meeting

Please join the Philadelphia Water Department (PWD) for a public meeting on the Green Cities, Clean Waters Program (Combined Sewer Overflow (CSO) Long Term Control Plan Update).

Meeting Locations and Times

Thursday, December 4th - 5:30-7:30 p.m.
Cobbs Creek Community Environmental Education Center
(700 Cobb Creek Parkway, Philadelphia)

Wednesday, December 10th - 6:00-8:00 p.m.
Center in the Park
(5818 Germantown Avenue, Philadelphia)

These meetings are a follow-up to the previous round of meetings held last spring. PWD will present the problems of the creeks and rivers, the sources of pollution and the vision behind the goals that will help transform Philadelphia into a greener city with cleaner waters.
Give us your feedback on these strategies
and let your voice be heard!

Contact Tiffany Ledesma Groll at:
ledesmagrollta@cdm.com or (215) 499-3756 with questions

PUBLIC MEETINGS

GREEN CITIES, CLEAN WATERS

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PUBLIC MEETINGS

1st Meeting:	2nd Meeting:	3rd Meeting:
WHEN: Tuesday, June 2, 2009 6:00 – 8:00 p.m.	**WHEN:** Thursday, June 4, 2009 6:00 – 8:00 p.m.	**WHEN:** Wednesday, June 10, 2009 6:00 – 8:00 p.m.
WHERE: FELS South Philadelphia Community Center (2407 South Broad Street, Philadelphia)	**WHERE:** Waterview Recreation Center (5826 McMahon Street, Philadelphia)	**WHERE:** Northern Liberties Community Center (700 North 3rd Street, Philadelphia)

Rain Barrel Drawing: We will give away 1 *FREE* rain barrel at each public meeting!

Learn how you can help protect our local sources of drinking water and help Philadelphia Go Green!

For more information, please visit
www.phillyriverinfo.org
or contact Tiffany Ledesma Groll at LedesmaGrollTD@cdm.com or (215) 499-3756

Green Cities, Clean Waters

Learn how you can improve our local sources of drinking water and help "green" Philadelphia!

Please join us at the "Green Cities, Clean Waters" exhibit to learn more about what the City and its partners are doing (and what you can do) to improve our City's water and land environment.

Also, don't forget to visit us for the "Green Cities, Clean Waters" *public meetings* in August, to hear more details on the City's plan to improve our waters and to green our city.

We want to hear from you!


Rain Garden


Flow-through Planter


Rain Barrel


Green Roof

Green Cities, Clean Waters Exhibits

A Philadelphia Water Department representative will kick-off the exhibit the Monday of each week at 6 pm.

July 27 - 31
Exhibit Hours:
Mon, Wed: 12pm - 8pm
Tue, Thurs: 10pm - 5pm
Fri: 10pm - 5pm
Free Library West Philadelphia Branch
(40th and Walnut Sts., Philadelphia)

July 21 - August 21
Exhibit Hours:
Tue - Sat: 10am - 5pm
Sunday: 1pm - 5pm
Fairmount Water Works Interpretive Center*
(640 Waterworks Dr., Philadelphia)

August 3 - 7
Exhibit Hours:
Mon - Fri: 7am - 9pm
Waterview Recreation Center
(5826 McMahon St., Philadelphia)

August 10 - 14
Exhibit Hours:
Mon - Fri: 9am - 9pm
Columbus Square Recreation Center
(12th and Wharton Sts., Philadelphia)

August 17 - 21
Exhibit Hours:
Mon - Thurs: 9am - 9pm
Fri: 9am - 6pm
Central Library
(1901 Vine St., Philadelphia)

* A speaker will not be available at this site.

Public Meetings

August 18
6 - 8 pm
Waterview Recreation Center
(5826 McMahon St., Philadelphia)

August 19
6 - 8 pm
Northern Liberties Community Center (700 N 3rd St., Philadelphia)

August 20
6 - 8 pm
Columbus Square Recreation Center
(12th and Wharton Sts., Philadelphia)

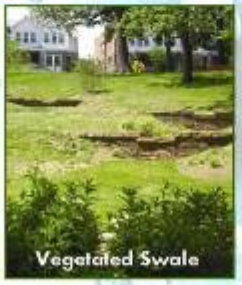
August 25
6 - 8 pm
Mercy Hospital
7th Floor Chapel Conference Room
(54th and Cedar Sts., Philadelphia)

For more information, please visit:
www.PHILLYRIVERINFO.org/CSOLTCPU

Or contact Tiffany Ledesma Groll:
LedesmagrollTD@cdm.com
(215) 499-3756

Philadelphia Water Department


Grass Pavers


Vegetated Swale


Green Roof


Bump-outs and Street Trees


Let it seep in - Jun 11, 2009 - South Philly Review - Windows Internet Explorer
South Philly review
ADVERTISEMENT
PIZZA LYMPICS
Presented by
The biggest pizza party South Philly has ever seen!
Thursday, July 16 - 6 to 9 p.m.
HOME NEWS LIFESTYLES OPINION FOOD SPORTS SOCIALS & OBITUARIES CALENDAR BLOGS CLASSIFIEDS REAL ESTATE
email
NEWS – JUN 11, 2009
Let it seep in
by Amanda Snyder
Three local areas are already part of The Water Department's long-term plan to prevent sewers from overflowing and to make the city greener. More learned how to become part of the mix last week.
Mary Commarota, manager of watershed planning and engineering for the Philadelphia Water Department, presented the long-term plan to lessen combined sewer overflow in the city (Staff Photo by Greg Benante).
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Public Meetings, Series #1

Philadelphia PWD Water Department

PWD CSOLTCPU Public Meeting #1
Port Richmond Library
Wednesday, April 2 from 5:45 – 7:45 p.m.

Please Sign In

Name	Organization	Email
Melanie Garrow	PWD	melanie.garrow@phila.gov
Diane Wilkey	New Kensington	dwilcox@nkcdc.org
Joe McNulty	"	jmcnulty@nkcdc.org
Elizabeth K. Brown	Delaware Riverkeeper Network	elizabeth@delawareriverkeeper.org
Andrew Blanchair	PA DEP	ablanchair@state.pa.us
Stephen Maskalchel	Hatch Mott MacDonald	stephen.maskalchel@hatchmott.com
William Hymen	PWD	Belmont water treatment plant
Jeo LAHM	Resident	
Joanne Dehne	PWD	joanne.dehne@phila.gov
Dwayne Myers	CDM	myersrd@cdm.com

Google Maps

Start **1101 Market St**
Philadelphia, PA 19107
End **2987 Almond St**
Philadelphia, PA 19134
Travel **4.1 mi – about 11 mins**

1101 Market St
Philadelphia, PA 19107
Drive: 4.1 mi – about 11 mins

	1. Head **east** on **Market St** toward **N 11th St**	0.5 mi 2 mins
←	2. Turn **left** at **N 5th St**	0.2 mi 1 min
→	3. Slight **right** to stay on **N 5th St**	397 ft
→	4. Turn **right** at **Race St**	0.3 mi 1 min
←	5. Merge onto **I-95 N** via the ramp on the **left** to **Trenton/NE Phila**	1.2 mi 2 mins
	6. Take exit **23** toward **Girard Ave/Lehigh Ave**	0.3 mi 1 min
	7. Merge onto **N Delaware Ave**	0.3 mi 1 min
	8. Continue on **Richmond St**	0.8 mi 2 mins
←	9. Turn **left** at **E Ann St**	0.2 mi 1 min
→	10. Turn **right** at **Almond St**	269 ft

2987 Almond St
Philadelphia, PA 19134

These directions are for planning purposes only. You may find that construction projects, traffic, or other events may cause road conditions to differ from the map results.

Overview

Start

End

PWD CSOLTCPU Public Meeting #1
Port Richmond Library
Wednesday, April 2 from 5:45 – 7:45 p.m.

Comments/Questions paraphrased:
Unknown asked: Is the I & Ramona project already installed.
Joanne Dahme responded that the project is currently in design and will go out to bid this summer.

Unknown asked: Are you going to have to have a storage tank or diversion system for every one of the 164 outfalls?
Joanne Dahme responded that we will be looking at the drainage area to each outfall to find the most cost-effective solution.

Unknown asked: Why were people in the NE so upset about the proposed tank?
Joanne Dahme responded that we should have done more outreach to explain the tank. Joanne also explained current solution.

Unknown asked: Cost comparison between Holy Family tank and new pipe solution?
Joanne Dahme responded that implementation costs were comparable; maintenance may be easier for piping solution.

Unknown asked: Are we (PWD) in talks with PENNDOT about SW for Girard interchange work?
Joanne Dahme explained our talks with PENNDOT and how we expect them to adhere to our SW regulations.

Unknown asked: With marshlands that filter SW, do they ever get clogged?
Joanne Dahme explained periodic cleaning of sedimentation fore bay.

Unknown asked: Why do we allow garbage disposals in Philly?
Joanne Dahme explained that it is part of the plumbing code. Explained that we need outreach to help people understand how their garbage disposal affects sewer system. Conversation ensued on cities that change/prohibit garbage disposals.

Unknown asked: Are grey water systems illegal in Philly?
Joanne Dahme explained meeting with L & I to allow downspout disconnects where applicable with permission from PWD. Joanne explained rain barrel program.

Unknown commented: It seems like you are going to do as much green as possible and then moving to gray.

Unknown asked: Does the National Policy require Green Projects?
Joanne Dahme responded that EPA put out a paper that recognized the green approach.

Unknown commented: Recommendation to bring in political science people to help PWD interact with the public.

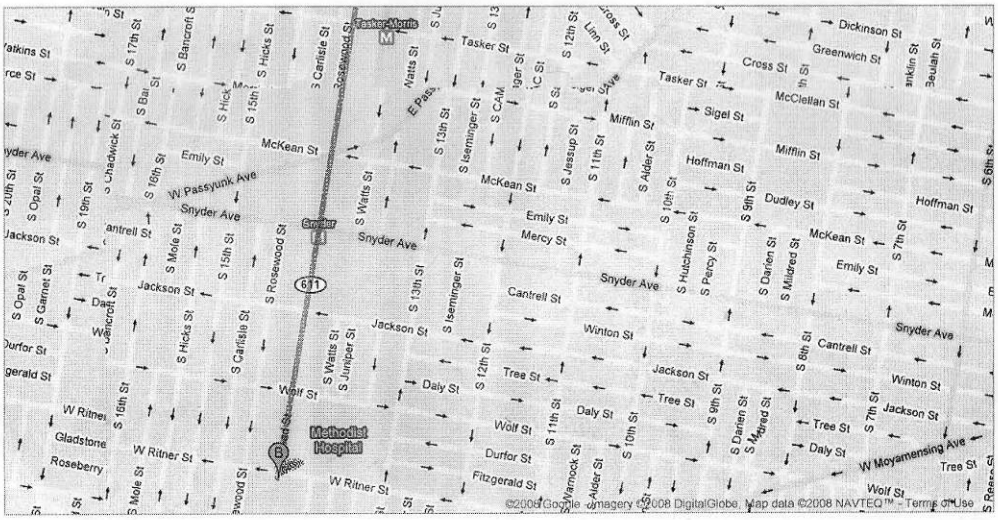
Philadelphia Water Department

PWD CSOLTCPU Public Meeting #2
Fels Community Center
Thursday, April 10 from 6:00 – 8:00 p.m.

Please Sign In

Name	Organization	Email
Megan Malloy	Fuse ic	megan.malloy@gmail.com
Harry Glaspee	Resident/Pennoni Assoc.	hlaspee@pennoni.com
Tiffany Ledesma	Gradell Consultant w/PWD	tledesmagradell@dlm.com
Laura Rozumalski	PWD	laura.rozumalski@pwd.gov
Jim Smullin	CDM	SMULLENJT@CDM.com
Marc Commeret	PWD-OOW	marc.commeret@phila.gov

Google Maps



☐ Avoid highways

A 1101 Market St
Philadelphia, PA 19107
Drive: 2.7 mi – about 10 mins

1. Head **east** on **Market St** toward **N 11th St**	0.1 mi
2. Turn **right** at **S 10th St**	0.2 mi
3. Turn **right** at **Sansom St**	0.4 mi
4. Turn **left** at **S Broad St/PA-611**	2.1 mi

B 2407 S Broad St
Philadelphia, PA 19148

These directions are for planning purposes only. You may find that construction projects, traffic, or other events may cause road conditions to differ from the map results.

Harry Lespee / Meg Molloy

PWD CSOLTCPU Public Meeting #1
FELS Center
Thursday, April 10 from 6:00 – 8:00 p.m.

Comments/Questions

Name:

Meg Molloy

Comment/Question:

"I do like the strategy."
Make it key – ex. that you show
★ Makes it real. gives a pt in real life +
brings it home – makes it personal
I wish more people could see the photos
how bout @ FMSC

Name:

Harry Lespee

Comment/Question:

– "Yeah I think it's a great idea"
takes a while to get the word out to
the public. They are busy

– compared to the recycling program. Took a while
to take hold

– Rain barrels

Partnerships w/ community groups + associations help
Build momentum → leads to individual action

Name:

Harry Lespec

Comment/Question:

Do you keep track of how many rain barrels are ~~deployed~~ out there.

Name:

Meg Malloy

Comment/Question:

For these projects do you analyze, study, model the benefits.

Nice to show/refer to sites that show effectiveness

Green Roofs - In Philly

17!

1. "I like the strategy"
   ↳ Meg

2. "I think it takes a while to get the word out to public b/c people are busy w/ their lives." (Yes - exhibit was at PWMIC)
   ↳ Peroni
   "It may also be economics b/c people may not be able to afford to buy rain gardens, so work w/ communities/ associations - groups"
   ↳ Peroni

3. Examples are key
   ↳ i.e. Penn Alexander
   Meg ↳ Specifics w/ locations - that hits home - people realize what's there.
   (Yes - Nice to do bike tour)

4. - Do you monitor how many rain barrels you've distributed? - Peroni (Yes)

5. "W/ some of these projects, can you calculate the impact that results from projects?" - Meg (Yes - w/ Infrastructure projects) harder to quantify, but looks! + w/ green ← look @ Porous pavement

6. SW

Philadelphia PWD Water Department

PWD CSOLTCPU Public Meeting #1
School of the Future
Thursday, April 24 from 6:00 – 8:00 p.m.

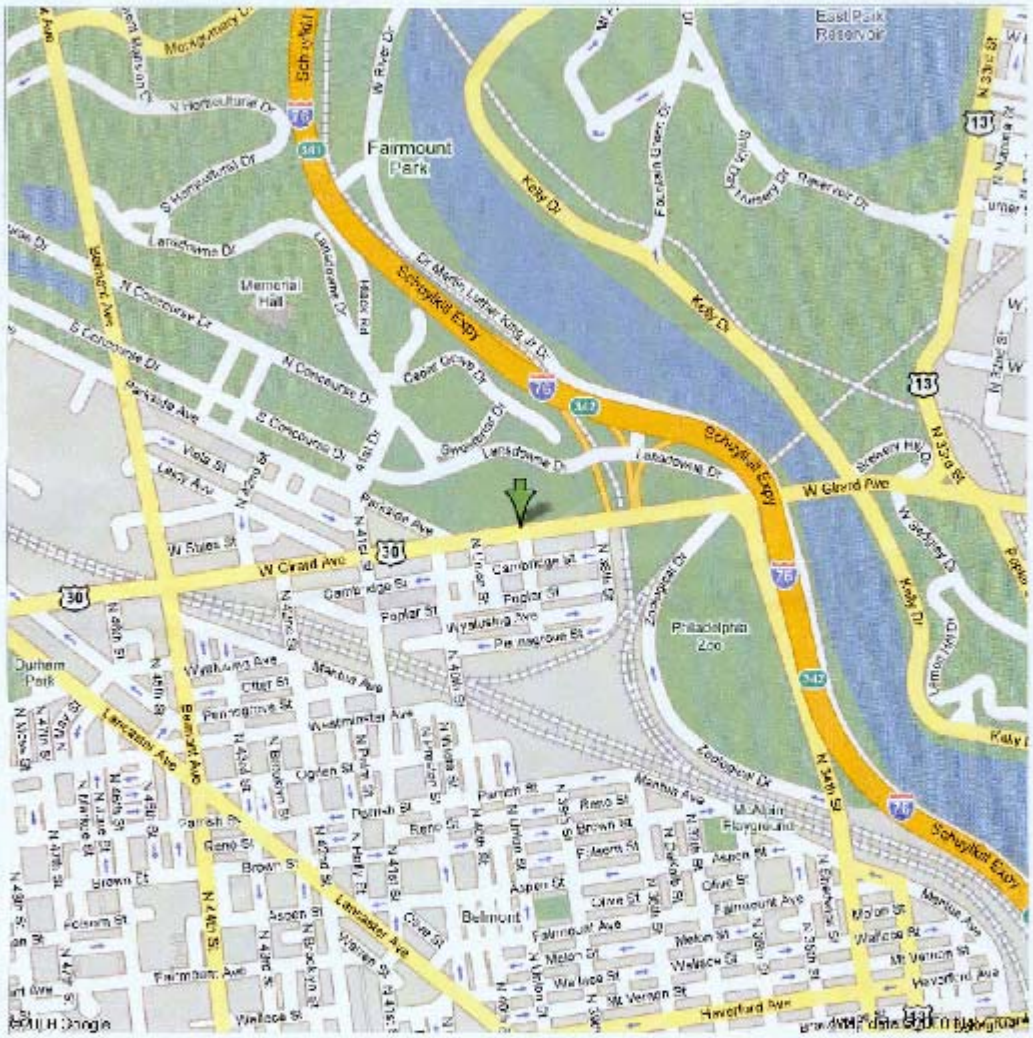
Please Sign In

Name	Organization	Email
Leonard Sammons	Water Dept	
DAVID BURKE	PADEP	[illegible]burke@state.pa.us
Marc Cammarata	PWD – OOW	marc.cammarata@phila.gov
Melanie Garrow	PWD – OOW	melanie.garrow@phila.gov
Tiffany Ledesma Garron	PWD-OOW	[illegible]
Sarah Corbascio	TTF	sarah@ttfwatershed.org / tledesmagarron@cdm.com
EDWARD CHOW	CENTER IN THE PARK SEC	[illegible] chflood@aol.com
Johanne M. Henderson	CIP SEC	jhenderson@centerinthepark.org
Carrie Lewis	CIP SEC	
FRED LEWIS	CIP / SEC	FLEWIS@CENTERINTHEPARK.ORG
Daryl Tripp	" "	Trippdaryl@yahoo.com
Marcel Thomas	[illegible]	[illegible]
Tony Federici	Resident / URS	antonio_federici@urscorp.com
CALVIN DAVENGER	PHILA. INT. AIRPORT	CALVIN.DAVENGER@PHL.ORG
DARCEL D. DAVENGER	School District of Phila.	dddavenger@AOL.COM
Andrew Goodman	PennPraxis	agoodman@design.upenn.edu
JAMES G. BRADLEY	PWD	JAMES.G.BRADLEY@PHILA.GOV
DAVID M. EL	PWD PIX ST. /	David.McBride@phila.gov
Jim Smullen	CDM	SMULLENJT@CDM.COM

Google Maps

Address **4021 Parkside Ave**
Philadelphia, PA 19104

Get Google Maps on your phone
Text the word 'GMAPS' to 466453



PWD CSOLTCPU Public Meeting #1
School of Future
Thursday, April 24 from 6:00 – 8:00 p.m.

Comments/Questions

Name: CALVIN DAVINGER

Comment/Question:
DO you have Capital project designs now? SPECIFICALLY, WETLAND PROJECT:
MARC said YES! → Columbus Square
Mill creek "Trench, Mill Creek Porous Pavement,
" " Outdoor Rain Garden

Name: MRS. DAVINGER

Comment/Question:
How do you keep weeds down (with all of the green stuff)?
We work w/ partners to help us maintain the sites, such as community groups, BUT PWD will also work O & M into place + it's not as intensive as one thinks → minimal maintenance.

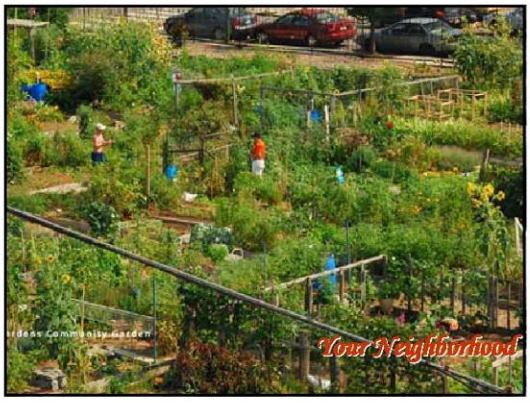

Imagine a
Philadelphia like
this…


Your School


Your School


Your Home


Your Home


Your Neighborhood


Your Neighborhood

Could this be the Philadelphia of the future?

Green Cities Clean Waters

We think so.

We can get there together.

Philadelphia PWD Water Department

Green Cities Clean Waters

Combined Sewer Overflow Long Term Control Plan Update

Green Cities Clean Waters

Presentation Overview

I. Philly Underground

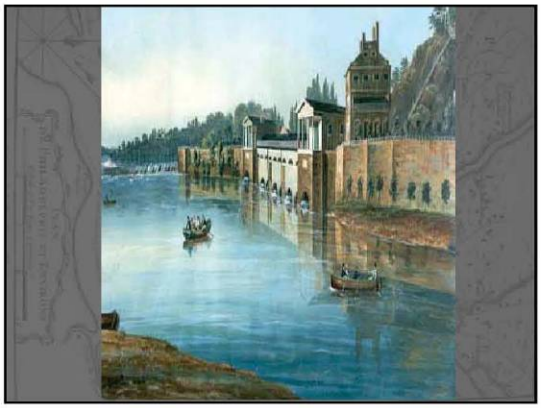
- The history and current status of Philadelphia's creeks and sewers

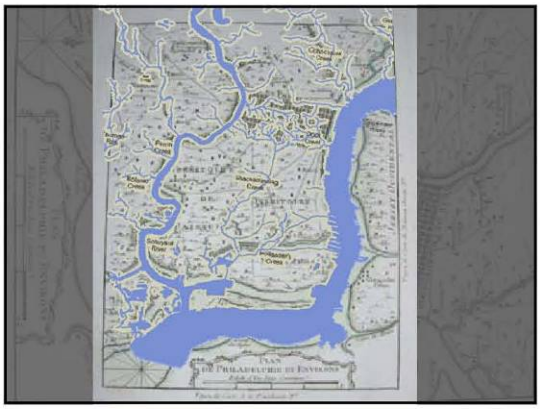
II. Cleaning up our water

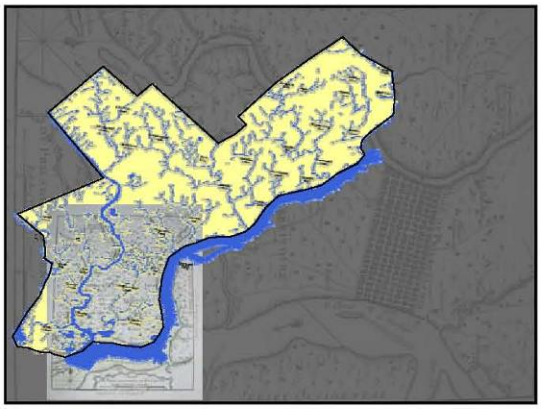
- The combined sewer overflow long term control plan

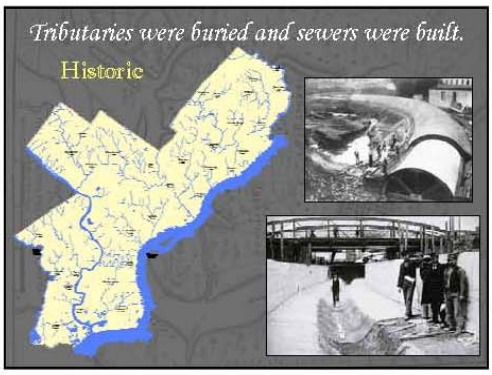
III. Securing clean water for the future

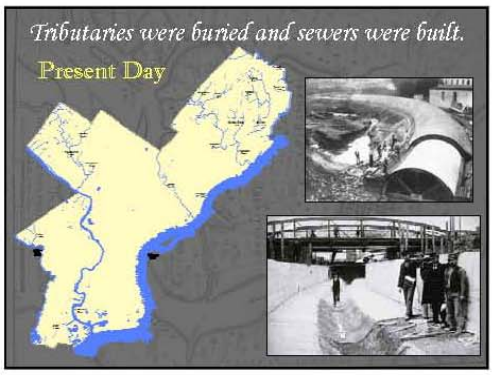
- *Updating* the combined sewer overflow long term control plan

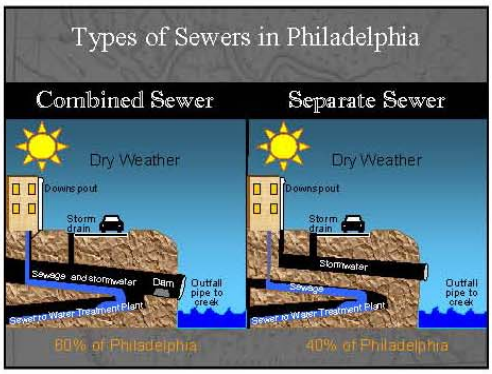


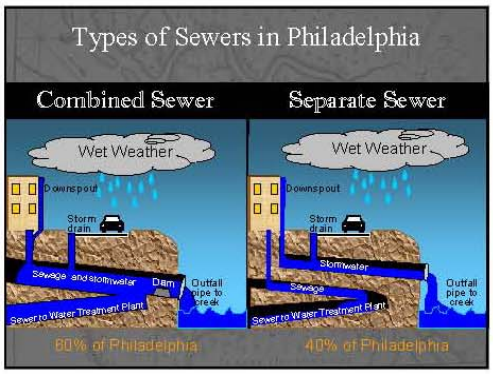





Tributaries were buried and sewers were built.
Historic


Tributaries were buried and sewers were built.
Present Day


Types of Sewers in Philadelphia
Combined Sewer
Separate Sewer
Dry Weather
Dry Weather
Downspout
Storm drain
Sewage and stormwater
Dam
Outfall pipe to creek
Sewer to Water Treatment Plant
Stormwater
Sewage
Sewer to Water Treatment Plant
Outfall pipe to creek
60% of Philadelphia
40% of Philadelphia


Types of Sewers in Philadelphia
Combined Sewer
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Wet Weather
Wet Weather
Downspout
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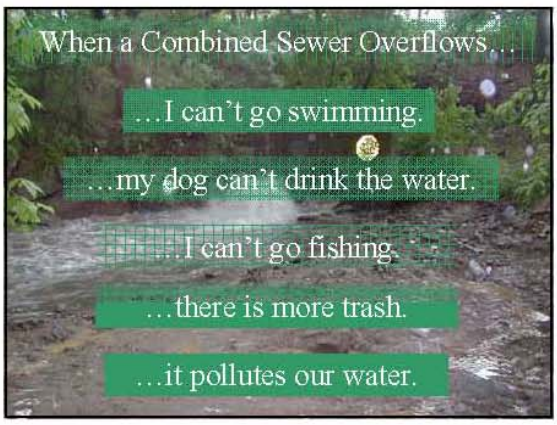
Dam
Outfall pipe to creek
Sewer to Water Treatment Plant
Stormwater
Sewage
Sewer to Water Treatment Plant
Outfall pipe to creek
60% of Philadelphia
40% of Philadelphia


Stormwater
'Natural' Area
Plants and trees work to absorb stormwater
Stormwater is absorbed into the ground
'Urban' area
Water hits impervious surface and runs off
Roofs, streets, parking lots, etc.
Runoff goes into the sewers

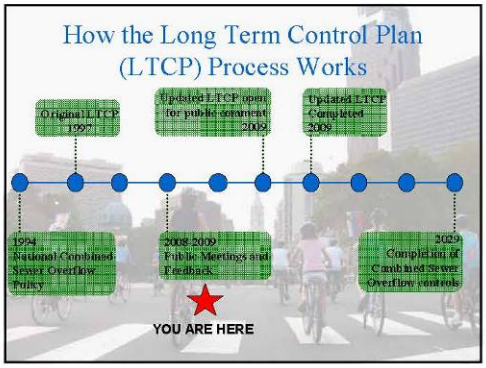

4" rain in three hours "Natural" watershed


4" rain in 24 hours "Urban" watershed

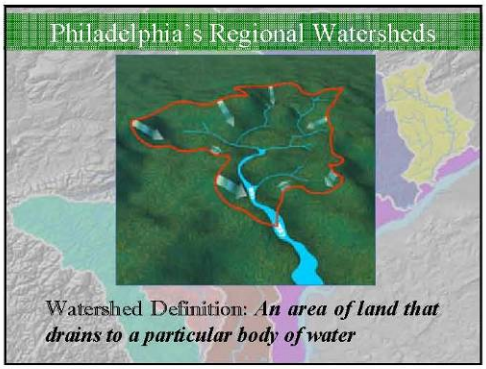

Stormwater causes
combined sewers to overflow.

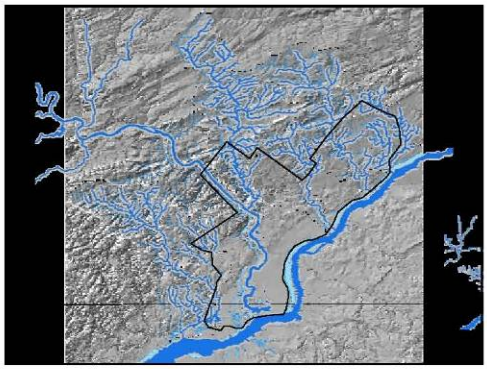

When a Combined Sewer Overflows…
…I can't go swimming.
…my dog can't drink the water.
…I can't go fishing.
…there is more trash.
…it pollutes our water.

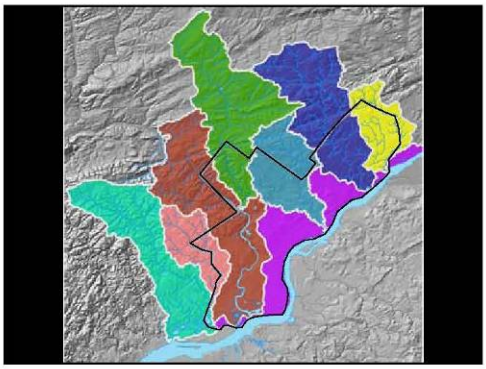

National Combined Sewer Overflow
Control Policy
I will be watching you.
YOU MUST clean up your Combined Sewer Overflows
Every city with Combined Sewer Overflows must create a Long Term Control Plan to clean up the water.

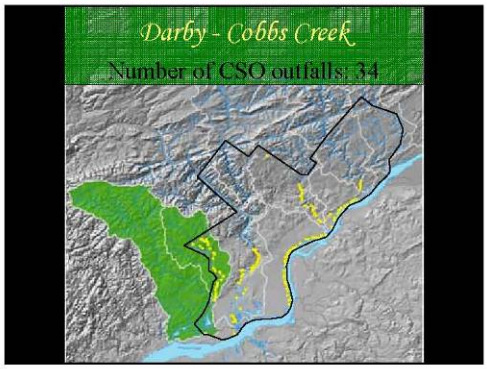

How the Long Term Control Plan (LTCP) Process Works
Original LTCP 1997
Updated LTCP open for public comment 2008
Updated LTCP Completed 2009
1994 National Combined Sewer Overflow Policy
2008-2009 Public Meetings and Feedback
2029 Completion of Combined Sewer Overflow controls
YOU ARE HERE

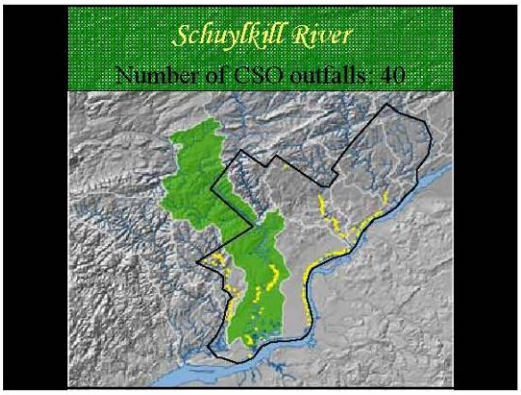

You Can be Involved in Many Ways!
Attending meetings of the Advisory Committee.
Attending public meetings.
Signing up to receive updates.
Visit our website at www.csosrock.gov.
Contributing feedback to the designers' plan.
Advocating for the implementation of the plan.
YOU ARE HERE

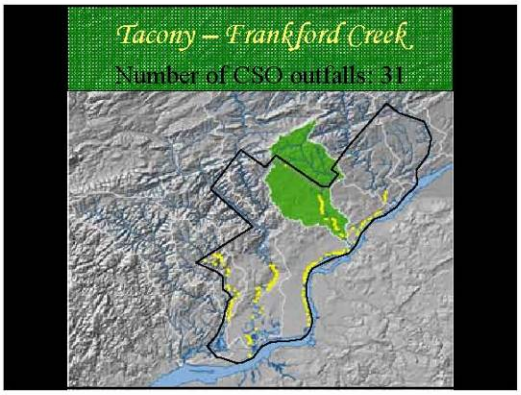

Philadelphia's Regional Watersheds
Watershed Definition: An area of land that drains to a particular body of water

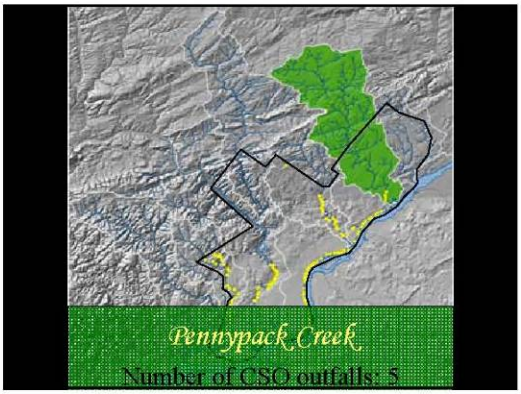


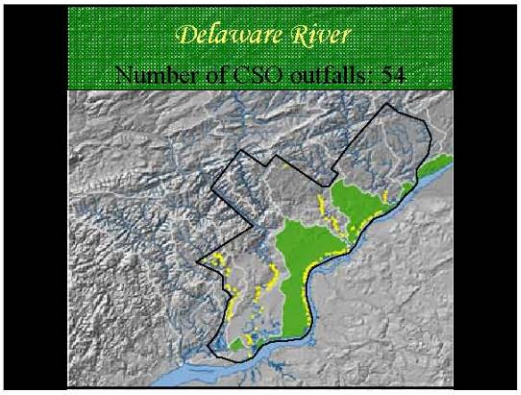


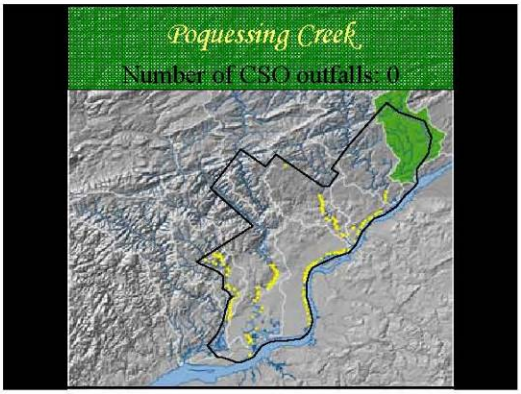

Darby - Cobbs Creek
Number of CSO outfalls: 34

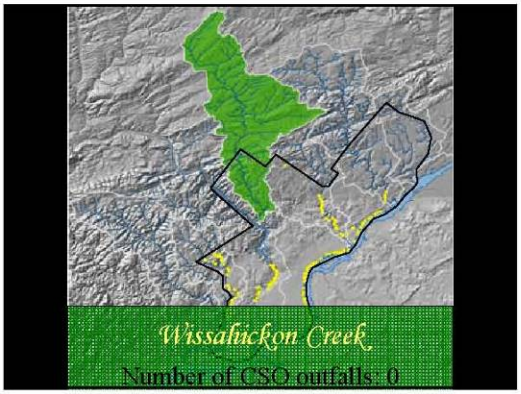

Schuylkill River
Number of CSO outfalls: 40


Tacony – Frankford Creek
Number of CSO outfalls: 31


Pennypack Creek
Number of CSO outfalls: 5


Delaware River
Number of CSO outfalls: 54


Poquessing Creek
Number of CSO outfalls: 0


Wissahickon Creek
Number of CSO outfalls: 0

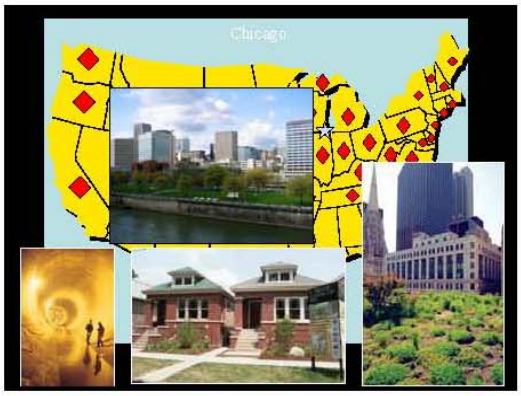

The Long Term Control Plan (LTCP)
Nine Minimum Controls
Capital Projects
Integrated Watershed Management Plans

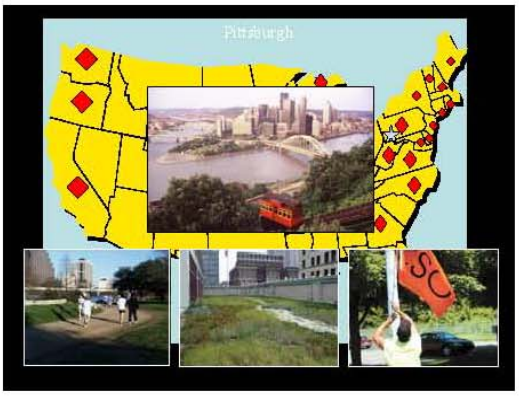

Watershed Partnership Programs
Stream Restoration
Teacher Training
Homeowner Stormwater Management
Tree Planting


Portland


Seattle


Milwaukee





Green

"Green" is the use of natural and man-made technology to mimic nature's ability to deal with stormwater.

Green Infrastructure examples

Green Infrastructure examples

Wissahickon Charter School

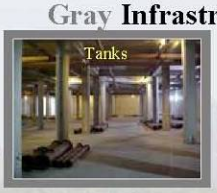
Penn Alexander School

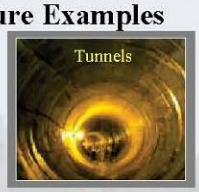
Liberty Lands Park

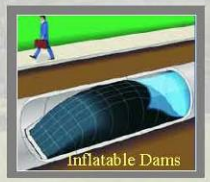
Gray

"Gray" refers to traditional infrastructure solutions to managing stormwater.

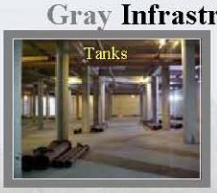
Gray Infrastructure Examples





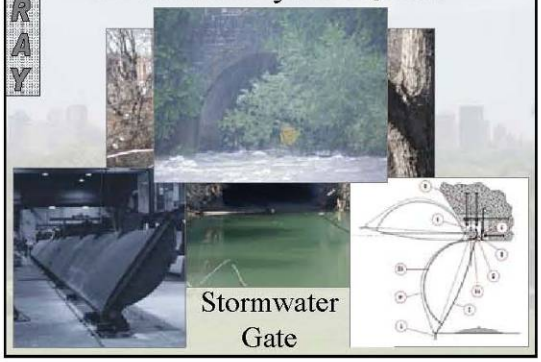


Gray Infrastructure Examples



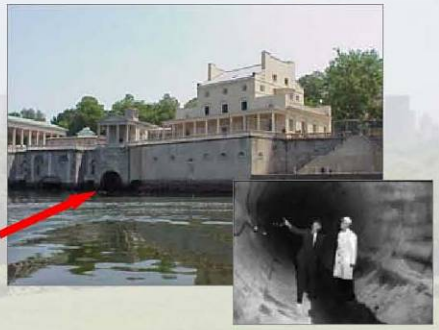
The intersection of I and Ramona

GRAY



Fairmount Waterworks- Main Relief Sewer

GRAY



Fairmount Waterworks- Main Relief Sewer

GRAY

Inflatable Dam

Balance

Updating the
Combined Sewer Overflow
Long Term Control Plan
will utilize green and gray technology.


