PHILADELPHIA WATER DEPARTMENT

Annual CSO Status Report

2005

Chapter 94: Wasteload Management Report

March 31st, 2006

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Section 1 - Introduction

This report is submitted pursuant to meeting the requirements of NPSDES Permits #'s 0026662, 0026671, and 0026689; Part C, Section D: Reporting Requirements, b. Annual CSO Status Report. This section requires that the permittee submit an Annual CSO Status Report as part of the Chapter 94 Municipal Wasteload Management Report. The purpose of this report is to document the status and changes made to programs implemented by the City of Philadelphia Water Department (PWD), during calendar year 2005, to manage and reduce the combined sewer overflows (CSOs) permitted to discharge to waters of the Commonwealth of Pennsylvania.

The report is organized as follows: Section 2 Citywide Programs discusses the operational status of the combined sewer system and includes summaries of the frequency and volume of overflows for the past calendar year. In addition, Section 2 provides a summary of any changes made to the programs required by the United States Environmental Protection Agencies (US EPA's) Nine Minimum Controls (NMCs) and as described in the Phase I section of the Long Term CSO Control Plan (LTCP) approved September 18, 1997 The section updates capital programs that are conducted on a City-Wide basis and as such have benefits to all receiving waters. In contract, Sections 3 through 9 are watershed-specific and describe the status of the watershed management planning and capital project implementation occurring within each respective watershed listed in the CSO LTCP. Monitoring of CSO discharges and other performance-related information for each CSO system is also summarized by watershed. Section 10 provides the status of activities completed to advance the concept of the Watershed Technology Center as described in the CSO LTCP.

Section 2 - Citywide Programs

1.0 Phase I – Continued Implementation of the Nine Minimum Controls

In the first phase of the PWD's CSO strategy, and in accordance with its NPDES permits, the PWD submitted to the Pennsylvania Department of Environmental Protection on September 27, 1995, *CSO Documentation: Implementation of Nine Minimum Controls*. The nine minimum controls 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. In general, PWD's NMC program includes comprehensive, aggressive measures to maximize water quality improvements through the following measures:

1. Review and improvement of on-going operation and maintenance programs
2. Measures to maximize the use of the collection system for storage
3. Review and modification of PWD's industrial pretreatment program
4. Measures to maximize flow to the wastewater treatment facilities
5. Measures to detect and eliminate dry weather overflows
6. Control of the discharge of solid and floatable materials
7. Implementation of programs to prevent generation and discharge of pollutants at the source
8. Public Notification of CSO impacts
9. Comprehensive inspection and monitoring programs to characterize and report overflows and other conditions in the combined sewer system.

Changes made to any of the specific projects or programs put into place as a result of the NMC document are discussed in below.

1.1 Operation & Maintenance

Reference Philadelphia NMC Report, 9/27/95 Section 1 pp. 61-62. The operation and maintenance program is well established and any changes or modifications to existing programs are indicated in the sections below.

1.1.1 CSO Regulator Inspection & Maintenance Program

Annual summaries of the comprehensive and preventative maintenance activities completed in the combined sewer system over the past year are detailed in Appendix A and any changes are discussed below.

In response to the CSO compliance inspection performed by DEP in November 2002, PWD has committed to demonstrating an improved follow-up response to sites experiencing a DWO. PWD has instituted a policy of next day follow-up inspection at sites that experience a DWO. PWD will conduct an evaluation of the effectiveness of twice-weekly inspections.

Customized Regulator Inspection Forms
Start: 8/1/95 End: 12/31/2000 Status: Complete

1.1.2 Pumping Station Maintenance

Annual summaries of the Wastewater Pumping summaries are included in Appendix B for:

- Flows
- Station Outages
- Station Condition
- Pump Performance
- Pump Availability
- Maintenance Breakdown

Central Schuylkill Pumping Station (CSPS) Quarterly Grit Pocket Cleanings -
Start: 8/1/95 End: Status: Ongoing
Grit removal operations are performed at the Central Schuylkill Pumping on a periodic basis to maintain the capacity of the siphon.

WW Pumping Predictive Maintenance Program
Start: 8/1/1995 End: Status: Ongoing

Pump Station Emergency Backup Power
Start: 9/27/1995 End: 12/1/1999 Status: Complete
See pump station maintenance annual summaries in Appendix B for documentation of any pump station outages.

1.1.2 Sewer Cleaning Contracts
Start: 12/1/1995 End: Status: Complete

1.1.3 Inflow Prevention Program
Start: 8/1/1995 End: 6/4/1999 Status: Complete

Tide Gate Inspection and Maintenance Program
Summaries of the tide gate inspection and maintenance completed during calendar 2005 are found in Appendix A, which documents the locations where preventative maintenance was performed on the tide gates. To summarize, 8 sites received Preventative Maintenance during 2005. These sites include S38, D11, D71, F09, D68, D45, S50, & D20.

Emergency Overflow Weir Modification
Start: 11/7/1994 End: 6/4/1999 Status: Complete

1.2 Maximize In-System Storage

Reference Philadelphia NMC Report, 9/27/95 Section 2 pp. 1-15

1.2.1 Evaluate Real Time Control in LTCP
Start: 2/1/1996 End: 1/27/1997 Status: Complete

See section 2 City Wide Programs

1.2.2 Install Diversion Dams
Start: 8/1/1995 End: 6/30/1997 Status: Complete

1.3 Modify Pretreatment Program

Reference Philadelphia NMC Report, 9/27/95 Section 3 pp. 1-13

1.3.1 Phase I Implementation
Start: 8/1/1995 End: 2/1/1997 Status: Complete

Inventory Significant Non-Domestic
Start: 8/1/1995 End: 8/21/1995 Status: Complete

Guidance Memorandum
Start: 8/1/1995 End: 1/26/1996 Status: Complete

Develop Data Form for Annual Inspections
Start: 3/1/1996 End: 9/1/1997 Status: Complete

Pretreatment Inspections - 1st 50%
Start: 3/1/1996 End: 7/1/1996 Status: Complete

Asses SIU Wet Weather Monitoring
Start: 7/1/1996 End: 8/1/1997 Status: Complete

1st 50% of SIUs Reduce Discharge
Start: 10/1/1996 End: 1/1/1997 Status: Complete

Pretreatment Inspections - 2nd 50%
Start: 7/1/1996 End: 12/31/1996 Status: Complete

2nd 50% SIUs Reduce Discharge
Start: 1/1/1997 End: 12/31/1998 Status: Complete

1.3.2 Phase II Implementation
Start: 3/1/1997 End: Status: Ongoing

Report - Performance of Phase I Activities
Start: 3/1/1997 End: 3/31/1997 Status: Complete

Annual Pretreatment Inspections - Criteria
Start: 3/18/1997 End: Status: Ongoing

Inspections are ongoing using guidance criteria to evaluate wet weather pollution prevention efforts for those industries that may have batch operations within a continuous discharge. IWU is will continue to investigate combined sewer trunks to find the sources of the high strength wastes and then evaluate in detail the nature and timing of these particular discharges.

1.4 Maximize WPCP Flow

Reference Philadelphia NMC Report, 9/27/95 Section 4 pp. 28-42

The basic strategy of flow maximization, or Modified Regulator Plan (MRP) was to deliver more flow to the WPCPs more frequently, to enable greater pollutant removals. The results of the hydraulic modeling of the interceptor sewers under the flow maximization scenarios indicate that significantly higher rates of flow can be delivered to the WPCPs more frequently than under current conditions. To date, 100% of the projected flow increase associated with the Modified Regulator Plan has been implemented. Some additional modifications might be made in the future to prioritize certain overflows, or to reflect an improved understanding of the collection system dynamics as identified throughout the ongoing modeling work, but no additional capture is expected to result on a system wide basis.

1.4.1 POTW Stress Testing
Start: 9/1/1997 End: Status: Moved to Section 2.3 per CSO LTCP

1.4.2 Prelim Costs - NMC #4 Implementation
Start: 8/1/1995 End: 12/20/1995 Status: Complete

1.4.3 NE DD Modified Regulator Plan (MRP)
Start: 1/1/1996 End: 7/1/1998 Status: Complete

1.4.4 SW DD Modified Regulator Plan (MRP)
Start: 1/1/1996 End: 7/1/1998 Status: Complete

1.4.5 SE DD Modified Regulator Plan (MRP)
Start: 10/30/1995 End: 7/1/1998 Status: Complete

1.4.6 NMC 4 Implementation Costs (LTCP)
Start: 5/1/1996 End: 9/1/1996 Status: Complete

1.5 Eliminate Dry Weather Overflow (DWO)

Reference Philadelphia NMC Report, 9/27/95 Section 5 pp. 1-5

Dry weather discharges at CSO outfalls can occur in any combined sewer system on either a chronic (i.e., regular or even frequent) basis or on a random basis (i.e., as a result of unusual conditions, or equipment malfunction). Random dry weather discharges can occur at virtually any CSO outfall following sudden clogging by unusual debris in the sewer, structural failure of the regulator, or hydraulic overloading by an unusual discharge of flow by a combined sewer system user. Chronic dry weather discharges can and should be prevented from occurring at all CSO outfalls. Random discharges cannot be prevented, but they can and must be promptly eliminated by cleaning repair, and/or identification and elimination of any excessive flow and/or debris sources.

As documented in Section 1 of the NMC report, regular inspections and maintenance of the CSO regulators are performed throughout the City. These programs ensure that sediment accumulations and/or blockages are identified and corrected immediately to avoid dry weather overflows. The results of these efforts are reflected in the Department's Monthly CSO Status Report submitted to PADEP and EPA Region III and summarized on annual basis in this report. The detailed inspection report summaries are included in Appendix A. The implementation of a comprehensive monitoring network is an ongoing project to enhance PWD's ability to ensure high levels of protection against dry weather overflow. Based upon peer review of other CSO communities the present combination of the physical inspection and maintenance with comprehensive monitoring, the present program far exceeds the level of effort employed in other communities.

1.5.1 CSO Monitoring Network
Start: 8/1/1995 End: 12/31/2002 Status: Ongoing

The Philadelphia Water Department's continues to implement the expansion to the CSO Monitoring network and temporary monitoring programs to support planning for further CSO control projects and to minimizing dry weather overflows and tidal inflows. The CSO monitoring network contract has been closed out and difficulties encountered with the contractor have been resolved through legal process with the bonding company of the contractor. PWD will continue to review, replace, and update network equipment in order to continue to support the above functions. See table 1.5.1 for status of the remote sites.

Table 1.5.1 Site Status Report for CSO Monitoring Network Implementation

MONITORING NETWORK - MONTHLY OPERATIONAL STATUS REPORT		
Month of:		**Jan-2006**
381 TOTAL of ALL NETWORK MONITORING SITES		
20 SITES NOT INSTALLED		
361 SITES INSTALLED		
Status of the 361 Installed Sites		
23 of 24 METERING CHAMBERS INSTALLED	80.1%	Operational
24 of 24 RAIN GAUGE SITES INSTALLED	96.0%	Operational
198 of 200 CSO SITES INSTALLED	22.2%	Operational
116 of 116 Priority Sites	29.6%	Operational
* Operational - The site data from all sensors is available on the server and is reasonably accurate		

1.5.2 WTP Residuals Management

Start: 12/15/1994 End: 12/31/1997 Status: Complete

The Department will continue to monitor the effectiveness of the operational changes to residuals management strategies, monitor for any adverse impacts on downstream CSOs, and report any DWOs in the monthly status reports.

1.5.4 Somerset Grit Chamber Cleaning

Start: 8/1/1995 End: Status: Ongoing

p. 30 SIAC - PWD regularly monitors the sediment accumulation in the grit trap at the origin of the Somerset Intercepting Sewer and in locations downstream to determine appropriate cleaning intervals for the girt trap and downstream interceptor. Driven by the monitoring program, the grit basin is cleaned periodically and debris quantities tracked to further refine the frequency of cleaning so as to maintain adequate capacity in the Somerset Intercepting sewer.

Somerset Grit Chamber cleaning details, specifically tonnage removed and dates of cleaning during 2005 are available in Appendix A. To summarize, 5 cleanings were performed at the chamber with a total of 359.84 tons of grit removed.

1.6 Solids and Floatables

Reference Philadelphia NMC Report, 9/27/95 Section 6 pp.1-12

The control of floatables and solids in CSO discharges addresses aesthetic quality concerns of the receiving waters. The ultimate goal of NMC No. 6 is, where feasible, to reduce, if not eliminate, by relatively simple means, the discharge of floatables and coarse solids from combined sewer overflows to the receiving waters. The initial phase of the NMC process has and will continue to focus on the implementation of, at a minimum, technology-based, non-capital intensive control measures.

The effectiveness of this minimum control and the evaluation of the potential need for other methods to more effectively control the discharge of solids and floatables from CSOs has been incorporated into the floatables monitoring and pilot evaluation project (T-4 Netting Facility below). That is, the need to control the discharge of solids and floatables, the degrees of control that will be necessary, and the determination of the controls that may be required, are intended to be an ongoing process throughout the development stage and the early implementation phases of the Long Term Control Plan.

1.6.1 Pilot Netting Facility

Start: 3/1/1996 End: 4/1/1997 Status: Complete

A pilot, in-line, floatables netting chamber was constructed as part of a sewer reconstruction project at CSO T-4 Rising Sun Ave. E. of Tacony Creek. The construction of the chamber was completed in March of 1997 and the netting system continues to operate. The quantity of material collected is weighed with each net change.

In 2005, ten net replacements were made (5 visits) collecting 1436 pounds of debris. Since the installation of the netting device, 112 nets have been replaced (56 visits) with an approximate total of 10,988 pounds of debris captured (Appendix A). The City has compared the floatables removed from the net with other floatables control technologies employed. More specifically, on an area weighted basis the inlet cleaning program data suggests that street surface litter dominates the volume of material that can enter the sewer system. The pilot in-line netting system installed at T_4 has also been shown to capture debris on the same order as the WPCP influent screens indicating that effective floatables control needs to target street surface litter in order to effectively reduce the quantity of debris likely to cause aesthetic concerns in receiving streams.

1.6.2 Repair, Rehabilitation, and Expansion of Outfall Debris Grills

Start: 9/27/95 End: Status: Ongoing

Debris grills are maintained regularly at sites where the tide introduces large floating debris into the outfall conduit. This debris can then become lodged in a tide gate thus causing inflow to occur. Additionally, these debris grills provide entry restriction, and some degree of floatables control. The list of the debris grills receiving preventative maintenance is available in Appendix A. To summarize, 31 maintenance visits were performed during 2005 at F05, T08, T15 and Sandy Run.

1.7 Pollution Prevention

Most of the city ordinances related to this minimum control are housekeeping practices that help to prohibit litter and debris from actually being deposited on the streets and within the watershed area. These include litter ordinances, hazardous waste collection, illegal dumping policies and enforcement, bulk refuse disposal practices, and recycling programs. If these pollutant parameters eventually accumulate within the watershed, practices such as street sweeping and regular maintenance of catch basins can help to reduce the amount of pollutants entering the combined system and ultimately, the receiving water. Examples of these programs are ongoing and were presented in the NMC document. The City will continue to provide public information about the litter and stormwater inlets as part of its implementing this minimum control as well as continue to develop the following new programs.