Good Timing
Currently, many initiatives around Philadelphia share the same 'green' goals.
PLAN PHILLY
NEXT GREAT CITY
Imagine Philadelphia
GREEN CITIES CLEAN WATERS....
PHS Makes Philadelphia Green®

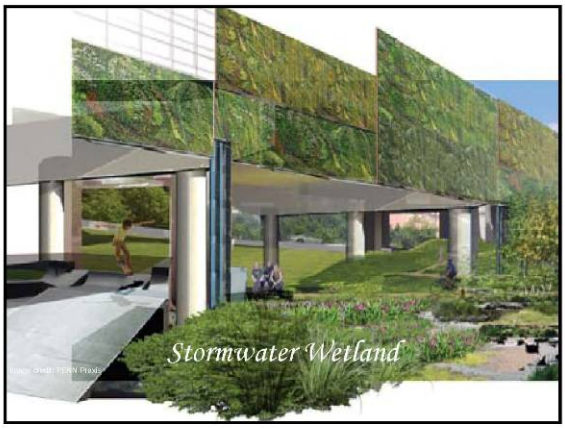

Rain Garden


Porous Asphalt


Underground Storage Tank


Vegetated Curb Extensions


Green Roofs



From now

From now to the future,

we are committed to creating a greener Philadelphia.

This has been a presentation of the

Combined Sewer Overflow
Long Term Control Plan
Update

Green Cities Clean Waters

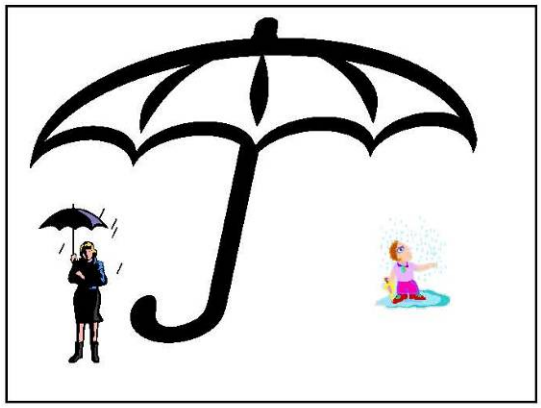
Philadelphia Water Department

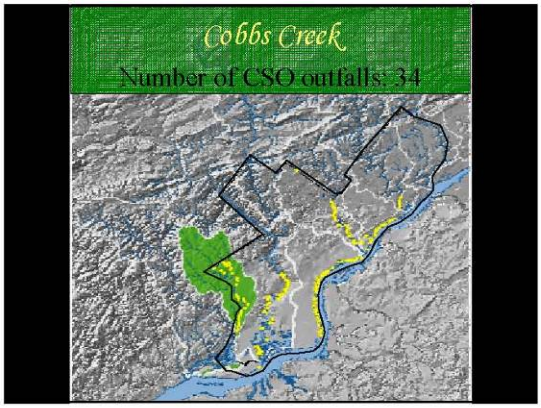
Thank you for participating.

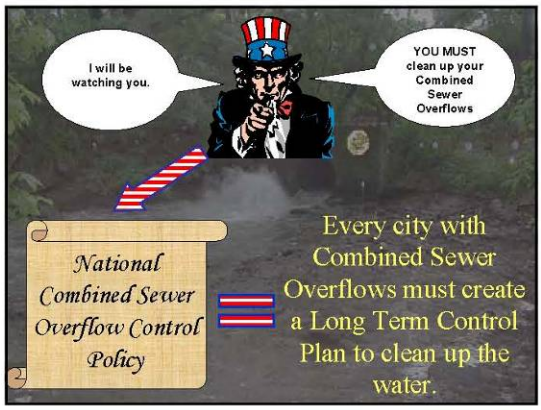
COMBINED SEWER OVERFLOW

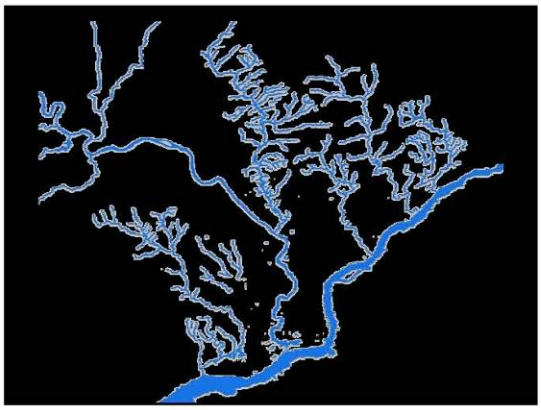
LONG TERM CONTROL PLAN

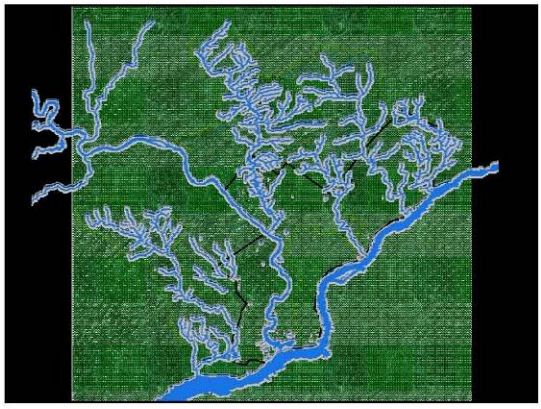
UPDATE

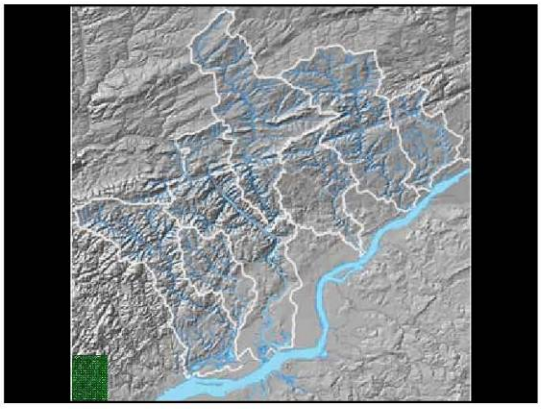



Cobbs Creek
Number of CSO outfalls: 34

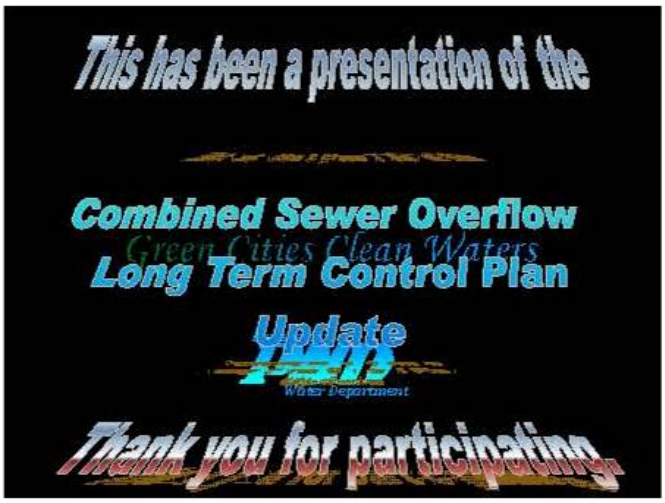

I will be watching you.
YOU MUST clean up your Combined Sewer Overflows
National Combined Sewer Overflow Control Policy
Every city with Combined Sewer Overflows must create a Long Term Control Plan to clean up the water.








Google


This has been a presentation of the
Combined Sewer Overflow
Green Cities Clean Waters
Long Term Control Plan
Update
Water Department
Thank you for participating.

Public Meetings, Series #2

CSO LTCPU
Public Meeting
October 23, 2008

Agenda

1. Welcome & Introductions

2. Water Quality Characterization, Problem Analysis & Goals for Our Watersheds

3. Questions and Answers

PWD CSOLTCPU Public Meeting #2
Fairmount Water Works Interpretive Center
Thursday, October 23, 2008 from 5:30 – 7:30 p.m.

Comments/Questions
Name:

Comment/Question:
How is PWD going to provide incentives for residential/ commercial properties to encourage greening?

Name:

Comment/Question:
Have you (PWD) had any dialogue with the larger parcels that will be affected by the rate reallocation?

Comments/Questions
Name:

Comment/Question:
CSOcast; is it showing whether an overflow is occuring or is it measuring volume?

Name:

Comment/Question:
Gray infrastructure- how will you model/size?

Comments/Questions
Name:

Comment/Question:
Are there tidal influences on the drinking water intake on the Delaware?

PWD CSOLTCPU
Public Meeting
Dec. 4, 2008

THANK YOU FOR VISITING CCCEEC AND FOR SIGNING THE VISITORS' REGISTER. VISITORS' REGISTER Sign In Sheet 2008

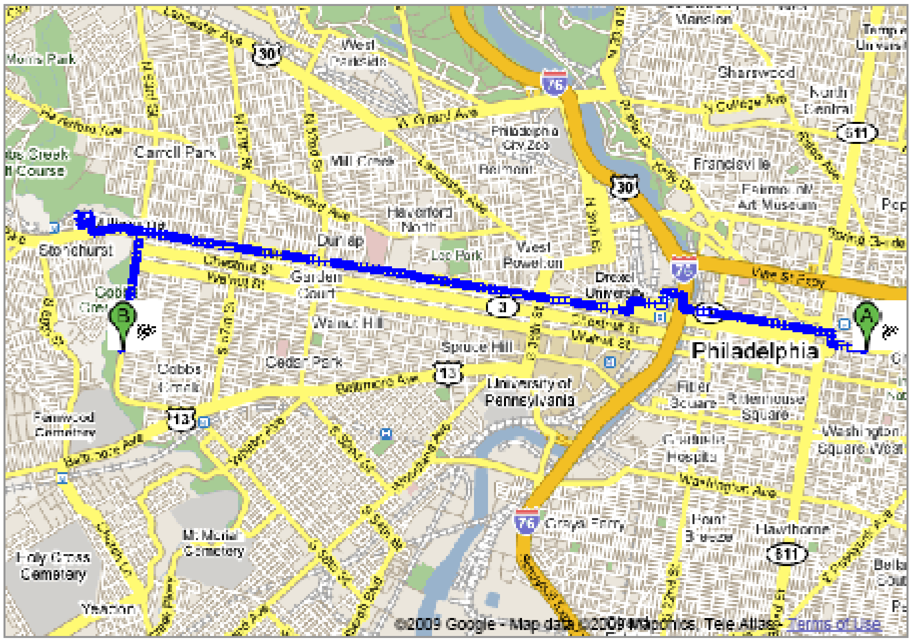
DATE	NAME & ADDRESS	E-MAIL ADDRESS	ORGANIZATION/BUSINESS	TELEPHONE
12-4-08	5421 Kingsessing Ave Russell Coleman		PWD - Flow Control	685-2057
12 4	Trish Fries Wissahickon Env Center	patricia.fries @phila.gov	Fairmount Park	685-9285
12-4	Megan Sgarlat Wiss. Env. Center, Fairmount Park	megan.sgarlat@ phila.gov	Fairmount Park	685.9285
12-4	Stephanie Hoffer Fairmount Park, PEC	stephanie.hoffer @phila.gov	Fairmount Park	685-0429
12-4	Delano Pope PWD FOX ST FLOW Control		PWD Flow Contr	685-2057
12-4	Obi Hardin	obi.hardin @yahoo.com	Flow Control	685-2057
12-4	Jason Brady Sierra Club	jason.brady@ sierraclub.org	Sierra Club	216-558-3310
12-4	DEBBIE CARR FPC			215-683-0214
12-4	Roberta Turner 330 Green St Bucks Co	Robertaturner@ hotmail.com	[illegible]	215-[illegible]
12-4	Herb Skillewas (RIZ) 1305 E. Susquehanna North M	herbskillewas@ comcast.net	[illegible]	215-423-2045
12-4	TIM BURKETT 2081 CLIPPER PK RD BALTIMORE, MD 21211	tburkett@ biohabitats.com	BIOHABITATS INC	410-554-0156

THANK YOU FOR VISITING
CCCEEC AND FOR SIGNING
THE VISITORS' REGISTER.

VISITORS' REGISTER

2008

DATE	NAME & ADDRESS	E-MAIL ADDRESS	ORGANIZATION/BUSINESS	TELEPHONE
12/4/08	Fiyaas Muhammad 4000 Market St Philadelphia PA 19123	fmuhammad@thepartnershipcdc.org	The Partnership CDC	215 662 1616 Ext 29
12/4/08	Chad Lamb 60 Red Lion, Upper Darby PA 19082	clwing@pacpa.org	PA Env. Council	215 592 7420 X107
" "	Tiffany Ledesma Groll	tledesmagroll+d@cdm.com	Consultant to PWD	215-499-3756



West Parkside
Sharswood
North Central
Carroll Park
Mill Creek
Belmont
Francisville
Haverford North
Dunlap
Stonehurst
West Powelton
Garden Court
Walnut Hill
Drexel University
Philadelphia
Spruce Hill
Cedar Park
Cobbs Creek
University of Pennsylvania
Rittenhouse Square
Washington Square West
Mt Moriah Cemetery
Holy Cross Cemetery
Hawthorne
Grays Ferry
Point Breeze
Yeadon
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(1)

PWD CSOLTCPU Public Meeting #2
Cobbs Creek Community Environmental Education Center
Thursday, December 4, 2008 from 5:30 – 7:30 p.m.

Comments/Questions

Name: Trish
"Gray infrastructure stores H_2O in tank instead of going to creek?"
Comment/Question: Joanne
Yes.

Name: Debbie Carr
"Where will there be sidewalk planters?"
Comment/Question: Joanne
1st one @ Columbus Sq., but in the future we would like to see it at all parks, City properties + others such places.

Comments/Questions

Name:

Trish

Comment/Question:

Trish Do you have literature on the success of S. Grove & the treatment wetland?

Joann Yes, mainly on Total Suspended Solids. It has reduced significantly so far

Name:

Roberta Turner

Comment/Question:

What is the longevity of porous asphalt? Any models?

Joann Morris Arb. has had theirs for over 17 years & there is minimal maintenance.

Comments/Questions

Name:

Last name first ~~Roberta~~ Roberta Turner

Comment/Question:

SW Regs. are only in the City?

Yes, but other munis are doing similar programs - some even more stringent

Name: Mr. Shallcross

~~Ed~~ What is baseflow?

Comment/Question:

Marc. The amt. of water in the stream on non-rainy days. It's not possible to replenish base flow with water not infiltrating land.

Comments/Questions

Name:

Khiet

Comment/Question:

Why cat fish in pic?

Marc - B/c fish need DO, so represents importance of DO in creeks.

Name:

Roberta Turner

Comment/Question:

Any difference in bacteria from Suburbs (Montgo Co) vs. in City?
Yes, sometime can be worse in suburbs... That's why we need to work with upstream neighbors through partnerships.

(5)

Comments/Questions

Name:

Biohab?

Comment/Question:

Where is the fish ladder in the photo? Will the Fairmount fish ladder have a photographic monitor?

Flat rock.

Yes. It will stream to FWWIC.

Name:

Jason Brady

Comment/Question: Marc –

Are other cities developing plans? Are we behind?

Yes, ~~not~~ we're behind but it's a good thing. B/c others are under consent decree, so we learn from their mistakes & develop a plan that can try to get us under a consent decree.

(6)

Comments/Questions

Name:

~~Brian~~ Tim Burkett

Comment/Question:

~~Mayor~~ ~~Jason~~ Phila. has a very comprehensive program, ~~but~~ other cities are doing programs, but not leading with green + filling in with gray.

Name:

Jason Brady

Comment/Question:

What's the price tag? Over how long?

Rough numbers - $2½-5 Billion over 20 yrs - 30 yrs.

(7)

Comments/Questions

Name:

Mr. Shallcross

Comment/Question:

What is the tunnel system?

Marc: Pipes that are 30ft. in diameter & 200ft. below the ground.

Will we build tunnels?

Marc: Yes, we will have to build some.

Name:

Tim Burkett

Comment/Question:

What is the degree of imperviousness? In Cobbs?

56% City-wide

CSO LTCPU
Public Meeting
December 10, 2008

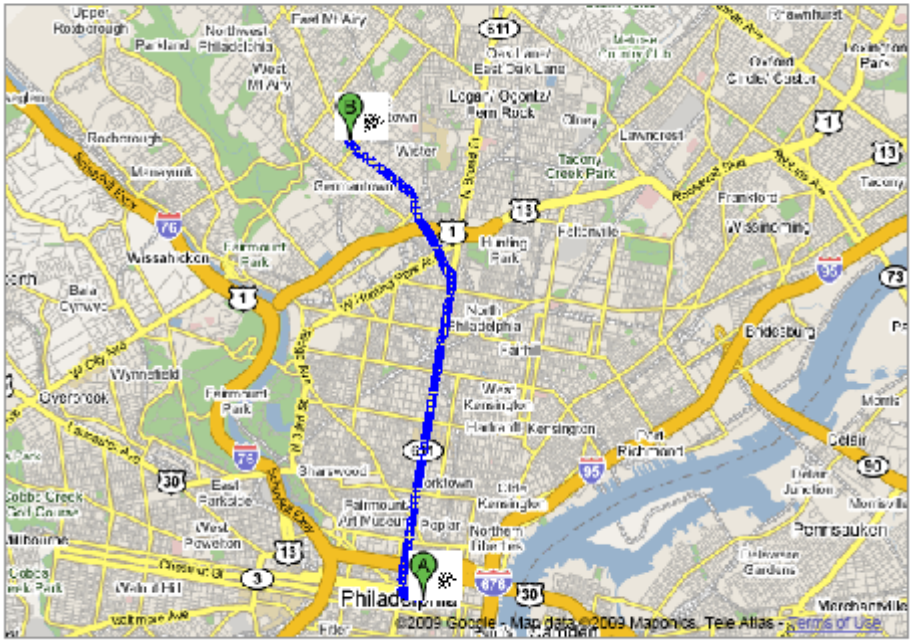
Agenda

1. Welcome & Introductions

2. Water Quality Characterization, Problem Analysis & Goals for Our Watersheds

3. Questions and Answers

Google Maps


Northwest Philadelphia
West Mt Airy
East Oak Lane
Logan
Olney
Lawndale
Tacony Creek Park
Wissahickon
Fairmount Park
Wynnefield
Overbrook
Bala Cynwyd
North Philadelphia
West Kensington
Fairmount
Art Museum
Poplar
Northern Liberties
Kensington
Richmond
Bridesburg
Port Richmond
Pennsauken
Cobbs Creek Park
West Powelton
Mill Creek
Walnut Hill
Philadelphia
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Philadelphia PWD Water Department

PWD CSOLTCPU
Public Meeting
December 10, 2008

Please Sign In

Name	Organization	Email
GREATER PHILADELPHIA WATERSHED ALLIANCE Charles Parsons, President 215-843-0749		
SARAH ROBBGRIRO	TTF	sarah@ttfwatershed.org
Kate Zaichan	Clean Air Council	katez@cleanair.org
Chris Nicholson		chnichol@verizon.net
PETER KURTZ	FPC	PETER.KURTZ@Phila.gov
FRED MAURER	FTCP	215 329 8842
Ellen McClure	Biohabitats	emcclure@biohabitats.com
HAL KRIEGER	Manayunk Watershed	HAROLDKRIEGER@VERIZON.NET
EDDIE BATTLE	EDDIE R. BATTLE ASSOC.	MARSHBATTLE@AOL.COM
FRED LEWIS	CIP/SEC	FLEWIS@CENTERINTHEPARK.ORG
David Schogel	CIP/SEC	davidschogel@yahoo.com
EDWARD CHIN	CIP/SEC	chfloet@aol.com
REV CHESTER Williams	CBWC	215-849-8021
Spencer Selenck		215-849-5481
Bridget Chadwick	Cheltenham EAC	215 887 3564 chadwick@vp.cenet.com
CATHERINE BROWN	GCBB	215-685 3514 cathy.brown@phila.gov
BRIANA BROWN	GCBB	
JOHNNIE HENDERSON	CIP/SEC	JHENDERSON@CENTERINTHEPARK.ORG
Margaret Boaverman	BD	margaretB@voicenet.com
gerry Kaufman	Awbury Arboretum	
Tiffany Ledesma	Groll PWD Consultant	

PWD CSOLTCPU Public Meeting
Center in the Park
Thursday, December 10, 2008
6:00 – 8:00 p.m.

Comments/Questions

Name: Kate Zaidan (Clean Air Council Rep.)
Will the presentation be on-line?

Comment/Question:
Joanne (PWD): Yes - phillyriverinfo.org

Name:
Peter Kurtz (Fairmount Park Commission)

Comment/Question:
Joanne (PWD): The dams are designed to prevent back-ups ??? They capture minimum amt. of rainfall. We have realtime control (computers) that know when to blow dams (inflatable) up + deflate, so they control the flow going out.

Comments/Questions

Name: Hal Krieger (Friends of Monoshue Flood Relief

Is the Kelly Drive / Project a dam (in-storage) project?

Comment/Question:

Joanne (PWD): Yes. (Technical Explanation provided by Marc Cammarata)

Name: Eddie Battle (@ Eddie R. Battle Assoc.)

Comment/Question:

What other cities have gray projects?

Joanne (PWD): Many - Portland, Baltimore, ... a lot of the older cities.

Comments/Questions Rev. Williams:

Name: [redacted]

Comment/Question: There is a lot of digging underground in the city. Why not do more modern projects, like waterfall type (on surface)?

Joanne (Paul): Yes, We would like to do as much on the surface as possible. You are right on! I'll present some of these projects now = Green Approach.

Name: Rev. Williams:
[redacted]

Comment/Question:

How do you pick out sites for projects? My community would love to see a green project in our area - on Chew Ave.?

Joanne: We will work with communities soon on the greening projects, we're just not there yet. ↳ like a sidewalk planter We will work with the Communities through the TIF Watershed Partnership.

Comments/Questions

Name:
Jerry Kaufield (Awbury Arb.)

Comment/Question:
Can you tell us how the sidewalk infiltration project works?

Joanne (PWD): ~~(~~Detailed technical) explanation followed.

Name:
Rev. Williams
~~Spencer Schenk~~

Comment/Question:
What do you consider an Emergency?

Joanne (PWD): These projects aren't for sites handling Emergencies. They are planning initiatives & opportunities, not Emergencies.

Spencer: What if you have flooding Emergency on your property (at storm street drain)? We need to know about these issues immediately. Report them, so that we can address them.

Comments/Questions

Name: Student Margaret that attends Springside School
Cliveden Park "That is pretty"

Comment/Question:

Spencer Rev. Williams:
Along the expressway, near [illegible] (Queen Ln.) ... Are you doing anything to catch the stormwater runoff on that side?

Joanne: Yes, We're looking into a project to better manage the stormwater there.

Name:
Gerry: What does it mean to get
Comment/Question: the neighborhood involved?

Joanne: Having TIF Watershed Partnership (Sarah Robb Grieco) set up now enables us to work + coordinate with the Communities.

Charles Parents: Why are City Water Customers forced to pay for stormwater?

Joanne: We have a 3,000 mile collection system. We have a user fee.

(6)

Comments/Questions

Name: Rev. Williams:

~~Spencer~~

Comment/Question:

Whatever we do to survive, ~~we need~~ will require the support of the Community. Why can't we start with the community 1st ~ to develop the partnership? We want ~~it~~ a green project at a train station, not a park?

Joanne: That's where we want to go. Before, with pipes only, it was ~~only~~ benefiting communities. Now, We're designing with communities in mind.

Name:

Comment/Question: We're gearing up to do more grass roots projects in the very near future

?

Jo: PWD is funded solely thru wate + sewer bills. We only collect enough to operate - not to make profit.

We need to sit down with other agencies to work together, like the Green Plan brought people together.

Comments/Questions

Name:
Charles:

Comment/Question:
The stormwater permit doesn't belong to PWD, but to the City.

Joanne: The PWD is the designated agency. We hold the permit, as a utility.

Name:
Catherine Brown: How can We engage average family? How to get them to relate to green projects?

Comment/Question:
Education should be simpler. You shouldn't have to have a degree to understand these problems.

People need to relate the everyday benefit to these projects.

Joanne: Yes, that's why we have Sarah (TTF Partnership) + We want to figure out how to get more people/communities to these meetings + getting involved. →

Catherine: There should be projects that kids have to take on to get involved in these projects.

Marc: One of the major programs that may address this issue is the Green Schools Program. Look at the student, here, that pointed out the rain garden on her school property (in the PowerPoint). That is the result of a demonstration project.

Springside Student: Teachers at my school teach through watershed model, taking us to stream to learn about fish + insects, etc.

Charles: ~~The water customers are~~ PWD should go back to just taking care of the basic water responsibilities,

Marc: When you turn your faucet on, does water come out?

Comments/Questions

Name: Bridget Chadwick:

I live in Cheltenham. I think

Comment/Question: We should work/develop partnerships with DVRPC – transportation projects ~~to widen the streets~~. b/c they are impacting our environment with the widening of streets, etc. Not good

Marc: Since our projects have multiple benefits, we will have to partner with the multiple agencies.

Name:

Comment/Question:

Charles: How much does PWD spend on cleaning storm drains? Why can't Streets do this?

Marc: We (PWD) own the infrastructure

Rev. Williams:

We want (my community) ~~wants~~ greening projects in or my (15-block radius) community.

How do we do it?

Marc: Contact Councilman + work w/ TTF Partnership

Rev. Williams: ~~Spencer~~: Who are the stakeholders?

Marc.: Everyone - Business leaders, land holders, municipal reps, etc.

Bridget: Make a list of shovel ready projects, Like Breaking up channelized Streams

Green Cities, Clean Waters

Combined
Sewer Overflow
Long-term Control
Plan Update

Philadelphia Water Department

Green Cities ….

- Unite the City with its water environment
- Create a green legacy for future generations
- Incorporate a balance between ecology, economics and equity

…Clean Waters

Imagine a Philadelphia like this…

Could this be the Philadelphia of the future?

We think so.

We can get there together.

Green Cities

Clean Waters

Philadelphia Water Department

Natural vs. Urban Stormwater Drainage

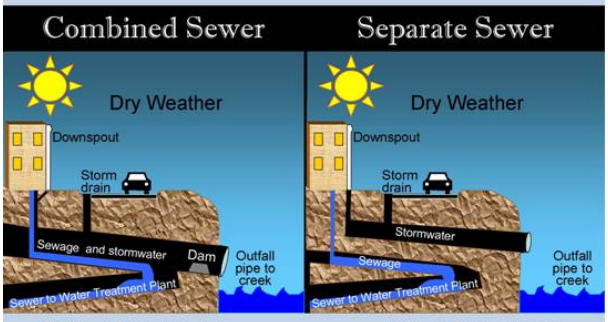
Stormwater infiltrates into the ground

Plants and trees work to absorb stormwater

Water hits impervious surface and runs off roofs, streets, parking lots etc.

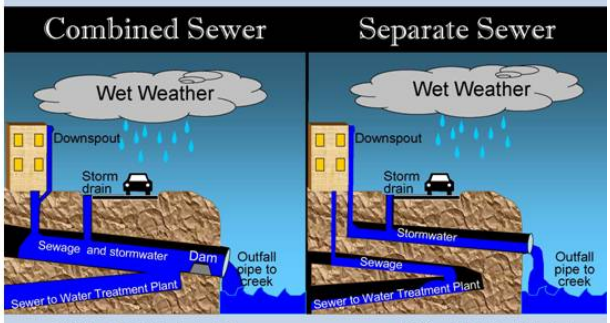
Runoff goes into the sewers

Types of Sewers in Philadelphia



60% of Philadelphia | 40% of Philadelphia

Types of Sewers in Philadelphia



60% of Philadelphia | 40% of Philadelphia

When a Combined Sewer Overflows…

…I can't go swimming.

…my dog can't drink the water.

…I can't go fishing.

…there is more trash.

…our water is polluted.

National Combined Sewer Overflow Control Policy

Every city with Combined Sewer Overflows must create a Long Term Control Plan to clean up the water.

GRAY and GREEN

The GRAY Approach

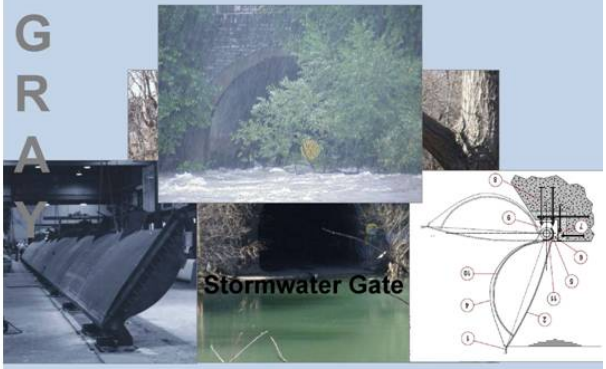
Refers to traditional infrastructure solutions to managing stormwater

GRAY





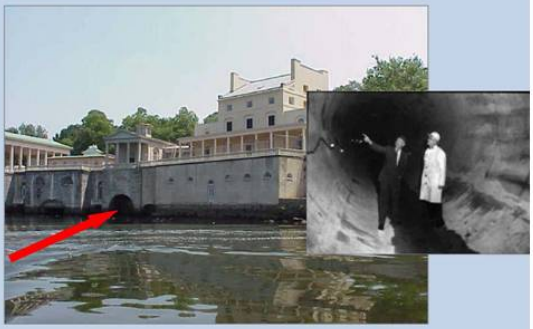
GRAY



The intersection of I and Ramona

GRAY

Fairmount Waterworks Main Relief Sewer



GRAY

Fairmount Waterworks Main Relief Sewer

Inflatable Dam



Adding Storage to Big Old Pipes

- An approach used by many cities.
- But, does this approach just build on yesterday's engineering technology ?
- Is this approach sustainable?
- Will it get us to our environmental goals ?
- What else can we do with our limited $$$s ?


The **GREEN** Approach

Refers to green infrastructure solutions to managing stormwater

GREEN Infrastructure Examples

GREEN Infrastructure Examples

Wissahickon Charter School

GREEN

Penn Alexander School

GREEN

Liberty Lands Park

GREEN

Balance

Updating the Combined Sewer Overflow Long Term Control Plan will utilize **GREEN** and **GRAY** technology.

Good Timing

Currently, many initiatives around Philadelphia share the same 'green' goals.

PLAN PHILLY

NEXT GREAT CITY

Imagine PHILADELPHIA
Laying the Foundation

GREEN CITIES CLEAN WATERS . . . .

PHS Makes Philadelphia Green®

North Delaware Riverfront

GreenPlan PHILADELPHIA

Mayor's Priorities

- Public Safety: Safest largest city in the country
- Education: Country's premier education city
- Jobs & Economic Development: Grows as a green city
- **Healthy & Sustainable Communities: Philly neighborhoods vibrant and livable**
- Ethics: Philly demonstrates highest standards for ethics and accountability
- Customer Service and a High Performing Government: Philly becomes a national customer service leader

Philadelphia Water Department's

Clean Cities Green Waters Integrated Approach

Community Partnerships

The primary goals of community partnership efforts include:

- Implementation projects in upstream communities
- Coordination of stormwater regulations
- Increased visibility of PWD efforts
- Stronger public stewardship
- More public education and awareness
- Strengthened political and public support for projects

Infrastructure

PWD will continue to evaluate, and where appropriate, design and implement gray infrastructure projects, such as:

- Expanding wastewater treatment capacity
- Creating new storage capacity using tanks and tunnels
- Adding floatables control through outfall netting
- Installing street catch basin controls and cleaning
- Integrating time control, inflatable dams, etc.

Waterways Restoration

PWD is implementing a waterways restoration program including:

- Restoration of stream channels and riparian habitat
- Creation or restoration of wetlands
- Elimination of impediments to fish migration
- Stream maintenance and cleanup
- Floatables control using skimming vessels

Land-based Programs

This program includes a wide variety of measures requiring or encouraging distributed storage, infiltration, and evapo-transpiration of stormwater to ease the burden on existing infrastructure, including:

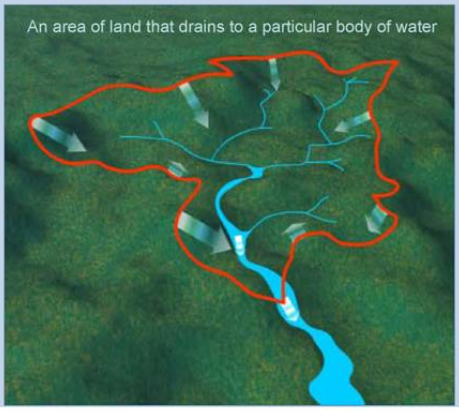
- New stormwater management regulations
- Use of low impact development
- Parcel-based stormwater billing

Together we can achieve a brighter tomorrow

Why Are We Here?

- To gain an understanding of existing watershed problems and conditions
- To explore how the Long Term Control Plan addresses these problems and helps us realize our vision

What Is a Watershed?



Philadelphia Water Department's

Watershed Planning Approach

- Initiate stakeholder partnership
- Develop understanding of stakeholder goals
- Assess watershed, document existing conditions
- Identify Problems and Sources
- Evaluate implementation options to overcome problems and achieve stakeholder goals
- Develop stakeholder backed implementation approach
- Implement recommendations

Watershed-Based Planning

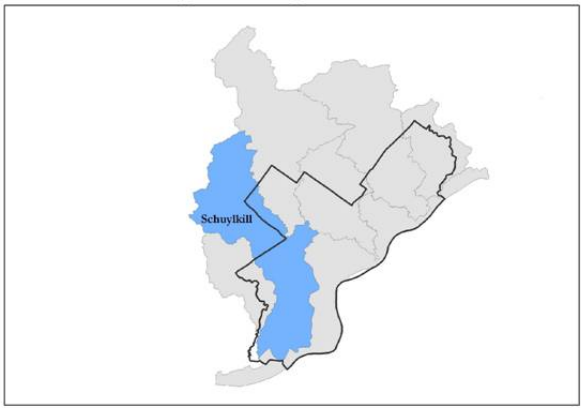
Highlighting the management approach for each of the following CSO watersheds:

- Cobbs
- Tookany Tacony-Frankford
- Schuylkill
- Delaware

Philadelphia's Regional Watersheds

Philadelphia's Regional Watersheds

Philadelphia's Regional Watersheds



Philadelphia's Regional Watersheds

PWD's Watershed Partnerships

Watershed	Partnership Active Since	Plan
Darby-Cobbs	1999	IWMP Completed 2004; Implementation underway
Tookany/Tacony-Frankford	2000	RCP completed 2004; IWMP completed 2005; Implementation underway
Schuylkill (Schuylkill Action Network)	2004	Source Water Protection Plan completed 2004; RCP completed 2001
Delaware (Direct)	2007	RCP Underway (2008); Implementation plan to follow

Characterization of Existing Conditions

PWD implements a detailed monitoring program in each planning shed including:

Chemical **Biological** **Physical**

Common Problems Identified in Urban Watersheds

- Water quality issues
- Odors
- Low dissolved oxygen
- Bank erosion
- Lack of channel habitat and biological diversity
- Wetland degradation
- Poor public access to streams
- Dumping and trash
- Vandalism

Water Quality Issues

Common causes:

- Stormwater discharges
- CSO discharges
- Leaking sewers
- Former industrial activities and occasional spills

Odors

Common causes

- Cross-connections in separate sewered areas
- Leaking sewers along stream
- CSOs during storms

Low Dissolved Oxygen

Common causes/sources:

- Oxygen demanding substances
- Leaking sanitary sewers
- CSOs
- Stormwater runoff
- Lack of streamside shade
- Over-widened channels
- Loss of baseflow
- Excessive invasive plant growth

Bank Erosion

Common causes:

- Lack of stormwater management upstream
- High impervious cover in watershed

Lack of Channel Habitat and Biological Diversity

Common causes:

- Lack of stormwater management upstream
- High impervious cover in watershed
- Alterations to stream channel (channelization)

Degraded Wetlands

Common causes:

- Land development
- Uncontrolled Stormwater

Poor Public Access to Streams

Common causes:

- Residential development up to stream edge
- Lack of public paths

Dumping and Trash

Common causes:

- Litter carried by storm flows
- Illegal dumping at vehicle access points

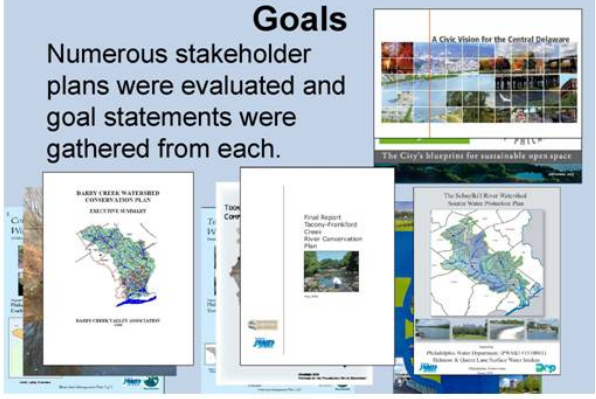
Vandalism

Common causes:

- Poor lighting
- Lack of public visibility and engagement
- Lack of patrolling

Establishment of Stakeholder Goals

Numerous stakeholder plans were evaluated and goal statements were gathered from each.



The Philadelphia Water Department's

"Umbrella" Stakeholder Goals

1. Streamflow and Living Resources
2. Instream Flow Conditions
3. Water Quality and Pollutant Loads
4. Stream Corridors
5. Flooding
6. Quality of Life
7. Stewardship, Communication, and Coordination
8. Recreation

Streamflow and Living Resources

Improve stream habitat and integrity of aquatic life.

Instream Flow Conditions

Reduce the impact of urbanized flow on living resources.

Water Quality and Pollutant Loads

Improve dry and wet weather stream quality to reduce the effects on public health and aquatic life.

Stream Corridors

Protect and restore stream corridors, buffers, floodplains, and natural habitats including wetlands.

Flooding

Identify flood prone areas and decrease flooding.

Quality of Life

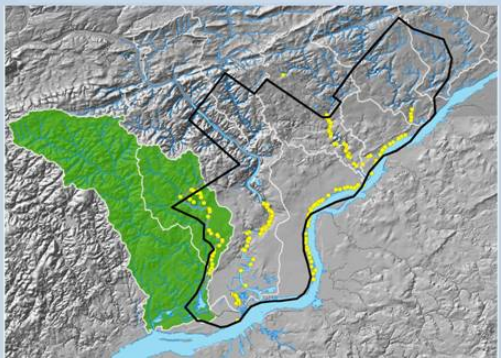
Enhance community environmental quality of life

Stewardship Communication and Coordination

Foster community stewardship and improve inter-governmental, state, local, and stakeholder cooperation and coordination on a watershed basis.

Cobbs Creek

Number of CSO outfalls: 34



What issues have emerged in this watershed?

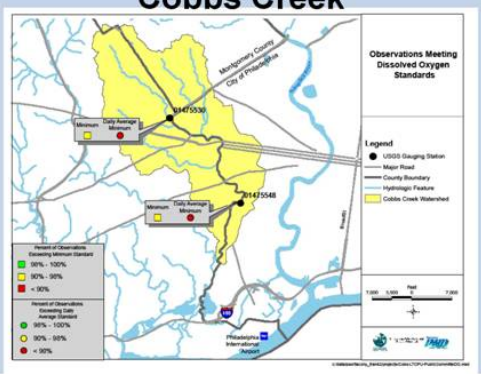
Vandalism

Dumping in and around the creek

Erosion

Bacteria in Cobbs Creek

Dissolved Oxygen Levels in the Cobbs Creek

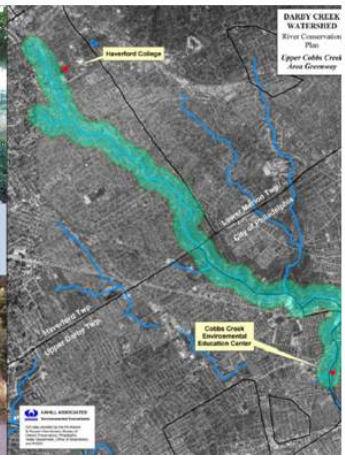


Vision

What could the Cobbs Creek Watershed look like if all of our stakeholder watershed goals were realized?