From the moment the City of Philadelphia began providing water to its citizens there has been a need to create partnerships to protect the water supply. In our earliest days it was through the creation of Fairmount Park. Today we comply with state and federal regulations that require citizen participation. More importantly however, the Philadelphia Water Department through its Public Education Unit has for more than 18 years voluntarily reached the public through an aggressive education and community outreach program that serves as a model for utilities across the country. Through these programs, the Water Department raises public awareness and understanding of storm water problems and issues. Educational materials are distributed at these events and included in bill stuffers to over 460,000 households. In addition, the City continues to facilitate watershed stakeholder meetings to unify public participation in the surrounding counties and to address the issues pertaining to stormwater management on a watershed scale.

1.7.1 Billstuffers

Billstuffers are regularly produced by the Water Department as an educational tool for disseminating information pertaining to customer service and environmental issues. Specific billstuffers are designed on an annual basis for the CSO, Stormwater and Watershed Management programs to address the associated educational issues. These billstuffers reach over 500,000 water and wastewater customers. The environmental bill stuffers distributed in 2005 include:

- Waterwheel (April)
- Streets Department Curbside Recycling Program (May)
- Streets Recycling (August)
- In's & Out's of Sewer Inlets (Nov.)
- Trash & Recycling Schedule (Dec.)
- Waterwheel (Jan.)
- Streets Recycling (March)
- Streets Recycling (May)
- Water and Sewer Rates (July)
- Streets Recycling (August)
- Ins and Outs of Sewer Inlets/Proper Disposal of Grease (Oct.)

1.7.2 Waterwheel Watershed Newsletters

The Water Department's watershed newsletters are usually published on bi-annual basis and target specific information to the residents living within a particular watershed. In this manner, citizens can be kept informed of departmental water pollution control initiatives specific to the watershed they live in. Issues are

sometimes published in the form of billstuffers and sometimes as a brochure (when combined with the annual drinking water quality report). Newsletters issued in FY'05 include:

Winter '05 Edition – This issue, in the form of a billstuffer, featured PWD's River Conservation Plans, an Update on the Tacony-Frankford River Conservation Plan, and the Poquessing River Conservation Plan

Spring '05 Edition – This issue, in the form of a mailed newsletter, featured an update on the Pennypack River Conservation Plan, Watershed Events and Seminars, in addition to the department's source water protection plan and its annual drinking water quality data.

Winter '06 Edition – This issue, in the form of a billstuffer, will features 2005 Watershed Improvements and Accomplishments including an update on the Pennypack Watershed Partnership, 2005 Goals for Philadelphia's River Conservation Plans, and Stormwater BMP Recognition Program.

1.7.3 Comprehensive Education Materials

The following projects were initiated, completed or ongoing in 2005:

- Watershed educational partnerships (continued from 1999) with Bodine High School, Edison-Faira High School, Fairmount Park, Phila. Recreation Dept., Academy of Natural Sciences, Lincoln High School, Turner Middle School, Senior Environmental Corps, and the Schuylkill Center for Environmental Education.
- Completion of the Tookany-Tacony/Frankford (TTF) Watershed Management Plan
- The completion of the Tacony-Frankford River Conservation Plan.
- Establishment of a 501c(3) TTF Partnership Entity to implement the final plan
- Completion of the draft report for the Pennypack Creek River Conservation Plan
- Completion of Year One studies and public outreach for Poquessing Creek River Conservation
- The creation of the Wissahickon Watershed Partnership
- The development of a new PWD website (www.phillyriverinfo.org) for the new Stormwater Regulations, BMP manuals (developer's and homeowner's versions) and all Office of Watershed programs.

- Activity Book
  One of the Water Department's most successful community publications is the student activity book (grades 3 – 8) "Let's Learn About Water." This publication develops the concepts of definition of a watershed, impact of non-point source pollution, and personal responsibility for protecting our water supply. It is in great demand by schools, communities and government officials. This book was developed with the Partnership for the Delaware Estuary and was funded in part through DEP Coastal Zone Management funds. Future editions will include descriptions and activities for various city watersheds. The curriculum has already been used in a number of middle schools to meet state required science-based credits. In 2005, the Activity Booklet was updated and made full color. The Fairmount Water Works Interpretive Center was also highlighted in some of the activities to encourage students to visit with their families.

- PWD Public Education Outreach
  PWD's Public Education Unit makes presentations at area schools, organizations and community events, providing information on all topics regarding the urban and natural water cycles and watersheds.

General Educational projects in 2005 - A great variety of public information materials concerning the CSO LTCP in relation to the watershed framework were developed as a result of the watershed partnerships and river conservation plans, including: fact sheets, press releases, tabletop exhibits, brochures, watershed surveys, websites, watershed walks, and presentation materials. Materials developed for a specific watershed are discussed in the Watershed Planning sections as appropriate.

Some of these publications/projects include:

- WaterWheel - Issue included with 2005 Water Quality Report (April/May 2005)
- WaterWheel – Issue included in December 2005 billstuffer.
- 2004 Annual Water Quality Report featuring special supplement on Source Water Assessment and Protection (April/May 2004)
- 2005 Annual Water Quality Report featuring special supplement on Source Water Assessment and Protection (April/May 2005)
- Fairmount Water Works Interpretive Center: Water in Our World (printed several runs 5,000 each time distributed at the Center and other visitor centers and public areas - 2005
- Keeping America's Waterways Beautiful: PWD's Flower Show Exhibit Features Best Management Practices in Landscaping and Gardening – March 2005
- 4th Annual 2005 Southeastern Pennsylvania Coast Day & BYOB Fishing Event (contributed funds for brochure)
- PWD Annual Report Fiscal Years 2005
- (annual report features watershed/stormwater projects)
- Clean Water Begins and Ends with You! Calendar Contest: distribution of calendars and SEPTA car cards featuring winning entries
- Guide for Hydrant Use & Street Water Discharges (best management practices for construction contractors) - in development by Industrial Waste.
- Learn About Your Water from the Comfort of Your Own Home (PWD and Partnership for the Delaware Estuary videos running on Philadelphia's Government Access Channel)
- Another Philadelphia First: Online Forecast System Predicts Schuylkill River Water
- Quality: RiverCast Unveiled - June 2005
- Southeast Water Pollution Control Plant Employees Receive Platinum Award, Recognizing
- Environmental Excellence in Wastewater Treatment, National Association of Clean Water Agencies Award - May, 2005
- Pennsylvania Has a Coast? Travelers learn about the Delaware Estuary and the region's premiere ecotourism center (signs on display at the Philadelphia International Airport)
- Know Your Watershed: New Signs Installed in Tookany/Frankford Watershed – July 2005
- You 'Otter' Know: Schuylkill River is Healthier than Ever
- Clean Water Begins and Ends With You! Drawing Calendar Contest - Awards Ceremony at the Fairmount Water Works Interpretive Center; Students' drawings were on display at the Center.
- Fairmount Water Works Interpretive Center – educational brochure for teachers
- First Urban Shad Watch at the Fairmount Water Works Interpretive Center – April 23, 2005
    - Catch of the Day – Fish paintings for children
    - Fish don't talk, but what do they tell us? Aquatic biologist' presentation on how many species of fish have returned to the Schuylkill River
    - What's in the River Today? New Exhibit featuring otter caught on tape
    - Name the Shad; Name the Otter Activity
    - Fish Facts – educational activity booklet, filled to the gills with activities about fish
- First Urban Shad Watch at the Fairmount Water Works Interpretive Center – April 24, 2005

- Season of the Shad Celebration Featuring: Native American Foodways Demonstrations - Fishnet Weaving and Shad Catching, Cooking and Drying Methods

- Saturday Morning Family Programs at the Fairmount Water Works Interpretive Center (Spring 2005)
- The Thirsty Land! Everyone has a Watershed. Where's yours? April 16
- The Dirty Truth: The Scoop on Poop and Pollution – April 9
- An Expedition in Time: Explore water pollution now and then during Ready? Set. Navigate! May 14
- A Delicate Balance: Exploring the Relationship of Land and Water during Choose it. Use it! …Abuse it? Lose it. – June 11
- Travel Through Time Tours: Experience our past, examine our present, explore our future May 7 (for Drinking Water Week)
- Drinking Water Week at the Fairmount Water Works Interpretive Center (PWD water treatment engineers and plant managers introduced students to water treatment processes)
- Know Your Watershed: New Signs Installed in Tookany/Frankford Watershed – July 2005
- New Skimmer Vessel Commissioned to Improve Water Quality - The Water Department, in partnership with the Philadelphia Department of Public Health, the Oliver Evans Chapter of the Society for Industrial Archeology and the Atwater Kent Museum of Philadelphia, is celebrated 200 years' worth of efforts to clean the Schuylkill and Delaware Rivers - July 16, 2005
- Clean Water Theater: videos and DVDs available for public distribution
- 4th Annual 2005 Southeastern Pennsylvania Coast Day Event – September '05
- Return and Rededication of the Fisherman Statue - esplanade exhibit at Fairmount Water Works Interpretive Center

- **PWD Flower Show**

  The PWD Public Affairs Division participates in the PA Horticultural Society's annual Flower Show each year to inform citizens of its biosolids products in addition to providing tips on how garden and home water conservation can provide a powerful tool for stormwater management at the residential level. The PWD Public Affairs Division participates in the PA Horticultural Society's annual Flower Show each year to inform citizens of its biosolids products in addition to providing tips on how garden and home water conservation can provide a powerful tool for stormwater management at the residential level.

  March 13 marked the end of a successful 2005 Philadelphia Flower Show, and with its ending comes the fruits of labor. The Philadelphia Water Department received the Pennsylvania Horticultural Society's Award of Merit for a Nonacademic Educational Exhibit and the Special Achievement Award of the Garden Club Federation of Pennsylvania for Conservation.

  The year's theme was "Keeping America's Waterways Beautiful." The Water Department, along with the Partnership for the Delaware Estuary, presented an exhibit on a landscaping project in Fairmount Park.

  Nearly seven years ago a gaggle of Canadian geese took up year-round residence in Fairmount Park along a section of West River Drive. People flocked to the geese, bringing an endless and abundant supply of food, giving the geese no reason to leave, resulting in environmental changes. The geese trounced about, tore up the landscape and caused significant erosion to the stream bank. When it rained the stormwater runoff carried sediment along with pollutants into the river. More than 150 geese, producing nearly 82 tons of droppings annually, posed a risk to drinking water quality since their new home was very close to an intake for one of Philadelphia's water treatment plants. A humane solution was needed, and one was quickly found. Geese feel insecure in areas where the natural ground cover obstructs their line of vision. Following this logic, volunteers from the Water

Department, Fairmount Park Commission and citizens restored the barren stream bank with native trees, shrubs, grasses, and wildflowers that grow higher than the line of vision for the geese. The project proved to be a success, and the geese moved on to less environmentally sensitive areas in the park. The flourishing native plants are effectively protecting the source water by absorbing and filtering much of the stormwater runoff before it enters the river. The graceful meadow, dotted with colorful wildflowers, now provides a visual retreat for the thousands of Philadelphians who recreate in that area of Fairmount Park. The native plants used to restore the river bank have yielded additional benefits by increasing habitat for small animals, insects, and even for the fish. Using best management practices, as demonstrated in this modest project, can add up to make a significant improvement in the quality of America's water resources – from the Schuylkill River, to the Delaware Estuary to the shining Atlantic!

- **Fairmount Water Works interpretive Center**

The City's Stormwater Management and Source Water Protection programs are inherently linked, as surface water is the source of the city's drinking water supply. Through programs offered at the Interpretive Center, the City provides public education about the urban water cycle and the role of environmental stewardship through tours of the department's drinking and wastewater treatment plants. Students in Philadelphia and surrounding communities learn about stormwater pollution prevention through a series of educational activities, most notably the Summer Water Camp and Urban Ecology programs. Since it's opening in October 2004, the FWWIC has had 53,661 visitors explore its exhibits and/or take part in its exciting programming.

The Scoop on Poop and Pollution

Interpretive Center Educator Brian Rudnick created a novel approach for FWWIC visitor's gain a better understand of a common urban watershed problem -- pollution from stormwater runoff. As part of his educational program, Brian "introduced" visitors to new students Alice and Sunny, who walked their faithful dog Schnitzel to their new schoolyard. Brian encouraged the visitors to create a short skit, challenging them to give Alice and Sunny, the "scoop on poop" when Schnitzel forgets himself in the schoolyard. Visitors were encouraged to use the exhibits to complete activities in story form.

The Thirsty Land

Everybody has a watershed. Where's yours? From Cobbs Creek to the Poquessing, there's a watershed near you. Some watersheds are small, some large. Drew Brown and Jacquelyn Bivins of the Philadelphia Water Department helped some eager Philadelphians explore their local watershed when they presented *The Thirsty Land* on April 16, 2005 at the FWWIC. Participants built a model watershed and learned how to protect their watersheds from stormwater runoff pollution. Jackie and Drew explained where Philadelphia is located in the Delaware River Basin Watershed, and how the Delaware and Schuylkill Rivers provide drinking water to nearly 1.5 million people in Philadelphia.

Promoting Clean Water Creatively

The Fairmount Water Works Interpretive Center was proud to host an award ceremony honoring 16 student artists, all winners of a city-wide drawing contest. The contest provides students with a better understanding of how stormwater runoff pollution adversely affects our local waterways. The FWWIC was the ideal place to hold the ceremony and serve as the official "art gallery" for the budding artists' work, as the contest's theme is closely aligned with the environmental education messages taught at the Center.

Philadelphia Mayor John F. Street and other city officials recognized the students and their teachers during the ceremony at the FWWIC in April. The *Clean Water Begins and Ends with You!* Drawing

Contest, sponsored by the Philadelphia Water Department and the Partnership for the Delaware Estuary, was open to Philadelphia public, private and parochial students ranging in age from kindergarten through 12th grade.

Drawings of the students receiving first-place prizes were used to promote the stormwater runoff pollution prevention message on public transit buses in celebration of the 35th anniversary of Earth Day, April 22. The 16 winning students' work is also being featured in a special 15-month calendar titled *Clean Water Begins and Ends with You.*

Fish don't talk, but what do they tell us?
A lot, actually. Did you know that in the late 1980s, only 11 species of fish were found locally in the Schuylkill River? More recently, aquatic biologists have identified 37 species in the river. What does that tell us? The health of Philadelphia's rivers is better than ever. And that's a good reason to celebrate.

First Urban Shad Watch
On Saturday, April 23, 2005, the FWWIC sponsored the First Urban Shad Watch. Philadelphia Water Department aquatic biologists Lance Butler and Joe Perillo were on hand to give presentations on the species of fish found in the Schuylkill, and a unique demonstration of the fish ladder at the Fairmount Dam. As a special treat that day, visitors were able to nominate names for the North American River otter that was caught on tape going through the fish ladder, and for a replica made from a real shad. The otter can be seen in the What's in the River, Today? Exhibit located in the Water and Wildlife section of the FWWIC. Kids who came to the shad watch were able to take home their fish paintings and a special, educational booklet that was filled to the gills with activities including a word search puzzle of Pennsylvania Fish and *All About Fish,* a glossary that helps identify the parts of a fish. The FWWIC partnered with the Pennsylvania Fish and Boat Commission to develop the booklet, and we are grateful to them for their support of what we hope will become an annual Shad Watch at the Center.