Waterways Restoration Team

Upper Cobbs Creek Area Greenway



Active Community Stewardship

Wetland Restoration/Creation

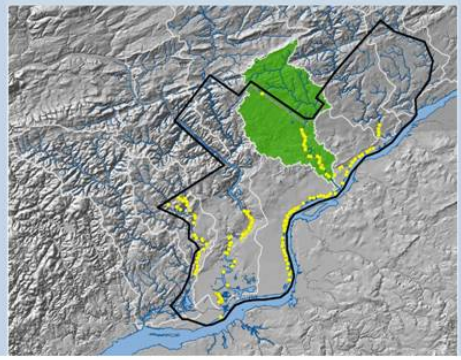
Before

After

During

Tookany/Tacony – Frankford Creek

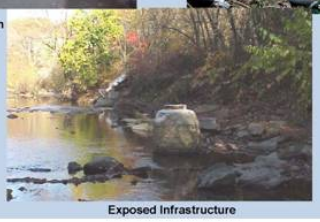
Number of CSO outfalls: 31



What issues have emerged in the TTF watershed?

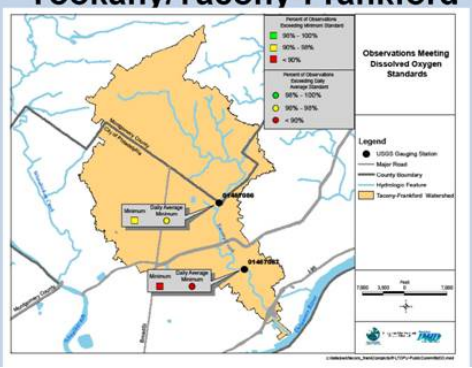
Stream Channelization

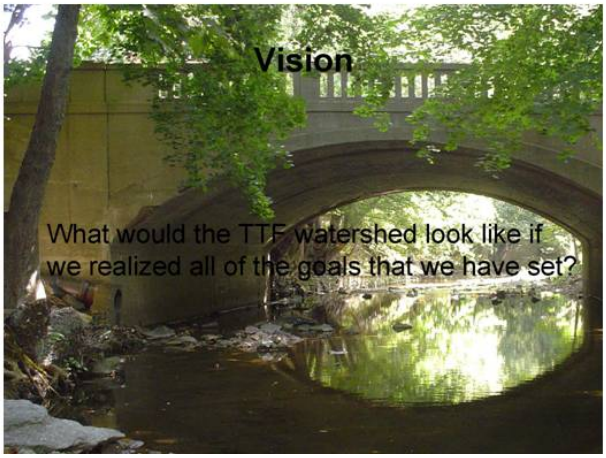
Litter and dumping



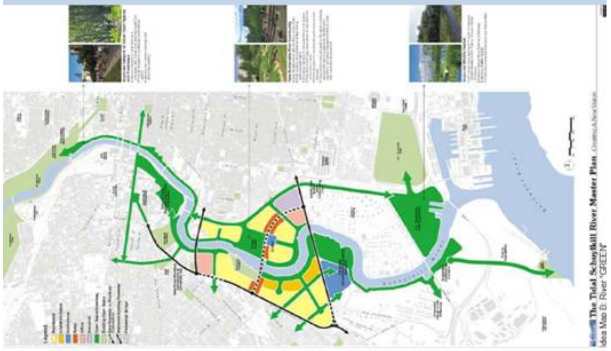
Exposed Infrastructure

Dissolved Oxygen Levels in the Tookany/Tacony-Frankford





Schuylkill River Trail Links

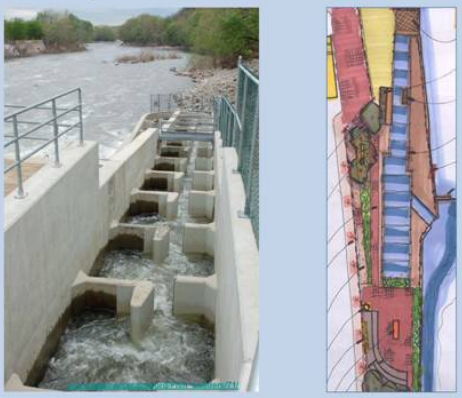


Triathlons

Rowing and Boating

Resurgence of aquatic life!

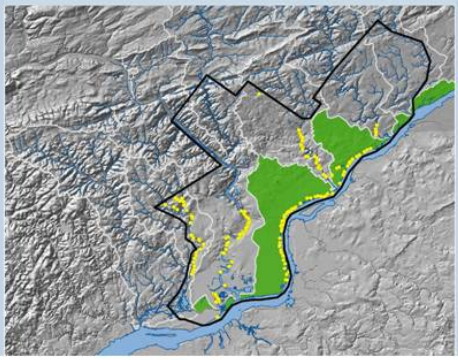
Schuylkill River Fish Ladder



Fishing

Delaware River

Number of CSO outfalls: 54



What issues have emerged in this watershed?

Spills and Water Quality Incidents

The Athos I

Oil Spill on the Delaware River

Riverfront land uses make public access difficult

Dumping and trash

Bacteria in the Delaware

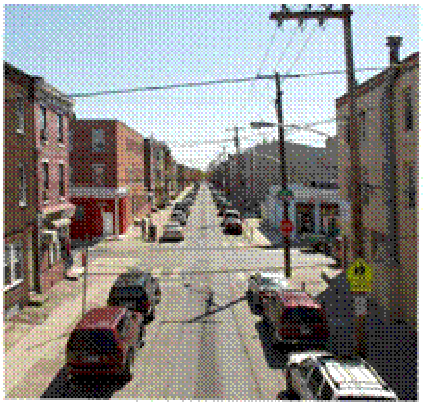
Vision

What would the Delaware River watershed look like if we realized all of the goals that we have set?

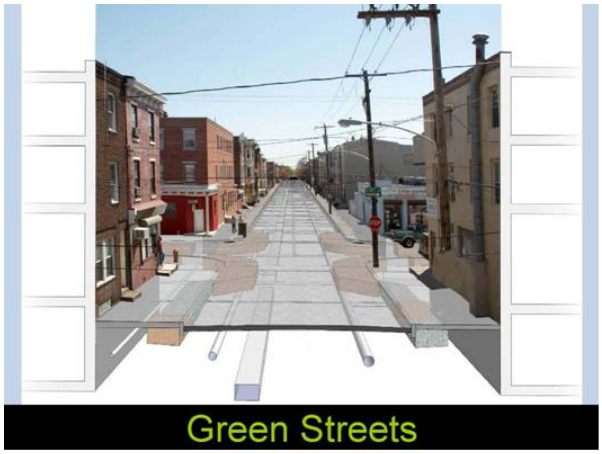
Next Steps

So – How do we get there?

- Visions have been outlined by various stakeholder groups
- We believe implementation of the LTCP with respect to the visions outlined by stakeholders and coupled with adequate support will enable the realization and execution of these visions.



Green Streets


Green Streets


Green Streets


Green Streets


Green Streets

Public Meeting Series #3

Philadelphia PWD Water Department

PWD CSOLTCPU
Public Meeting
Tuesday, June 2, 2009
FELS Center

Please Sign In

Name	Organization	Email
Jessamyn Snyder	South Philly Review	asnyder@southphillyreview.com
Henrietta Martin		
ANDRES CARRIGA	TEAM	
Rose Rafferty	Block Captain	
Stephanie Odell	Lo Mo Civic Association	Stephodell@gmail.com
Susan Gould	Lo Mo Civic Assoc.	gouldsue@yahoo.com
Heidi Engel	"	heidiestengel@hotmail.com

PWD CSOLTCPU Public Meeting, Series #3
FELS Center
Tuesday, June 2, 2009
6:00 – 8:00 p.m.

Comments/Questions

Name:

Audience Member

Comment/Question:

I like what is being proposed. But what if a street already has trees, will PWD remove the trees or build infiltration pits beneath the trees? Can this be done?

No. PWD will not remove any trees. We love trees. If a block already has a full set of trees, we'll look at other green street tools, e.g., bumpouts, that we can apply to manage the stormwater.

Name:

Audience Member

Comment/Question:

Who is paying for this?

PWD's Capital budget is funding the design and implementation of both the green and the gray, traditional projects. But it ultimately comes back to being paid by our ratepayers, our water/sewer customers. That's why it's so important to have public feedback.

Comments/Questions

Name:

Audience Member

Comment/Question:

I live on Albion Street which is a very small street. Can you green a street like mine?

Small streets are certainly more challenging than wider streets, but we are still fine tuning designs that may be a better fit for streets like yours. When homeowners install a rain barrel or a flow through planter, this can help make the street a green one.

Name:

Audience Member

Comment/Question:

When this happens, how are we training the designers and contractors to build these properly and to maintain them in the future?

PWD has been designing and building stormwater demonstration projects for the past 10 years with many public and private partners, so we've gained a lot of experience. But we are still learning and we have consultants working with us to help us refine our current designs and to help us develop guidelines for long term maintenance and operation of these systems. We see green infrastructure as providing green economy jobs.

Comments/Questions

Name: Audience Member

Comment/Question:

I live on a block where nobody wanted trees. So I bought a large planter and placed it on my sidewalk. Suddenly, all my neighbors saw how nice it looks and that it stopped people from parking on the sidewalk. Now a lot of my neighbors have tem. Sometimes, people just need to see how things looks and work first to accept and want them.

Yes! That's why we are doing model neighborhood projects. Social Marketing!

Name:

Comment/Question:

PWD CSOLTCPU
Public Meeting
June 4, 2009
Waterview Recreation Center

Please Sign In

Name	Organization	Email
Maryann Helferty	EPA R3	helferty.maryann@epa.gov
MEGAN SGARLAT	FAIRMOUNT PARK	megan.sgarlat@phila.gov
Steve Manheim	Neighbor	manheims@comcast.net
Brian Winters	"	brianwinters_30@msn.com
LISA MALONE	KSVAC	lisadmail@gmail.com
Rev Charles Williams	CBNC Inc	
Michael Ingram	Ingram Plumbing	MIKESR@Ingramsreplies.com
Michael W Cox		MWCox@yahoo.com
Shamba Johnson		Shamba330@NCA.com

(1)

PWD CSOLTCPU Public Meeting, Series #3
Waterview Recreation Center
Thursday, June 4, 2009
6:00 – 8:00 p.m.

Comments/Questions

Name:
Rev. Williams

Comment/Question:
PWD did a very good job restoring the Adams Ave. & Rising Sun intersection. ~~Great~~

Name:
Michael Wilcox (spoon)

Comment/Question:
Can you tell us about Perms asphalt?

PWD: Yes, I will explain it & show you because we have a demonstration of it right outside of the building.

(2)

Comments/Questions

Name:
Rev. Williams

Comment/Question:
Could you separate sewage runoff and sanitary at the end of the pipe?

PWD: You can't do it at the end of pipe. It must be at the source, unless you build a tunnel.

Name:
Rev. Williams

Comment/Question:
How does green roof work, in terms of plants surviving?

PWD: Green roofs use ~~[illegible]~~ sedums, which are ideal for green roofs.

(3)

Comments/Questions

Name:

Rev. Williams

Comment/Question:

Is the City incorporating green design in all current bumpouts.

PWD: We're in the process of trying to convince them, (strongly) but we need the residents to go to City + express they want it to be green.

Name:

Brian Williams (grey)

Comment/Question:

How do you deal with mosquitoes?

PWD: Mosquitoes only like stagnant water. Green infrastructure is designed to have water move, therefore mosquitoes aren't a problem.

Michael Wilcox (Green)

Parking lot for church I work with is having problems with green b/c it is taking a long time & it is too expensive.

↳ PWD: We have to change the system (to speed it up)

We can speak to congregations, about the greening benefits.

Green is Michael (Biz Card

(4)

Comments/Questions

Name:
Rev. Williams

Comment/Question:
Can you create long ~~grass~~ sidewalk planters along entire block?
PWD: Yes, you can put multiple ones in.

Name:
Lisa

Comment/Question:
~~Explain~~ Do you put tree pits or actual ~~trenches~~ trenches in for tree trenches?

- PWD: Actual trenches are below ground.

(5)

Comments/Questions

Name: Lisa girl

Comment/Question:
What do trees do to sidewalks?

PWD: Broken laterals invite trees, not vice versa. If you plant trees properly, then you won't have problem.

Name:
Rev. Williams

Comment/Question:
I tried the new system for my roof where you paint the roof gray & now runoff just shoots right off.

PWD: That is the negative impact that roofs have.

(6)

Comments/Questions

Name:
Brian Williams 9th

Comment/Question:
Kids can drown in buckets of water. Are rain barrels safe?
PWD - Yes, they have tops on top to protect children from getting inside.

Name:
Rev. Williams

Comment/Question:
Do we have to cut grasses on sidewalk?

PWD: No, We want to use native plants, so there is less maintenance.

(7)

Comments/Questions

Name:

Lisa

Comment/Question:

Are there incentive for developers to do green infrastructure?

PWD: Yes, New regs. require that they manage 1st inch of runoff, if site is larger than 15,000 ft.^{2} going to be disturbed and is

Name:

Michael Wilcox

Comment/Question:

I'm a registered plumber. I'm concerned about contamination of rain barrel. What are the negatives? Maybe have sticker on rain barrel that says not safe to drink?

PWD: Contamination in SW is same at source as at the end of pipe.

Adding sticker warning is a great idea!

Rev. Williams

If I have rain barrel + move out + new owner has problem w/ rain barrel. Am I liable?

PWD: No!

~~A~~. Lisa

Since city (corridors ARE) already developed, how become green?

PWD: Convert vacant lands to urban farms or other greening.
As streets get redeveloped, add green.
Give businesses incentives.
Give homes incentives.
Need to tackle ~~[illegible]~~ in steps w/ in pockets areas that ~~[illegible]~~ need redeveloping.

Rev. Williams (9)

Wouldn't City save $ by building green, instead of paying a lot $ for cement?

PWD - Yes, In future, we hope it will be a requirement to do green, but right now it's not cost-effective for the Streets Dept.

Rev. Williams

Why not green 30th St station? It's blight & an eyesore.

PWD - It's not cost effective at this moment for them, possibly. We need to create the incentive for the property owners to do this like in the way we will bill large commercial + Industrial properties (billed based on size of property + amt. of impervious)

Rev. Williams

Is there such thing as too many trees on a block?

PWD - Yes. You need to have appropriate spacing, so roots don't overlap, etc.

Rev. Williams

Who owns the sidewalks?

PWD = You do!

Philadelphia PWD Water Department

PWD CSOLTCPU
Public Meeting
June 10, 2009
Northern Liberties Community Center

Please Sign In

Name	Organization	Email
Allison Graham	EPA Region 3	graham.allison@epa.gov
Paul Gansky	NLNA	pgansky@aol.com
Sari judd	NLNA	
VIVEK ANANTHAN	VIS	VIVERA@JUNO.COM
KEN MITCHELL	NLNA	BARDAMKEN@YAHOO.COM
Brooke Bissell	Clean Water Action	bbissell@cleanwater.org
Enid Goldberg	NLNA	pgoldewag@verizon.net
Scott Willing	NLNA	willingham.scott@epa.gov
PAUL MAIELLO	KSNK GREENHOUSE OWNER	MAIELL07@VERIZON.NET
Lara Kelly	NLNA	lara.kelly@comcast.net
Eva Richards	NLNA	ibr1007@verizon.net
Khiet Luong	P.E.C.	kluong@pecpa.org

PWD CSOLTCPU
Public Meeting
June 10, 2009
Northern Liberties Community Center

Please Sign In

Name	Organization	Email
		Multiplex77@aol.com
		[redacted]
		NORDR@aol.com

PWD CSOLTCPU Public Meeting, Series #3
Northern Liberties Community Center
Thursday, June 10, 2009
6:00 – 8:00 p.m.

Comments/Questions

Name:

Erika

Comment/Question:

We have a new rain garden in our park ~ a mini version of a wetland!
Marc - Yes!

Name:

Comment/Question:

Is street higher than sidewalk where bioswales are present?
Yes, in order to direct stormwater to the vegetation

Comments/Questions

Name:

Adeolee

Comment/Question:

Are there contractors that can do porous pavement?

PWD: Yes, there are. You can find them on-line. We need the demand to be there, so that the costs decrease + Contractors want to do it.

Name:

Adeolee

Comment/Question:

How much stormwater runoff will you remove thru greening?

PWD: The 1st inch of rain fall (at the very least)

(3)

Comments/Questions

Name:

[signature]

Comment/Question:

Is it common to measure temperature ~~w~~ thru the green projects?

Green will create more cooling than blacktop & sometimes we consider temperature differentials, depending on the project.

Name:

[signature]

Comment/Question:

Do you have information on what the neighbor think, re: vegetation?

~~[illegible]~~ At Saylor Grove Wetland, residents love it!

(4)

Comments/Questions

Name:
Akridee

Comment/Question:
Do native plants stay? Yes
With control, after first two seasons, yes + they keep invasives out.

Name:
Akridee

Comment/Question:
How does school sign up for growing?
Philo. School Dist. is a private entity
PWD can only financially support public ~~projects~~ properties, but PWD can support private schools with other support (e.g. grant funds +/or license agreements/ownership rights.)

(5)

Comments/Questions

Name:

Attendee

Comment/Question:

Has anyone on City Council taken this on as a City issue (green)?
The Mayor! We are following his green plan

Name:

Attendee

Comment/Question:

Can you green rec. centers?
Yes!

(6)

Comments/Questions

Name:

Comment/Question:

Will new SW regs affect homeowners?
NO!
Only industry/commercial + huge property owners.
However, bills go down when these impacted properties start putting in green (they will get credit).

Name:

Comment/Question:

Is there a way to incentivize residential credit?
Right now, no, but working w/ Pennsylvania, so that resident gets credit if put Rain barrels, etc. in.

Comments/Questions

Name:

Comment/Question:

Can we green playground (next to Alkus) + REC Center?
Yes, We have to create a demand for it!

Name:

Comment/Question:

Is general street tree planting a component?
Yes, but current tree pits are not designed to manage SW runoff. But we will pay $ to enhance tree pits.

Green Cities, Clean Waters

Summer, 2009

CSO-Control Approach Survey

The Philadelphia Water Department (PWD) believes that the best way to spend its customers' dollars to decrease Combined Sewer Overflows (CSOs) is through an approach that largely focuses on a green solution that captures stormwater on land through more natural practices, with some traditional "gray" solutions, such as new pipes and tanks to fill in the gaps where green practices can't capture the volume that we are targeting.

- Generally, do you like this strategy?

- Generally, what do you like about this strategy?

- Generally, what concerns do you have about this strategy?

- What additional information do you think would be helpful?

Green Cities, Clean Waters

The Combined Sewer Overflow Long Term Control Plan Update

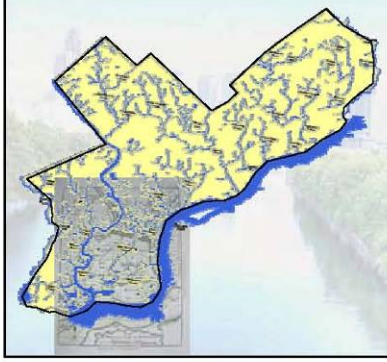
Agenda

I. Brief Recap on Water History, Stormwater & Current Status of Waterways
II. What is the Combined Sewer Overflow Long Term Control Plan Update?
III. Alternatives and Options
IV. Give Us Your Feedback (Take Survey)

Vision

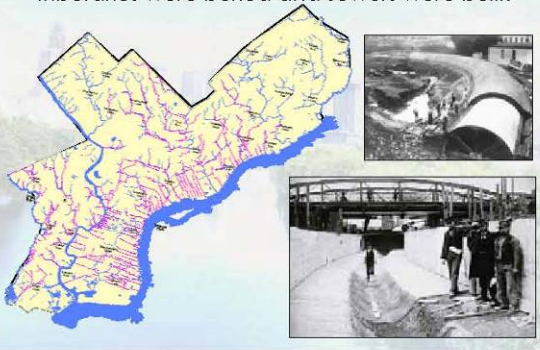
- We want a beautiful, green city with clean waters.

History

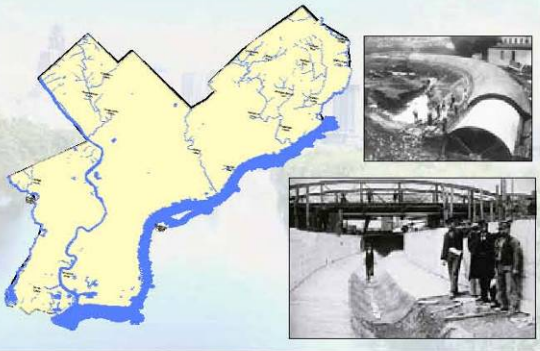


History

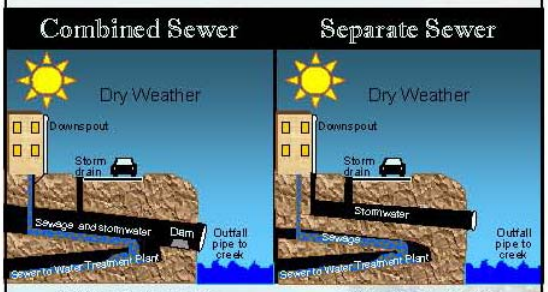
Tributaries were buried and sewers were built.



Present Day

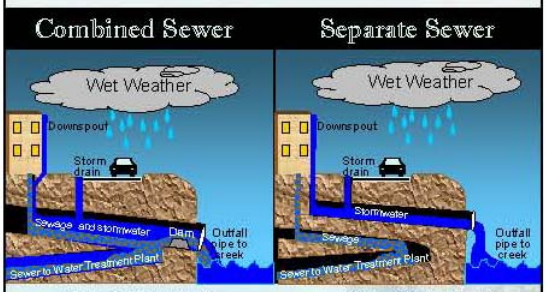


What is a Combined Sewer Overflow?



60% of Philadelphia | 40% of Philadelphia

What is a Combined Sewer Overflow?



60% of Philadelphia | 40% of Philadelphia

Natural vs. Urban Stormwater Drainage

- Stormwater soaks into the ground.
- Plants and trees work to absorb stormwater.

- Stormwater hits impervious (non-penetrable) surface and runs off roofs, streets, parking lots, etc.
- Ultimately, runoff goes into the sewers and then to creeks.

When a Combined Sewer Overflows…

- …I can't go swimming.
- …my dog can't drink the water.
- …I can't go fishing.
- …there is more trash.
- …our water is polluted.

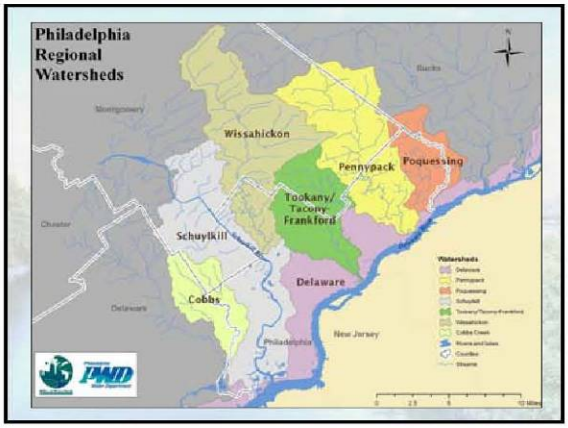
National Combined Sewer Overflow Control Policy

Every city with Combined Sewer Overflows must create a Long Term Control Plan to clean up the water. It is a national water priority to clean up, reduce or eliminate combined sewer overflows.

It's not just a Philly Problem

Philadelphia's Watershed Approach

Watershed: An area of land that drains stormwater to a common body of water



Implementation Approach

- PWD has developed "**Implementation Targets**" as means to measure progress and sustain stakeholder support through the Combined Sewer Overflow Plan over the span of 20 -30 years.
  - **Target A:** Dry Weather Water Quality and Aesthetics
  - **Target B:** Healthy Living Resources
  - **Target C: Wet Weather Water Quality**

Target A: Dry Weather Water Quality and Aesthetics

Target B: Healthy Living Resources

Boulders and plants added to provide refuge for fish and bugs

Concrete box channel remains

Target C: Wet Weather Quality

- **Requires lengthy timeline**
  - Heavily relies on Combined Sewer Overflow and Low Impact Development teams
- **Building both Green and Gray Infrastructures**
  - Inflatable Dam, Combined Sewer Overflow gates, etc.
  - Best Management Practices
    - All of our Green Program Elements
- **Adaptive Management**

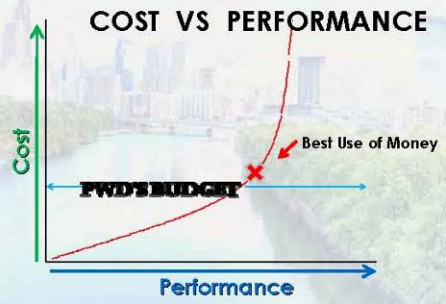
Cost vs. Benefit

The Water Department is expecting to spend billions of dollars over 20 – 30 years to reduce the number of Combined Sewer Overflows that occur each year.

There is a level of benefit (and cost) associated with every dollar spent on building green and gray infrastructure.

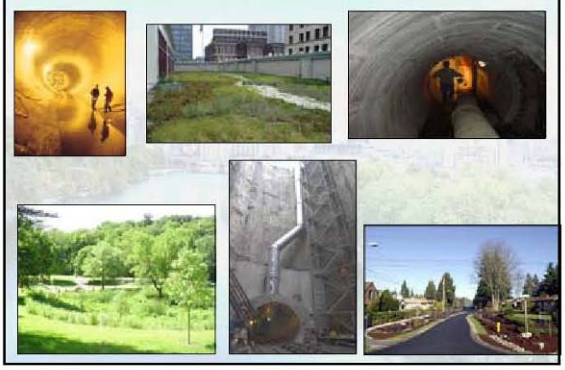
PWD is working to determine a cost effective solution to improve and restore the quality of our waterways and to reduce the number of annual overflows.

What can we afford that works best?



The most cost effective & beneficial method will be the **Green Infrastructure** approach with some traditional "gray" solutions to fill in the gaps where green practices can't capture the volume that we are targeting.

Gray Infrastructure Solutions Green



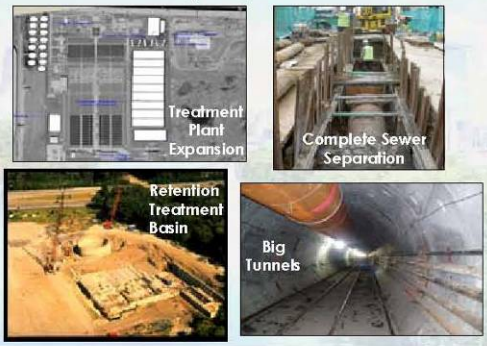
Gray – What is it?

"Gray" refers to traditional infrastructure solutions to manage stormwater.

4 Options

- Complete Sewer Separation
- Expand Treatment Facilities
- Big Tunnels/More Storage
- Retention Treatment Basins

Gray Options



Green – What is it?

- "Green" is the use of natural and man-made technology to mimic nature's ability to deal with stormwater.
- Treats stormwater as a resource
- 10 Green Elements in our Green Program

Examples of Green Components

- **Green Roofs**
  - A green roof is a roof that is partially or completely covered with vegetation to manage stormwater runoff.

- **Porous Pavement**
  - This porous surface replaces traditional pavement, allowing stormwater runoff to infiltrate directly into the soil and receive water quality treatment.

Examples of Green Components

- **Bump Outs/Curb Extensions**
  - A curb opening directs stormwater runoff from the street and gutter into the bump-out, where the stormwater runoff is allowed to soak into the ground and filter out pollutants.

- **Sidewalk Planters**
  - Sidewalk planters are vegetated with native plants that collect stormwater runoff. Sidewalk planters trap sediment, other pollutants and reducing the rate and volume of stormwater runoff.

Examples of Green Components

- **Grass Pavers**
  - Grass pavers are porous surfaces with open areas designed to allow grass to grow within the open slots.

- **Flow-through Planters**
  - Flow-through planters are vegetated boxes with a small reservoir that receive runoff through rain drains or curb cuts.

Examples of Green Components

- **Living Wall**
  - A living wall is a vertical arrangement of plants and other vegetation.

- **Rain Barrel**
  - A Rain barrel collects and stores stormwater runoff from downspouts.

Examples of Green Components

- **Tree Trenches**
  - The trees and soil in the tree trench provide the important function of filtering out common stormwater runoff pollutants and absorbing stormwater runoff

- **Vegetated Swales**
  - Swales are designed to trap suspended solids and to reduce the flow and velocity of stormwater runoff.

Green Program

Green Streets

Components of a Green Street could include:

-Curb Openings
-Sidewalk Planters
- Street Trees
- More Landscaping
-Curb Extensions/Bump Outs
-Porous Pavement

Green Program

Green Homes

Components of a Green Home could include:

-Rain Barrels
-Rain Gardens
-Flow-through Planters
-Green Roofs
-Native Plants
-Energy Efficient Practices & Appliances

Green Program

Green Parking

Components of Green Parking could include:

- Porous Pavements
-Vegetated Swales
- Pavers

Green Program

Green Schools

Components of a Green School could include:

-Rain Gardens
-Living Walls
-Green Roofs
-Porous Pavements

Green Program

Green Public Facilities

Components can include:

- Living Wall
- Street trees
- Rain Gardens
- Green Roofs
- Porous Pavements
- Sidewalk Planters

Green Program

Public Open Spaces

Components can include:

- Rain Gardens
-Porous Pavements
- Tree Trenches
- Vegetative Swales

Green Program

Green Industries, Commercial Properties and Institutions



Components of Green Industry can include:

-Green Roofs -Porous Pavement -Bump Outs -Rain Gardens -Planters

Green & Gray Infrastructure Costs

- **Dollars**
  - Both strategies cost money to implement.

- **Construction**
  - Both strategies require construction and the disruptions that come with it.

Green & Gray Infrastructure Costs

- **Traffic**
  - Both strategies may cause traffic (during construction).

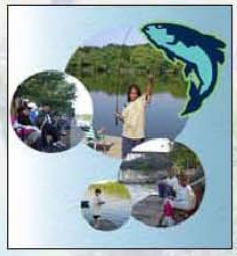
- **Energy**
  - Both strategies consume energy.


Benefits

Gray	Green
• Reduced Combined Sewer Overflows	• Reduced Combined Sewer Overflows
• Improved Water Quality	• Improved Water Quality
• More Jobs	• More Jobs (Green Jobs)
	• Better Air Quality & Health Benefits
	• Cooling
	• Reduced Heat Stress
	• Reduced Carbon Footprint
	• Energy Savings
	• Increased Recreation
	• Enhanced Aquatic Life & Terrestrial Life
	• Improved Aesthetics
	• Higher Property Values

Reduced CSOs/ Improved Water Quality

Both strategies are designed to clean up, reduce or eliminate combined sewer overflows and therefore, improve water quality.

Increased Job Creation

Green technology creates more local green jobs over time compared to gray infrastructure, where big companies are hired to do the work on a short-term basis.


Air Quality & Health Benefits

Carbon Footprint

Definition: Measure of the amount of greenhouse gases (e.g., carbon dioxide) produced by an individual (or company/event) due to their impact on the environment.

Increased Recreation

Green parks coupled with clean water increases recreational opportunities and promotes a city of Brotherly Love.

Enhanced Aquatic Life & Terrestrial Life

Improve stream habitat and integrity of aquatic and terrestrial life.

Aesthetics

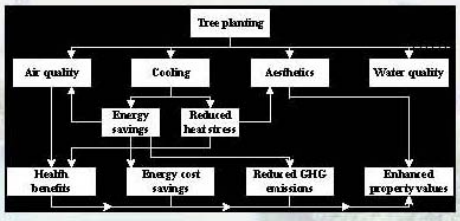
Property Value

Planting trees and vegetation increases the beauty of the neighborhood and therefore, the property values.

Economic/Environmental/Social Benefits

- Costs
- Ecological Benefits
- Recreation
- Heat Stress Mortality
- Energy Savings
- Air Quality
- Carbon Footprint
- Aesthetics
- Jobs
- Property Value

How Benefits are Linked



Alternatives Evaluation

- **Qualitative Factors Considered**
  - Public Support
  - Location
  - Construction Feasibility
  - Complexity and Difficulty of Solution
- **Maximize benefits to society – Triple Bottom Line**
- **Minimize Cost to PWD and its Customers**
- **Financing and Affordability**
- **All alternatives must meet goals**

The alternatives considered to help us reach the ultimate goal of reducing CSOs…

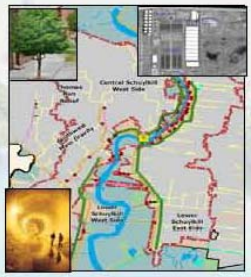
Alternatives Evaluated

1. **Big Tunnels**
2. **Green Programs, Larger Pipes and Expansion of Treatment Facilities**
3. Green Programs, Increased Transmission , Expansion of Treatment Facilities and Retention Treatment Basins
4. **All Green**
5. Green with Smaller-Scale Gray
6. Plant Expansion, Satellite Treatment (Ballasted Floc)
7. Plant Expansion, Satellite Treatment (Swirl/Vortex)
8. Retention Treatment Basins

#1: Big Underground Tunnels

City-Wide	
Combined Sewage Capture	Cost (in Billion dollars)
80-85%	N/A
85-90%	N/A
90-97%	3.2 – 10

#2 Green Programs, Larger Underground Pipes and Expansion of Treatment Facilities



City-Wide	
Combined Sewage Capture	Cost (in Billion dollars)
80-85%	1.7 – 3.5
85-90%	3.3 – 3.7
90-97%	3.7 – 10

#3 All Green

City-Wide	
Combined Sewage Capture	Cost (in Billion dollars)
80-85%	1– 1.6
85-90%	1.5 – 2.7
90-97%	2.7 – 5+

Triple Bottom Line ($)
50% Green ($400M) vs. 30' Diam. Tunnel ($1000M)

Present Value Benefit Estimates for Tookany-Tacony-Frankford Watershed		
Benefit Categories	Green 50% (Alt 13-2)	Grey 30 ft (Alt 12-4)
Increased Recreational Opportunities	$ 41.2 million	
Reduction in Flood Stress Mortality	$ 73.3 million	
Energy Savings/Landscape	$7.8 million	($1.3 million)
Air Quality Improvements from Trees	$ 31.2 million	
Reduced [Increased] Costs of SO_2 and NO_2 Emissions	$ 14.3 million	($12.5 million)
Reduced [Increased] Costs of CO_2 Emissions	$4.4 million	($1.5 million)
Social Costs Avoided by Green Collar Jobs	$27.2 million	
Improved Aesthetics/Property Value [30%]	$49.3 million	
Disruption Costs from Construction and Maintenance	($1.2 million)	($1.7 million)
Aquatic and Terrestrial Ecosystems	-	H
Water Quality Enhancement	-	-
Total	**$283+ million**	**($17+ million)**

WHAT DO YOU THINK?

Please fill out the survey.

We want to hear from you!

Model Neighborhoods

(Sample petitions, educational materials, walk announcements,
street design layouts and sample photo simulation sets)

Green Streets/Model Neighborhood Petition

I, Mike Ritzius, as the representative for the 1200 block of Ellsworth Street, submit this petition as evidence that nearly 100 percent of the residents on my block want to find out more about becoming one of the City's Green Streets (which can include trees with planters, curb bumpouts, above ground planters, and other street features that better manage rainwater runoff and improve the beauty of our block).

#	Name	Address
1	Mike + Marisa Ritzius	~~1215~~ Ellsworth St #1215
2	Jackie + Don Gusic	1222 Ellsworth Street Phila PA 19147
3		1200
4	Vacant	1201 - Vacant lot
5		1202
6	Vacant	1203 - Vacant lot
7	Matthew Brennan	1204
8		1205 - B
9		1206
10		1207 Vacant
11		1208
12		1209
13		1210
14	Rachael Kratzer	1211
15		1212
16		1213
17	Rachel A. Nikelsburg	1214
18		1216
19		1217
20		1218
21		1219
22		1220 ELLSWORTH ST. PHILA. PA 19147
23		1221
24		1223
25		1224
26	MONICA FALESKI	1225

Philadelphia Water Department

Green Streets/Model Neighborhood Petition

I, Virginia Canfield, as the representative for the 3100 block of Marston Street, submit this petition as evidence that nearly 100 percent of the residents on my block want to see their street become one of the City's Green Streets (which can include trees with planters, curb bumpouts, above ground planters, and other street features that better manage rainwater runoff and improve the beauty of our block).

#	Name	Address
1	Virginia L. Canfield	3151 North Marston Street
2	Mrs. Susie Robinson	3155 North Marston Street
3	Cheryl Spencer	3128 N. Marston St.
4	Karen Little	310 N. MARSTON ST.
5	[illegible]	310 N. Marston St.
6	[illegible]	2914 W. Allegheny Ave
7	Darnell Rodgers	3159 N. Marston St.
8	Devarc Cncppell	3159 N. Marston St
9	Hafeez Bryan	3156 N. Marston
10	Timothy Randolph	3113 N Marston St
11	Jeannie Winebark	3146 N. Marston St.
12	DAVID CARMICHAEL	3143 MARSTON ST
13	[illegible]	3129 N Marston
14	TINA Willis	3132 N Marston St
15	Patricia Green	3123 N. Marston
16	Tanya FRISBY	3109 N. MARSTON ST.
17	Timothy GREEN	3116 Marston St
18	Doreen Wright	3102 N Marston St.
19	[illegible]	3108 N. Marston St
20	Nate Avery	3120 N MARTON ST
21	Melvin Collins	3126 N MARSTON ST.
22	Myra Annie Scott	3140 N Marston St
23	[illegible]	[illegible]
24	[illegible]	[illegible]
25	[illegible]	3135 N. Marston St
26	Leigh Bishop	3119 N. Marston St.
27	Paul a Bolden	3131 N. MARSTON ST

Philadelphia Water Department

Green Streets/Model Neighborhood Petition

I, [illegible], as the representative for the 3100 block of PENNOCK ST, submit this petition as evidence that nearly 100 percent of the residents on my block want to see their street become one of the City's Green Streets (which can include trees with planters, curb bumpouts, above ground planters, and other street features that better manage rainwater runoff and improve the beauty of our block).

#	Name	Address
1	Ida Brown	3152 N Pennock st
2	Alphonso Graves	3155 N. Pennock St
3	Roxanne Whaley	3156 N. Pennock ST
4	Bonny & Pee DAVIS	3154 N Pennock ST
5	Jerry Meriweather	3159 N PENNOCK. ST
6	Shirley Meriweather	3148 N Pennock, St
7	Hyp Miller	3147 N. Pennock St.
8	Andrew Hostetter	3151 N Pennock ST
9	Cynthia Paddy	3133 N. Pennock St
10	[illegible]	3135 N. Pennock St
11	Stefanie Fuller	3131 N Pennock St
12	Patricia Fuller	3129 N. Pennock St
13	E. Ann [illegible]	3137 N Pennock ST
14	Earline Young	3153 N. Pennock St
15	Gwendolyn Hughes Parker	3101 Pennock Phila. Pa. 19132
16	Shirlesa Saulters	3106 Pennock St Phila PA 19132
17	Julia Adams	3100 Pennock St Phila. Pa. 19132
18	John Bennett	3116 Pennock St. Phila, Pa. 19132
19	Melissa Thomas	3127 Pennock ST Phila 19132
20	Hattie Herndon	3119 pennock st phila pa, 19132
21	Maxine Taylor	3157 Pennock St. phila. Pa. 1932
22	Barbaira Fuller	3139 n Pennock st phila. Pa 19132
23	Denise Whittaker	3149 N. Pennock St Phila PA 19132
24	Letetia Massaw	3128 N. Pennock St. Phila, PA 19132
25		
26		
27		

Green Streets/Model Neighborhood Petition

I, Andrew Kerber as the representative for the 2500 block of Grays Ferry Avenue, submit this petition as evidence that nearly 100 percent of the residents on my block want to find out more about becoming one of the City's Green Streets (which can include trees with planters, curb bumpouts, above ground planters, and other street features that better manage rainwater runoff and improve the beauty of our block).