WOW! The Wonder of Water!
Water utilities across the United States, Canada and the United Kingdom celebrated the 30th anniversary of Drinking Water Week, May 1-7, 2005. The FWWIC hosted two Drinking Water Week events sponsored by the Philadelphia Water Department. This year's theme was the Wonder of Water! Drinking Water Week was established by the American Water Works Association to promote the importance of safe, clean water – a resource whose precious value is often forgotten or taken for granted. The FWWIC is proud to participate in this international celebration. Here's a snapshot of Philadelphia's events:

Ever wonder about water?
On May 3, 2005, 25 middle school students from Cornerstone Christian Academy joined several water treatment engineers from the Philadelphia Water Department to celebrate Drinking Water Week at the FWWIC, where they learned about water cycles, water treatment processes and aquatic biology.

Travel Through Time Tours
As any FWWIC Tour Guide knows, Philadelphia was the first major municipal water supplier in the United States. But what came before the Fairmount Water Works and what is the Philadelphia Water Department doing now to provide safe water to the City? Citizens throughout the watershed, who participated in our Travel Through Time Tours, learned all about Philadelphia's historical, contemporary and future efforts in water treatment and supply. On Saturday, May 6, these guests were treated to free bus tours to several former and current water facilities as the Drinking Water

Weeks activities continued. The Travel Through Time Tours started at City Hall, the former site of the city's first pumping station, Center Square, where Drew Brown, manager of public education, explained the history of water supply in Philadelphia. From there, guests traveled to the Interpretive Center where FWWIC Tour Guide Ray Finkel explained the vital role the Fairmount Water Works played in the development of the City. At the Center, guests viewed a video that details the history of water in the 19th century Philadelphia. Next, our guests continued on to the Belmont Water Treatment Plant by route of West River Drive, giving passengers a scenic view of the Schuylkill River, a source of Philadelphia's drinking water. Here, Ed Grusheski presented a slide presentation on the history of the Belmont plant. Finally, Nicole Charleton, Pilot Plant Engineer, provided guests with a tour of one of PWD's research plants where they glimpsed future endeavors for water treatment.

Get Out of Bed, Sleepyhead! Learn About Your Watershed.
This past spring, our Interpretive Center Educators conducted a series of family-orientated educational programs. The Saturday Morning Family Programs provided fun and interesting ways to learn about Philadelphia's watersheds and how to protect our water resources. The Saturday Morning Family Programs proved to be such a success that the FWWIC staff has decided to continue the series this fall.

Ready? Set, Navigate!
What did Philadelphia look like before modern skyscrapers dotted the cityscape? On May 14, 2005, some curious youngsters found out that most of the Philadelphia area and its environment looked very different before the 20th century, as they went on an expedition through time with Interpretive Center Educator Karen Young. The children played an exciting orienteering game designed to help compare and contrast Philadelphia's 19th century landscapes and landmarks, to those of the 20th and 21st centuries. Participants explored all around the deck of the Interpretive Center to learn the effects of pollution on the Schuylkill River, the source of drinking water for the city. By the end of the game, the children were able to estimate the impact of pollution from past times to modern.

Choose it. Use it! …Abuse it? Lose It!
Every day, people make choices about how they use the land around them – often without considering how land use will affect the water they drink. On June 11, 2005, visitors to the FWWIC ventured on a scavenger hunt through the exhibits to learn the history of land usage in Philadelphia. They used modern land-use maps to guide them through their journey of discovery, and learned how and why attitudes have changed about using land and protecting the water around us. Interpretive Center Educator Ellen Schultz, creator of *Choose It. Uses it!...Abuse it? Lose It!* was on hand to help visitors make the important connections during the scavenger hunt.

1.7.4 Citizen Advisory Committee (CAC) and other Partnership Projects

Water Quality Citizens Advisory Council
In 2001, the Water Quality CAC was formed from a merger of the Stormwater and the Drinking Water Quality CACs. Over the past few years, source water protection had become more of a concern for drinking water quality. The Drinking Water CACs focus has been drawn naturally toward non-point source pollution, a focus traditionally undertaken by the Stormwater CAC. Finally, this merging of the two CACs complemented the PWD's, DEP's and EPA's new approach to looking at and addressing water quality issues on a holistic basis. The Partnership for the Delaware Estuary facilitates CAC meetings. The committee consists of representatives from the following groups: Tookany Creek Watershed, Academy of Natural Sciences, Action AIDS, Bridesburg Civic Association, Bucks County Water & Sewer Authority, Center in the Park Senior Environmental Corps, Clean Water Action, Cobbs Creek Community Environmental Education

Center, Delaware River Basin Commission, Delaware Valley Regional Planning Commission, Drexel University, Eastwick PAC, Fairmount Park Commission, Frankford Group Ministry, Friends of Fox Chase Farm, Friends of High School Park, Friends of Manayunk Canal, Friends of Pennypack Park, Friends of Poquessing Creek Park, Friends of Tacony Creek Park, MANNA, Mayor's Commission on Literacy, PA DEP Water Supply Division, Partnership for the Delaware Estuary, PA Environmental Council, PennPIRG, PA Horticultural Society, Pennypack Environmental Center, Pennypack Watershed Association, Phila. Health Department, Phila. Corp. for Aging, School District of Philadelphia, Schuylkill Center for Environmental Education, Schuylkill Navy, Schuylkill River Development Corp, Schuylkill River Heritage Corridor, Southhampton Watershed Association, Stroud Water Research Center, US EPA Region III, Wissahickon Charter School.

Clean Water Partners

Clean Water Partners is a project designed to reduce non-point source pollution from retail and commercial businesses that will be implemented in several commercial districts in Philadelphia and Chester Counties. In FY'05, the Partnership developed and disseminated a brochure to over 2000 groups/individuals, including municipal officials, watershed associations, environmental advisory councils (EACs). The Partnership had 15 resulting responses from groups expressing interest in the Clean Water Partners program. Direct contact was made with 55 groups through a personalized letter and at least one phone call. In total, 41 groups expressed interest in the participating in the Clean Water Partners program, including EACs, watershed groups, business groups, and municipalities. The program coordinator made 33 presentations describing this program and educating 192 individuals about stormwater runoff pollution prevention during this partner recruitment phase.

Program literature and training materials were developed based on the results of the Partnership's Clean Water Partners pilot. Four basic Clean Water Partners educational pieces were developed to support this program, including:

- Eight-page Good Housekeeping Handbook
- Clean Water Partners Auto Service Sector Fact Sheet
- Clean Water Partners Food Service Sector Fact Sheet
- Clean Water Partners Site Survey Form and Pledge Certificate (Developed to standardize education program, site visit/survey procedures, and facilitate pledges.

Additional training materials were developed to support program partners and assist with program implementation. These included: Sample Kick-off Letter, Flyers, Sample Press Release, Training Packet and Clean Water Partners Powerpoint Presentation.

The current seven active program partners in Pennsylvania include: Abington Township EAC, Chester-Ridley-Crum Watersheds Association, Friends of the Wissahickon, Marcus Hook Boro EAC, Norwood Boro, West Goshen Township, and University City. In New Jersey, Gloucester City is the only active program partner. In Delaware, Delaware City is the only active partner.

1.7.5 City-Wide Initiatives

Annual Earth Day Service Project

Community and watershed volunteers participated in the Water Department- and Stormwater CAC-sponsored annual Earth Day service project by installing storm drain curb markers throughout the City. Volunteers used the new curb markers developed by PWD and PA Coastal Zone Management Project to stencil the message "Yo!!! No Dumping! Drains to River!" beside a fish. By developing a more durable and

easily applied curb marker, volunteers are able to cover more area. In spring and summer 2005, over 20 organizations participated in the storm drain marking activity. Throughout these months, approximately 3,500 storm drains were marked in April and 1,500 more were decaled during the summer in the City of Philadelphia.