#	Name	Address
1	Andrew Kerber	2534 Grays Ferry Ave
2		2537
3		2527 GRAYS Ferry Ave
4	Mildred J Hines	2521 Grays Ferry Ave
5		2519 Grays Ferry Ave
6		2519 Grays Ferry Ave
7		2519 Grays Ferry Ave.
8	Beverly Hagan	0527 Grays Ferry Ave
9	AMES CAMPBELL	2531 GRAYS FERRY AVE
10	Madeleine Gates	2515 Grays Ferry Ave
11	Jose Whatley	2526 Grays Ferry Ave.
12	Khyonna Jasmin	2523 Grays Ferry ave.
13		2526 Grays Ferry Ave.
14	Tommie Hill	2527 GRAYS Ferry Ave
15	Joyce Hadgby	2533 Carpenter St
16		2526 Grays Ferry Ave
17	John McHugh	2529 Grays Ferry Ave
18		2546 Grays Ferry Ave
19	Roosevelt Logan	2513 Grays Ferry Ave.
20		
21		
22		
23		
24		
25		
26		

Model Neighborhood

Three Typical Stormwater Management Projects

Street Tree Plantings

Street trees provide shade, improve air quality, reduce stormwater runoff, absorb noise and beautify neighborhoods. From a stormwater management perspective, trees can reduce stormwater runoff by capturing rainfall on leaves and branches. Trees can be planted in special ways to capture the flow of water from the street and sidewalk letting it soak to the soil around the tree roots, and filtering pollutants from the runoff. Other tree benefits include, improved property values and crime reduction.

Sidewalk Planters

Sidewalk planters (or rain gardens) are shallow depressions in the sidewalk, vegetated with native plants that collect stormwater runoff from the adjacent street and sidewalk, filter pollutants from the runoff and allow the runoff to soak into the ground. Stormwater runoff from the street is directed to the planter through a curb opening. Stormwater that is not absorbed by the plants and the soil overflows back out to the street and the existing storm inlet or directly into the sewer system through a pipe. Sidewalk planters/rain gardens help protect our waterways by trapping sediment, fertilizer, oil, pet waste and other pollutants and reducing the rate and volume of the stormwater runoff.

Vegetated Curb Bump Outs

Vegetated curb bump-outs are located along the curb line of the street, where the curb is bumped out into the existing parking lane of the street. A curb opening directs stormwater runoff from the street and gutter into the bump-out. The bump-out is slightly depressed and vegetated with native plants to allow stormwater runoff to pond, soak into the ground and become filtered by the plants before overflowing to the existing storm inlet. In addition to managing stormwater runoff and improving water quality, bump-outs may also slow down traffic and create safer pedestrian crossings.

Why a model neighborhood ?

Philadelphia Water Department (PWD) is working on a new and exciting green initiative with its partners, Fairmount Park, Citizens for Pennsylvania's Future (PennFuture), the Next Great City coalition, Pennsylvania Horticultural Society and local community groups.

Model Neighborhoods is an initiative to transform the neighborhoods of Philadelphia into model green communities that manage stormwater in innovative ways. These neighborhoods will showcase green infrastructure elements, such as street trees trenches, sidewalk planters, and bump outs/curb extensions (see middle panel for definitions). These projects help clean stormwater runoff, help slow it down and help it soak back into the ground, reducing the amount of stormwater that would otherwise travel through underground pipes to our streams and rivers.

Beyond stormwater benefits, green infrastructure projects beautify neighborhoods, improve air quality, reduce the City's temperature (urban heat island effect), and create safer, healthier communities.

How to nominate your block?

1. Contact your local neighborhood group or civic organization to notify them of your interest. Civic partners play a key role in *Model Neighborhoods*.
2. Fill out the Green Street Petition and obtain signatures from the residents on your block.
3. Submit the petition to the Philadelphia Water Department so that your block can be considered.

* The first four blocks that sign up in each neighborhood will be considered for a green street. Others may be considered at a later date.

See contact information on the reverse side for materials.

Model neighborhood Elements

Examples of green infrastructure elements that you may see on your street, block and on other public properties:

Street Trees Trenches

Street trees trenches capture the flow of stormwater from the street and sidewalk, letting it soak into the soil. They provide shade, improve air quality, absorb noise and beautify neighborhoods.

Sidewalk Planters

Stormwater runoff from the street is directed to the planter through a curb opening. Sidewalk planters help protect our waterways by trapping pollutants and reducing stormwater runoff.

Bump Outs/Curb Extensions

A curb opening allows stormwater runoff from the street and gutter into the curb extensions, where the stormwater runoff soaks into the ground and filters out pollutants.

Rain Barrels

Rain barrels are storage containers that collect and store stormwater runoff from the downspouts.

Rain Gardens

Rain gardens are shallow depressions in the land, vegetated with native plants that filter stormwater runoff.

Porous Pavement

Porous pavement allows stormwater runoff to soak right through it, while providing the same structural support as traditional pavement.

Existing Street

Green Street!

Where are the current Model Neighborhoods?

Location	*Civic Partner*
Passyunk Square	Passyunk Civic Association
Awbury/Cliveden	Tookany/Tacony-Frankford (TTF) Watershed Partnership
Northern Liberties	Northern Liberties Neighborhood Association
Pennsport	Pennsport Civic Association
New Kensington/ Fishtown	New Kensington CDC
Point Breeze	South Philadelphia Homes, Inc./ Newbold/Redevelopment Au-
North Philadelphia	Asociación Puertorriqueños en Marcha (APM)
Manayunk	Manayunk Development Corp/ Roxborough CDC
East Falls	East Falls Development Corporation

Learn more About Model Neighborhoods through these Programs

- **Fairmount Park's Street Tree Walks**
- **Philadelphia Water Department's Dock Street Tour, Cohocksink Tour and Wingohocking Tour**

For more details on the above events and other future events, in addition to more information on *Model Neighborhoods*, visit:

www.PHILLYWATERSHEDS.org

Facebook Group: *Green Neighborhoods through Green Streets*

What Can Homeowners Do?

Examples of projects that homeowners can do on their properties to better manage stormwater runoff:

- Plant a tree.
- Install a rain barrel.
- Plant a rain garden.
- Install a planter (container garden).

Project Sponsors:

Frequently Asked Questions (FAQs)

Q. Who funds *Model Neighborhoods*?

A. Primarily Philadelphia Water Department (PWD), with support from other city agencies and local nonprofit groups.

Q. Are projects on private properties considered for funding?

A. No. PWD can only implement projects in public right of ways (i.e. streets and sidewalks), however, PWD may provide technical support to private property owners. In fact, PWD is interested in evaluating residential properties in Philadelphia for rain gardens (where appropriate) and flow-through planters. Please contact us, if you are interested.

Q. Who will maintain the *Model Neighborhoods* green infrastructure projects?

A. PWD. However, PWD will rely on residents to do minor maintenance, such as litter removal and sweeping leaves.

Q. Where can the general public purchase porous asphalt?

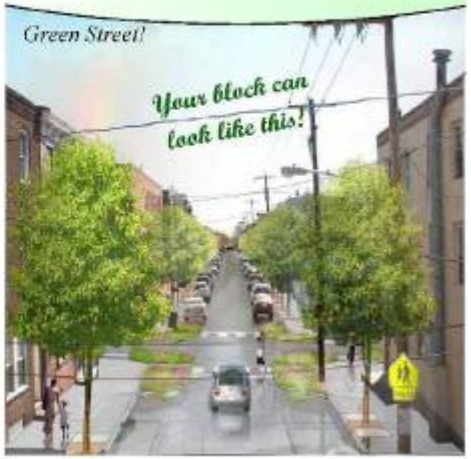
A. Porous asphalt is only cost-effective in larger batches. PWD recommends that you contact a contractor that you would hire to install a traditional driveway and ask this contractor if he/she is willing to work with porous materials.

For more information, contact:

Tiffany Ledesma Groll
Office of Watersheds
Philadelphia Water Department
1101 Market St. 4th Floor
Philadelphia, PA 19107
Phone: 215-499-3756
Fax: 215-685-6043
E-mail: **ledesmagrolltd@cdm.com**

Green Cities, Clean Waters

Model Neighborhoods



MODEL NEIGHBORHOODS
NORTHERN LIBERTIES

Green Cities,
Clean Waters

Tree Walk on Your Block

Saturday, May 30, 2009
10am–11:30am

Meet at
Liberty Lands
900 Block of N. 3rd Street

Have you ever wondered why some urban neighborhoods are so charming? It's often because of **street trees!** Join us for this fun tree walk and discover why many of Philadelphia's urban neighborhoods are going **GREEN** with trees! Learn tricks for identifying trees and see how Fairmount Park selects ideal trees for an urban environment. Look at the benefits trees provide--the temperature is always several degrees cooler under the shade of a tree! Learn about proper placement, selection, and care, and who to call when you have questions. *All welcome. Free. No registration necessary. For information call* ***215.685.9285***.

Discover the opportunities offered by the Philadelphia Water Department and Fairmount Park to make your community a Model Neighborhood. For additional information, visit **www.phillywatersheds.org**.

Green Cities, Clean Waters
MODEL NEIGHBORHOODS

Discover how a green neighborhood could be ***YOURS!***

MODEL NEIGHBORHOODS
PASSYUNK SQUARE

Green Cities,
Clean Waters

Tree Walk on Your Block

Saturday, May 16, 2009
Noon

at
PASSYUNK SQUARE
SPRING FESTIVAL
Capitolo Park
9th & Federal Streets

Have you ever wondered why some urban neighborhoods are so charming? It's often because of street trees! Join us for this fun tree walk and discover why many of Philadelphia's urban neighborhoods are going GREEN with trees! Learn tricks for identifying trees and see how Fairmount Park selects ideal trees for an urban environment. Look at the benefits trees provide--the temperature is always several degrees cooler under the shade of a tree! Learn about proper placement, selection, and care, and who to call when you have questions. *All welcome. Free. No registration necessary. For information call* ***215.685.0470.***

Discover the opportunities offered by the Philadelphia Water Department and Fairmount Park to make your community a Model Neighborhood. For additional information, visit **www.phillywatersheds.org.**

Passyunk Square Civic Association

Discover how a green neighborhood could be YOURS!

MODEL NEIGHBORHOODS
AWBURY/CLIVEDEN

Green Cities,
Clean Waters

Tree Walk on Your Block

Saturday, June 13, 2009
10am–11:30am

Meet at
6211 Chew Avenue, Philadelphia, PA
(between Belfield Avenue and Tulpehocken Street)

Have you ever wondered why some urban neighborhoods are so charming? It's often because of street trees! Join us for this fun tree walk and discover why many of Philadelphia's urban neighborhoods are going GREEN with trees! Learn tricks for identifying trees and see how Fairmount Park selects ideal trees for an urban environment. Learn how to choose trees that won't interfere with sidewalks or power lines. Discover the benefits trees provide --the temperature is always several degrees cooler under the shade of a tree! And trees increase property values and improve the quality of air around them!

Learn about proper placement, selection, and care, and who to call when you have questions. *All welcome. Free. No registration necessary. For information call* ***215.685.9285.***

Discover the opportunities offered by the Philadelphia Water Department and Fairmount Park to make your community a Model Neighborhood. For additional information, visit **www.phillywatersheds.org**.

Green Cities, Clean Waters
MODEL NEIGHBORHOODS

Discover how a green neighborhood could be YOURS!

History

In 1682, William Penn made a treaty with the local Native American tribes under the sheltering branches of the "Treaty Elm" which stood at what is now Penn Treaty Park. Penn's vision for the city would eventually grow up around that site and include parks, gardens, open spaces and trees.

Now, more than 325 years later, Penn would be proud of his vision. There are more than 125,000 street trees in the 21st Century version of his "greene countrie towne," and they are the responsibility of Fairmount Park.

Green Cities, Clean Waters
MODEL NEIGHBORHOODS

Philadelphia Street Tree Management Division

Telephone: 215.685.4362 or 215.685.4363
Fax: 215.685.4364
Email us at: fpc.streettree.info@phila.gov

Hours of Operation:

7AM-3:30PM; Monday-Friday, Year Round (except City holidays).

Visit www.fairmountpark.org and click on Street Tree for detailed information or to obtain a Tree Maintenance Citizen Service Request form.

Call 911 for emergencies (fallen tree or limb is blocking a street, damaged a house, car or utility line) after normal business hours.

Fairmount Park

PHILADELPHIA

Street Trees

WWW.FAIRMOUNTPARK.ORG

What is a "Street Tree?"

Street trees are located in the strip of land between sidewalks and curbs – or in planting sites cut into sidewalks next to a curb. They range from newly planted maple trees to the mighty oak trees planted in the 1920's. Philadelphia street trees are important to our environment, they shade and beautify our neighborhoods, absorb noise, filter pollution and improve property values while keeping William Penn's vision alive.

Street trees don't have an easy life. They have to endure pests and diseases, air pollution, summer droughts and salt contamination from melting ice and snow. Damage occurs from cars, animals, bicycle chains and by advertisements stapled or nailed to their trunks.

Like any living thing, street trees need care and Fairmount Park has the authority over street trees in the City of Philadelphia. Please contact us before planting, removing, pruning or any other work on Philadelphia street trees.

A periodic visual inspection of your street trees will help keep them healthy. Examine your tree for the presence of:

- pests and insects
- stunted growth
- dead branches
- tree rot
- cavities in the trunk or branches

How You Can Help

At the request of Philadelphia property owners, Fairmount Park's Street Tree Management Division will inspect street trees and, if conditions warrant, have the tree pruned or removed for safety reasons at no cost to the homeowner.

Fairmount Park arborists will also inspect your location to determine whether it is appropriate for a new street tree. If so, the proper tree species for the site will be selected by the arborist.

Property owners are permitted to hire tree contractors* (qualified arborists) to perform work on street trees adjacent to their property. This work can include planting, pruning, minor root pruning (required for plumbing and/or masonry work), pesticide spraying, fertilization and tree removal. Contractors must apply for a permit from the Fairmount Park Street Tree Management Division prior to performing work on any street tree in Philadelphia.

* Homeowners can obtain a list of qualified tree contractors by contacting the Philadelphia Street Tree Management Division.

When street trees are no longer able to provide shade and beauty, they provide benefits to Philadelphia citizens through our organic recycling program. Free wood chips, firewood and compost are available at the Fairmount Park Recycling Center near Ford Road & Chamounix Drive in West Fairmount Park and at Park District recycling yards in Northeast, Northwest and South Philadelphia. Contact 215.683.0200 for locations.

Tree Tenders

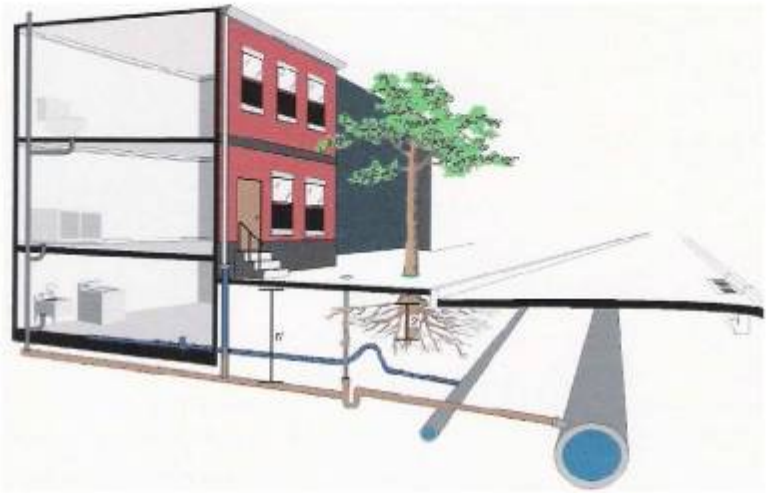
In 1993, Fairmount Park partnered with The Pennsylvania Horticultural Society to launch the Tree Tenders project to teach general tree care skills to organized community groups and Philadelphia residents. Today, there are over 1,900 Tree Tenders from 150 different neighborhoods.

Learn how you can be a Tree Tender by visiting http://www.pennsylvaniahorticulturalsociety.org/phlgreen/tree-training.html.

Sidewalk Trees & House Sewer Laterals

Homeowners often engage in a type of "chicken or the egg" discussion concerning the roots of their sidewalk trees and the effect of these roots on their sewer lateral – the pipe that connects the home's wastewater drainage system to the sewer in the street. You may have heard a neighbor claim that the roots of the tree in front of their house broke through their lateral pipe, causing the pipe to eventually block up so that problem-free flushing became a fond memory.

Tree roots can find their way into a sewer lateral, but normally that occurs only after the lateral has begun to deteriorate as a result of age, settlement or other factors. Most of a tree's root system is concentrated in the **top 12 – 24 inches of soil** directly beneath the concrete sidewalk. A home's sewer lateral, beneath the sidewalk slab, is an average of **six to seven feet below ground**, providing a buffer of soil and fill between the lateral and the tree.



The **brown pipe** connecting the house to the sewer in the street is the house sewer lateral. The **blue pipe** connecting the house to the street is the house water service. Note that the sewer lateral is approximately six feet below the sidewalk and that the roots of the tree are approximately two feet below the sidewalk.

When roots are adventurous enough to find their way to the lateral, it is usually a result of a crack or open joint in the pipe that allows water to escape into the surrounding soil, attracting stray tree roots.

Following are a few additional facts to set your mind at ease when contemplating your own sidewalk tree:

- **House laterals** in Philadelphia are made from **cast iron.** Pipes of this material usually last 60 – 70 years. This is based upon average Philadelphia weather (its freeze and thaw cycles), urban loads in streets (cars and trucks), the nature of sidewalk/street fill and electrical currents in the ground. Older homes, built prior to World War II, may have had terra cotta lateral pipes, which are more prone to cracking and breaking.
- **Sidewalk trees** in the City are approved by the Fairmount Park Commission to ensure that only trees that are suitable to urban environments (trees that can withstand urban challenges such as pollution and sidewalks & streets that are filled with infrastructure) are planted along city streets.
- Plumbers have the ability to **check the condition of house laterals** without digging up the pipe if they need to look for blockages caused by roots or other materials. In addition, commercially available products exist that can be poured into your toilet and flushed into your pipe, destroying any roots that may have found their way into the pipe via a crack.

Trees are Good for your House and the Environment

- A 2005 Study by the University of Pennsylvania found that trees translated into **higher property values.** The study found, for example, that planting a tree within 50 feet of a house increased its sale price by nine percent.
- Trees provide a **cooling shade** to a home in the hot summer months, decreasing the amount of energy required to cool a home and the related electric bills. Tree lined blocks can actually decrease local temperatures.
- Trees naturally **clean the air** of pollutants and create a neighborhood **noise buffer.**
- Trees improve **stormwater management,** reducing the amount of polluted stormwater runoff that normally would go directly into storm drains. The **leaves** of trees capture rain drops before they hit the ground, evaporating some of this rain water and sending it back into the air. **Tree roots** allow rainwater to filter back into the soil, recharging the often thirsty earth.

Your House Lateral and You

Property owners are responsible for the care and maintenance of their house lateral, from the point it leaves the property to its connection into the city sewer in the street. PWD has a Homeowner's Emergency Loan Program (HELP) in place to assist residents with the cost of repairing a broken sewer lateral (the average replacement cost is $3,000). If you receive a notice from PWD about a broken lateral or water service, call the number on the notice – 215-685-xxxx. For water or sewer emergencies, or for general information, call PWD's hotline at 215-685-6300.

Green Cities, Clean Waters
MODEL NEIGHBORHOODS

for **STAFF ONLY**

Street Trees in Philadelphia

Background Information

What are some of the benefits of street trees?
Street trees provide shade from the hot rays of the sun. The temperature is always several degrees cooler under the shade of a tree! Trees muffle noise from traffic and construction, help filter dust and pollution particles from the air (the air is actually cleaner and healthier beneath and around trees!), help reduce flooding from storm water runoff, and provide habitat for wildlife. Trees give beauty and charm to neighborhoods, can increase property values by 10-15%, and can encourage local businesses.

Who owns the street trees?
The City of Philadelphia

What is a street tree?
A street tree is a tree located between the sidewalk an d the curb. A tree growing in your yard is not a street tree even though its branches might be hanging over into the sidewalk or street. The Park will go out to the site to determine if it's a street tree or not.

Who is responsible for street trees?
Fairmount Park manages all street trees (as well as park trees) in the City of Philadelphia and is responsible for planting, pruning and removing street trees. Most of this work is done by arborists overseen by the Park. The Park has a separate contract for each of these three services: one for planting, a second for pruning, and a third for removal.

Who do I call to get a street tree planted?
Call Fairmount Park's *Street Tree Management Division* at **215 685-4363** or send an email to fpc.streettree.info@phila.gov .

How long does it take to get a street tree planted?
The wait to get your street tree planted can be one year, depending on resources. The Park plants street trees in spring and fall. Spring planting begins mid-March; fall planting begins at the end of October. The planting schedule depends on weather conditions and when the vendor can get trees. (Fairmount Park just received their 2006 **and** 2007 street tree budget in one lump and will be planting these trees in fall 2007 and spring 2008.)

Who chooses the street tree?
The resident can request a particular species, but the Park arborist who visits the site makes the final determination. There are many factors that go into choosing a street tree: the Park chooses a variety of species so that they don't create a monoculture and looks at the surroundings--are there overhead wires, telephone poles, driveways?--all of which determine what the species will be and whether the species should be large, medium, small or columnar. Check out the City of Philadelphia's recommended street tree list at www.fairmountpark.org/RecommendedTreeList.asp

Planting the street tree
A large hole, called a tree pit, is dug for the new street tree. The minimum tree pit size is 3'x3' and depends on the site conditions. After the tree is planted, the contractor mulches the tree pit area, stakes the new tree, and waters it.

What can residents do to help care for their street tree?
Residents should **water** their street trees with 15-20 gallons of water each week. One of the biggest stresses on newly planted street trees is not getting enough water. Residents can also remove weeds from the tree pit and should not plant anything (other than the tree) in the tree pit. Weeds, flowers and ground cover compete for water, nutrients and root space and can put stress on your street tree. Residents can help by being careful with car doors and bikes, which can damage the protective bark. To do anything more to your street trees, such as major pruning or removing, you must obtain a permit. Contact Fairmount Park when you observe a problem. The Pennsylvania Horticultural Society (PHS) has a program called "Tree Tenders" that provides 9 hours of training on tree biology, urban stresses, tree identification, basic pruning, root care, tree planting, and community organizing. For more information about the Tree Tenders program, call PHS at (215) 988-8844 or check out their website at www.pennsylvaniahorticulturalsociety.org.

Who do I call when there is a problem?
To report a problem with your street tree, call Fairmount Park's *Street Tree Management Division* at **215 685-4363** or send an email to **fpc.streettree.info@phila.gov** If it is after normal working hours, leave a voice mail message. The Park will send someone out within 7-10 working days to look at it. Hours are 7:00 am – 3:30 pm Monday through Friday except City holidays.

If it is an **emergency, call 911**. Examples of emergencies are a tree or branch falls and is blocking access to the sidewalk or street; a tree or branch falls on your roof. Someone from the Park will be dispatched through radio.

Will the Park remove a tree I don't like?
No. The Park does not take down trees because people don't like them. There has to be a valid problem for the Park to remove it. Having to rake up fallen leaves, seeds and other fruits is not considered a valid problem.

What if the tree is breaking up my sidewalk?
If a street tree is breaking up the sidewalk, the Park will come out to look at it. The Park will make a decision on a case-by-case basis according to the condition of the tree and what's going on around it. Often the solution is for the property owner to replace the paving.

Will the Park take care of a problem with a tree in my yard?
No. The Park is not responsible for trees growing in yards. Trees growing in the yard are the resident's responsibility.

What about trees growing in alleyways?
The City only responds to emergencies with trees in alleyways. Emergencies would include a tree or branch that falls and blocks the alleyway, falls on your roof, or damages your property. For emergencies with trees in your alleyway, call **215 683-0222**. The work on alleyway trees is paid for through the Mayor's Neighborhood Transformation Initiative (NTI) program and is performed by Fairmount Park arborists under the supervision of Gus Jardell.

What about trees growing through cracks in the sidewalk?
Trees growing through a crack are not street trees. Any tree growing through a crack should be pulled out. The resident can do this.

What are some of the stresses on street trees?
The biggest stress on new trees is not getting enough water. Cuts and gashes in the protective bark caused from car doors, lawn mowers, weed wackers, bicycles, and carving initials allow insects and disease to enter and can weaken and kill the tree. Insects and disease can also enter when branches get broken or torn off from climbing on trees. Salt used to melt ice on sidewalks and roads can try the leaves and roots (although the Park tries to choose salt-tolerant trees), dog feces (dog feces are high in acidity and nitrates which are harm ful to trees), pollution, harmful insects and disease.

Where does the money come from for street trees?
Money for street tree planting, care and removal comes from a variety of sources :

- Planting money comes from the Park's capital budget.
- Pruning and removal money comes from the Park's operating budget and the Managing Director's operating budget.
- City Council members have their own "discretionary" money and will sometimes allot some of this money for street trees. For example Janie Blackwell recently put money aside to do tree removals in her council district.

Tell me more about Fairmount Park's *Street Tree Management Division*
The Park's Street Tree Management Division is located at Boelson Cottage on West River Drive . The division has a total of 9 Park staff: this includes five tree inspectors who are in the field each day, two arborists, one word processing operator, and a manager (Fran Piller) who oversees the division. For management purposes, the Street Tree Management Division divides the city into 5 districts. East Park's district is district 1.

Contact Information
Fairmount Park
Street Tree Management Division
Hours: 7:00 am – 3:30 pm Monday through Friday except City holidays.
215 685-4363
fpc.streettree.info@phila.gov
www.fairmountpark.org/StreetTreeIntro.asp
For alleyway trees only, call 215 683-0222

Prepared by Debbie Carr
Revised 1-7-08

Street Trees
for
Model Neighborhoods

Small Trees (mature height under 30')

Trident Maple	Acer buergeranum
Amur Maple	Acer ginnala
Paperbark Maple	Acer griseum
Serviceberry	Amelanchier x grandiflora
American Hornbeam	Carpinus caroliniana
American Red Bud	Cercis Canadensis
Carolina Silverbell	Halesia carolina
Chinese Fringetree	Chionanthus retusus (tree form)
Fringetree	Chionanthus virginicus (tree form)
Flowering Dogwood	Cornus florida
Thornless Cockspur Hawthorn	Crataegus crusgalli var. inermis
Winter King Green Hawthorn	Crataegus viridis 'Winter King'
Mt. Fuji Cherry	Prunus serrulata 'Shirotae'
Autumn Flowering Cherry	Prunus subhirtilla 'Autumnalis'
Rosy Cloud Cherry	Prunus subhirtilla 'Rosy Cloud'
Dream Catcher Cherry	Prunus incisa x campanulata 'Dream Catcher'
Okame Cherry	Prunus x 'Okame'
Crapemyrtle	Lagerstroemia indica (tree form)
Japanese Tree Lilac	Syringa reticulata 'Ivory Silk'
Japanese Tree Lilac	Syringa reticulata 'Summer Snow'

Medium Trees (mature height 30' to 40')

Sargent Cherry	Prunus sargentii

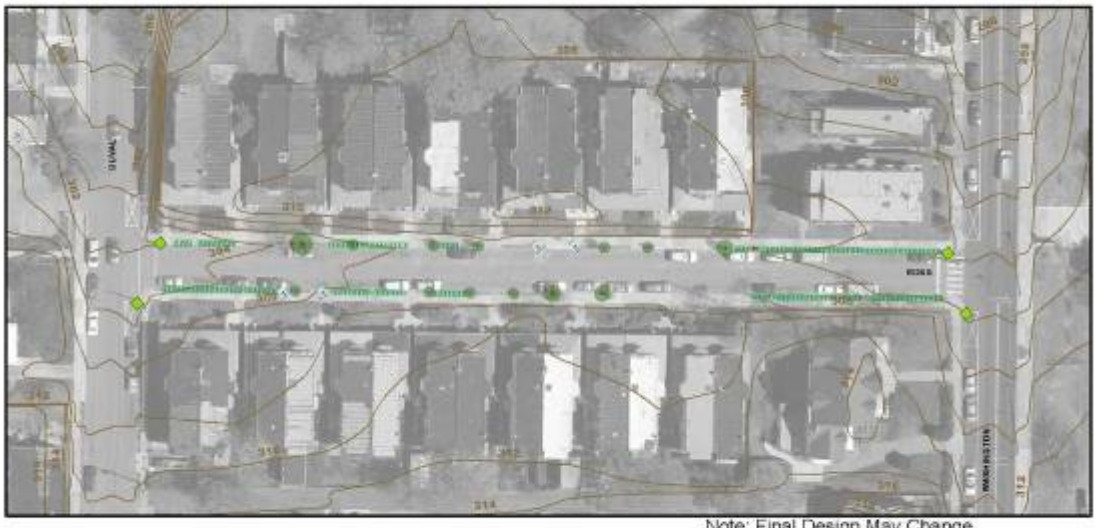
Trees for Narrow Streets

Fastigiate Red Maple	Acer rubrum 'Armstrong'
Bowhall Maple	Acer rubrum 'Bowhall'
Goldspire Maple	Acer saccharum 'Goldspire'
Columnar European Hornbeam	Carpinus betulus 'Columnaris'
Columnar Sargent Cherry	Prunus sargentii 'Spire'

Green Cities, Clean Waters
MODEL NEIGHBORHOODS

6300 Block Ross St. Preliminary Green Street Layout

July 2009



Green St. Features
- Proposed bumpout
- Proposed tree trench

Existing trees
- missing
- small
- medium
- large

Misc. Features
- fire hydrant
- bollard
- pole
- inlet

Note: Final Design May Change

0 20 40 80 120 160 Feet

1 inch = 40 feet

1 - 10 Block East Palmer St. Preliminary Green Street Layout

July 2009

Green St. Features
- Proposed bumpout
- Proposed tree trench

Existing trees
- missing
- small
- medium
- large

Misc. Features
- fire hydrant
- bollard
- pole
- inlet

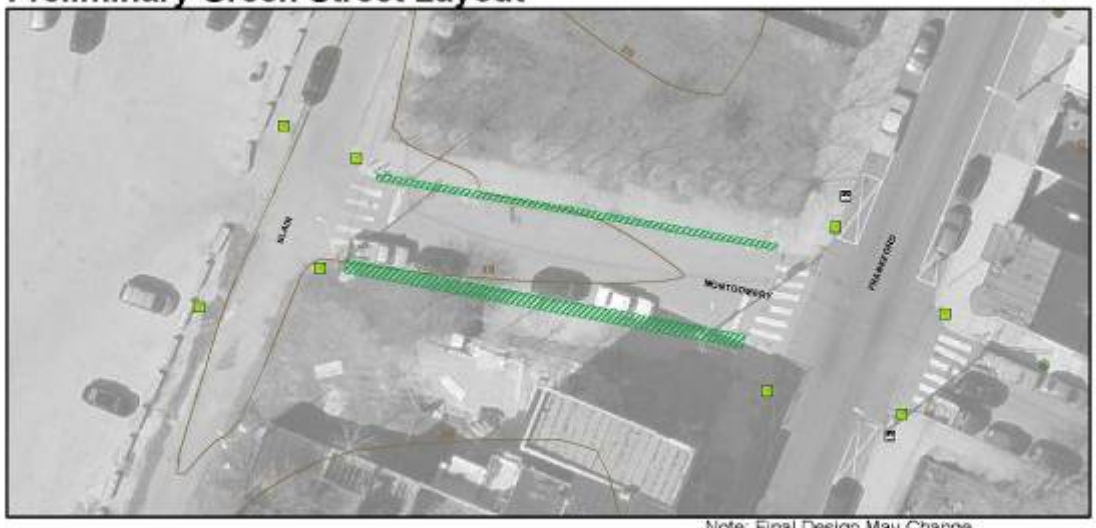
Note: Final Design May Change

0 10 20 40 60 80 Feet

1 inch = 20 feet

1 - 10 Block East Montgomery Ave.
Preliminary Green Street Layout

July 2009



Green St. Features
- Proposed bumpout
- Proposed tree trench

Existing trees
- missing
- small
- medium
- large

Misc. Features
- fire hydrant
- bollard
- pole
- inlet

Note: Final Design May Change

0 10 20 40 60 80 Feet
1 inch = 20 feet

N

1800 Block Blair St.
Preliminary Green Street Layout

July 2009

Green St. Features
- Proposed bumpout
- Proposed tree trench

Existing trees
- missing
- small
- medium
- large

Misc. Features
- fire hydrant
- bollard
- pole
- inlet

Note: Final Design May Change

0 10 20 40 60 80 Feet
1 inch = 20 feet

1675 - 1700 Block East Berks St.
Preliminary Green Street Layout

July 2009

Green St. Features
- Proposed bumpout
- Proposed tree trench

Existing trees
- missing
- small
- medium
- large

Misc. Features
- fire hydrant
- bollard
- pole
- inlet

Note: Final Design May Change

0 10 20 40 60 80 Feet

1 inch = 20 feet

N

2100 Block South 16th St. Preliminary Green Street Layout

July 2009

Green St. Features
- Proposed bumpout
- Proposed tree trench

Existing trees
- missing
- small
- medium
- large

Misc. Features
- fire hydrant
- bollard
- pole
- inlet

Note: Final Design May Change

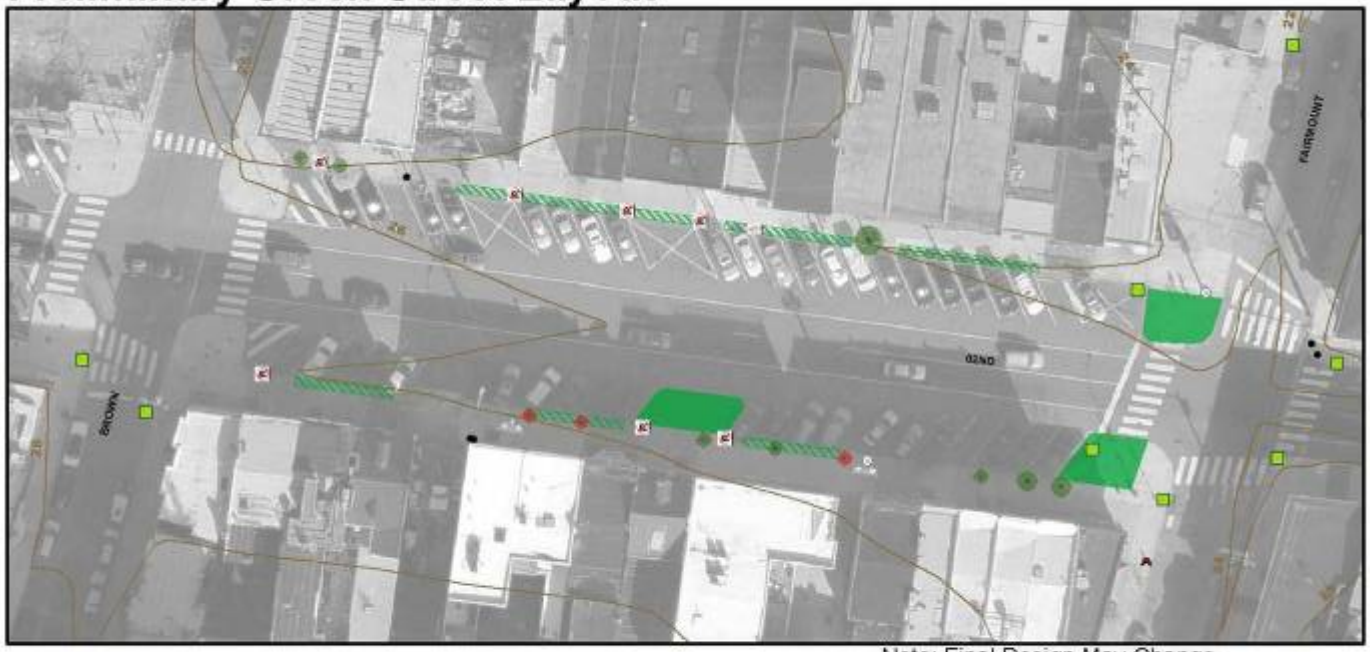
0 15 30 60 90 120 Feet

1 inch = 30 feet

N

700 Block North 2nd St.
Preliminary Green Street Layout

July 2009



Note: Final Design May Change

Green St. Features
- Proposed bumpout
- Proposed tree trench

Existing trees
- missing
- small
- medium
- large

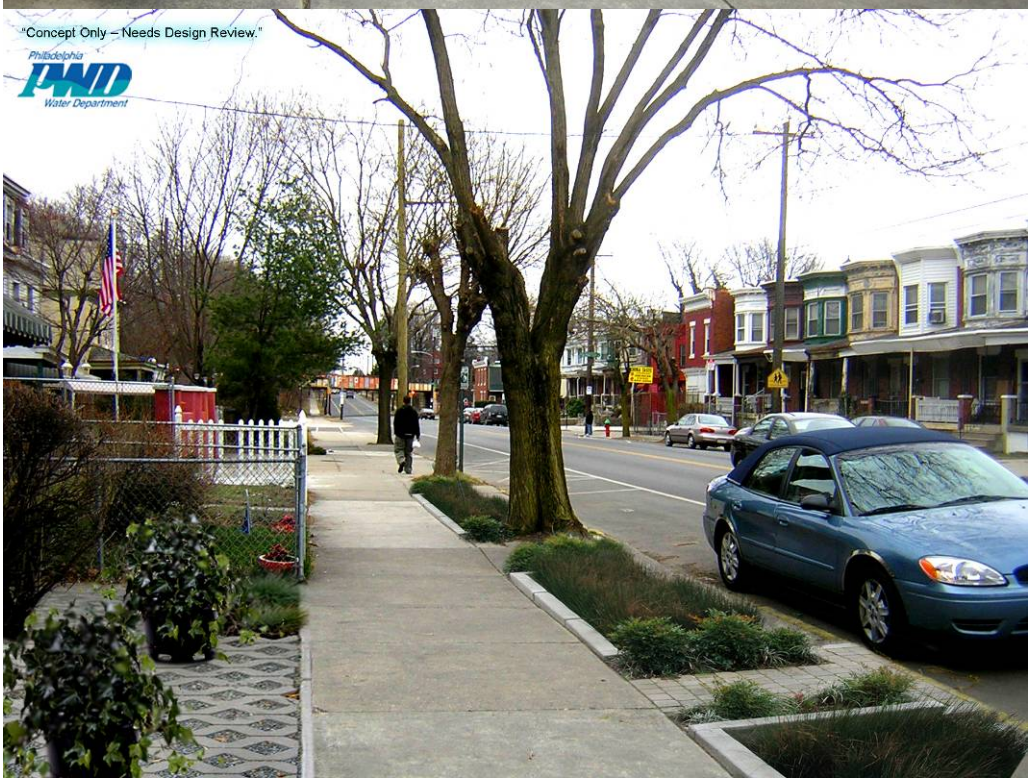
Misc. Features
- fire hydrant
- bollard
- pole
- inlet

0 15 30 60 90 120 Feet

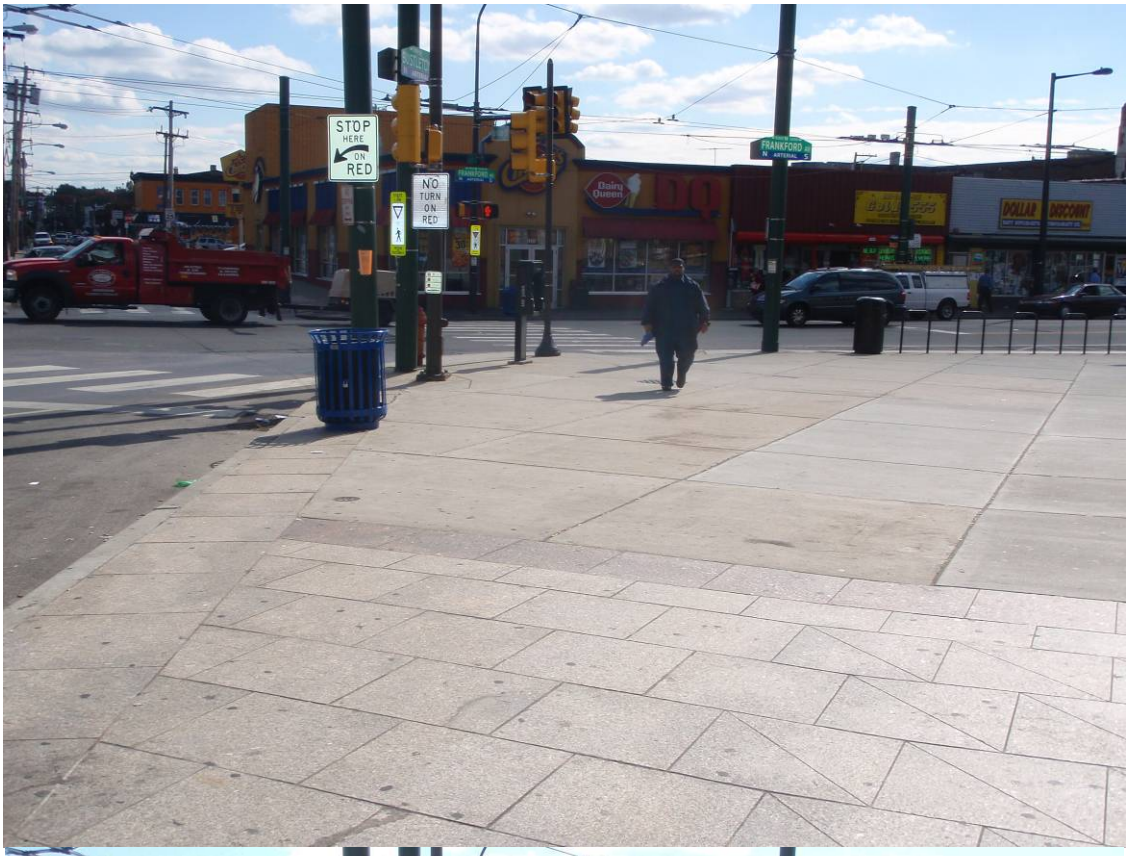
1 inch = 30 feet

N

Photo Simulation
Before and After pictures


"Concept Only – Needs Design Review."
Philadelphia
PWD
Water Department


Philadelphia
PWD
Water Department
Concept Only - Needs Design Review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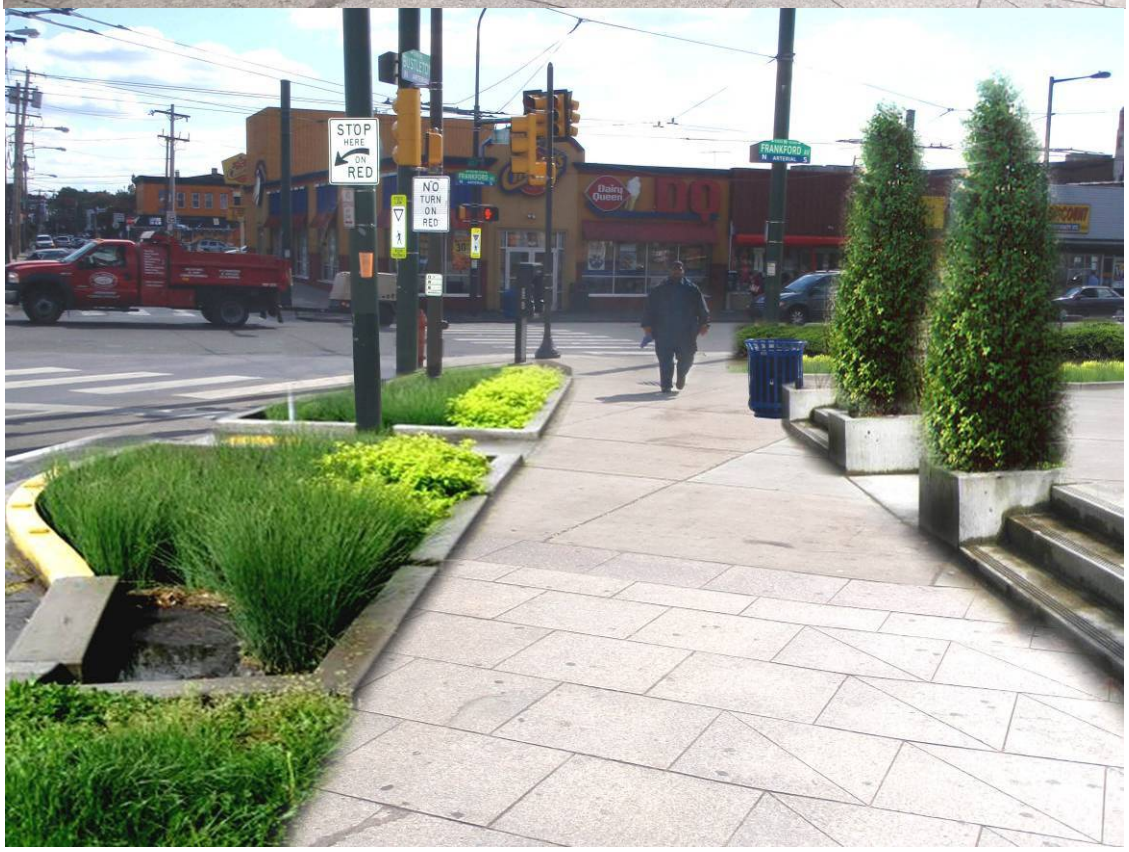
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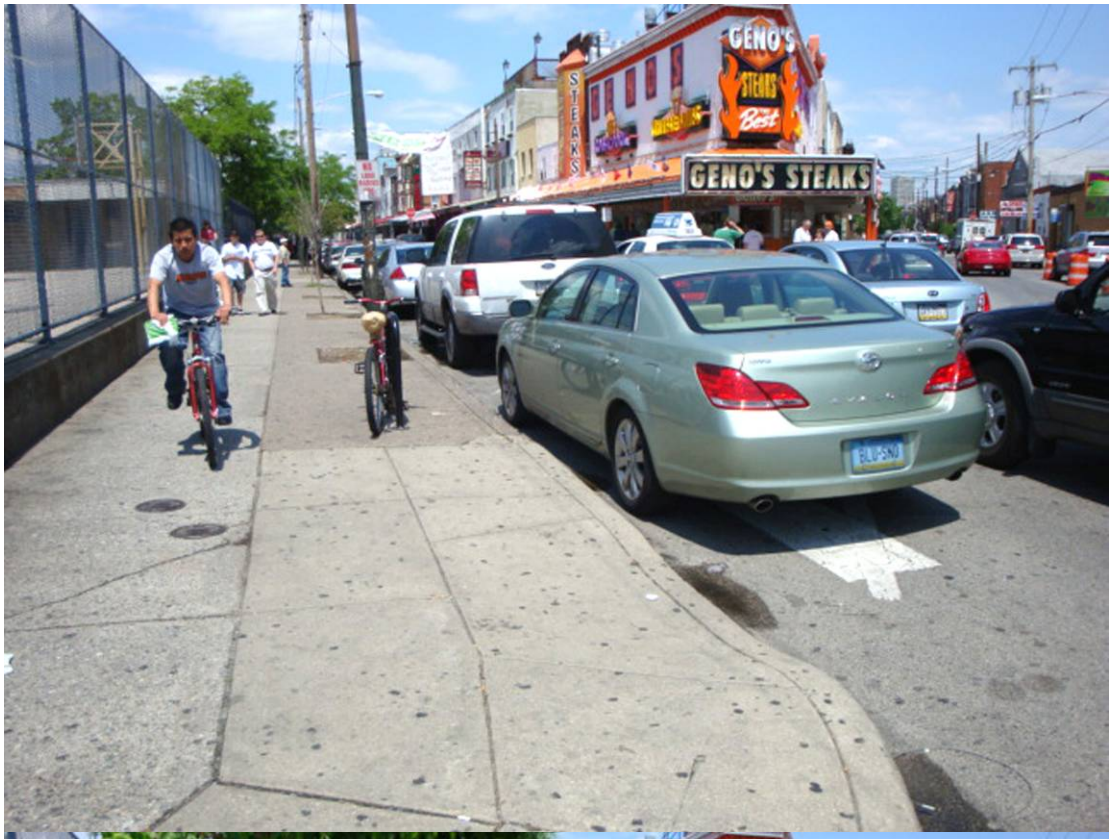
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Green Neighborhoods through Green Streets Survey

Green Neighborhoods through Green Streets

The Philadelphia Water Department (PWD) would like to green our neighborhoods to better manage stormwater (rain or melting snow) runoff before it enters storm drains. This would consequently improve our quality of life. The City would like to help by planting trees, and by using other green techniques.

We appreciate your feedback on green streets. This survey will only take about 7 minutes. Time permitting please complete the entire survey of 12 questions.

1) After viewing each set of images below, are you in favor of greening in your neighborhood?

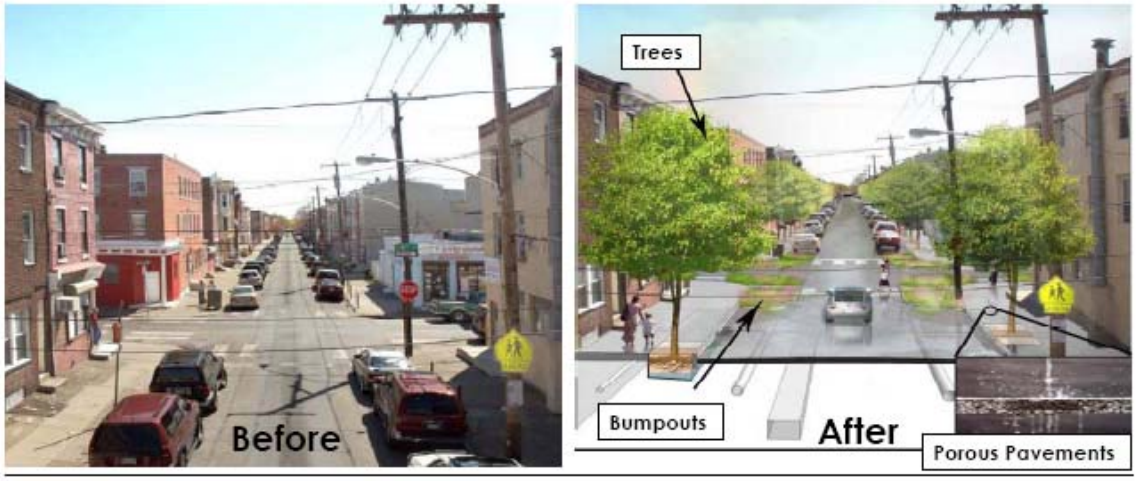
☐ Yes

☐ No

a) What do you like about the images?

b) What don't you like about the images?

2) In your own words, please describe a "Green Street."



2) In your own words, please describe a "Green Street."

3) Using trees and plants as examples of green street features, what actions would you be willing to take to green your neighborhood? Please check all that apply.

- ☐ Ask for more trees/plants for your street
- ☐ Plant a tree/garden
- ☐ Maintain a tree/garden (pruning, removing litter, etc.)
- ☐ Advocate for more trees/plants
- ☐ Participate in a public meeting
- ☐ Educate your neighbors about trees/gardens
- ☐ Provide feedback
- ☐ Other (please specify)

4) Of the following issues, which THREE are most important to you?

- ☐ Safety – e.g. Traffic calming
- ☐ Health – e.g. Less asthma
- ☐ Environment – e.g. Cleaner water
- ☐ Streets – e.g. In safe condition
- ☐ Parks and playgrounds – e.g. In good condition
- ☐ Less or no trash and litter
- ☐ Less or no vandalism
- ☐ Leaving the world a better place for our children (the next generation)

5) If the nearby riverfront was cleaner, safer and more accessible, which recreational activities would you participate in? (Choose all that apply.)

- ☐ Walking/Hiking/Jogging
- ☐ Boating/Canoeing/Kayaking
- ☐ Resting/Viewing/Hanging Out
- ☐ Biking
- ☐ Birding
- ☐ Fishing
- ☐ Picnics
- ☐ Photography
- ☐ Other (please specify)

---

6) A: Where does the water in your neighborhood go when it rains?

- ☐ Nearest water treatment plant
- ☐ Nearest creeks and/or rivers
- ☐ I don't know

B: What do you call this water?

- ☐ Rainwater
- ☐ Runoff
- ☐ Stormwater
- ☐ Other (please name)_____

---

8) A: Are you familiar with the term watershed?

- ☐ Yes
- ☐ No

B: What watershed do you live in?
(include an "I don't know" option aside from all the watersheds)

---

9) Do you have any additional comments?

10) Gender

- ☐ Male
- ☐ Female

11) Age

- ☐ Under 18
- ☐ 18-25
- ☐ 26-34
- ☐ 35-45
- ☐ 46-54
- ☐ 55-64
- ☐ Over 64

12) Race/Ethnic Background

- ☐ White or Caucasian
- ☐ Black or African-American
- ☐ Latino/Hispanic
- ☐ Alaska Native or Native American
- ☐ Asian/Pacific American
- ☐ Prefer not to answer
- ☐ Other (please specify)

13) What is your zip code?

14) What is your block address (ex. 1100 Market St.)?

Thank you for taking this survey! If you would like to learn more about Philadelphia's waterways and watersheds, visit www.phillyriverinfo.org.

Start showing your support for green streets today! Forward the link to this survey to your friends and colleagues in Philadelphia.

Green Neighborhoods through Green Streets

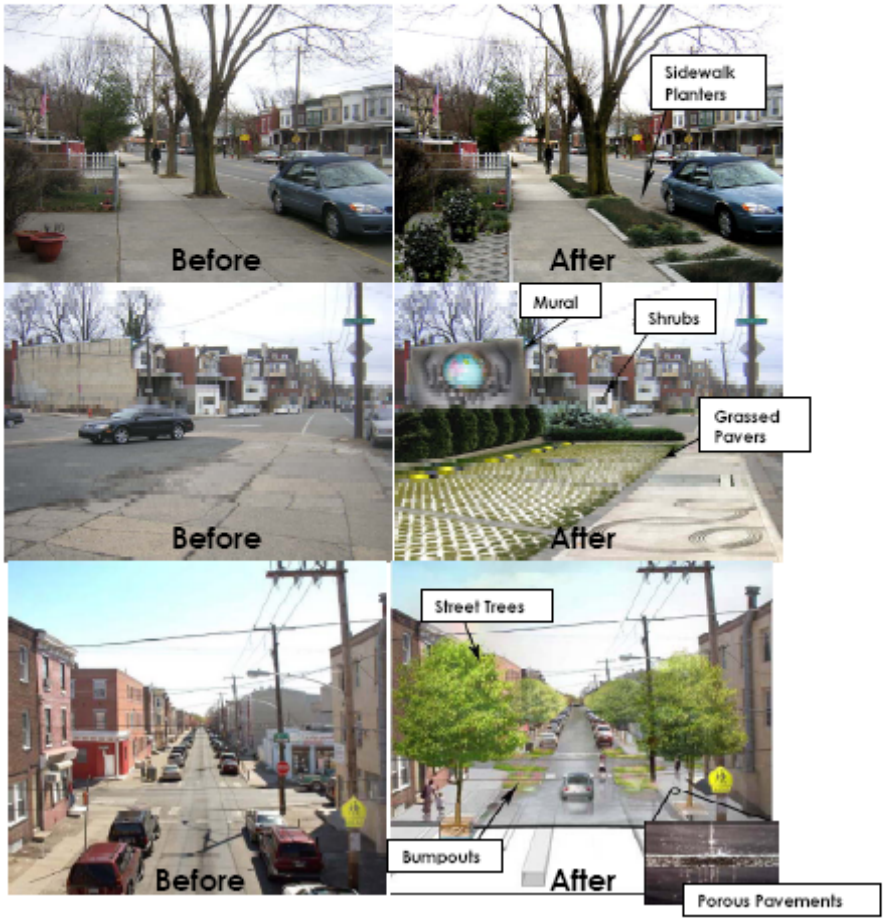
The Philadelphia Water Department (PWD) would like to green our neighborhoods to better manage stormwater (rain or melting snow) runoff before it enters storm drains. This would consequently improve our quality of life. The City would like to help by planting trees, and by using other green techniques.

We appreciate your feedback on green streets. This survey will only take less than 5 minutes.

1. After viewing each set of images below, are you in favor of greening in your neighborhood?
   - □ Yes
   - □ No

a) What do you like about the images?

b) What don't you like about the images?



Turn Over →

2. Using trees and plants as examples of green street features, what actions would you be willing to take to green your neighborhood? Please circle or check all that apply.

- □ Ask for more trees/plants for your street
- □ Plant a tree/garden
- □ Maintain a tree/garden (pruning, removing litter, etc.)
- □ Advocate for more trees/plants
- □ Participate in a public meeting
- □ Educate your neighbors about trees/gardens
- □ Provide Feedback to the Philadelphia Water Dept.

3. In your own words, please describe a "Green Street."

4. Do you have any additional comments?

5. Your Zip Code:

_____

6. What is your block address (ex.1100 Market Street)?

_____

Thank you for taking this survey. If you wish to learn more about green streets, please provide your contact information (name, email, phone and/or address) in the space below so that we can update you on meetings and activities. You can also check us out online at www.phillyriverinfo.org

Total number of responses: 438(online) + 297(hardcopy) = **735**

What do you like about the images?		
Responses	**Total**	**%**
1) I love greening	150	22.3
2) Beautiful, Attractive, etc...	100	14.9
3) I want more Trees	91	13.5
4) Safer, Friendlier, Welcoming Atmosphere	91	13.5
5) Plants and Vegetation	75	11.1
6) Environment friendly	58	8.6
7) Health and Cleanliness	54	8.0

Description:

1) They are in favor of greening.
2) Greening makes the block look aesthetically pleasing.
3) They want more trees.
4) Greening makes them feel safe in their block and creates a sense of pride in their neighborhood.
5) They want more gardens, planters, flowers and grass.
6) Greening improves air quality and takes care of runoffs.
7) Greening provides shade, cools the warm air and makes the block cleaner.

Overall: 92% responded positively (698/735)

What do you dislike (potential concerns)?		
Responses	**Total**	**%**
1) Nothing	226	34.7
2) Maintenance problems	148	22.7
3) Trash and Leaves	63	9.7
4) Root Damages	47	6.5
5) Before pictures	42	5.5
6) Financial costs/ taxes	29	4.1
7) Narrow Sidewalk	24	3.1

1) They like everything about greening
2) Who will prune, water and cut the trees and plants?
3) Trash and pet waste will accumulate near trees and bumpouts. Foliage is also a problem.
4) Tree roots damages sidewalk, pipes and home foundations.
5) They dislike the "before pictures."
6) Where is the money for the project and upkeep coming from? Are taxes going to rise?
7) Trees and plants might get vandalized.

Overall: 60% have potential concerns regarding greening

Describe a green street		
Responses	**Total**	**%**
1) A street with substantial plant life	167	25.7
2) Clean, safe and friendly neighborhood	99	15.3
3) All about greening	76	11.7
4) Deals with runoff issues	64	9.9
5) None	56	8.6
6) a street that is properly maintained	47	7.2
7) environment-friendly street	46	7.1

1) Explained a green street as having trees, plants, vegetation, garden, etc...
2) Aside from having some or none of number 1, they mentioned the positive effect it has on the morale, health and cleanliness of the neighborhood.
3) They mentioned a little bit of everything. I just decided to group them all together.
4) Aside from having some or none of number 1, they specifically mentioned that it helps deal with flooding, runoff, etc...
5) No comment
6) Aside from having some or none of number 1, they mentioned that it needs to be maintained either by the neighbors or by the city.
7) Aside from having some or none of number 1, Green helps the environment (more oxygen, cooler, etc...)

2) What are you willing to do?		
	total	%
Ask for more trees/plants for your street	575	79.42
Plant a tree/garden	533	73.62
Maintain a tree/garden	516	71.27
Advocate for more trees/plants	432	59.67
Participate in a public meeting	428	59.12
Educate your neighbors	400	55.25
Provide Feedback	429	59.25
None	24	3.31

Rec Activities		
	total	%
Walking/ hiking/ jogging	407	93.14
Resting/ Viewing/ Hanging out	356	81.46
Picnics	332	75.97
Biking Boating/ Canoeing/ Kayaking	242	55.38
Photography	180	41.19
Fishing	82	18.76
other	61	13.96

Important Issues		
	total	%
Environment	316	72.31
Trash	254	58.12
Parks	164	37.53
Children	157	35.93
Health	153	35.01
Safety	129	29.52
Streets	98	22.43
Vandalism	85	19.45
Biking	3	0.69
Walking/hiking/jogging	2	0.46

Where does the water go when it rains?		
	total	%
Nearest creeks and/or rivers	198	45.31
I do not know	170	38.90
Nearest water treatment plant	69	15.79

What do you call this water?		
	total	%
Runoff	223	50.45
Stormwater	135	30.54
Rainwater	69	15.61
Other	15	3.39

Are you familiar with the term watershed?		
	total	%
Y	269	85.13
N	47	14.87

Which watershed do you live in?		
	total	%
Delaware	120	27.46
I don't know	104	23.80
Schuylkill	103	23.57
Wissahickon	44	10.07
Tacony/Frankford	27	6.18
Pennypack	24	5.49
Darby/Cobbs	15	3.43
Poquessing	9	2.06

Gender		
	total	%
Female	272	62.24
Male	165	37.76

Age		
	total	%
26-34	142	33.26
35-45	128	29.98
55-64	53	12.41
18-25	35	8.20
46-54	40	9.37
over 64	24	5.62
under 18	5	1.17

Race/Ethnic Background		
	total	%
White/Caucasian	366	83.75
Black or African American	21	4.81
Other	11	2.52
Prefer not to answer	15	3.43
Asian/Pacific American	16	3.66
Latino/Hispanic	8	1.83

zipcode	total	%
19147	81	11.60
19130	53	7.59
19123	49	7.02
19125	40	5.73
19146	36	5.16
19104	27	3.87
19132	27	3.87
19143	26	3.72
19119	25	3.58
19148	25	3.58
19144	20	2.87
19107	19	2.72
19129	18	2.58
19128	16	2.29
19138	15	2.15
19139	15	2.15
19145	14	2.01
19103	12	1.72
19111	12	1.72
19121	11	1.58
19122	11	1.58
19120	10	1.43
19140	10	1.43
19141	10	1.43
19131	7	1.00
19134	7	1.00
19151	7	1.00
19106	6	0.86
19115	6	0.86
19133	6	0.86
19136	6	0.86
19114	4	0.57
19137	4	0.57
19149	4	0.57
19152	4	0.57
19154	4	0.57
19010	3	0.43
19050	3	0.43
19083	3	0.43
19102	3	0.43
19118	3	0.43
19124	3	0.43
19126	3	0.43
19127	3	0.43
19135	3	0.43
19142	3	0.43
19116	2	0.29
19150	2	0.29
19153	2	0.29
19460	2	0.29
19466	2	0.29
19002	1	0.14
19020	1	0.14
19023	1	0.14
19026	1	0.14
19038	1	0.14
19044	1	0.14
19046	1	0.14
19082	1	0.14
19157	1	0.14
19422	1	0.14
19426	1	0.14

Facebook

Facebook | Model Neighborhoods - Windows Internet Explorer

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Model Neighborhoods

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Basic Info

Name: Model Neighborhoods

Category: Common Interest - Health & Wellness

Description: Philadelphia Water Department (PWD) is working on a new and exciting green initiative with its partners, Fairmount Park, PennFuture, Pennsylvania Horticultural Society and local civic organizations.

Model Neighborhoods is an initiative to transform the neighborhoods of Philadelphia into model green communities that manage stormwater in innovative ways. These neighborhoods will showcase green infrastructure elements, such as street trees, sidewalk planters, and bump outs/curb extensions (see middle panel for definitions). These projects help clean stormwater runoff, help slow it down and help it soak back into the ground, reducing the amount of stormwater that would otherwise travel through underground pipes to our streams and rivers.

Beyond stormwater benefits, green infrastructure projects generate other benefits too – beautifying neighborhoods, improving air quality, reducing the City's temperature (urban heat island effect), and creating safer communities, among other benefits.

Contact Info

Email: streetgreening@gmail.com

Website: http://phillyriverinfo.org
http://phillywatersheds.org

Group Type

This is an open group. Anyone can join and invite others to join.

Admins

- GreenCities CleanWaters (creator)

Related Groups

Recent News

For more information check out the links:
http://www.phillyriverinfo.org
http://www.phillywatersheds.org
http://www.phillywatersheds.org/public/gssurvey.php

Also, join the facebook group:
Green Neighborhoods through Green Streets

Members

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Tim McDonald


Chris Hartman


Charles Szell


Courtney Kossik


Scott Page

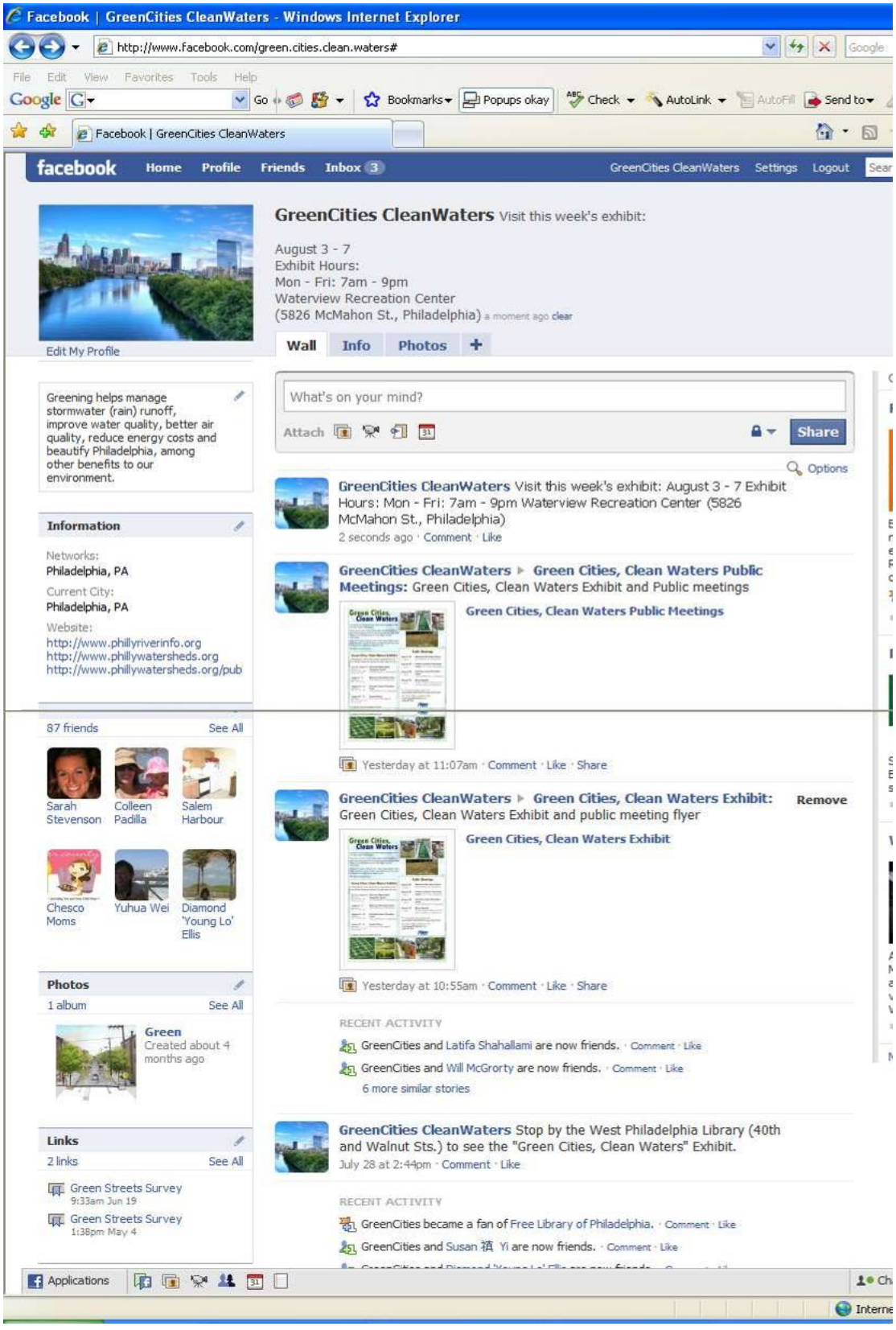

Chrissie Tscherne Raysor


Marwan Kreidie


Lauren Townsend

Applications

Done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GreenCities CleanWaters Visit this week's exhibit:
August 3 - 7
Exhibit Hours:
Mon - Fri: 7am - 9pm
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Greening helps manage stormwater (rain) runoff, improve water quality, better air quality, reduce energy costs and beautify Philadelphia, among other benefits to our environment.
Information
Networks:
Philadelphia, PA
Current City:
Philadelphia, PA
Website:
http://www.phillyriverinfo.org
http://www.phillywatersheds.org
http://www.phillywatersheds.org/pub
87 friends
See All
Sarah Stevenson
Colleen Padilla
Salem Harbour
Chesco Moms
Yuhua Wei
Diamond 'Young Lo' Ellis
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Green Streets Survey
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GreenCities and Will McGrorty are now friends. · Comment · Like
6 more similar stories
GreenCities CleanWaters Stop by the West Philadelphia Library (40th and Walnut Sts.) to see the "Green Cities, Clean Waters" Exhibit.
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GreenCities and Susan 禎 Yi are now friends. · Comment · Like
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Basic Info

Name: Green Neighborhoods through Green Streets
Category: Common Interest - Health & Wellness
Description: The Philadelphia Water Department (PWD) would like to green our neighborhoods to better manage stormwater (rain or melting snow) runoff before it enters storm drains.

Green structures and practices have a lot of advantages. Aside from beautifying Philadelphia, these practices and structures also improve water quality and better air quality.

To better understand the benefits of greening to your community and our goals, we would like to explain why the Philadelphia Water Department (PWD) is proposing this effort.

In much of Philadelphia, as in many other large cities throughout the world, a single-pipe, "combined sewer system" is used to collect and treat both rain runoff, or "stormwater," and residential and commercial sanitary waste. However, during intense rain events, there is not enough capacity in our pipes and treatment plants to handle the volume of stormwater runoff, causing Combined Sewer Overflows (CSOs) into Philadelphia's creeks and rivers. The City will need to spend billions of dollars over the next decades to reduce these overflows.

To reduce Combined Sewer Overflows, PWD proposes to use a combination of "grey infrastructure," including building underground storage pipes and tunnels and expanding our treatment plants, and "green infrastructure." Examples of green infrastructure include curbside tree planters, rain gardens, rain barrels and green roofs. These "green" practices all use natural methods to allow stormwater runoff to soak in the ground to prevent it from reaching our sewers or slow down the runoff enough to help prevent overflows.

The PWD would like to emphasize the use of green infrastructure based on the additional social, economic and health benefits it can provide to Philadelphia neighborhoods.

In order to do that, we need your help. We believe that a truly effective greening effort would involve the cumulative participation of all of Philadelphia's neighborhoods. Our first step is to work with you to help us gauge the interest in greening through conducting a survey.

Contact Info

Email: Streetgreening@gmail.com
Website: http://www.phillywatersheds.org/public/g...

Office: PWD
Location: Philadelphia, PA

Group Type

This is an open group. Anyone can join and invite others to join.

Admins

- GreenCities CleanWaters (creator)

Recent News

If you live in Philadelphia, we want to hear from you! Please give us your feedback on green streets by taking this short survey.

Tell us what you think!

http://www.phillywatersheds.org/public/gssurvey.php

Members

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Lara Kelly


Jenna Lucas


Shannon Henry Ott


Kali MacDonald

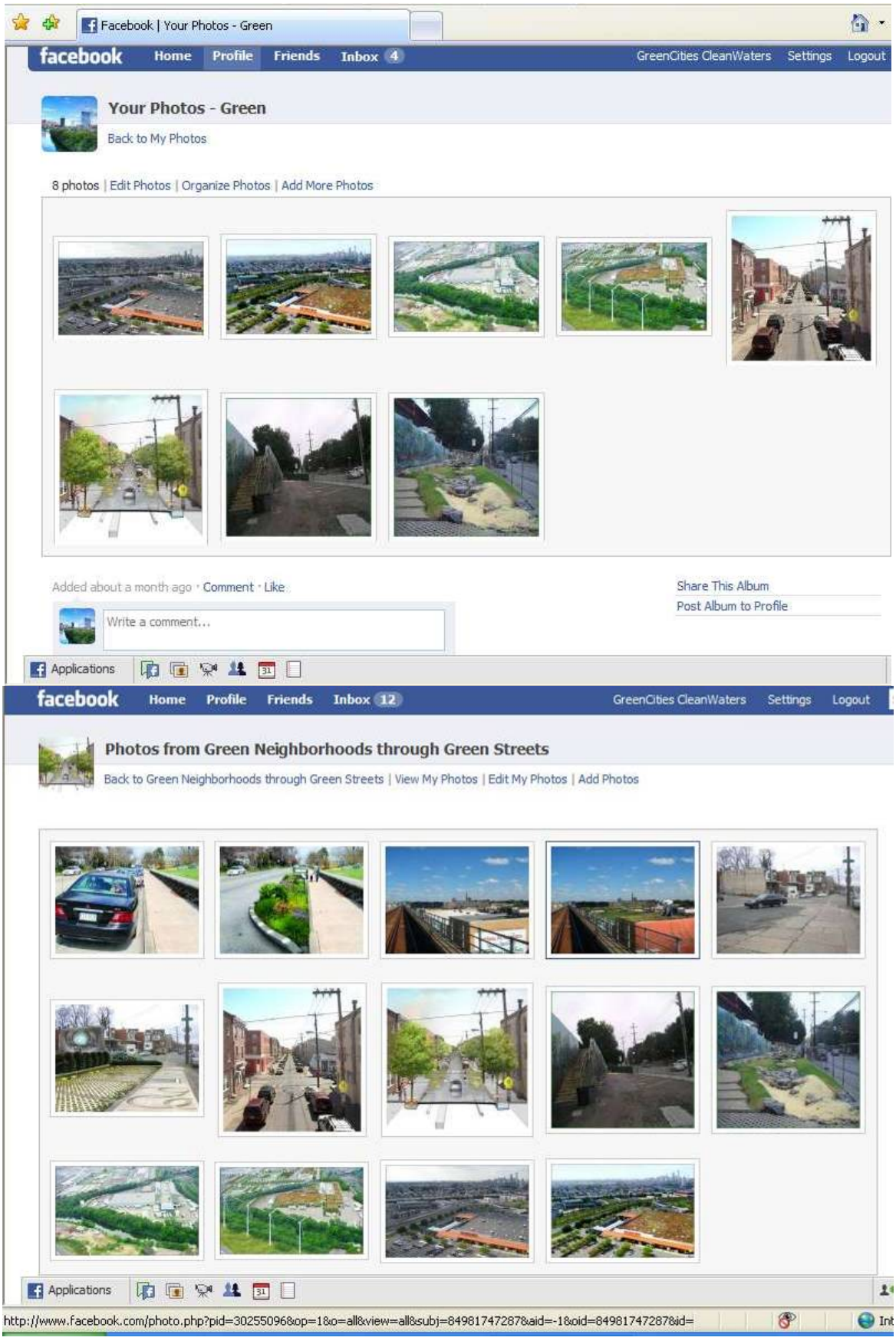

Kyle Anderson


Stefania Chiorean


Ralph Hernandez


Montco Moms

Applications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Logout
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Added about a month ago · Comment · Like
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Information Fair Materials

THE CSO LONG TERM CONTROL PLAN

GREEN CITIES
CLEAN WATERS

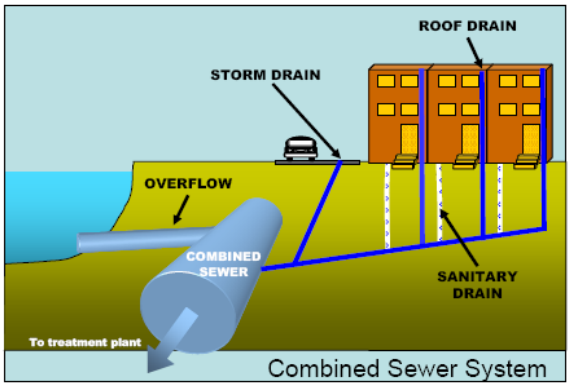
History and Background

The City of Philadelphia

INTRODUCTION

Philadelphia is fortunate to have an abundance of creeks, open space, parkland and beautiful rivers. The Schuylkill and Delaware Rivers are not only scenic; they are the drinking water source for Philadelphia residents. These waterways, however, suffer from pollution from various sources, both within and outside the City limits. One such pollution source: Combined Sewer Overflows (CSOs).*

What are Combined Sewers Overflows?



A combined sewer system is a wastewater collection system owned by a municipality which transports wastewater* from homes, businesses and industry, stormwater* from the approximately 75,000 storm drains on our streets and property roof leaders through a single-pipe system to a Water Pollution Control Plant (WPCP).

During dry weather conditions (when it is not raining) and during very small storm events, combined sewers* can adequately transport this mixture of sanitary

to a nearby stream or river so as to prevent the flooding of homes and streets. This is what is known as a Combined Sewer Overflow (CSO).

Real-Time Control - Tacony Creek Park Storage

Infrastructure Project

Tacony-Frankford Watershed

Contact: Marc Cammarata
215.685.4948
marc.cammarata@phila.gov

Status: Concept Design

Partners:

Philadelphia Water Department

Real-Time Control - Tacony Creek Park Storage...

CSO outfall T14, a very large sewer (21' by 24'), discharges into the Tacony Creek during periods of moderate to heavier rainfall. T14 has a volume of approximately 10 million gallons and to use as much of this storage as possible, a control structure is needed in the sewer. Installation of a crest gate is proposed in order to retain flow within the sewer. This gate will reduce CSO discharges to the creek by utilizing the relief sewer for in-system storage. This control technology provides an additional margin of protection against dry weather overflows while still maintaining flood protection for upstream communities. The crest gate retains the stored flow in the relief sewer and a new connector pipe drains the stored flow to an existing nearby interceptor.

Benefits:

•The Tacony Creek will realize a consistent average annual reduction of

Waterways Restoration Team

Restoration Project

Multiple Watersheds

Contact: Joanne Dahme
215.685.4944
joanne.dahme@phila.gov

Status: Monitoring

Partners:

Fairmount Park Commission (FPC)

Philadelphia Water Department

Waterways Restoration Team...

The Philadelphia Water Department has instituted a Waterways Restoration Team (WRT), a crew dedicated to removing large trash, cars, shopping carts, and other dumped debris from the 100 miles of stream systems that define our City's neighborhoods. This crew is also restoring eroded streambanks and streambeds around outfall pipes and in tributaries as a part of PWD's goal to restore our streams while meeting Clean Water Act permit requirements. The Waterways Restoration Team is working in partnership with the Fairmount Park Commission staff and the various Friends of the Parks groups to maximize resources and the positive impacts to our communities.

Benefits:

Real-Time Control - Main Relief Sewer Storage

Infrastructure Project

Schuylkill Watershed

Contact: Marc Cammarata
215.685.4948
marc.cammarata@phila.gov

Status: Monitoring

Partners:

Philadelphia Water Department

Real-Time Control - Main Relief Sewer Storage...

The Main Relief Sewer, a set of five sewers which provide flood relief to combined sewer areas in all of PWD's drainage districts, discharges to the Schuylkill River at Fairmount Park. Prior to this project, CSO was released into the river at the Main Relief Sewer outfalls. An inflatable dam was installed in the Main Relief sewer (13.5' by 13.5') with a potential storage volume of 6.2 million. This dam will reduce CSO discharges to the creek by utilizing the sewer for in-system storage. The inflatable dam retains the stored flow in the sewer and a new connecting sewer drains the stored flow to a nearby interceptor. The dam became fully operational in Fall 2006.