"Stormy Weather" Video

The video focuses on individual responsibility as a critical success factor in improving storm water quality. The deleterious effects of storm water pollution on the physical and biological community in aquatic systems are addressed through various anti-litter messages, such as: litter control, responsible household and pet waste management, and the proper use of inlets. The video is distributed to schools, watershed organizations and interested civics. The video has been distributed to over 300 environmental groups on an annual basis, various citizen groups, and schools, and has become a part of the environmental education curriculum for Delaware schools. The City's cable channel is showing the video twice a day.

"Clean Water Begins and Ends with You"

The Partnership for the Delaware Estuary and the PWD, sponsored its seventh drawing contest for Philadelphia students grades K-12 in January 2005. Students were required to draw an illustration that shows how Philadelphians can help prevent stormwater runoff pollution. First prize drawings were used to promote stormwater pollution prevention messages on SEPTA buses and in the creation of a "Clean Water Begins and Ends with You" calendar. In 2005, there were almost 1,500 drawings entered into the contest, with 44 schools participating. This year's award ceremony was held in April 2005 at the Fairmount Water Works Interpretive Center.

Clean Water Theatre

Working in partnership with the Academy of Natural Sciences, the Partnership for the Delaware Estuary, the PWD CAC offered the Clean Water Theatre's "All Washed Up" program which uses local artists and musicians to engage public, private and parochial schools throughout the City of Philadelphia in becoming active and informed stewards of our environment. The setting of the 20 minute play is in an urban park that has a river running through it. The story is built around three characters (an old man who is the caretaker of the park and who had been a vaudeville song and dance man in his youth, and two teenagers – a boy and a girl) that explore the importance of environmental stewardship and clean water. While there were not any live performances of Clean Water Theatre in 2005, many video and DVD copies of the performance was distributed to teachers and local educators.

Senior Citizen Corps (SEC)

The Water Department continues to work with the Senior Citizen Corps to address stormwater pollution problems and water quality monitoring programs for the Monoshone Creek, a tributary to the Wissahickon Creek and to the Tookany Creek. The SEC performs biomonitoring, collects water samples, and conducts physical assessments of the stream. The Water Department assists SEC efforts through the provision of municipal services, education about stormwater runoff and the department's Defective Lateral Program, and mapping services such as GIS. Meetings are held monthly. The Corps is also partnering with PWD on its Saylor Grove Wetland Demonstration Project, assisting with public education and outreach.

Safe Boating Program

PWD has also initiated an outreach, education, and notification program for marinas and personal watercraft that may be situated near CSO outfalls on the Delaware River. PWD has held meetings with representatives from DEP's Coastal Non-Point Pollution program, the Partnership for the Delaware Estuary and administrators of similar programs in New Jersey to develop a host of educational and environmental management measures. Our proposed approach entails conducting a survey of existing marinas and boat launches and their use profiles (personal, charter, open, closed craft, etc.). We would then initiate meetings with the individual marinas to implement site-specific notification mechanisms (brochure, flags, sign, etc.) that list precautions that should be exercised by those engaging in contact recreation within the marina

Waterways Restoration Team – A Partnership between PWD and the Fairmount Park Commission

In July 2003, the Philadelphia Water Department and the Fairmount Park Commission (FPC) initiated an exciting partnership that will improve the environmental quality of our precious City parks and streams.

The FPC has assumed responsibility for over 200 acres of land dedicated to the City for stormwater management purposes land that was, up until now, a mowing and landscaping maintenance burden for the Water Department. The FPC will use this land to further its vision of developing "watershed parks," creating natural connections between neighborhoods and existing park areas.

In exchange, the Water Department is fielding a Waterways Restoration Team (WRT) – a crew dedicated to removing large trash – cars, shopping carts, and other short dumped debris - from the 100 miles of stream systems that define our City neighborhoods. This crew will also restore eroded streambanks and streambeds around outfall pipes and remove sanitary debris at these outfalls. The Waterways Restoration Team will work in partnership with the FPC staff and the various Friends of the Parks groups to maximize resources and the positive impacts to our communities. This partnership focuses on the core strengths of our two agencies. The FPC will continue to improve landscape management of the City's parks and dedicated lands, while the Water Department will focus its efforts on water quality improvements, a mandate it has under its state and federal water quality related permits.

Waterways Restoration Team – FY '05 Performance Measurements

	Number of sites visited	No. of Sites requiring multiple days	Vol. of debris removed total (tons)	No. of cars	No. of tires	No. of Shopping carts	No. of Partner Projects
July 04	10	1	86	-	4	3	1- MDC
Aug. 04	9	2	43	-	10	21	2- MDC, FPC multiple days
Sept 04	12	2	59	-	2	2	1 – FPC multiple days
Oct. 04	12	4	47.5	-	15	7	1- FPC multiple days
Nov. 04	5	2	70.5	-	-	1	2- MDC, FPC multiple days
Dec. 04	9	-	22.8	-	12	1	-
Jan. 05	6*	3	85.97	1	40	1	-
Feb. 05	9	2	15.14	2	177	7	2- FPC, MDO multiple days
Mar. 05	7	1	31.74	-	95	20	4 - FPC, MDO, Police, F&BC, multiple days
April 05	9	3	30.43	-	95	55	3 – FPC, MDO, FOMP - multiple days
May 05	14	5	94.65	8	45	12	6 – MDC, FPC, FOMP, FOPP, Police, Streets - multiple days
June	13	3	115	-	20	2	2 – FOPC, FPC multiple

05							days
Total	**115**	**29**	**702**	**11**	**515**	**132**	

* Snow removal detail

Partners – Manayunk Development Corp (MDC), Fairmount Park Commission (FPC), Managing Director's Office (MDO), Fish and Boat Commission (F&BC), Friends of Morris Park (FOMP), Friends of Pennypack Park (FOPP), Friends of Poquessing Creek (FOPC).

In addition to the unbelievable amounts of trash that have been eliminated from our park and stream systems, the Waterways Restoration Team completed its second plunge pool restoration project at the Tustin Street outfall in the Pennypack Creek and an interim stabilization of the lower segment of the Wises Mill Road Tributary to the Wissahickon Creek.

1.8 Public Notification

As discussed in Section 7 of the above report, the Water Department had developed and will continue to develop a series of informational brochures and other materials about its CSO discharges and the potential affect on the receiving waters. The brochures provide phone contacts for additional information. Also, the opportunity to recruit citizen volunteers to check or adopt CSO outfalls in their watersheds (i.e., notifying the PWD of dry weather overflows, etc.) will be explored through the watershed partnership framework. Brochures and other educational materials discuss the detrimental affects of these overflows and request that the public report these incidences to the department. In addition, the Water Department has enlisted watershed organizations to assist it with this endeavor. PWD will continue with this focus in 2005 to continue to raise the level of awareness in its citizens about the function of combined and stormwater outfalls through a variety of educational mediums. The watershed partnerships will also continue to be used for this type of education.

In response to the compliance inspection performed by DEP in November 2002, PWD reviewed and revised our public notification program in areas that have a reasonable likelihood for primary contact recreation. As part of our watershed management program development, PWD examined recreational uses in the area waterways. As a result, the development and use of new notification practices are already underway for areas known to support contact recreation, namely the Upper Schuylkill River and in areas of Tacony Creek Park. Flyers were developed and directly distributed to people observed to be swimming in Tacony Creek. A recreational advisory has been completed for the Schuylkill River in conjunction with the Department's Water Quality Committee. This system's educational message will be similar to the marina programs as the advisories are based upon rainfall, CSOs and upstream influences on water quality.