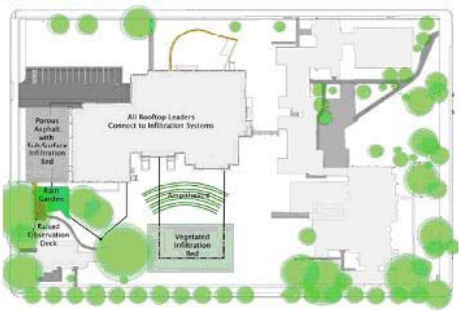
Benefits:

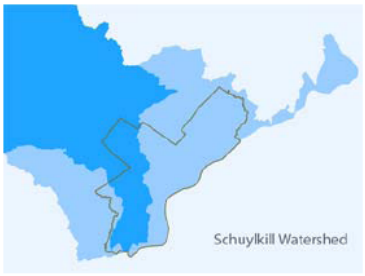
•The installation of the inflatable dam results in significant reductions in CSO

Penn Alexander School

Stormwater BMP Project

Multiple Watersheds





Contact: Amy Leib
215.685.6035
amy.leib@phila.gov

Status: Monitoring

Partners:

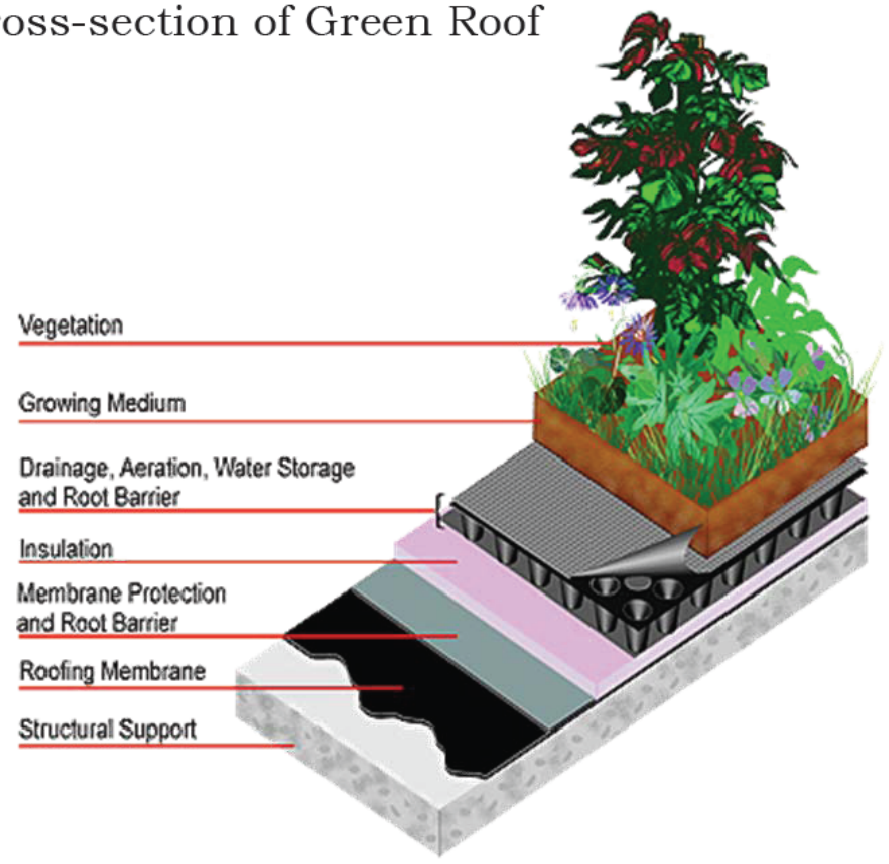
Pennsylvania Department of Environmental Protection (PADEP)
University of Pennsylvania (UPENN)
Philadelphia School District (PSD)

Penn Alexander School...

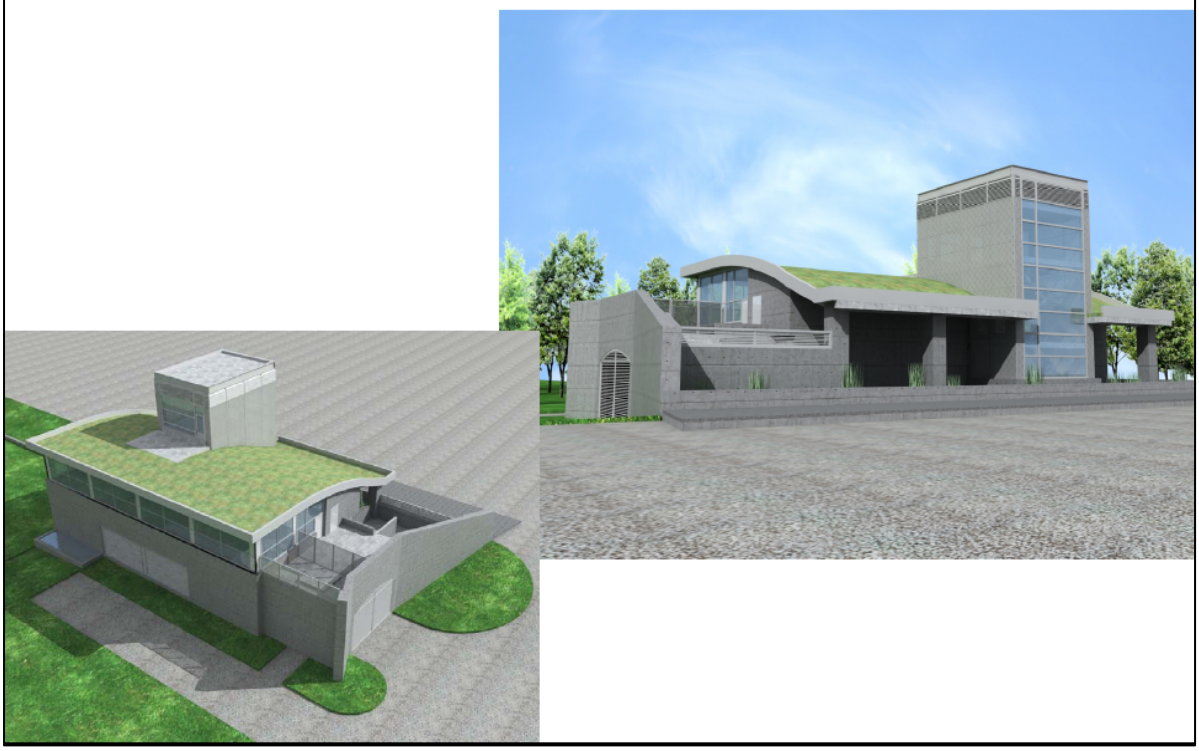
The University of Pennsylvania and the School District of Philadelphia, working in partnership with the Philadelphia Water Department Office of Watersheds, implemented an innovative storm water management project on the site of Alexander Elementary School in West Philadelphia. The school site posed significant challenges in terms of stormwater retention and soil erosion and offered significant opportunities to provide environmental education and environmental diversity to the community. Major components of the project include rooftop collection, an underground infiltration bed, porous pavement play yard, and a rain garden.

Benefits:

Cross-section of Green Roof



Venice Island Pumping Station with Green Roof

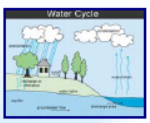


Mill Creek Playground Basketball Courts

The basketball courts at Mill Creek Playground have been built with a special type of pavement that allows rain and melted snow to pass right through it instead of running off into the sewer system. This surface is called "porous pavement." Below the pavement is a layer of stone where water is stored until it is all absorbed into the ground below. Porous pavement is best suited for parking lots, walkways, or play courts.

Effects of Stormwater

Stormwater is precipitation. In an urban environment, stormwater flows over concrete and pavement, rather than percolating through soil into ground water, like it would in a natural environment.



RAIN BARRELS

A rain barrel is a device that collects water from the downspouts which lead from the roof of a building to the ground.

By storing rain water, there is a decreased impact of stormwater

Uses for Rain Barrel Water

- Watering the lawn
- Watering garden plants and flowers
- Filling a bird bath
- Washing gardening containers and tools


Stream Restoration of Cobbs Creek at Marshall Road
Restoration Project
Darby-Cobbs Watershed

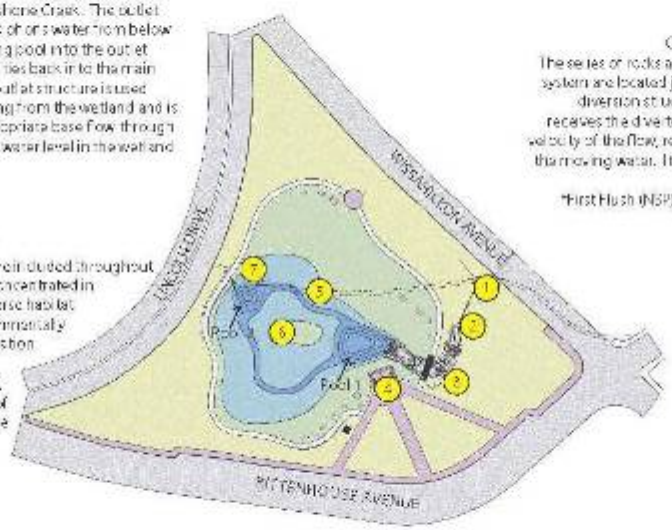
SAYLOR GROVE STORMWATER WETLAND
& ITS STORMWATER MANAGEMENT FEATURES

Stormwater Diversion Chamber #1:
A 48" storm sewer carries the stormwater runoff from this region and connects to a diversion chamber, which intercepts the stormwater flow and directs it to the weir (cascade) for treatment. This structure also acts as a settling chamber where it captures the metals, hydrocarbons and/or other pollutants found in the sediment carried by stormwater runoff, before it enters the wetland. If the two manholes at this site were to be removed, you could view the encapsulated stream flowing right below you into the park.
*Watersheds, Nonpoint Source Pollution (NSP), Stormwater Runoff, Cross Connections/Illicit Discharges

Final Outlet/ Stormwater Diversion Chamber #2
This is the final outlet structure. It directs the flow back into the original storm sewer after treatment before it enters the Nonconnah Creek. The outlet has an 8" storm pipe that sits on the water from below the surface of the collecting pool into the outlet structure. The outlet then ties back in to the main 48" stormwater line. The outlet structure is used to regulate flow discharging from the wetland and is used to maintain the appropriate base flow through the wetland system. If the water level in the wetland goes above 2 feet, it will spill into the outlet structure.
*Stream Bank Erosion, Stream Restoration

Cascade Energy Dissipator System:
The series of rocks and pools that make up the cascade system are located just downstream of the stormwater diversion structure outlet (Image 2). The cascade receives the diverted stormwater and slows down the velocity of the flow, reducing the energy associated with the moving water. It also removes coarse sediment and aerates the water.
*First Flush (NSP), Water Quality and Water Quantity Issues, Energy Dissipation

Island/Wetland Meadow
Plants, shrubs, and trees are distributed throughout the site, but are heavily concentrated in this area to provide a diverse habitat community in this environmentally sensitive zone. The vegetation also filters and removes pollutants from the water, slows down the velocity of the flow, and increases the uptake of water.
*Native Species, Removal of Pollution by Plants, Indicators of Water Quality (Aquatic Organisms)



Stormwater Diversion Chamber #2 Outlet:
Stormwater runoff from the Pittard Sod Avenue side of the Park is diverted into the Park as well. The outlet for this diversion chamber is also visible at the cascade. Refer to Site #1 for a description of the chamber.
*Stream Daylighting

Permanent Pool (Pool #1),
Channels, Collecting Pool (Pool #2)
The permanent pool is located at the base of the cascade. It removes the majority of the fine particulate matter in the stormwater wetland. The collecting pool is a smaller version of the permanent pool. It is located directly across – on the other side of the wetland where the outlet structure is located. The surrounding channels reduce the velocity of the flow.
*Water Quality Sampling

Scenic Overlook/Site of Old Fountain:
Surface stormwater runoff from the surrounding parkland on this side of the site drains to this fountain area. There are two drains that release runoff into the wetland underneath this structure.
*Surface Stormwater Runoff

*Indicates Possible Educational Discussion Topics

BACKGROUND

Stormwater Runoff Impacts

The Monoshone Creek flows alongside Lincoln Drive, just across from Saylor Grove, through Historic RittenhouseTown. The majority of the Monoshone Creek now exists in storm sewer pipes. The creek and its tributaries were encapsulated over a century ago to allow for development of the Germantown community. When development occurs, the natural features of a landscape, such as vegetation and soil, are replaced with hard surfaces, such as pavement and buildings. These hard surfaces prevent stormwater from soaking back into the earth during a rainstorm. As a result, stormwater flows across these impenetrable surfaces, picking up all of the pollutants in its path such as oil, pesticides, fertilizers, or anything else that will float and/or dissolve in stormwater. These pollutants can be transported either directly over land into nearby water bodies or into storm drains which are connected to storm sewer pipes that discharge to streams and creeks. Polluted stormwater not only impacts the water quality of streams, but when the runoff rushes out of the stormwater pipes in great volumes and at high velocities, the form and shape of the streams also become jeopardized. Among many impacts that result from such conditions, the stream beds become scoured, erosion is accelerated, aquatic habitats are damaged, and stream banks become unstable. Stormwater is a water quantity and water quality issue, as we have seen in the Monoshone Creek.

Drinking Water Impacts

The Monoshone Creek and its surrounding sub-shed (smaller scale watershed) are located within the Philadelphia Water Department's (PWD) highest priority zone for source water (drinking water) protection — the Queen Lane and Belmont intakes. The Monoshone is a tributary to the Wissahickon Creek, which empties into the Schuylkill River, near the drinking water intake for Philadelphia's Queen Lane Water Treatment Plant. Because 24% of Philadelphia's drinking water comes from Queen Lane, the health of the entire Wissahickon Creek Watershed, including the Monoshone Creek, is critical to all who live and work in Philadelphia.

In Conclusion

At Saylor Grove, the stormwater treatment wetland will help detain (temporarily hold back) and treat the stormwater which was originally piped directly to the Monoshone Creek. This project will help reduce the quantity of stormwater entering the Monoshone at any given time and help improve the quality of the stormwater runoff as well. The Philadelphia Water Department would like to see every stream mile in the City of Philadelphia meet its designated use as a fishable and "swimmable" stream. This project is an exemplary demonstration of how the City and its partners are reaching this goal together.

SITE FACTS

- Saylor Grove Park is approximately 3.2 acres. The Saylor Grove Wetland makes up about one-third to one acre of the park.
- Saylor Grove Wetland drains approximately 156 acres of stormwater runoff from Germantown. The wetland is designed to drain the stormwater within 24 hours.
- Saylor Grove Wetland will filter a significant portion of the estimated 70 million gallons of stormwater per year.
- The wetland will remove approximately 13 tons of total suspended solids from the Monoshone Creek.
- The first 0.7 inches of every rainfall event will be sent to and treated at the wetland. According to the long-term historical record of the airport's rainfall data, 70% of all storms make up 0.7 inches or less of rainfall.
- The wetland will improve flow variability of the Monoshone Creek.
- The wetland will increase biodiversity (vegetation and animals).
- Approximately 3,000 trees, shrubs, and herbaceous plugs have been planted.

For more information on the stormwater management features, refer to the inside of this document.

Saylor Grove Stormwater Treatment Wetland Tour Guide

Stormwater Management Practices Demonstration Site

Spring 2006

Welcome to the Saylor Grove Stormwater Treatment Wetland! The Philadelphia Water Department (PWD), the Fairmount Park Commission (FPC), and its many partners like to dream big in their shared mission to protect and improve the environment. Fortunately for the Germantown section of Philadelphia, the dreaming (and hard work!) has transformed Fairmount Park's parcel of parkland — Saylor Grove — into one of Philadelphia's first stormwater treatment wetlands. The one-acre wetland, constructed in the fall of 2005, helps to slow down stormwater runoff and filter polluted stormwater from approximately 156 acres of Germantown before it enters the Monoshone Creek. A significant portion of this estimated 70 million gallons of urban stormwater runoff will be treated naturally every year! Saylor Grove not only boasts a stormwater treatment wetland, but also a new educational trail, interpretive signage, historic memorials and sculptures previously located in the park and a renovated, beautified space for all visitors to enjoy.

Why a Wetland?

Wetlands clean stormwater, replenish groundwater, reduce flooding risks, and provide habitats for wildlife. The Saylor Grove Stormwater Treatment Wetland is a highly visible project in the historic Wissahickon Watershed and was selected as a demonstration to illustrate how wetlands can successfully treat stormwater in an urban environment. In demonstrating the success of this project, we hope that similar wetland projects will be replicated throughout the City and in neighboring communities to improve water quality and to help bring back healthy streams and creeks throughout the region.

Prepared for the Center in the Park (Senior Environment Corps)
by the Office of Watersheds, Philadelphia Water Department

Construction & Specs

The R. E. Roy is a 39-ft, front-end loader, single hull, shallow draft, debris skimming vessel. It is powered by a main diesel engine, Caterpillar Model 3056 205 hp and a four-blade, magnesium bronzed propeller. The vessel is also equipped with a 122-gallon fuel tank, a 150 gpm, 100 psi Water Canon system, and a 5.6 yd^3 hydraulically controlled, grated bucket. Its construction began in June, 2004 and the vessel was delivered in March, 2005

The Dedication

The dedication took place on July, 16, 2005 where the R. E. Roy was officially commissioned. The skimming vessel is named for Richard E. Roy, a former Water Commissioner who gave more than 30 years of gracious service to the City of Philadelphia and the Philadelphia Water Dept.

Partners

Philadelphia Water Department
Office of Watersheds
Aramark Tower – 4th Floor
1101 Market Street
Philadelphia, PA 19107

The R. E. Roy

Floatable Skimming Vessel

Commissioned July, 2005

History and Background

The Philadelphia Water Department Office of Watershed's (PWD OOW) vision is to unite the city with its waterways, creating a green legacy for future generations while incorporating a balance between ecology, economics and equity. PWD's Combined Sewer Overflow Long-Term Control Plan (PWD CSO LTCP), completed in 1997, highlights the need to improve public awareness of an individual's contribution to coastal aesthetics, notably in the Delaware and Schuylkill Rivers, and to improve water quality and aesthetics of surrounding parks and recreational areas. As such, the plan recommends the use of a floatables skimming vessel to remove debris from targeted reaches of the Delaware and Schuylkill Rivers. Similar waterfront enhancement programs have been very successful in New York City, Passaic Valley, NJ, Baltimore, MD, and Washington D.C.

Why the need for the vessel?

The Schuylkill and Delaware Rivers are both undergoing a renaissance of development, ranging from hotel and entertainment centers and new housing, to the restoration of museums, greenways, gardens, and open space. The floatable skimming vessel enables the Philadelphia Water Department to monitor and remove floatables that accrue on the City of Philadelphia's waterways. In addition, it demonstrates to our citizens the value that the City of Philadelphia places on its waterways

How It Works!

The front-end loader design allows the skimmer to utilize a grated bucket to lift floatables from the water surface into an on-board hold. The vessel collects debris in the bucket through two means. As the vessel drives through a mat of debris, the debris enters the bucket and is held by the grates as water passes through the grates. In addition, the vessel is designed to create a strong suction current that draws water through the vessel hull and the grated bucket, thus, drawing floatables into the bucket. The grated bucket is capable of holding over 3 yd^3 of material. Once the vessel returns to the dock, a crane lifts the grated bucket from the deck for disposal. The R. E. Roy is scheduled to be operated through PWD's Flow Control Unit five days per week from March through November each year, with December to February allotted for annual maintenance.

Project Benefits

- Address water quality by collecting trash of a wide variety – identified through the qualitative assessment.
- Directly affect the interface of land and water by educating the public about where to put trash and better managing non-point source pollution in river.
- Improve and expand public access to coastal zone by drawing people to cleaner and more aesthetically pleasing rivers and providing a cleaner tourist destination point.
- Manage and protect coastal natural, historic, cultural or recreational resources.
- Provide a regional model that can serve as an example for similar projects that will address watershed management that directly impacts the Delaware Estuary by serving as a key implementation project in the abatement of trash as a result of non-point and point source pollution.

Contacts

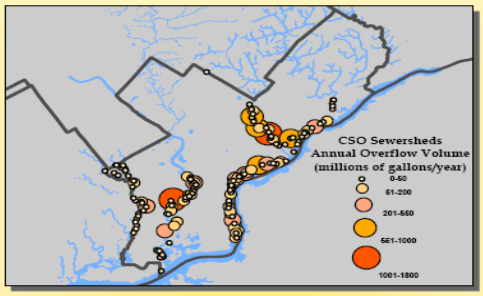
Marc Cammarata (215) 685-4948
CSO Program Manager
Philadelphia Water Dept.
Office of Watersheds

Lance Butler (215) 685-4947
Aquatic Biologist, Supervisor
Philadelphia Water Dept.
Office of Watersheds


A Homeowner's Guide to Stormwater Management
You can make a difference!
Learn what you can do on your property and in your community to improve the health of your watershed.
Prepared by: Office of Watersheds
Philadelphia Water Department
Volume 1 • January 2006

Top 10 Most Wanted CSOs

These 10 outfalls account for 8.3 billion gallons of combined sewer overflow every year, 59% of the estimated annual overflow volume in Philadelphia.



#1
FFRFG (R18)
1765 MG/yr, Frankford Creek
Castor Avenue & Hunting Park
Frankford High Level Relief Sewer

#2
S50
1552 MG/yr, Schuylkill River
43rd Street east of Woodland Avenue
Mill Creek, 20' x 20' outfall

#3
T14
998 MG/yr, Tacony Creek
I Street and Ramona Street
21' x 24' outfall

#4
D25
895MG/yr, Delaware River
Somerset Street east of Richmond Street
Twin outfall 12' diameter

#5
F21
808 MG/yr, Frankford Creek
Walding Street northwest of Creek Basin
Twin outfall 10.5' x 9.5'

#6
T8
681MG/yr, Tacony Creek
Ashdale Street west of Tacony Creek
12.5' outfall

#7
C17
522 MG/yr, Cobbs Creek
Beaumont Street and Cobbs Creek
12' x 11.5' outfall

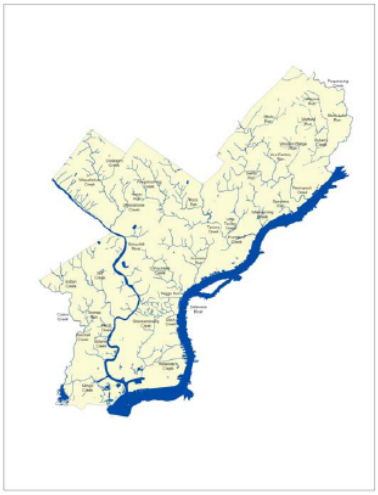
#8
D5
416 MG/yr, Delaware River
Magee Street southeast of Milnor Street
Twin outfall 11' x 9'

#9
S45
365 MG/yr
Schuylkill River
67th Street east of P&R railroad

#10
D45
307 MG/yr, Delaware River
Laurel Street and Delaware Avenue
14.5' x 16' outfall

Philadelphia's Changed Landscape

Philadelphia's Historic Streams



The piping of some Historic Streams

Philadelphia's Remaining Streams

Bill Kelly Artwork & Exhibit Materials
(Interpretation of *Green Cities, Clean Waters*)


What PWD & Partners Are Accomplishing
Springside School
Green Infrastructure Design Elements:
1. Rain Garden
Green Infrastructure Benefits at Springside School:
2. Disconnected Downspouts & Art Sculptures
Partners
Waterview Recreation Center
Green Infrastructure Design Elements:
Project Benefits
Partners
Cliveden Park


Green Cities,
Clean Waters
Philadelphia Water Department's
Combined Sewer Overflow
Long Term Control Plan
Green Cities,
Clean Waters


WORLD
CLEAN WATERS
H2O
in the world
Where has that water been?
Where hasn't it been?

The Philadelphia Water Department's
Fairmount Water Works Interpretive Center
Presents:

Bill Kelly

Interpreting the Green Cities, Clean Waters Vision

The Philadelphia Water Department's (PWD) "Green Cities, Clean Waters" program seeks to implement a comprehensive watershed management approach that identifies multiple solutions (land, water, and infrastructure-based) to improve and preserve the City's water environment, to create a green legacy for future generations and to incorporate a balance between ecology, economics and equity.

Our daily interaction with water provides a prime example of humans' ecological relationship with the planet – it is one of the most common yet vital interactions we have with the natural world everyday. Art, with its appeal to the senses, imagination, and intellect, provides a unique approach to explore this relationship between society and water. The jars featured in this exhibit, filled with water and teeming with life and imagery, are a reminder of how intertwined we are both locally and globally with the finite amount of water that exists on this planet.

- Bill Kelly

Please join us at the Fairmount Water Works Interpretive Center, as artist, Bill Kelly, displays an artistic interpretation of Philadelphia's "Green Cities, Clean Waters" program.

Exhibit Opens September 25th, 2008
Reception: Thursday | October 16, 2008 | 5:30pm - 7:30pm
RSVPs welcomed by October 14, 2008: 215.685.0723

Fairmount Water Works Interpretive Center
640 Waterworks Drive, Philadelphia, PA 19130
For Directions: www.fairmountwaterworks.org

GREEN SPACE

TEXT SIZE: A A A

Email this post | Back to Blog home

WEDNESDAY, OCTOBER 15, 2008

Water meets art meets water

Bill Kelly's jar art

Bill Kelly thinks about water a lot.

As an artist, he's looked at how people interact with the wilder world, and he's recently focused on water as "one of the most common but easily overlooked interactions we have with nature everyday, and one reason why it presents an ideal lens through which to explore the larger story of society's reliance upon the natural world."

He's recently finished a series of "jar art" - filled with water, plants and images - to "remind how we are intertwined both locally and globally with the finite amount of water that exists on this planet."

A public reception is being held Thursday from 5:30 to 7:30 p.m. at the Fairmount Water Works Interpretive Center.

The exhibit will remain open through Nov. 22.

The exhibit is part of the Philadelphia Water Department's "Green Cities, Clean Waters" program.

Kelly studied photography at the Art Institute of Philadelphia and has a master's degree in fine arts from Goddard College in Vermont.

He reports in a prepared statement that after this, "I can never again nonchalantly drive over a local river, turn on my tap, or dump something down the drain without thinking of the many ways I may be impacting - and am in turn affected by - the local water cycle."

Posted by Sandy Bauers @ 9:43 PM Permalink | 2 comments

SAVE AND SHARE

Comments

Sign in to post a comment

Posted by **eryanphoto** 10:55 AM, 10/22/2008 Sign in to report abuse
I would like to see more of Bill Kelly's jar art. Does he have a website or book of his jar art?

Posted by **Professor Smartypants, PhD** 11:58 AM, 10/22/2008 Sign in to report abuse
Pretty.

ABOUT SANDY BAUERS

Sandy Bauers is the environment reporter for the Philadelphia Inquirer, where she has worked for more than 20 years as a reporter and editor. She lives in northern Chester County with her husband, two cats, a large vegetable garden and a flock of pet chickens.

GreenSpace - her column about how to reduce your carbon footprint in everyday life - appears every other Monday in Health & Science.

Green Cities, Clean Water Exhibition

"Green Cities, Clean Water," the new exhibit at the Interpretive Center combines photography, art and stormwater management practices. A team from the Office of Watersheds created the exhibit to raise awareness of its long-range plan to transform Philadelphia into a city celebrated for its clean and beautiful rivers and streams.

Known officially as the Combined Sewer Overflow Long-term Control Plan, The Philadelphia Water Department's CSOLTCP seeks to implement a comprehensive watershed management approach that identifies multiple solutions (land, water, and infrastructure-based) to improve and preserve the City's water environment, to create a green legacy for future generations and to incorporate a balance between ecology, economics and equity.

Bill Kelly with one of his "jars."

Office of Watersheds Director Joanne Dahme predicts that the Green Cities, Clean Water project will take 20 years and many millions of dollars. "Our goal is to reduce stormwater runoff as much as possible by capturing it on the surface, through gardens, green roofs, permeable building materials and other green technologies that minimize runoff. Green technology will allow us to replace today's system with smaller pipes and fewer storage tanks. And we'll keep our rivers and streams cleaner and more beautiful." For more information go to: phillyriverinfo.org

Meanwhile, the Office of Watersheds has completed several demonstration projects and offers suggestions homeowners can put into practice to reduce runoff on their properties. The exhibit juxtaposed successful public programs with small projects, such as rain barrel collection systems, wild flower meadows and permeable paving materials.

Click here to see the environmental projects underway at Springside School.

Water Department project designer Tiffany Ledesma Groll invited environmental photographer Bill Kelly to create artwork to complement the Green Cities, Clean Water exhibit. Bill brings his perspective as an individual living in urban environments and interacting with the "wild" world on a daily basis. He uses jars filled with water, photographs, and plant life to demonstrate both the finite amount of water in our world and its ubiquity in our cities and lives.

"While jars are often used to preserve, in this context the addition of a living organism suggests that what needs preservation is not a static entity which can be bottled and stored, but rather it is the purity of the natural cycle of water that must be allowed to run its course," Bill explained. "As we witness the plants make their home in a surreal aquatic environment, we are reminded of water's life-sustaining gifts to both humanity and all that grows alongside us. This work is a tribute to the miracle and challenge of making our home in what was originally dubbed a city between two rivers."

To see a slide show of Kelly's work, click here. Copies of his photos and his actual jars are available at the Fairmount Water Works Interpretive Center. A portion of the sale price will benefit the Interpretive Center.

Green Cities, Clean Waters: with Artist and Educator Bill Kelly

FAIRMOUNT WATER WORKS INTERPRETIVE CENTER

THURSDAY, OCTOBER 16, 2008
05:30 PM TO 07:30 PM

Please Print

	NAME	PHONE	E-MAIL	Check Here To Be Added To Our E-mail List
43.	Josh Smith	215 425 1962	lejosh@mail.com	
44.	Katherine Andrews	202-549-2881	kandrews@law.upenn.edu	REST. ww
45.	Heather Rutledge	2155720622	eastmonheather@hotmail.com	
46.	Dalyn	570 704 9044		
47.	Kerren Brooker	2678790790	kerreenb@yahoo.com	
48.	Mr+ Mrs Andrew Sherman	215-685-4008		
49.	BRIAN PARKER			
50.	Michael chmyzch			
51.	Jonatyn Larson	267-257-4720	MHaganPhoto@gmail.com	
52.	Tom Taggart		Thomas.Taggart@phila.gov	
53.	Beth Clewlow	—		RM
54.	GREG BERGEN			
55.	LAUREN ROSENTHAL	267-230-2846	juicenart@gmail.com	

KIRSTEN Knoblauch 215 531-2480

✓ beth nixon

Green Cities, Clean Waters: with Artist and Educator Bill Kelly

FAIRMOUNT WATER WORKS INTERPRETIVE CENTER

THURSDAY, OCTOBER 16, 2008
05:30 PM TO 07:30 PM

NAME (Please Print)	PHONE	E-MAIL
1. Ms. Lovett McDavisson (2)		
2. Dr. & Mrs. Ronald Silberman (2)	318-780-7557	Silberman07@comcast.net
3. Amy Blake	610.525.3747	amydesigns@earthlink.net
4. ANDREW SHERMAN (2)		
5. ALICE WRIGHT (2)	484-250-5818	
6. MARY ELLEN MCCARTY (4)	685-6246	
7. STEPHANIE CHIOREAN (5)	814-883-1909	
8. MR. AMIN RAMLI 18		
9. LAURA WATT (2) ~~28~~	215-880-3023	
10. 27		
11. DR. & MRS. BINE (2)		
12. SUSAN BECKETT (1)	267-269-7545	
13.		
14.		
15.		

Green Cities, Clean Waters: with Artist and Educator Bill Kelly

FAIRMOUNT WATER WORKS INTERPRETIVE CENTER

THURSDAY, OCTOBER 16, 2008
05:30 PM TO 07:30 PM

	NAME (Please Print)	PHONE	E-MAIL
46.	BOB MYERS	610-662-3784	Bob@myers-media.com. * Place on mailing list
47.	ERICA IRWIN	"	(PERSONALLY KNOW ARTIST KELLY)
48.	DONALD GRISHAM	267-253-7462 TELE VM.	
49.	TIFFANY LEDESMA GROLL (3)	215-620-9055	ON MAILING LIST CHECK HUSBAND'S
50.			
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WORKED ON PROJECT

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Green Cities, Clean Waters: with Artist and Educator Bill Kelly

FAIRMOUNT WATER WORKS INTERPRETIVE CENTER

THURSDAY, OCTOBER 16, 2008
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	NAME	PHONE	E-MAIL	Check Here To Be Added To Our E-mail List
✓	29. Elizabeth Eisenberg	410-458-3123	lizz483@gmail.com	Rest. W.W.
✓	30. CAROL WISKER	610 949 9262	CAROLWISKER@MAC.COM	✓
	31. ADRIENNE STALEK	215 717 6122	astalek@uarts.edu	✓
	32. Megan Sgarlat	570.814.9230	Megan.sgarlat@phila.gov	
	33. doug franklin	215 732 5067	dougfranklin@gmail	
	34. [illegible]	315-740-[illegible]	[illegible]@gmail.com	
	35. Tina Moon	267 221 5285	tinahmoon3@comcast.net	
	36. Melanie Garrow	215-685-6036		
	37. Joniwe + Walpdrye	215 848 7514		
	38. Bob Walker			
✓	39. Martha Fournier		M_Fournier22@hotmail.com	✓
	40. Jacob mitas	—	jacobpablomitas@hotmail.	
✓	41. Lauren McCall		laur_mc@hotmail.com	✓
✓	42. SUE fitzpatrick		Suefitz1@comcast.net	✓
	Joshua morris		[illegible]	

Green Cities, Clean Waters: with Artist and Educator Bill Kelly

FAIRMOUNT WATER WORKS INTERPRETIVE CENTER

THURSDAY, OCTOBER 16, 2008
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	NAME	PHONE	E-MAIL	Check Here To Be Added To Our E-mail List
15.	Mary Ellen McCarty	215 685-6246	maryellen.mccarty@phila.gov	✓
16.	Tiffany Ledesma Groll	215-499-3758		
17.	Marc Cammarata	215 685 4948	marc.cammarata@phila.gov	✓
18.	C. Nancy Evans	215 402 0892	cnancy.evans@verizon.net	✓
19.	Anna Cascio	215 233 3484	mcascio9@comcast.net	✓
20.	Randy Kapralick	215 688 1318	rkwormeearthlink.net	
21.	Joey Willhite		joeywillhite@gmail.com	
22.	Don Camera	2154677147		
23.	Tom Groll	215-620-9494	tgroll28@hotmail.com	
24.	Todd Murray	610 764-6156	tmphoto915@yahoo.com	
25.	Joann Bohn	215-685-4411	joann.bohn@phila.gov	
26.	Debby + Alan Dion		dkdion@verizon.net	
27.	Jo Owen	610 664 4409		
28.	Lisa Simon	215 545 470	lsimon6simonpc@	

Green Cities, Clean Waters: with Artist and Educator Bill Kelly

FAIRMOUNT WATER WORKS INTERPRETIVE CENTER

THURSDAY, OCTOBER 16, 2008
05:30 PM TO 07:30 PM

17
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16
16
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77

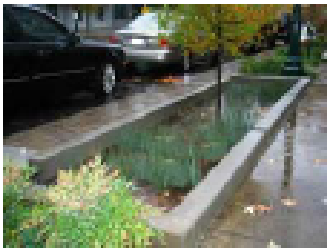
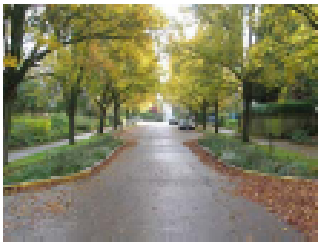
Please Print Maureen O'Rourke 484.437.1645 maureenorourke@antonelli.edu

NAME	PHONE	E-MAIL	Check Here To Be Added To Our E-mail List
1. Lucia Mettler	215-869-5414	lucia.mettler@gmail.com	✓
2. Lynn Aharnick	215 802-0097	LAHARNICK@comcast.net	✓
3. Bonnie Fornstein		b.kornstein@comcast.net	✓
4. Ellen Rosenberg	215-470-9195	ELLENOTR@comcast.net	—
5. Jené Copeland			
6. Bob VanEss	610 344 0700	bvaness@vanguarddirect.com	—
7. David Thompson		dthompson@simonpr.com	✓
8. Kelly Anderson		kellyanderson@phila.gov	
9. Michelle Lutz		Mlutz@lutheransettlement.org	✓
10. Lila & Jill	215 307 6061	istvempfis@hotmail.com	
11. Stephanie Chiorean	8148851909	stephanie.chiorean@phila.gov	
12. Megan Molloy			
13. Joanne Pinto		cottagefolks@msn.com	✓
14. Claire & Bob Bounds	235-9788		

Urban Watersheds Revitalization Conference

GREENING OUR STREETS

2008
URBAN WATERSHEDS
REVITALIZATION CONFERENCE


Date: Friday, October 31, 2008

Time: 8:30 a.m.— 3:30 p.m.

Location: Community College of Philadelphia

Fee: $20

Register Today: http://www.stormwaterbmp.org/conference
watersheds@pennhort.org
215-988-8772

Overview

We plan to explore what constitutes a green street, present the vision that is guiding the movement toward green streets, and provide insight into how our region can move forward by turning the vision into a reality. We will explore how to improve stormwater management on public right-of-ways, while also beautifying communities, providing economic incentives, and creating other environmental benefits and amenities. The conference will focus on demonstration projects and case studies in Philadelphia and in the nearby suburbs, as well as the work and experience of regional and national design and engineering experts.

Brought to you by: Philadelphia Water Department, Pennsylvania Horticultural Society, American Water Resources Association, Pennsylvania Environmental Council, Montgomery County Conservation District, Temple University, Villanova University, Philadelphia University, Drexel University, & Community College of Philadelphia.

2007
URBAN WATERSHEDS REVITALIZATION CONFERENCE

Please reserve **Thursday, May 3,** from **8:30 a.m. to 3:00 p.m.** for the third annual Urban Watersheds Revitalization Conference at Philadelphia University (School House Ln. & Henry Ave.) in Philadelphia.

The conference will target the urban (or mostly developed) watershed communities of south-east Pennsylvania, including the City of Philadelphia and the surrounding suburbs. The event will feature two panel discussions, a poster session and an awards ceremony for the winning projects of the Stormwater Best Management Practices (BMPs) Recognition Program. The first panel discussion will cover the theme of stormwater management regulations and requirements. The second panel discussion will be the response from the design community on the realities of implementing these regulations and requirements. The subjects addressed in the panel discussion may include the perceptions, realities and responses to the state model stormwater ordinance, National Pollutant Discharge Elimination System (NPDES) requirements, flood control minimization, stormwater rate structure reallocation, retrofit funding mechanisms and other programs and initiatives that aim to demonstrate the environmental, economic and social benefits that arise through sustainable watershed management.

FOR MORE INFORMATION

For more information and to register for the conference, please visit: **www.stormwaterbmp.org/conference**. This event is FREE, so sign up soon!

Also, please visit the Stormwater BMP Recognition Program website and nominate a local project at: www.stormwaterbmp.org.

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Philadelphia Water Department

Delaware Valley Urban Stormwater Partnership

conserving natural resources for our future

AMERICAN WATER RESOURCES ASSOCIATION
Community, Conservation, Connections

PHILADELPHIA UNIVERSITY

From: Sarah RobbGrieco [mailto:sarah@ttfwatershed.org]
Sent: Tuesday, November 04, 2008 1:12 PM
To: Ledesma Groll, Tiffany; Khiet Luong
Subject: Re: Help with CSO LTCPU Public Meetings

Hi Tiffany,

The conference was fantastic for me. One of the best I've been to since I started with TTF. In particular, the panel with Joy and Gina and the PWD and Streets Dept staff was incredibly useful. I learned so much from hearing all their points of view. You guys really did a great job with the entire day.

Let's talk more.

Sarah

Sarah RobbGrieco
Executive Director
Tookany/Tacony-Frankford Watershed Partnership, Inc.
One Awbury Road
Awbury Arboretum
Philadelphia, PA 19138
phone: 215.208.1613
email: sarah@ttfwatershed.org
web: ttfwatershed.org

Robert Allen/MDO/Phila

10/31/2008 04:26 PM

To Howard Neukrug/PWD/Phila@Phila, Glen Abrams/PWD/Phila@Phila, Joanne Dahme/PWD/Phila@Phila
cc
Subje Greening Our Streets
ct

Just a quick note to congratulate you all on a great conference! It's gratifying to see the City coming together on these issues thanks to your leadership.

From: Dan Meier [mailto:dmeier@duffnet.com]
Sent: Tuesday, November 04, 2008 1:12 PM
To: Ledesma Groll, Tiffany
Subject: RE: Duffield presentation

No problem. The conference was one of the best I've been to in 25 years. Such a wide cross-section of people but all of us focused on the same city-improving agenda. Thanks for including us and thanks for your efforts in making it happen.

Dan Meier, P.E.
Duffield Associates
211 N. 13th Street, Suite 704
Philadelphia, PA 19107
(215) 545-7295
(215) 875-7356 fax

Backgrounders

(View Advisory Committee Invitation Packet for complete versions of first two backgrounders)

THE CSO LONG TERM CONTROL PLAN *UPDATE*

GREEN CITIES
CLEAN WATERS

Current Status of Our Waterways

The City of Philadelphia

Introduction

The Philadelphia Water Department (PWD) is charged with ensuring optimal compliance with the City's federal Clean Water Act (CWA) permit. In doing so, PWD is striving to define a stormwater management program that protects and enhances our region's waterways by managing stormwater in a way that significantly reduces the need for infrastructure (pipes). PWD believes that money spent on stormwater management and the attainment of CWA goals should also represent money spent to improve the natural resources of the City and to enhance the community. In 2007, PWD began to reevaluate its Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP) and capital improvements program to integrate additional projects that will reduce CSO frequency and volume. The CSO Long Term Control Plan Update (LTCPU) involves the development of additional management alternatives to ensure capture and treatment of combined sewer system flows and the reduction of discharges from CSOs by building on the experience and progress gained from the implementation of our original CSO LTCP.

The US EPA's Guidance for Long Term Control Plan Development outlines a number of specific tasks for municipalities to undertake while developing their own LTCP, including what is called a "System Characterization." A system characterization includes a detailed assessment of current conditions of the combined sewer system and receiving waters. To accomplish this task, PWD initiated a detailed monitoring program that includes chemical, biological and physical assessments to characterize the current state of the watershed and identify existing problems and their sources. PWD characterized both CSO and non-CSO sources of pollution within each watershed, in order to better understand all causes of water quality impairment. Technical Memorandums, Reports, Plans and Documents for each of our watersheds are available on the City's Watershed Information Center website at www.phillyriverinfo.org

This fact sheet includes a summary of existing conditions for the Cobbs, Tookany/Tacony-Frankford, Schuylkill and Delaware Watersheds; potential solutions for addressing problems identified through the System Characterization will be presented in a forthcoming fact sheet – winter 2009.

PWD's Monitoring and Assessment Programs for System Characterization:

PWD's monitoring and assessment program includes the collection and organization of both existing and new data on surface water hydrology and quality, wastewater collection and treatment, stormwater control, land use, stream habitat and biological conditions, and historic and cultural resources in order to gain an understanding of what data already exists and where there may be gaps worth filling. Data are collected from various agencies and organizations in a variety of forms, ranging from reports to databases and Geographic Information System (GIS) files. To supplement existing data, PWD's Office of Watersheds (OOW) conducted an extensive sampling and monitoring program to characterize the conditions of each watershed.

Schuylkill and Delaware Rivers The Delaware River Basin Commission (DRBC) and PWD have collected water quality data from sampling locations within the Delaware and Schuylkill Rivers. Additionally, the U.S. Geological Survey (USGS) had recorded historic baseline water quality data that can now be compared with the data collected by DRBC. This comparison allows for a more comprehensive analysis of water quality and the impacts of urbanization over the past 10 years.

Cobbs and Tookany/Tacony-Frankford Creeks A Comprehensive Characterization Report (CCR) has been developed for both the Cobbs and Tookany/Tacony-Frankford Watersheds. CCRs form the scientific basis for the creation of an Integrated Watershed Management Plan. A CCR includes physical, chemical and biological assessments of a watershed and incorporates land use, geology, soils, hydrology, water quality, ecology, and pollutant loads related information about a watershed. PWD carried out a comprehensive sampling and monitoring program in the Darby-Cobbs watershed between 1999 and 2002 and in the Tookany/Tacony-Frankford between 2002 and 2004.

Watershed Planning Process

PWD's Integrated Watershed Management Planning (IWMP) process is based on a carefully developed approach to meeting the challenges of watershed management in an urban setting. PWD developed their concept of regional watershed management planning recognizing that, as the downstream most entity in each of the watersheds leading to the City of Philadelphia, they could not make sustainable improvements to the waterways without support from upstream partners. The planning process also incorporates the best of existing municipal and conservation planning efforts (including River Conservation Plans, Open Space Plans, municipal Comprehensive Plans, etc.) as well as regulatory requirements and stakeholder goals. Its focus is on attaining priority environmental goals in a phased approach, making use of the consolidated goals of the numerous existing programs that directly or indirectly require watershed planning. These plans are built upon a solid, scientific foundation composed of water quality monitoring (wet and dry weather), macroinvertebrate and fish bioassessments, physical stream surveys (FGM) and computer simulated modeling programs for stormwater flows and pollutant loading.

An integrated watershed management plan is a long-term road map designed to achieve healthy communities and restore natural resources. An integrated plan embraces the laws designed to save our streams, preserve the streams' ecology, and enhance the parkland and riparian buffers that shelter these streams. The plan will also reach out to include the best of municipal and conservation planning efforts, which strive to ensure that growth within the watershed occurs with particular attention to the impacts on the environment. Most importantly, the plan will incorporate the goals of a diversity of people who live, work, and dream in all areas of the watershed.

Watershed Partnerships:
Stakeholder support is critical to the success of a regional planning initiative. A diversity of stakeholder perspectives must be involved with the development of each stage in the planning process in order to ensure that the plan is representative of stakeholder interests. This stakeholder buy-in is most critical to ensuring ultimate implementation of the plan. Recognizing this, PWD has helped to develop stakeholder watershed partnerships for each watershed that drains to the City of Philadelphia. The ultimate goal is to cultivate a partnership committed to implementing the plan once completed.

Characterization of Existing Conditions in Philadelphia's Watersheds

Philadelphia, which is being called "The Next Great City," faces new and exciting challenges in every aspect of city planning. Having to restore the natural resources of the waterways, as well as prevent further damage to the creeks and rivers is a tall order for such a rapidly growing and constantly changing City, but Philadelphia is embracing this challenge and leading the way with its integrated watershed management planning approach.

Philadelphia's urban watersheds suffer from many problems within the City limits. Many of these problems stem from the highly urbanized settings surrounding the waterways and have a direct correlation to the actions of the public and land management practices in the region.

During wet weather (when it is raining), our consequences on the environment are evident when bacteria (from human waste and other sources) ends up in our waterways through both combined and stormwater outfalls. This type of problem creates an environment which is not conducive to swimming, nor to any other form of primary contact with the water.

An additional problem in our waterways includes fluctuations in dissolved oxygen (oxygen in the water) levels, which have been observed in all of our urban creeks. These changes can adversely affect the health of the fish in our streams.

Furthermore, very high flows are common in our streams during larger storm events. During these events, the streamside vegetation along the creek banks begin to disappear, leading to erosion of the stream banks contributing to additional sediment in the water and habitat loss. High volume streamflows erode the stream banks and stream bottoms, and in many locations, this results in exposed PWD sewer infrastructure.

PWD and its partners are working hard to reverse the adverse impacts on our streams. As such, stream restoration projects, outreach to large property owners and the implementation of a variety of innovative stormwater management practices, such as green roof installations, are only a few examples of the steps that we are taking, as a City, towards the ultimate goal of transforming Philadelphia into a leading "green city" with "clean waters."

Cobbs Creek

Cobbs Creek drains approximately 23 miles over portions of 10 municipalities and the City of Philadelphia, ultimately discharging into the Darby Creek. The designated uses for the non-tidal suburban portion of Cobbs Creek include all the state-wide uses including: Migratory Fishes, Warm Water Fishes, Potable Water Supply, Industrial Water Supply, Livestock, Water Supply, Wildlife Water Supply, Irrigation, Boating, Fishing, Water Contact Sports, Aesthetics, plus the addition of Migratory Fishes (25 PA§ 93.9e).

Completed Plans and Watershed Assessments

A number of assessments and planning initiatives have been completed within this watershed area, each illuminating problems, potential problem sources as well as recommended solutions. PWD carried out a comprehensive sampling and monitoring program in the Darby-Cobbs Watershed between 1999 and 2002. PWD's sampling revealed some *good news* – very few (only five) of the Pennsylvania State Water Quality Criteria revealed exceedances of in dry weather conditions and thirteen during wet weather conditions. A total of 29 criteria were used to test these parameters. Also, during the biological assessment — 44 different species of fish were identified. And, as the Integrated Watershed Management Plan is implemented in this watershed, these numbers will only improve!

Among those evaluated by the CSO LTCPU process are:

- Cobbs Creek Wetland Assessment – 2000 and 2006
- Darby-Cobbs Comprehensive Characterization Report – 2004
- Geomorphologic Survey – Level II for Cobbs Creek – 2003
- Streamside Infrastructure Assessment – 2002
- Cobbs Creek Integrated Watershed Management Plan – 2004
- Darby-Cobbs River Conservation Plan – 2005
- The Darby-Cobbs Act 167 Stormwater Management Plan – 2005

Partnerships

In 1999, the Philadelphia Water Department initiated the Darby-Cobbs Watershed Partnership in an effort to engage residents, businesses, and government, as neighbors and stewards of the watershed. Since then, the Partnership has been active in developing a vision for the watershed and guiding and supporting subsequent planning activities within the watershed.

The mission as established by the Darby-Cobbs Watershed Partnership is *"To improve the environmental health and safe enjoyment of the Darby-Cobbs watershed by sharing resources through cooperation of the residents and other stakeholders in the watershed. The goals of the initiative are to protect, enhance, and restore the beneficial uses of the Darby-Cobbs waterways and riparian areas."*

Current Conditions	
Erosion, Sediment Accumulation, Flow Variety	•Stream bank erosion •Storm discharges •Channel modification •Hydromodification and combined sewer overflow
Wetlands	•43 wetlands have been identified within the watershed (many impaired) •10 wetland creation/enhancement opportunities have been identified •Invasive Species programs in place
Healthy Riparian Habitat	•Water diverted from land to waterways •Land Development/encroachment •Invasive Species Programs in place •Streamside tree plantings underway
In-stream Habitat and Biological Impairment	•Over-widening/Erosion •Loss of natural curves/Habitat alteration •Loss of floodplain •Loss of stream/floodplain connection •Loss/degradation of aquatic habitat •Severe water flow fluctuations •Point and non-point source (NPS) pollution from urban development
Sewer Odors	•Suspected sewer leaks during dry weather •Cross-connected sewer lines •CSOs*
Trash and Dumping	•Trash from stormwater discharge •Deliberate disposal of debris in the creeks •Careless behavior
Water Quality Concerns	•Sediment** •Bacteria*** •Dissolved Oxygen****

*Combined Sewer Overflow (CSO) number in Cobbs Creek: 34

**Sediment—symptom of erosion and habitat loss caused by high flows

***Bacteria—levels are higher during and soon after wet weather when CSO's and stormwater outfalls are discharging to the stream

****Dissolved Oxygen— Stormwater and CSO discharges, treated discharges, septic systems, lack of shade, invasive plant growth, natural sources, plunge pools and other poorly mixed areas

Tookany/Tacony-Frankford Creek

The Tookany/Tacony-Frankford (TTF) Watershed drains 29 square miles of Philadelphia and Montgomery County. The creek is referred to as the Tookany Creek until it enters Philadelphia at Cheltenham Avenue; then as the Tacony Creek until the confluence with the historic Wingohocking Creek in Juniata Park; and finally the section of the stream from Juniata Park to the Delaware River is referred to as the Frankford Creek. Municipalities within this watershed drainage area include Cheltenham Township, Abington Township, Jenkintown Borough, Rockledge Borough, Springfield Township and the City of Philadelphia.

Completed Plans and Watershed Assessments

A number of assessments and planning initiatives have been completed within this watershed area, each illuminating problems, potential sources as well as recommended solutions. From 2000 through 2004, PWD has collected water quality data for sampling locations in the Tookany/Tacony-Frankford Watershed. Sample results were compared to relevant PA DEP general water quality criteria to provide an initial impression of which parameters might need further investigation. Applicable relevant standards include water uses to support a potable water supply, recreation and fish consumption, human health, and aquatic life to support warm water fishes. PWD's sampling revealed some *good news* – very few (only nine) of the Pennsylvania State Water Quality Criteria revealed exceedances of in dry weather conditions and eighteen during wet weather conditions. A total of 46 criteria were used to test these parameters. Also, during the biological assessment — 17 different species of fish were identified. And, as the Integrated Watershed Management Plan is implemented in this watershed, these numbers will only improve!

Among those evaluated by LTCPU process are:

- TTF Creek Wetland Assessment – 2006
- Fluvial Geomorphologic Assessment of the TTF – 2006
- TTF Streamside infrastructure Assessment – 2005
- TTF Integrated watershed Management Plan – 2006
- Tacony-Frankford River Conservation Plan – 2005
- The TTF Act 167 Stormwater Management Plan – 2008

Partnerships

TTF Partnership is a consortium of proactive environmental groups, community groups, municipalities, government agencies, businesses, residents, and other watershed stakeholders who have an interest in improving their watershed.

The goals of the partnership are to protect, enhance, and restore the beneficial uses of the waterways and riparian areas. Through watershed management we can mitigate the adverse physical, biological, and chemical impacts of land uses as surface and ground waters are transported throughout the watershed to the waterways.

The mission of the TTF Partnership is *"To increase public understanding of the importance of a clean and healthy watershed; to instill a sense of appreciation and stewardship among residents for the natural environment; and to improve and enhance our parks, streams, and surrounding communities in the Tookany/Tacony-Frankford watershed.*

Current Conditions	
Erosion, Sediment Accumulation, Flow Variety	•Stream bank erosion •Storm discharges •Channel modification •Hydromodification and combined sewer overflow
Wetlands	•24 wetlands have been identified within the watershed (many impaired) •26 wetland enhancement opportunities have been identified •Invasive Species programs in place
Healthy Riparian Habitat	•Water diverted from land to waterways •Land Development/encroachment •Invasive Species Programs in place •Streamside tree plantings underway
In-stream Habitat and Biological Impairment	•Over-widening/Erosion •Loss of natural curves/Habitat alteration •Loss of floodplain •Loss of stream/floodplain connection •Loss/degradation of aquatic habitat •Severe water flow fluctuations •Point and non-point source (NPS) pollution from urban development
Sewer Odors	•Suspected sewer leaks during dry weather •Cross-connected sewer lines •CSOs*
Trash and Dumping	•Trash from stormwater discharge •Deliberate disposal of debris in the creeks •Careless behavior
Water Quality Concerns	•Sediment** •Bacteria*** •Dissolved Oxygen****

*Combined Sewer Overflow (CSO) number in TTF Creek: 31
**Sediment—symptom of erosion and habitat loss caused by high flows
***Bacteria—levels are higher during and soon after wet weather when CSO's and stormwater outfalls are discharging to the stream
****Dissolved Oxygen— Stormwater and CSO discharges, treated discharges, septic systems, lack of shade, invasive plant growth, natural sources, plunge pools and other poorly mixed areas

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Completed Plans and Watershed Assessments

A number of assessments and planning initiatives have been completed within this watershed area, each illuminating problems, potential sources as well as recommended solutions. From 2000 through 2004, PWD has collected water quality data for sampling locations in the Tookany/Tacony-Frankford Watershed. Sample results were compared to relevant PA DEP general water quality criteria to provide an initial impression of which parameters might need further investigation. Applicable relevant standards include water uses to support a potable water supply, recreation and fish consumption, human health, and aquatic life to support warm water fishes. PWD's sampling revealed some *good news* – very few (only nine) of the Pennsylvania State Water Quality Criteria revealed exceedances of in dry weather conditions and eighteen during wet weather conditions. A total of 46 criteria were used to test these parameters. Also, during the biological assessment — 17 different species of fish were identified. And, as the Integrated Watershed Management Plan is implemented in this watershed, these numbers will only improve!

Among those evaluated by LTCPU process are:

- TTF Creek Wetland Assessment – 2006
- Fluvial Geomorphologic Assessment of the TTF – 2006
- TTF Streamside infrastructure Assessment – 2005
- TTF Integrated watershed Management Plan – 2006
- Tacony-Frankford River Conservation Plan – 2005
- The TTF Act 167 Stormwater Management Plan – 2008

Partnerships

TTF Partnership is a consortium of proactive environmental groups, community groups, municipalities, government agencies, businesses, residents, and other watershed stakeholders who have an interest in improving their watershed.

The goals of the partnership are to protect, enhance, and restore the beneficial uses of the waterways and riparian areas. Through watershed management we can mitigate the adverse physical, biological, and chemical impacts of land uses as surface and ground waters are transported throughout the watershed to the waterways.

The mission of the TTF Partnership is *"To increase public understanding of the importance of a clean and healthy watershed; to instill a sense of appreciation and stewardship among residents for the natural environment; and to improve and enhance our parks, streams, and surrounding communities in the Tookany/Tacony-Frankford watershed.*

Current Conditions	
Erosion, Sediment Accumulation, Flow Variety	•Stream bank erosion •Storm discharges •Channel modification •Hydromodification and combined sewer overflow
Wetlands	•24 wetlands have been identified within the watershed (many impaired) •26 wetland enhancement opportunities have been identified •Invasive Species programs in place
Healthy Riparian Habitat	•Water diverted from land to waterways •Land Development/encroachment •Invasive Species Programs in place •Streamside tree plantings underway
In-stream Habitat and Biological Impairment	•Over-widening/Erosion •Loss of natural curves/Habitat alteration •Loss of floodplain •Loss of stream/floodplain connection •Loss/degradation of aquatic habitat •Severe water flow fluctuations •Point and non-point source (NPS) pollution from urban development
Sewer Odors	•Suspected sewer leaks during dry weather •Cross-connected sewer lines •CSOs*
Trash and Dumping	•Trash from stormwater discharge •Deliberate disposal of debris in the creeks •Careless behavior
Water Quality Concerns	•Sediment** •Bacteria*** •Dissolved Oxygen****

*Combined Sewer Overflow (CSO) number in TTF Creek: 31
**Sediment—symptom of erosion and habitat loss caused by high flows
***Bacteria—levels are higher during and soon after wet weather when CSO's and stormwater outfalls are discharging to the stream
****Dissolved Oxygen— Stormwater and CSO discharges, treated discharges, septic systems, lack of shade, invasive plant growth, natural sources, plunge pools and other poorly mixed areas

Delaware River

(Delaware Direct)

The Delaware Direct Watershed, located entirely in Philadelphia and draining approximately 84 square miles, is highly urbanized and discharges directly to the Delaware River. As an urban watershed, this area has rich complexities and multiple dimensions- diverse land use and communities, Center City, a formerly industrial Delaware waterfront, and a mix of neighborhoods and communities, reflecting a wide range of stakeholders, concerns and interests. Yet, there are many planning projects underway, many people gathering around the river and many groundbreaking events and projects taking place at this very moment in Philadelphia. As a result, the plans and teams behind these projects are aiding in the reconnection of the people and the City of Philadelphia to its waterway, making the streams and parks in our communities valuable assets to our citizens and joining PWD and partners in our protection efforts.

Completed Plans and Watershed Assessments

A number of assessments and planning initiatives have been completed within this watershed area, each illuminating problems, potential sources as well as recommended solutions. Dissolved Oxygen levels have increased significantly over the last three decades, enabling shad to more freely though the tidal zone of the Delaware River and into the freshwater zone in Philadelphia, as they make their way to the Fairmount Fish Ladder in the Schuylkill River. Where the shad were once limited by a lack of oxygen, they are returning to migrate up the Delaware River - a valuable indicator of improving environmental conditions!

Among those evaluated by the CSO LTCPU process are:

- Delaware Direct River Conservation Plan – 2009
- Delaware River Source Water Protection Plan – 2007
- Delaware Estuary Program's State of the Estuary Report – 2008
- GreenPlan Philadelphia – 2008
- North Delaware Riverfront Master Plan – 2001
- Central Delaware Riverfront Planning Process – 2008
- Northern Liberties Waterfront Plan – 2007
- Philadelphia Navy Yard Master Plan
- Delaware River Basin Commission Boat Run Data
- USGS Gage Stations

Partnerships

The Delaware Direct Watershed Partnership was formed in 2007 to support the River Conservation Planning process for the Delaware Direct River Conservation Plan. A myriad of stakeholders are involved– non-profits, state and local government, in addition to community representatives.

Current Conditions	
Erosion, Sediment Accumulation, Flow Variety	•Stream bank erosion •Storm discharges •Channel modification •Hydromodification and combined sewer overflow
Wetlands	•Several wetland creation/enhancement opportunities have been identified
Healthy Riparian Habitat	•Water diverted from land to waterways •Land Development/encroachment •Invasive Species Programs in place •Streamside tree plantings underway
In-stream Habitat and Biological Impairment	•Loss of flood plain •Loss of stream/floodplain connection •Loss/degradation of aquatic habitat •Point and non-point source (NPS) pollution from urban development
Sewer Odors	•Suspected sewer leaks during dry weather •Cross-connected sewer lines •CSOs*
Trash and Dumping	•Trash from stormwater discharge •Deliberate disposal of debris in the creeks •Careless behavior
Water Quality Concerns	•Sediment** •Bacteria*** •Dissolved Oxygen****

*Combined Sewer Overflow (CSO) number in Delaware River: 54

**Sediment—symptom of erosion and habitat loss caused by high flows

***Bacteria—levels are higher during and soon after wet weather when CSO's and stormwater outfalls are discharging to the stream

****Dissolved Oxygen— Stormwater and CSO discharges, treated discharges, septic systems, lack of shade, invasive plant growth, natural sources, plunge pools and other poorly mixed areas

Philadelphia Water Department

Internet Resources

PhillyRiverInfo

http://www.phillyriverinfo.org/

On this website, you will find general information on Philadelphia's watersheds as well as upcoming watershed-related events. Check this site often to find out what is going on in your watershed!

Green Cities, Clean Waters (LTCPU)

http://www.phillyriverinfo.org/csoltcpu/

An offshoot of PhillyRiverInfo, this websites focuses on the Green Cities, Clean Waters Program (Combined Sewer Overflow Long Term Control Plan Update). Here you can read about details of the plan and learn about the basics of a combined sewer system.

CSOCast

http://www.phillywatersheds.org/csocast/

NEW! This website is PWD's latest effort to show the overflow status of the City's 164 Combined Sewer Outfalls. CSO Cast indicates whether CSOs are occurring or are suspected to have occurred within the last 24 hours. It is updated twice daily with information from PWD's extensive sewer monitoring network.

RiverCast

http://www.phillyrivercast.org/

The Philly RiverCast is a forecast of water quality that predicts potential levels of pathogens in the Schuylkill River between Flat Rock Dam and Fairmount Dam (i.e., between Manayunk and Boathouse Row). Visit this site to find out the daily RiverCast prediction and to learn more about water quality.

Rain Barrel Program

http://www.phillywatersheds.org/rainbarrel/)

The Philadelphia Water Department is providing rain barrels to residents of Philadelphia's watersheds free of charge, in order to promote the reduction of stormwater flows to our sewer system and creeks. To receive a rain barrel, you must attend a rain barrel workshop to be educated on the installation and use of the rain barrel. Rain barrel workshops are held in locations around the city throughout the year. Check this website to see when a workshop is being held in your watershed.

THE CSO LONG TERM CONTROL PLAN *UPDATE*

GREEN CITIES
CLEAN WATERS

Clean Water Benefits and the Balanced Approach

The City of Philadelphia

Combined Sewer Overflow (CSO)
A wastewater collection system that transports wastewater from homes, businesses, industry, and stormwater from storm drains on our city streets through a single-pipe system to a Water Pollution Control Plant. Under heavy rainfall conditions the flow in the combined sewers may exceed the capacity of the pipe or treatment facility. As a result, a portion of the wastewater and stormwater may be diverted directly to a nearby stream or river to prevent the flooding of homes and streets.

National Pollutant Discharge Elimination System (NPDES)
A provision of the Clean Water Act which prohibits discharge of pollutants into waters of the United States unless a special permit is issued by EPA, a state, or, where delegated, a tribal government on an Indian reservation.

Non-Point Source
Diffuse pollution sources (i.e., without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by stormwater. In Philadelphia, examples include stream bank erosion and construction.

Point Source
A stationary location or fixed facility from which pollutants are discharged; any single identifiable source of pollution; e.g. a pipe, ditch, ship, ore pit, factory smokestack. Municipal sewer systems are regulated as point sources.

Pollutant
Generally, any substance introduced into the environment that adversely affects the usefulness of a resource of the health of humans, animals, or ecosystems.

Receiving Waters
A river, lake, ocean, stream or other watercourse into which wastewater or treated effluent is discharged.

Runoff
That part of precipitation, snow melt, or irrigation water that runs off the land into streams or other surface-water.

Sanitary Sewer
Underground pipes that carry only domestic or industrial waste, not storm water.

Sanitary Sewer Overflow (SSO)
Untreated or partially treated sewage overflows from a sanitary sewer collection system.
Definition from Philadelphia Water Department

Stormwater
The water that runs off surfaces such as rooftops, paved streets, highways and parking lots. It can also come from hard grassy surfaces like lawns, play fields, and from graveled roads and parking lots. *Definition from King County, Water and Land Resources Division.*

Wastewater
The spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter.

Water Pollution
The presence in water of enough harmful or objectionable material to damage the water's quality.

Water Quality Standards (WQS)
Water quality standards are provisions of state or federal law which consist of a designated use or uses for the waters of the United States, water quality criteria to protect the most sensitive uses for such waters, and an antidegradation policy and implementation procedures to protect water quality. Water quality standards are established to protect the public health or welfare, enhance the quality of water and serve the purposes of the CWA.

Bill Stuffers & WaterWheels

Philadelphia Water Department

WATER Wheel

Protecting Your Environment / 2008

CSO: Public Notification Means You're in the Know

Stormwater Best Management Practices Awards

What is a WATERSHED?

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

The watersheds that drain directly to Philadelphia are: Darby Cobbs Watershed, Schuylkill Watershed, Wissahickon Watershed, Delaware Watershed, Pennypack Watershed, Tookany/Tacony-Frankford Watershed and Poquessing Watershed.

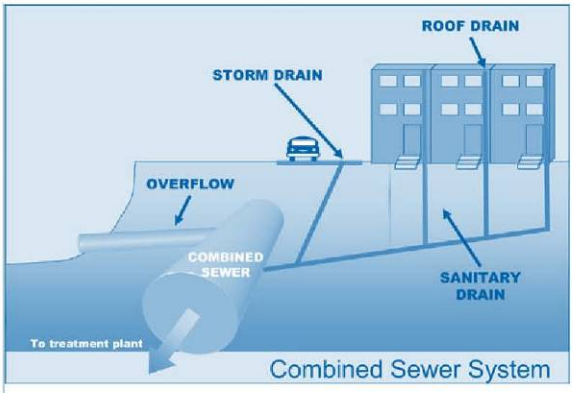
Combined Sewer Overflow (CSO) Public Notification Signage Program

What is a Combined Sewer Overflow (CSO)?

A combined sewer system transports sanitary wastewater (from homes, businesses and industry), stormwater from the storm drains on our streets and stormwater from property downspouts through a single-pipe to a Water Pollution Control Plant (treatment plant).

Under heavier rainfall conditions, however, the flow in combined sewers may exceed the capacity of the pipe or treatment facility. As a result, a portion of the wastewater and stormwater may be sent directly to a nearby stream or river to prevent the flooding of homes and streets. This is what is known as a Combined Sewer Overflow.

During heavy rainfalls or sudden snowmelts, Philadelphia may experience these overflows in various locations throughout the City. These overflows may exceed water quality standards, threaten aquatic life and its habitat, and impair the use and enjoyment of the water body.



Combined Sewer System

What is the goal of the Combined Sewer Overflow (CSO) Public Notification Program?

The goal of the Philadelphia Water Department's (PWD) CSO program is to improve and preserve the water environment in the Philadelphia area.

The goal of the CSO Public Notification Program is to educate the public on CSOs using a variety of methods that will reach different segments of the population. One method that we are implementing is the CSO Public Notification Signage Program. This program informs the public of the potential hazards of primary contact with creeks and rivers during combined sewer overflow events.

What is the goal of the Signage Program?

PWD is striving to educate citizens about water quality conditions in our rivers and streams during and after a rain storm.

In 2005, PWD initiated its pilot signage program and installed signs at stream and river locations with good public access. The goal of the pilot program is to gauge the effectiveness of signage as compared to other public outreach efforts. PWD is concerned about primary contact with the water (skin contact) in CSO areas during or immediately after a rain event. The signs warn the public to avoid fishing, use of PWCs (Personal Water Crafts, such as jet-skis or wave runners), wading and particularly swimming. CSOs contain bacteria and pathogens that could make someone sick if they swallow water or eat fish that have come in contact with CSOs. The public should not go in the water, near the CSOs, for 48 hours after a heavy rain event.

The signs are in English and Spanish. PWD recognizes that there are many native-Spanish speakers that use our parks and waterways for recreation, as well as other non-English native speakers.

The signs also include the Philadelphia Water Department Hotline – 215-685-6300. PWD should be contacted if there is flow coming from the outfall during dry weather (when it is not raining).

Philadelphia Water Department

Frequently Asked Questions (FAQs)

Can I swim in the water near a CSO?

Swimming and bathing are not permitted in the City's rivers and streams due to risks of drowning, injury from submerged objects, strong currents, and other hazards. An additional risk to the public is ingesting tainted water from an overflow as untreated sewage contains bacteria. Women of child-bearing age, children, the elderly, and persons with compromised immune systems are at an even higher risk of getting sick.

Is it safe for my dog to drink the water near a CSO?

PWD recommends that your dog not drink the water after a rainstorm. Despite their superior sense of smell, dogs are known to get "up close and personal" with things that might seem gross to you, or stop to take a drink out of a muddy puddle. If this really concerns you, consider carrying plenty of drinking water and a "packable" drinking bowl for your dog. Dogs that are offered plenty of water in this manner may be less likely to drink out of the creek.

Can I eat the fish?

The Pennsylvania Fish and Boat Commission and Pennsylvania Department of Environmental Protection have jointly issued a statewide "blanket" consumption advisory recommending no more than one meal (up to 8oz) per week of recreationally caught fish, including hatchery-raised stocked trout.

Mercury and PCBs can be harmful to humans, and all fish, whether wild-caught or farm-raised, will contain some level of these contaminants. Women of child-bearing age, children, elderly, and persons with compromised immune systems may wish to limit their consumption of fish. If you still plan to consume the fish, please follow the cooking and cleaning directions for eating skinned and trimmed fish. These instructions, along with other information, may be found at http://www.depweb.state.pa.us.

Stormwater Best Management Practices (BMP) Recognition Program

On May 3, 2007, the Stormwater Best Management Practices (BMP) Recognition Program announced the exemplary and innovative stormwater management projects that were recognized for helping to transform the health of our watersheds in the region. The event took place at the third annual Urban Watersheds Revitalization Conference, held at the Kanbar Center at Philadelphia University.

The Stormwater BMP Recognition Program is sponsored by the Philadelphia Water Department, American Water Resources Association (AWRA), Montgomery County Conservation District, Villanova University, and the Department of Environmental Protection (Coastal Zone Management).

Please visit the website for more information and to submit an application: http://www.stormwaterBMP.org.

2007 Stormwater Best Management Practices (BMP) Recognition Program Recipients

Andropogon Associates & Friends of Wissahickon
Valley Green Environmental Restoration Program
Type of Project: Rain Garden

Gilmore & Associates
Chatham Financial Corporate Headquarters
Type of Projects: Retention Basin/ Wet-Pond & Native Species Landscape Restoration (Meadows)

Johnson & Johnson
Pharmaceutical Research and Development Spring House Road Property
Type of Projects: Porous Asphalt Parking Lot, Underground Infiltration Beds, and Bioretention Swales

Lower Merion Environmental Advisory Council
Riverbend Environmental Education Center
Type of Projects: Porous Pavement Parking Lot and Vegetative Swale

Lower Merion Township
Aqua America Headquarters
Type of Project: Bioretention Parking Lot

Lower Providence Township
Type of Project: Naturalized Stormwater Basin

Pennoni Associates, Inc.
3925 Walnut Street Mixed Use Facility
Type of Project: Green Roof

Upper Darby Township & Cahill Associates
Second Ward Park
Type of Project: Stormwater Retrofit - Porous Pavement Basketball Courts, Bioretention, and Tree Trench

Upper Perkiomen High School (UPHS)
UPHS Stormwater BMPs
Type of Project: Wet-Pond and Vegetated Swales

Upper Providence Township
Black Rock
Type of Project: Naturalized Basin

Warrington Environmental Advisory Committee
Igoe, Porter, Wellings Memorial Field
Type of Project: Rain Garden

Wissahickon Valley Watershed Association
Sandy Run
Type of Project: Wetland Restoration

Wissahickon Charter School
Harmony Garden
Type of Project: Infiltration Basin

Roofscapes, Inc.
Lifetime Achievement Award
Philadelphia Fencing Academy
Type of Project: Green Roof

Philadelphia Water Department

WATER Wheel

Waterways Issue / 2009

Green Cities – Clean Waters

Tookany/Tacony-Frankford Creek

Protecting and Preserving Our Waterways

The Philadelphia Water Department (PWD) is always working to protect your water resources. This includes managing the stormwater that comes with heavy rain or snow falls. We are working on ways to control stormwater that also help our waterways. Our plan to do this is called a "Long Term Control Plan," or LTCP.

Part of our plan includes studying at our combined sewer system and the rivers and streams. This means we now know how our system is working, and where we can make changes to help it work better.

What is a Combined Sewer Overflow (CSO)?

A combined sewer system brings wastewater from homes, businesses and industry, and stormwater from the storm drains on our streets through a single-pipe system to a Water Pollution Control Plant (treatment plant).

Under heavier rainfall conditions, the flow in combined sewers may be more than the pipe or treatment plant can handle. This means that some of the wastewater and stormwater may flow directly to a nearby stream or river to prevent the flooding of homes and streets. This is what is known as a Combined Sewer Overflow.

What is a Watershed?

A watershed is the land surrounding a system of rivers (or streams or creeks), or a particular river, that, when it rains, sheds the runoff into that waterway.

Everything you do impacts your watershed. Runoff from garden fertilizers, hazardous substances like used motor oil, and trash dumped into one area of a river bank, can pollute water many miles downstream. Protecting and preserving our watersheds helps protect our water resources.

The watersheds that drain directly to Philadelphia are: Darby Cobbs Watershed, Schuylkill Watershed, Wissahickon Watershed, Delaware Watershed, Pennypack Watershed, Tookany/Tacony-Frankford Watershed and Poquessing Watershed.

Green City – Clean Water

We want to make Philadelphia's urban landscape into a vibrant, green community where people want to live and work.

Philadelphia can be a green city with clean water -- and benefit economically at the same time. We can help our watershed as well as our region's economic health, quality of life and sustainability.

PWD has the knowledge and experience for creating and managing a watershed approach to Combined Sewer Overflow (CSO) control. We own and operate the City's sanitary sewers, storm sewers, combined sewers and wastewater treatment plants. We work in cooperation with the Philadelphia City Planning Commission to help local builders and developers include stormwater management in many of their projects.

In 2007, PWD began to review its CSO Long Term Control Plan (LTCP) and capital improvements program. We want to make sure our capital improvement projects control CSOs.

For our CSO Long Term Control Plan Update (LTCPU), we have developed new ways to handle sanitary sewer system flows. We have also been successful in reducing CSOs.

Over the past few years, we have gathered thousands of facts about the Schuylkill and Delaware Rivers, as well as the Cobbs and Tookany/Tacony-Frankford Creeks. We have information about their water quality, aquatic wildlife, history, land use, cultural resources, and more.

Watersheds and Waterways

We work with many local partners, including educational and environmental groups, township and other governments, and volunteer organizations. These partnerships are very important in the work we do to protect our waterways. The partnerships work together to write a plan to improve the water resources in each watershed.

Using a watershed approach means we look at more than just Philadelphia's city boundaries. Rivers and streams don't stop at those boundaries, so we don't either.

Some waterways are already damaged – erosion, trash-dumping, and neglect can mean polluted water or even further erosion. We are working to clean up damaged waterways. This will protect the land nearby, and let us enjoy recreational activities on or near the waterways.

Philadelphia Water Department

WATER Wheel

The Tookany/Tacony-Frankford Creek Plan

Looking at The Tookany/Tacony-Frankford Watershed

The Tookany/Tacony-Frankford Creek Watershed is in Philadelphia and Montgomery counties, and is 29 square miles in size. From 2000 to 2004, PWD collected water data for the watershed to look at the health of the water and the land.

We then compared our findings with 46 standards set by the Pennsylvania Department of Environmental Protection. These standards tell us if the water can be used for drinking, and recreational uses, and if the water is clean enough for human health and aquatic life.

Our results were positive, but we did find some areas where we want to improve, and we developed our Watershed Management Plan.

Some of the issues we are now working on include: stream bank erosion, loss of floodplain, pollution from urban development, suspected sewer leaks, and trash and debris dumping.

We have identified the wetlands that need help the most, and developed a list of 26 projects to improve the health of these areas. We are also planting trees to help control erosion, and removing some invasive plants and aquatic life that harm our natural wildlife.

Glossary

Here are definitions of some of the terms we use when talking about water.

Sanitary Sewer
Underground pipes that carry only domestic or industrial waste, not stormwater. *Definition from the U.S. Environmental Protection Agency (EPA).*

Sanitary Sewer Overflow (SSO)
Untreated or partially treated sewage overflows from a sanitary sewer collection system. *Definition from Philadelphia Water Department.*

Stormwater
The water that runs off surfaces such as rooftops, paved streets, highways and parking lots. It can also come from hard, grassy surfaces like lawns, play fields, and from graveled roads and parking lots. *Definition from King County, Water and Land Resources Division.*

Wastewater
The spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter. *Definition from EPA.*

Water Pollution
The presence in water of enough harmful or objectionable material to damage the water's quality. *Definition from EPA.*

Other Resources

PhillyRiverInfo
http://www.phillyriverinfo.org/
On this website, you will find general information on Philadelphia's watersheds. Check this site to find out what is going on in your watershed!

Green Cities, Clean Waters (LTCPU)
http://www.phillyriverinfo.org/csoltcpu/
This websites focuses on the Green Cities, Clean Waters Program (Combined Sewer Overflow Long Term Control Plan Update). Read about details of the plan and learn about the basics of a combined sewer system.

CSOCast
http://www.phillywatersheds.org/csocast/
This website shows the overflow status of the City's 164 Combined Sewer Outfalls. It is updated twice daily.

RiverCast
http://www.phillyrivercast.org/
This is a forecast of water quality that predicts potential levels of pathogens in the Schuylkill River between Manayunk and Boathouse Row. Visit this site to find out the daily RiverCast prediction.

Rain Barrel Program
http://www.phillywatersheds.org/rainbarrel/
PWD is providing rain barrels to residents of Philadelphia's watersheds free of charge. To receive a rain barrel, you must attend a rain barrel workshop. Check this website to see the schedule.

The Combined Sewer Overflow Program: A Long Term Control Plan For Our Rivers

Introduction

Philadelphia is blessed with an abundance of creeks, open space, park land and beautiful rivers. The Schuylkill and Delaware Rivers are not only scenic; they are the drinking water source for Philadelphia residents. These waterways, however, suffer from pollution from various sources, both within and outside of the City limits. One such pollution source: Combined Sewer Overflows (CSOs).

What is the Goal of PWD's Combined Sewer Overflow Program?

The goal of the Philadelphia Water Department's (PWD) combined sewer overflow program is to improve and preserve the water environment in the Philadelphia area and implement technically viable, cost-effective improvements and operational changes. PWD has taken a three-pronged approach:

1. Nine Minimum Controls (NMC) – System "Tune-Up"

The first component of the PWD CSO strategy involves the Nine Minimum Controls (NMCs). The NMCs are low-cost actions or measures that can reduce CSO discharges and their effect on receiving waters, do not require significant engineering studies or major construction, and can be implemented in a relatively short time frame. This program ensures that our existing sewer system is operating to the best of its ability, providing a "tune-up" to the existing infrastructure.

For more details on the NMCs, please visit the U.S.EPA on-line at: http://cfpub.epa.gov/npdes/home.cfm?program_id=5.

2. Capital Projects – Design and Build New Combined Sewer System Components

The second component of the PWD CSO strategy involves technology-based capital improvements to the City's sewer system. This program requires significant engineering, design and construction to improve the performance of the combined sewer system. This program has and will continue to increase the capacity of the City's combined sewer system, reduce infiltration into the system, decrease the volume of overflows and improve stream water quality.

What are Combined Sewer Overflows?

A combined sewer system is a wastewater collection system which transports sanitary wastewater (from homes, businesses and industry), stormwater from the storm drains on our streets (approximately 75,000 of them) and stormwater from property rain leaders - through a single-pipe system to a Water Pollution Control Plant (WPCP).