PWD has also initiated an outreach, education, and notification program for marinas and personal watercraft that may be situated near CSO outfalls on the Delaware River. PWD will hold meetings with representatives from DEP's Coastal Non-Point Pollution program, the Partnership for the Delaware Estuary and administrators of similar programs in New Jersey to develop a host of educational and environmental management measures. Our proposed approach would entail conducting a survey of existing marinas and boat launches and their use profiles (personal, charter, open, closed craft, etc.). We would then initiate meetings with the individual marinas to implement site-specific notification mechanisms (brochure, flags, sign, etc.) that list precautions that should be exercised by those engaging in contact recreation within the marina and/or on the open water. In addition, these meetings would discus how the marina can adopt environmentally responsible operation and maintenance practices for personal and multi-purpose watercraft that are jointly supportive of safe contact recreation and the DEP Coastal Non-Point Pollution goals. Specifically, these would address the measures identified in the Marinas and Recreational Boating section of

the DEP document titled Deliverables for Results-Based Funding Coastal Non-point Pollution (CNP) Specialist.

1.8.1 Other Public Notification Initiatives

The Water Department has developed and will continue to develop a series of informational brochures and other materials about its CSO discharges and the potential affect on the receiving waters, in addition to information regarding dry weather flows from its stormwater outfalls. The brochures provide phone contacts for additional information. Also, the opportunity to recruit citizen volunteers to check or adopt CSO outfalls in their watersheds (i.e., notifying the PWD of dry weather overflows, etc.) will be explored through the watershed partnership framework. Brochures and other educational materials discuss the detrimental affects of these overflows and request that the public report these incidences to the department. In addition, the Water Department has enlisted watershed organizations to assist it with this endeavor. The department continued with this focus in 2004 to raise the level of awareness in its citizens about the function of combined and stormwater outfalls through a variety of educational mediums. The watershed partnerships are primed for this kind of public/private effort to protect stream water quality. In addition, the department is working with Fairmount Park to install CSO signage (see below) at 20 of the most highly visible CSO outfalls (text will also be included in English and Spanish). Lastly, the department's Clean Streams Team will investigate the feasibility of installing signage that can withstand nature and vandals at the department's outfalls

In The PWD, in partnership with the Delaware Estuary Program, initiated a best management practices education program for marinas. This program is designed to better educate and alert recreational users of the Delaware and Schuylkill Rivers regarding questionable water quality following rainstorms. The program will also provide tips and information to marina operators to ensure their practices are environmentally sound and consistent with the State BMP guidance for marinas in the coastal zone. To complement this effort, the PWD has also been working with other city agencies to devise a "Recreational River Rating System" for the Schuylkill River due to the number of recreational activities that occur on the river year around. This system's educational message will be similar to the marina programs as the advisories are based upon rainfall, CSOs and upstream influences on water quality.

1.9 Monitoring and Reporting

Reference Philadelphia NMC Report, 9/27/95 Section 9 pp. 1-3 and System Hydraulic Characterization Report, 6/27/95 Section 5, pp. 5-3.

Monitoring and characterization of CSO impacts from a combined wastewater collection and treatment system are necessary to document existing conditions and to identify water quality benefits achievable by CSO mitigation measures. The tables included in the following section represent the average annual CSO overflow statistics for calendar year 2005 as required in the NPDES Permit. The table has been reorganized to present overflows by the specific receiving water into which the CSOs from a given interceptor system discharge. In order to be consistent, the column headings are presented in the same format found in the System Hydraulic Characterization (SHC) and NMC Documentation. These statistics are also summarized in the Watershed Planning Section along with waterbody - specific monitoring programs that occurred in 2005.

1.9.1 Annual CSO Statistics (2005)

The estimated average annual frequency and volume statistics for calendar year 2005 are presented in the following Table.

COBBS CREEK 2005 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Cobbs Creek High Level	26	32	0 - 61	20	1206 - 1237	50 - 53	0 - 288
Cobbs Creek Low Level	9	12	0 - 51	19	93 - 100	75 - 78	0 - 176

DELAWARE RIVER 2005 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Upper Delaware Low Level	12	12	4 - 54	27	851 - 903	58 - 62	7 - 213
Somerset	8	9	22 - 58	41	3586 - 3545	47 - 50	45 - 292
Lower Delaware Low Level	27	27	4 - 56	34	2533 - 2658	59 - 63	7 - 301
Oregon	5	6	1 - 52	36	1179 - 1197	38 - 41	2 - 191
Lower Frankford Low Level	5	6	20 - 54	36	1034 - 1082	45 - 49	40 - 224

PENNYPACK CREEK 2005 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Pennypack	5	5	12 - 49	26	73 - 79	67 - 71	27 - 178

SCHUYLKILL RIVER 2005 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency				CSO Volume (MG)			CSO Capture (%)			CSO Duration (hrs)		
			Range per subsystem			Avg per subsystem	Range per subsystem			Range per subsystem			Range per subsystem		
Central Schuylkill East Side	20	26	1	-	75	29	1136	-	1192	58	-	61	2	-	393
Central Schuylkill West Side	10	10	1	-	57	37	599	-	624	49	-	53	1	-	309
Lower Schuylkill East Side	7	9	4	-	56	38	695	-	724	53	-	57	7	-	285
Lower Schuylkill West Side	4	4	5	-	57	42	1095	-	1116	20	-	23	10	-	226
Southwest Main Gravity	2	2	4	-	55	30	1810	-	1862	63	-	67	7	-	236

TACONY CREEK 2005 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency				CSO Volume (MG)			CSO Capture (%)			CSO Duration (hrs)		
			Range per subsystem			Avg per subsystem	Range per subsystem			Range per subsystem			Range per subsystem		
Tacony	16	16	1	-	62	36	3859	-	3933	39	-	43	4	-	306
Upper Frankford Low Level	12	12	8	-	55	36	358	-	377	58	-	62	14	-	255

2.0 Phase II – Capital Improvement Projects

The second phase of the PWD's CSO strategy is focused on technology-based capital improvements to the City's sewerage system that 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. Table 2-1 provides a summary of the 17 capital projects described fully in *CSO Documentation – Long Term CSO Control Plan, January 1999*. A column has been added to this table that details the receiving water body that will benefit from the project. Lastly, the completion dates of the respective projects have been modified to be consistent with the Draft NPDES permits.

Table 2-1 Summary of Phase II Capital Projects

Watershed	Project Description	Capital Cost
City Wide Program	Establish Real Time Control (RTC) Center	$350,000
City Wide Program	Targeted Infiltration/Inflow Reduction Programs	$2,000,000
Schuylkill and Delaware	Solids & Floatables Control Program	$380,000
Pennypack	Integrate Water Quality Objectives into Flood Relief Programs	N/A
Pennypack	85% CSO Capture Pennypack Watershed (P-1 through P-5)	$230,000
Tacony - Frankford	RTC - Tacony Creek Park Storage (T-14)	$450,000
Tacony - Frankford	RTC - Rock Run Relief Sewer Storage (R-15)	$490,000
Delaware	Somerset Interceptor Sewer Conveyance Improvements	$300,000
Tacony - Frankford	Frankford Siphon Upgrade	$10,000
City Wide Program	RTC & Flow Optimization - Southwest Main Gravity Interceptor,	$1,750,000
	Cobbs Creek Cut-off, and Lower Schuylkill West Side	
Schuylkill	RTC - Main Relief Sewer Storage (R-7 through R-12)	$650,000
Schuylkill	Eliminate Outfalls: Dobson's Run Phase I	$6,200,000
Schuylkill	Eliminate Outfalls: Dobson's Run Phase II	$7,000,000
Schuylkill	Eliminate Outfalls: Dobson's Run Phase III	$11,700,000
Schuylkill	Eliminate Main & Shurs Outfall (R-20)	$12,000,000
Schuylkill	Eliminate 32nd & Thompson Outfall (R-19)	$1,500,000
Darby - Cobbs	Cobbs Creek Low Level (CCLL) Conveyance Improvements	$440,000
Darby - Cobbs	Cobbs Creek Low Level (CCLL) Control Project	$2,500,000
City Wide Program	WPCP Wet Weather Treatment Maximization Program	$150,000
	Total Phase II Project Cost:	**$48,100,000**

This section presents the status of the capital improvement projects being implemented on a citywide basis.