During dry weather conditions (when it is not raining) and during very small storm events, combined sewers can adequately transport this mixture of sanitary wastewater and stormwater to one of the City's three water pollution control plants for treatment.

Under heavier rainfall conditions, however, the flow in combined sewers may exceed the capacity of the pipe or treatment facility. As a result, a portion of the wastewater and stormwater may be diverted directly to a nearby stream or river to prevent the flooding of homes and streets. This is what is known as a Combined Sewer Overflow.

During heavy rainfalls or sudden snowmelts, Philadelphia may experience these overflows in various locations throughout the City from any of its 164 permitted combined sewer outfalls. These overflows may exceed water quality standards (WQS), threaten aquatic life and its habitat, and impair the use and enjoyment of the water body.

A watershed refers to the land that drains stormwater (rain or melting snow) to a specific body of water, such as a river or stream.

3. Watershed Management and Watershed Partnerships

The watershed approach evaluates the impacts of both point and non-point pollution sources and aims to find regional, watershed solutions to restore water quality. Because watersheds are defined by natural features and do not adhere to political boundaries, PWD believes that watershed management is the most practical and effective way to manage pollution and improve water quality.

The PWD forms partnerships with its suburban neighbors, businesses and industries, community and non-profit groups and other stakeholders to evaluate the region's watersheds and to develop an effective watershed management plan. To be successful, watershed management plans must be adopted and implemented by all participating stakeholders and their constituents.

To date, PWD has initiated the formation of watershed partnerships in all of the City's watersheds. The combined sewer watersheds include the Darby-Cobbs Watershed Partnership, Tookany/Tacony – Frankford Watershed Partnership and Pennypack Watershed Partnership, while the separate sewer watersheds include the Poquessing Watershed Partnership and the Wissahickon Watershed Partnership. The Schuylkill Watershed is represented by the Schuylkill Action Network (SAN), a partnership of the City of Philadelphia, federal and state agencies, and local watershed groups protecting the drinking water supply in the Schuylkill River Watershed. This fall, the Delaware Direct Watershed Partnership will be formed.

If you are interested in joining a partnership or for further information on the PWD watershed management planning projects, visit: http://www.phillyriverinfo.org.

Green Cities – Clean Waters: Combined Sewer Overflow Long Term Control Plan Update

Crescentville CSO

The CSO Long Term Control Plan Update is also known as the "Green Cities – Clean Waters Program."

Introduction

In 2007, PWD began to reevaluate its combined sewer overflow program and capital improvements program to integrate additional projects that reduce CSO frequency and volume. As a result, the CSO Long Term Control Plan Update (LTCPU) was created. It involves the development of management alternatives that ensure capture and treatment of sanitary sewer system flows and CSO reductions.

PWD is committed to a balanced "Land-Water-Infrastructure" approach to achieve its watershed management and CSO control goals. This method includes infrastructure-based approaches, where appropriate, but also includes a range of land-based stormwater management techniques and the physical reconstruction of aquatic habitats, where appropriate.

The "Land-Water-Infrastructure" approach is made up of three programs:

LAND: Wet Weather Source Control

The Wet Weather Source Control program promotes the use of Low Impact Development (LID) and other structural and non-structural controls to reduce CSO volume through evaporation, transpiration, infiltration and detained release to the combined system for treatment, such as an extensive street tree program, green roofs and rain gardens. This program also requires post-construction stormwater controls on land development and redevelopment in the combined sewer area to achieve CSO reductions.

WATER: Ecosystem Restoration and Aesthetics

The Ecosystem Restoration and Aesthetics program focuses on projects that contribute to the improvement of the aesthetic and ecological integrity of CSO receiving waters. Such water-based approaches include stream bed and bank stabilization and reconstruction, aquatic habitat creation, plunge pool removal, improvement of fish passage, and floodplain reconnection.

INFRASTRUCTURE: Capital Improvement Projects

The Capital Improvement Projects program continues to implement CSO capital improvement projects that were planned during the previous combined sewer overflow program in addition to new projects to increase the capture and treatment of combined sewage. Examples of such projects include the work of the Waterways Restoration Team, Stream Habitat Restoration, Wetland Enhancement and Construction, Fish Passage Projects and Riparian Buffer Creation and Enhancement.

GLOSSARY

Runoff refers to water from rain or melting snow or irrigation that flows over the ground and into the nearest body of water. It can contribute to soil erosion and carry harmful pollutants.

Point source pollution refers to any discernible, confined, and discrete conveyance, such as a pipe, tunnel or ditch, from which pollutants are or may be discharged.

Nonpoint source (NPS) pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, such as lawn fertilizers, oil and dog waste, finally depositing them into the nearby creeks and rivers.

Receiving Waters: All distinct bodies of water that receive runoff or wastewater discharges, such as streams, rivers, ponds, lakes, and estuaries.

Water Quality Standards (WQS) are state-adopted and EPA-approved standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

annual

Drinking Water Quality Report

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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PWD is an active and proud member of:

- American Water Resources Association
- American Water Works Association
- American Water Works Association Research Foundation
- 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

PWD's Public Water System Identification #PA1510001

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

The Philadelphia Water Department

The Philadelphia Water Department (PWD) is pleased to present our annual Water Quality Report. This report, published in April 2008, includes water quality information for the 2007 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?

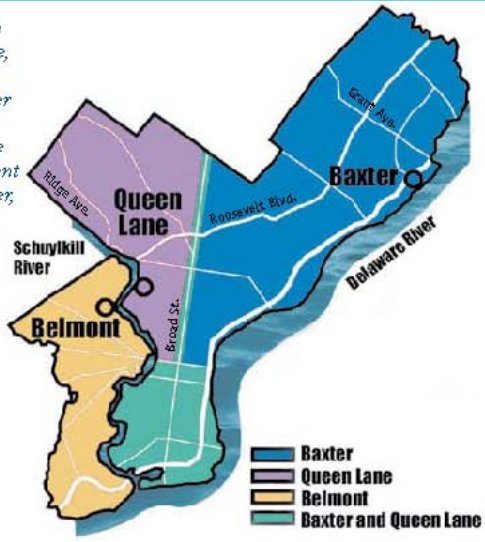
Philadelphia is located in the Delaware River Watershed, which begins in New York State and extends 330 miles south to the mouth of the Delaware Bay. The Schuylkill River is part of the Delaware River Watershed.

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 256 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. 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 (formerly West River 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.

Depending on where you live, you receive drinking water from one of the city's three water treatment plants – Baxter, Belmont, or Queen Lane.



Safeguarding the water you drink.

At their sources, the Delaware and Schuylkill Rivers are generally clean rivers. 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 Environmental Protection Agency 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 Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791) or from their website (http://www.epa.gov/safewater).

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, in some cases, radioactive material, 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.

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.

What do we look for?

Under Primary and Secondary Safe Drinking Water Regulations, EPA and Pennsylvania 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, Radionuclides Rule. We monitored for the regulatory parameters listed below. Tables on page 8 and page 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, cyanide free, 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, 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.

Additional Testing

We periodically test for the following contaminants, even though the Pennsylvania Department of Environmental Protection (PADEP) does not require us to do so: nitrite, asbestos, dalapon, dinoseb, dioxin, diquat, endrin, glyphosate, hexachlorobenzene, 2,4-D, PCBs, toxaphene, 2,4,5-TP, heptachlor, heptachlor epoxide, and vinyl chloride. No significant levels of any of the above contaminants have been found in Philadelphia's drinking water.

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 leaded 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 PADEP 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.

However, this could change in any year 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 Environmental Protection Agency's Safe Drinking Water Hotline at 800-426-4791.

Research and Monitoring:
Cryptosporidium and Giardia

Cryptosporidium and *Giardia* are microscopic organisms found in surface water throughout the U.S. In 2007, we conducted 36 tests on our treated drinking water. None of the samples were positive for *Giardia* or *Cryptosporidium*.

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 appropriate precautions to take to avoid infection. *Cryptosporidium* and *Giardia* must be ingested to cause disease, and it 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. We are also 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. 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

Since 2004, the Philadelphia Water Department has participated in national research and monitoring of pharmaceuticals in drinking water. The technology to detect pharmaceuticals in water is very recent and only a few laboratories in the nation have this capability. The Philadelphia Water Department has been working with them.

Nationwide, pharmaceuticals get into drinking water because people now take more pharmaceuticals than ever, both prescription and over the counter. Only a small portion of these pharmaceuticals is absorbed in the body. The rest is passed through the body, eventually making its way into our nations's rivers and streams which are our drinking water sources. The levels we have found 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 extremely low 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.

Partnership for Safe Water

Employees of the Philadelphia Water Department's three water treatment plants have earned six consecutive Director's Awards for maintaining an elite status 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 it is 40 percent less than the Partnership's voluntary goal of 0.1 ntu.

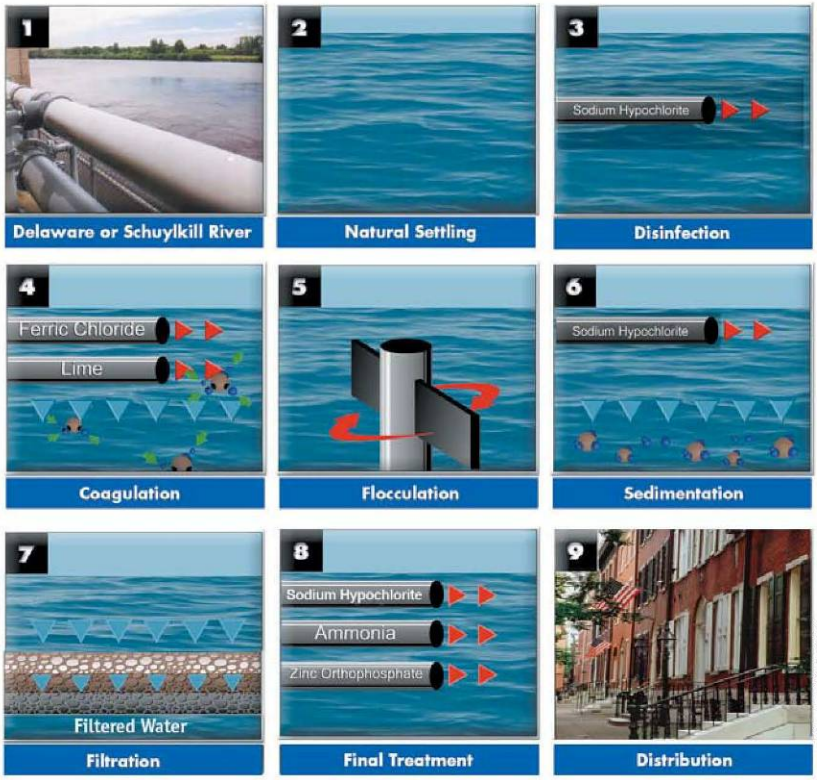
The Partnership for Safe Water established a turbidity goal of less than 0.10 ntu (at all times tested). Today, all three of our water treatment plants continue to lower their ntu levels, achieving a total annual average of 0.06 ntu.

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.

drinking water treatment

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

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 water to join together. This makes them 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 may be added.

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. More sodium hypochlorite may be added. 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 nearly 3,300 miles of water mains to 480,000 households in Philadelphia.

2007 DRINKING WATER QUALITY

METALS - *Tested at Customers' Taps - Testing is done every 3 years. Most recent tests were done in 2005.*

	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	9 ppb	9 out of 107	Corrosion of household plumbing
Copper	90% of homes must test less than 1.3 ppm	1.3 ppm	0.3 ppm	0	Corrosion of household plumbing

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	36 ppb Range of individual test results: 12 - 70 ppb	45 ppb Range of individual test results: 12 - 82 ppb	46 ppb Range of individual test results: 15 - 82 ppb	Byproduct of drinking water chlorination
Total Haloacetic Acids (THAAs)	60 ppb	31 ppb Range of individual test results: 19 - 47 ppb	28 ppb Range of individual test results: 12 - 59 ppb	26 ppb Range of individual test results: 13 - 45 ppb	Byproduct of drinking water chlorination

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	1.38	1.50	1.61	Naturally present in the environment.

BACTERIA IN TAP WATER

NOTE: One 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 Bacteria	Presence of coliform bacteria in 5% or less of more than 360 monthly samples	0	Highest % of positive samples: 0.22%	Naturally present in the environment.

OTHER CHEMICALS IN TAP WATER – PWD monitors annually although we are only required to report every nine years

	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	4.9 ppm	0.75 - 4.9 ppm	Fertilizer runoff, sewage
Barium	2 ppm	2 ppm	0.04 ppm	0.03 - 0.04 ppm	Metal refineries or natural deposits
Cyanide	0.2 ppm	0.2 ppm	0.06 ppm	0.05 - 0.06 ppm	Discharge from steel/metals, plastics and fertilizer factories

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 0.30 ntu	95% of samples must be at or below 0.30 ntu	95% of samples must be at or below 0.30 ntu	Soil runoff, river sediment
Highest Single Value for the year	0.085 ntu	0.098 ntu	0.093 ntu	Soil runoff, river sediment

NOTE: PWD achieved turbidity limits 100% at all times tested.

		Baxter WTP	Belmont WTP	Queen Lane WTP
Hardness (as Calcium Carbonate)	Annual Average *parts per million or grains per gallon*	86 ppm or 5 gpg	156 ppm or 9 gpg	153 ppm or 9 gpg
	Annual Minimum *parts per million or grains per gallon*	60 ppm or 4 gpg	120 ppm or 7 gpg	66 ppm or 4 gpg
	Annual Maximum *parts per million or grains per gallon*	99 ppm or 6 gpg	202 ppm or 12 gpg	217 ppm or 13 gpg
Alkalinity (as Calcium Carbonate)	Annual Average	40 ppm	69 ppm	67 ppm
	Annual Minimum	22 ppm	44 ppm	44 ppm
	Annual Maximum	60 ppm	108 ppm	95 ppm

SODIUM IN TAP WATER

Chemical	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Sodium	19 ppm or 4 mg per 8 oz. glass of water Range of individual test results: 14 - 28 ppm or 3 - 7 mg per 8 oz. glass of water	40 ppm or 9 mg per 8 oz. glass of water Range of individual test results: 25 - 61 ppm or 6 - 15 mg per 8 oz. glass of water	36 ppm or 9 mg per 8 oz. glass of water Range of individual test results: 17 - 53 ppm or 4 - 13 mg per 8 oz. glass of water

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

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	1.64 ppm	2.48 - 2.88 ppm

RADIOACTIVE CONTAMINANTS

Radioactive Contaminants	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Result	Range of Test Results for the Year	Source
Alpha	15 pCi/L	none	3.7 pCi/L	0 - 3.7	Erosion of natural deposits of certain radioactive minerals.
Combined Radium 226 & 228	5 pCi/L	none	3.2 pCi/L	0 - 3.2	Erosion of natural deposits of certain radioactive minerals.

During the period of 2005, we conducted initial monitoring for a revised radionuclides regulation. We performed quarterly analysis of water treatment plant effluents for gross alpha, radium 226, radium 228, and uranium. Three out of twelve samples had detectable levels of radium 228, and one out of twelve samples had a detectable level of gross alpha. All detected values were below one-half of the MCL. Radium 226 and uranium were not detected in our water.

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
Atrazine	3 ppb	3 ppb	0.06 ppb	0.0 - 0.06 ppb	Runoff from herbicide used on row crops.
Simazine	4 ppb	4 ppb	0.12 ppb	0.0 - 0.12 ppb	Runoff from herbicide used on row crops.
Carbofuran	40 ppb	40 ppb	2.0 ppb	0.0 - 2.0 ppb	Leaching of soil fumigant used on rice and alfalfa.
Dichloromethane	5 ppb	0 ppb	0.6 ppb	0.0 - 0.6 ppb	Discharge from drug and chemical factories.

Listed on pages eight and nine are our Drinking Water Quality Results for 2007. All results are better than the recommended federal levels designed to protect public health. We are pleased to report that we did not have any drinking water violations for 2007. In keeping with our long-standing unblemished record, we continue to be free of violations since the Safe Drinking Water Act was implemented in 1974.

By reporting these results in the tables above, we are meeting a requirement of the EPA. Please see the glossary for definitions of abbreviations used in the tables.

Some contaminants may pose a health risk at certain levels. Others, such as turbidity, have no health effects. 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.

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

How do we protect our water supplies from pollution?

We carefully safeguard our urban water supply through a variety of initiatives focused on protecting and improving the quality of our rivers and streams. We conduct research into new and emerging issues in water quality science, implement projects to directly enhance and improve water quality, operate and maintain an early warning system to alert our treatment plants of oil spills and other in-stream events that could impact our water supply, partner with other organizations and agencies throughout our watersheds that are also committed to improving source water quality, and continuously monitor the quality and health of our rivers and streams.

Plans Underway to Protect our Rivers and Streams

During the past several years, we completed Source Water Assessments and Protection Plans for the Delaware and Schuylkill rivers. The Source Water Assessments were completed between 1999 and 2002 and identified the major water quality concerns for the Schuylkill and Delaware rivers. The Schuylkill and Delaware River Protection Plans, completed between 2005 and 2007, took the results of the assessments and developed strategies for addressing the water quality challenges identified in the assessments. We are also involved in research to understand the impact of climate change and global warming on the water supply and conduct experimental research to understand the impact of small concentrations of everyday products, such as caffeine and pharmaceuticals, on the water environment.

For information about the quality of our region's rivers and streams, call the Pennsylvania Department of Environmental Protection at 484-250-5900 or check their website (http://www.dep.state.pa.us).

Schuylkill Action Network (SAN)

In 2004, the Schuylkill Action Network received a grant from the Environmental Protection Agency to fund projects which were identified during the Schuylkill River Source Water Assessment. This grant was one of only 13 awarded nationally that year.

Land use has a major influence on how the quality of our rivers and streams are impacted by stormwater runoff. Some lands, such as forested land or land surrounding high quality streams and reservoirs, are particularly important for drinking water protection. In 2006 and 2007, the SAN Watershed Land Protection Collaborative mapped and prioritized land in the Schuylkill Watershed based on the importance of the land for drinking water protection, and the likelihood of that land being developed. A strategy was then developed to share the results of the prioritization with land use planning and zoning agencies throughout the watershed to make sure future land use decisions consider the impacts of such decisions on drinking water supply.

Schuylkill and Delaware River 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 real and potential sources of contamination to Philadelphia's raw water supply, and outlines several approaches to reducing them.

One major component of the Schuylkill Plan, completed in 2005, 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 preserving or improving water quality.

The Delaware River Plan, completed in 2007, 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. Now with the new Flexible Flow Management Plan, which was enacted for the Delaware River in October of 2007, we need to conduct extensive modeling of this plan. Along with project changes in flow characteristics from global warming, climate change, sea level rise, and population changes, this plan will make sure we continue to provide adequate protection of Baxter's intake from salt intrusion well into the future.

SAN FACTS & FIGURES

SAN Mission:
Protecting and restoring the Schuylkill River as a premiere regional:
- Drinking water source
- Recreational resource
- Natural habitat for fish and wildlife

122: Number of SAN organizations in 2007

SAN Members
- Citizens
- Non-profits
- Universities
- Funders
- Water suppliers
- Corporations
- Federal, state and local governments

Major Pollution Threats to Schuylkill River
- Agriculture
- Abandoned mine drainage
- Urban and suburban stormwater runoff
- Faulty sewer systems

The SAN provides:
- Central coordination of restoration and protection efforts for the entire Schuylkill River
- Consensus-based plans for the watershed built on sound science, data, and stakeholder input

$1.15 million: EPA Targeted Watershed Program Grant Award (2005-2009)
- 50 projects reducing the impact of agriculture, abandoned mine drainage (AMD), and stormwater on the quality of the Schuylkill River.

Agriculture: SAN Agriculture Projects are designed to treat excessive loadings of nutrients and contaminiated stormwater runoff. As of 2007:
- 32,000 feet of streambank fencing has been installed
- 6,000 feet of streambank plantings have been completed
- 15 Conservation Plans accomplished

Abandoned Mine Drainage: The upper watershed is impacted by polluted water seeping from abandoned coal mines that discharge iron, manganese, and aluminum to the Schuylkill River. To date:
- 5 AMD projects have been implemented, treating 21 million gallons per day of contaminated flow

Stormwater:
- Ranked all detention basins in the Wissahickon Creek watershed for the potential to be modified to enhance groundwater recharge and water quality treatment of stormwater runoff

Providing Early Warning Protection

Since 2004, we have led the development and implementation of the Early Warning System for the Schuylkill and lower Delaware Rivers. This system is an integrated communication and water quality monitoring network that supports the identification, notification and analysis of source water quality events such as chemical spills and other potential hazards.

The system's goal is to provide advance warning of potential source water contamination to water suppliers. Funded in part by a $775,000 grant from the Pennsylvania Department of Environmental Protection, the system provides water suppliers on both rivers with essential information to make critical treatment and pumping decisions in response to spills and accidents that can have a detrimental impact on the rivers. The Schuylkill and Delaware system is comprised of a partnership of water suppliers, industries with water intakes, and government agencies. The system also includes a web-based centralized database for water quality and event information, a telephone notification system, and a network of real–time water quality monitors located throughout the two watersheds.

Delaware Valley Early Warning System serves
- Over 3 million people
- Philadelphia, Camden and Trenton Metro areas
- 12 water utilities, 23 water treatment plants in Pennsylvania
- 5 water utilities, 5 water treatment plants in New Jersey

Since the system was fully deployed in January of 2005, 100 events have been entered into the system, ranging from a 100-million-gallon fly-ash spill on the Delaware and a cyanide discharge in the Wissahickon Creek, to flood warnings and sewage discharges. In each of these cases, the improved awareness, communication, and coordination provided by the system was valuable to our response.

RiverCast

More than 100,000 people use the Schuylkill River at Fairmount Dam ("boathouse row") for recreational activities every year. The amount and scope of river use seem to increase annually. As recreation increases, so does public concern about river water quality. In response to this concern, we developed RiverCast: the first and only bacteria forecasting system in the United States created for recreational activities. Similar to a weather forecast, RiverCast is an internet-based system that provides the public with hourly updates of expected concentrations of fecal coliform bacteria in the Schuylkill River.

RiverCast uses a color rating system to indicate bacteria levels. Each color rating is linked with guidelines for recreational activity (see below). The bacteria ranges used to determine the color ratings, along with the below activity guidelines, are based on draft EPA regulations for recreational waters.

GREEN		
Bacteria	Types of Activities	RiverCast
Low level	jet skiing, kayaking swimming, sculling	recommendation: suitable

YELLOW		
Bacteria	Types of Activities	RiverCast
Level elevated	jet skiing, kayaking swimming, sculling	recommendation: may not be suitable

RED		
Bacteria	Types of Activities	RiverCast
Level high	jet skiing, kayaking swimming, sculling	recommendation: not suitable

The website has been visited over 100,000 times and has been used for the planning of major water recreational events such as triathlons and regattas. Visit RiverCast at www.phillyrivercast.org.

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.

Funded in part by a grant from the Pennsylvania Department of Environmental Protection, we partnered with Aqua America (formerly Philadelphia Suburban Water Company) and the Pennsylvania American Water Company to perform a source water assessment of water intakes along the Schuylkill and its tributaries.

The assessment detailed major issues within the watershed that threaten the quality of the drinking water supply. The river is a major source of drinking water for the public served by these three water utilities. In addition, the Philadelphia Water Department conducted an assessment for seven surface water intakes along the tidal section of the Delaware River.

This summary is for water supply areas for the Philadelphia Water Department's Baxter, Belmont, and Queen Lane water treatment plants. It assesses the raw (untreated river) water only.

For water quality information on our treated "tap" water, please see the charts on pages 8 and 9 of this report.

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.

Baxter Water Treatment Plant

This plant, located in the Torresdale section of Philadelphia, provides treated water that comes from the Delaware River. Through the Delaware River Protection Plan, we revisited the findings of our source water assessment report and identified population growth and land cover change in the Delaware River watershed; as well as the impact of sea level rise, global warming, 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.

Historically, we have developed and maintained emergency response plans to address transportation accidents and spills along the Delaware River that could potentially impact the water supply, 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 prevent declines in water quality throughout the entire 13,000 square-mile watershed to keep our water supply as clean as possible. Our Delaware River Protection Plan outlines our many strategies for protecting and enhancing the quality of the Delaware River as a source of drinking water for future generations.

Belmont and Queen Lane Water Treatment Plants

These plants provide treated water that comes from the Schuylkill River in Fairmount Park. Through a 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.

Historically, we have developed and maintained emergency response plans to address accidents and spills that could potentially impact the water supply. 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 prevent declines in water quality throughout the entire 2,000 square-mile watershed to keep our water supply as clean as possible. Our Schuylkill River Protection Plan outlines our many strategies for protecting and enhancing the quality of the Schuylkill River as a source of drinking water for future generations.

We welcome your ideas and opinions

We participate in nearly 200 public and community events a year, including presentations made at schools, ongoing 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!

Our Fairmount Water Works Interpretive Center is where the water environment comes alive! 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! Our adult programs include lectures and seminars from nationally and internationally known scientists and writers. We offer something for everyone.

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, check out the Center's Saturday Family Programs and other environmental education events at the Center, visit our website: www.fairmountwaterworks.org.

Interesting facts about Philadelphia's water

Hardness

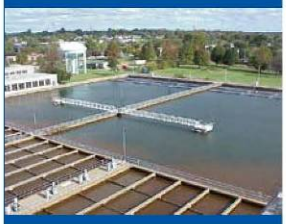
Hardness defines the quantity of minerals such as calcium and magnesium in water. These minerals react with soap to form insoluble precipitates and can affect common household chores such as cooking and washing. Philadelphia's water is considered "medium" hard. Hardness also affects other water qualities such as its corrosiveness, with naturally soft water being more corrosive.

Cloudy Water

Aeration is the process which takes place when the water flowing from your tap into your glass appears cloudy. This temporary condition is a result of dissolved air being released from the water and being temporarily suspended in the water in your glass. This most commonly happens in the winter time when the cold water in the water mains is warmed up quickly in household plumbing, thereby encouraging the dissolved air to come out of the water.

Temperature

The temperature of both the Schuylkill and Delaware rivers varies seasonally from approximately 32° to 82° F. The Water Department does not treat the water for temperature.



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

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.phillyriverinfo.org

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	215-483-9238	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
Environmental Alliance for Senior Involvement	A, C, E, P, T	703-241-4927	http://www.easi.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.cobbscreek.org
Wissahickon Restoration Volunteers	A, C, E, P, T	215-951-0330 x2101	http://wissahickon.patrails.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

ACTIVITY TYPES

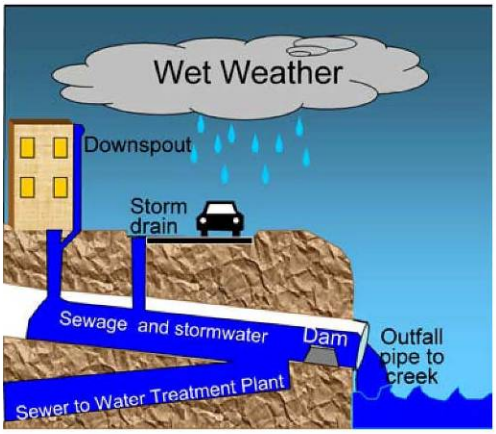
A: Environmental activism
B: Business related protection and education activities
C: Clean-up of trash and litter
E: Environmental education
F: Fishing or fish recreation activities
L: Land conservation and management
P: Planting trees and streambank repair/ protection
R: Rowing, canoeing, and related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

WATER Wheel

Philadelphia PWD Water Department

"Green Cities — Clean Waters Program"

Green Cities/2008



What is a Combined Sewer Overflow (CSO)?

A combined sewer system transports sewage (from homes, businesses and industry), stormwater from the storm drains on our streets and stormwater from property rain leaders through a single underground pipe to a Water Pollution Control Plant (treatment plant).

Under heavier rainfall conditions, however, the flow of the sewage and stormwater in combined sewers may exceed the capacity of the pipe or treatment facility. As a result, a portion of the sewage and stormwater may be sent directly to a nearby stream or river to prevent the flooding of homes and streets. This is what is known as a Combined Sewer Overflow.

The Vision for Our Creeks & Our City

Imagine a Philadelphia where you can walk along any creek in the City and find yourself surrounded by wildflowers under a shady canopy, listening to birds chirp, watching butterflies and dragonflies flutter by and where you can rest and fish peacefully in clean waters. This is the vision the Philadelphia Water Department (PWD) has for the future of Philadelphia – for a greener city with cleaner waters.

PWD believes that this vision can become a reality through PWD's "Green Cities-Clean Waters Program." This program is also referred to as the Combined Sewer Overflow (CSO) Long Term Control Plan. It is a plan that will help us reduce combined sewer overflows and clean up our waters – the plan that will help us transform Philadelphia into a more desirable place to live, work and play.

The Warning on Our Creeks

Combined Sewer Overflows (CSOs) are not just a Philadelphia problem. They are an old problem in cities throughout the country, where combined sewer outfalls are present. CSOs discharge a mix of sewage and stormwater during rainstorms, resulting in swimming and fishing advisories and habitat destruction. Therefore, it is important that the public avoid contact with the waters in our creeks and rivers during and immediately following rain events.

The History behind Those Pipes

Philadelphia was once a city of water (see Map 1 on the next page) – where hundreds of creeks flowed through the city. It was because of these creeks and rivers that industry flourished. However, as Philadelphia grew, so did the pollution. Waste from slaughterhouses, used dye, trash and sewage – all were discharged to our rivers and creeks. It was standard practice in the 18th and 19th centuries to use creeks as sewers.

At one point, the creeks and rivers were so filthy that they became a health hazard. Thousands of Philadelphians died from disease. The creeks also became an obstacle to development. Eventually, they were driven underground, their streambeds replaced with the sewers that now contain them. By the late nineteenth century, many of the creeks had disappeared – the map of the city's surface streams was disturbingly blank (see Map 2 on the next page).

(continued on next page)

"Green Cities—Clean Waters"

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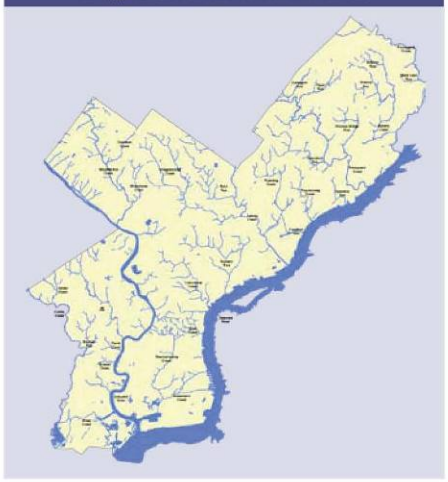
However, by the twentieth century, City leaders realized the benefits of preserving our remaining streams and creating watershed parks (East and West Parks, Wissahickon, Cobbs, Tacony, Pennyack). But for many of those streams, it was too late.

In addition, the 1972 Clean Water Act required utilities to significantly reduce pollution from its treatment facilities, combined sewers and storms. As a result, the creeks and rivers in the City are cleaner now than they have been in half a century.

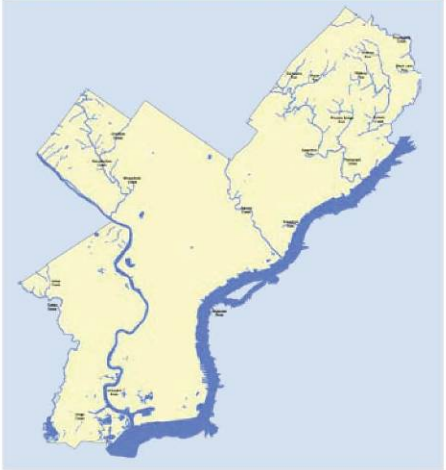
Over the next 20 years, we will build upon this progress, implementing a mix of new infrastructure, green land practices, stream restoration and community involvement. Through the "Green Cities-Clean Waters Program," and with your support, we will transform Philadelphia into a place where all want to live, work and play. The creeks will become a place where we can find respite in the City; where we can walk amongst wildflowers, listen to the songs of birds, and fish in clean waters again.

For more information and to learn how you can help support the Green Cities-Clean Waters Program, please visit our website: http://www.phillyriverinfo.org.

Map 1: Historic Streams



Map 2: Today's Streams



Clip out and fold this information and carry it in your wallet, so you can report flows.

No Swimming at Any Time in Philadelphia Creeks.
Sewers May Overflow.
During and immediately after rain, polluted water may flow from pipes.

To protect your health, do not come in contact with rivers and streams during and immediately after rain events.

For information on how to protect our waterways, visit: www.phillyriverinfo.org.

Please report flows from pipes during dry weather to PWD's hotline: 215-685-6300.

Philadelphia Water Department (PWD)

Cortelo, doblelo y guardelo en tu billetero, para que puedes reporter desbordamientos.

No Nades en Ningun Tiempo en las Quebradas de Filadelfia. Puede Ocurrir Desbordamiento de Aguas Negras.

Durante e imediatamente después de llover, las aguas contaminadas pueden fluir por tubería.

Para proteger su salud, evite el contacto con ríos y quebradas durante e imediatamente después de llover.

Para información sobre como proteger nuestros cuerpos de agua visite: www.phillyriverinfo.org.

Favor de reportar cualquier desbordamiento (durante tiempos secos) a la linea directa de PWD: 215-685-6300.

Philadelphia Water Department (PWD)

Faith-Based Initiatives

Reverend Luis Cortés
Nueva Esperanza
4261 North 5th Street
Philadelphia, PA 19140

June 17, 2009

Dear Reverend Cortés,

Peace and blessings to you and Nueva Esperanza!

As the Associate Director of the Mayor's Office for Faith Based Initiatives and the Director of the Philadelphia Water Department's Office of Watersheds, we are pleased to inform you that we feel encouraged by all of the recent city initiatives to foster neighborhood stewardship of our environment. Just this month, the Mayor released GreenWorks Philadelphia, his vision for making Philadelphia the most sustainable city in the country by 2015. As people of faith know, a sustainable city is a safe and beautiful city.
The Mayor's Office for Faith Based Initiatives has been working with the Philadelphia Water Department to consider activities that will compliment the neighborhood and fulfill important environmental objectives that would serve the municipal, economic, health and spiritual needs of the City's residents. In the spirit of hope and community, we are writing to request a one hour meeting with you to begin a dialogue with Nueva Esperanza towards establishing a partnership to beautify and green the surrounding neighborhoods.

Here are a few ideas for how we might be able to work together:

- City beautification (clean-ups, planting gardens, greening sidewalks and streets)
- Establishing living memorials (commemorative trees and gardens)
- Surveying worshipers' attitudes about green streets

For more detailed background information, we have attached a separate fact sheet. Also, please feel free to contact Mr. Gerald Bright, Aquatic Biologist, with the Philadelphia Water Department – 267-339-1826. Mr. Bright will follow up with you on our behalf to schedule a meeting. Thank you for your consideration to partner with us.

Sincerely,

Minister Malcolm T. Byrd
Associate Director
Mayor's Office of Faith-Based Initiatives

Sincerely,

Howard Neukrug
Director, Office of Watersheds
Philadelphia Water Department

Faith Community Greening Partnership Facts

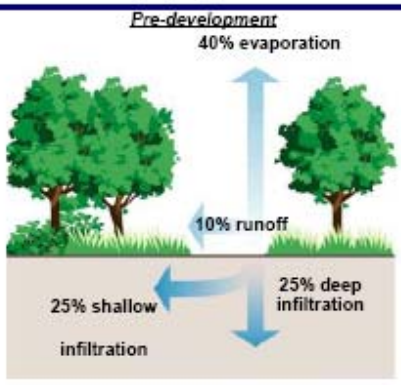
The Philadelphia Water Department (PWD), in partnership with the Mayor's Office of Faith-Based Initiatives (MOFI), is beginning dialogues and partnerships with Philadelphia's religious institutions, faith- inspired organizations, and neighborhoods towards further beautifying and greening of city neighborhoods through the planting of more vegetation on sidewalks and streets.

Below are illustrations of pre- and post-development conditions, the City's combined sewer system and examples of grey and green infrastructure. The federal government mandates that the City manage its stormwater runoff in order to minimize impacts to local streams. PWD wants to use as much green (vegetation) as possible to minimize this runoff. Greening will reduce combined sewer overflows, while beautifying communities, and improving air quality, in addition to providing other benefits to Philadelphia and its residents.

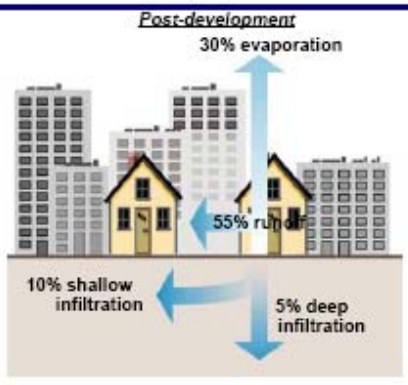
MOFI and PWD believe that faith leaders and their congregations understand that stewardship of our land and water is both a civic responsibility and a spiritual obligation.

We would like to gauge the interest of local congregations in greening, through conducting an environmental awareness survey. PWD will provide the surveys, background materials and staff to distribute the surveys and answer questions. Additionally, we can collaborate on formulating the message about this effort to specific congregations.

For more information, visit www.phillyriverinfo.org or contact Gerald W. Bright, Aquatic Biologist and Project Liaison, at 267-339-1826 or Gerald.Bright@phila.gov.



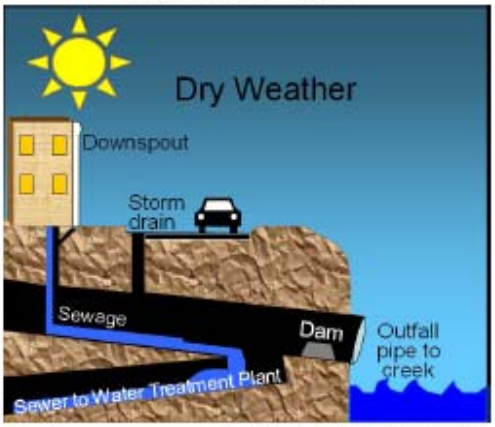
Prior to development, vegetation (trees and plants) enables stormwater (rain or melting snow) to soak into the ground, replenish groundwater and foster tree and plant growth, thereby supporting healthy living streams and rivers.



As a city develops, we replace vegetation with built surfaces, such as rooftops, streets, and parking lots, causing stormwater to run off of these impenetrable surfaces, traveling to the nearest storm drains, which connect to underground sewer pipes.

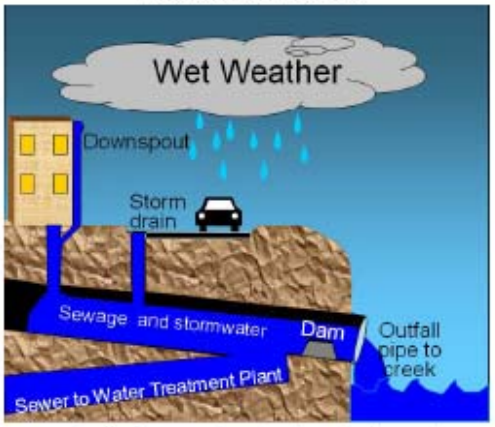
Faith Community Greening Partnership Facts

Combined Sewer System



We built sewer systems to collect the rainfall that flowed off of these built surfaces and to divert it away from our neighborhoods. In much of Philadelphia, as in many other large cities throughout the world, a single-pipe, "combined sewer system," is used to collect and treat both rain runoff, or "stormwater," and residential and commercial sanitary waste.

Combined Sewer System



However, during intense rain events, there is not enough capacity in our pipes and treatment plants to handle the volume of stormwater runoff, causing Combined Sewer Overflows (CSOs) into Philadelphia's creeks and rivers.

Grey Infrastructure

To reduce CSOs, PWD proposes to use a combination of "grey infrastructure," including building underground storage pipes and tunnels and expanding our treatment plants, and "green infrastructure."

Green Infrastructure

Examples of "green infrastructure," include curbside tree planters, rain gardens, rain barrels and green roofs. These "green" practices all use natural methods to allow stormwater runoff to soak in the ground to prevent it from reaching our sewers and/or to slow down the runoff enough to help prevent CSOs. Green streets are safe streets that clean and beautiful our city.