2.1 Infiltration and Inflow (I/I) Reduction Projects

Start: 9/1/1998 End: Status: Ongoing

Reference Long Term CSO Control Plan p. 2-5.

Description: Opportunities exist to reduce CSO impacts by means of reducing the entry of stormwater runoff, rainfall-derived I/I, and groundwater infiltration into the sewer system. Appropriate measures will be identified, evaluated, and implemented, where appropriate and cost-effective. There are four basic approaches to CSO control through I/I reduction:

1) Reduce the entry of stormwater runoff (including perennial stream baseflow) into the combined sewer system by diverting streamflow directly to a receiving stream.

2) Reduce the entry of groundwater infiltration to the combined sewers, interceptor sewers, and/or upstream separate sanitary sewers.

3) Reduce the entry of rainfall-derived I/I from upstream sanitary sewer systems.

4) Monitor and study the tidal inflows from river levels exceeding emergency overflow weir elevations at tide gates.

Each of the above methods enables CSO reduction by effectively increasing the capacity in the intercepting sewers and WPCPs available for the capture and treatment of combined wastewater. Several opportunities have already been identified and are currently being evaluated. The estimated costs for the I/I reduction program as documented in the CSO LTCP is $2,000,000.

Environmental Benefits: Since I/I is relatively clean water that occupies conveyance and treatment capacity, eliminating it from the system frees up capacity for the relatively more concentrated combined wastewater. This reduces CSO discharges and enables greater pollutant capture throughout the combined sewer system. An additional benefit of reduced infiltration (and diversion of any perennial streamflow) is the reduction in the operating costs associated with continuously pumping and treating these flows.

Status: This program consists of a combination of investigative and corrective efforts geared at reducing extraneous flows into the combined sewer system.

2.1.1 Temporary Flow Monitoring Program

The PWD temporary flow-monitoring program initiated in July 1999, with deployment of portable flow meters throughout targeted Philadelphia sewershed areas to quantify wastewater flow through sanitary sewers and characterize the tributary sewersheds. The identification and quantification of rainfall dependent inflow/infiltration (RDII) into sanitary sewers contributing to the City of Philadelphia's service area is a key component in assessing potential reductions in combined sewer overflow (CSO) impacts.

The data collected allows for the quantification of wet and dry weather flows in separate sanitary sewers for a specified list of sites over a given period. The flow monitoring data is subjected to rigorous QA/QC procedures resulting in consistently good data quality over the monitoring period. Further analysis of the flow monitoring data is performed using hydrograph separation techniques in order identify the primary flow components. The results of these studies include the quantification of base wastewater flow rates (BWWF), ground water infiltration / direct surface stream inflow rates (GWI/SWI), and rainfall dependant infiltration and inflow (RDII) expressed as a percentage of rainfall volume over the sewershed area (R-value). This analysis was performed in 2002 for approximately 18 sites.

In 2003, the PWD flow monitoring program continued with the redeployment of 7 sanitary sewer flow monitoring sites providing data suitable for RDII analysis and 3 combined sewer sites providing data for model calibration. RDII analysis and dry weather flow characterization was performed for these 7 sanitary sewer flow monitoring sites (4 in the NE sewer district, 2 in the SW sewer district, and 1 in the SE sewer district) with data collected over the period September 2002 through November 2003.

In 2004, 13 flow meters were redeployed in sanitary sewer to provide data suitable for RDII analysis and 4 combined sewer sites providing data for model calibration. RDII analysis and dry weather flow characterization was performed for these 13 sanitary sewer flow monitoring sites (8 in the NE sewer district and 5 in the SW sewer district) with data collected over the period January 2004 through November 2004. In addition to the PWD temporary sewer flow-monitors, 17 sanitary sewer flow monitors were deployed, through a contract with CSL Services, Inc., at un-metered connections from outlying community service areas. RDII analyses and dry weather flow characterizations were performed on these additional 17 sanitary sewer flow monitoring sites with data collected over the period November 2004 through December 2004.

The status of the current (FY2005-2006) flow monitoring contract with CSL Services for $250,000 of portable flow metering and dye dilution testing is summarized below:

(1) Dye-dilution Testing: 19 outlying community permanent flow meters were dye dilution tested at a cost of $2,750 each for a total cost of $52,250

(2) Portable Flow and Level Metering: A total of 19 portable flow and level metering sites, which include 10 flow sites and 9 level sites, have been installed from September 2005 through January 2006. The sites were selected to provide data for calibration and verification of hydraulic models developed for areas targeted for storm flood relief projects. A total of 49 meter-months of flow and level data have been obtained at a cost of $2000 each for a total cost of $98,000.

The remaining contract sum of $99,750 will be used for approximately 49 meter-months of additional flow monitoring to be performed at selected sites from during the spring through early summer of 2006 in targeted storm flood relief project areas.

Portable sewer collection system flow monitoring is a permanent need in support of hydraulic system hydraulic characterization and model verification for both storm flood relief and CSO long term control programs. An RFP will be developed for bidding during the spring of 2006 for further portable flow monitoring to be performed beyond the current contract with CSL services.

2.1.2 Tide Inflow Study – Corrective Actions

The System Inventory and Characterization Report (SIAC) identified 88 CSOs influenced by the tides. Many of these sites have openings above the tide gate. During extreme high tides inflow into the trunk sewer can occur. During these events, significant quantities of additional flow can be conveyed to the treatment plant and thus reduce capacity for storm flow, as well as increasing treatment costs. Page 2-12 of the NMC report describes a program to install tide gates, or other backflow prevention structures, at regulators having an emergency overflow weir above the tide gate. This program was completed in June of 1999 and protected all openings up to 1.5' City Datum and resulted in significant inflow reductions. These reductions were estimated in the 1999 annual status report.

After further review, additional sites were targeted for inflow protection measures. Although situated at elevations significantly higher than extreme high tides, these additional sites were modified in 2001. Table 2.1.1 summarized the number of sites corrected.

Table 2.1.1 Status tide inflow protection project.

Drainage District	Total # Sites	# Completed
Northeast	21	21
Southwest	7	7
Southeast	6	6
Total	34	34

2.1.3 Sewer Assessment Program

The permittee shall implement a comprehensive sewer assessment program (SAP) to provide for continued inspection and maintenance of the collection system using closed circuit television. The SAP shall be used to guide the capital improvement program to ensure that the existing sewer systems are adequately maintained, rehabilitated and reconstructed.

2.1.4 City Wide GIS Mapping

The PWD has begun to utilize the comprehensive Geographic Information System (GIS) of the City sewer system to target locations for inspection and potential maintenance where I/I may be a problem. Two such examples, are intake walls; locations where springs and creeks directly enter the sewer system, and creek crossings; locations where sewers travel directly under a waterbody.

2.1.5 Whitaker Avenue Stream Restoration

I/I studies in the Tacony-Frankford Watershed identified a location in need of stream restoration to protect PWD infrastructure. A manhole severely exposed due to stream migration from high quantities of runoff had its riser knocked off during a storm event. Large quantities of stream water were flowing into the open sanitary sewer. The immediate problem was corrected, but the long term solution needed to be addressed.

D.S. Winokur and Associates was contracted and completed a detailed survey and drafting of the base maps necessary to support KCI Technologies in the preparation of contract drawings for this Growing Greener Grant partially funded restoration.

In 2005, KCI Technologies was completed the conceptual design of a natural stream channel design for approximately 2000 feet of this portion of Tacony Creek. The design considers stable channel dimension, pattern and profile; impacts of urban development and hydrologic and hydraulic modifications; protection or removal of existing PWD infrastructure; in-stream structures for grade control, stream bank stability, and habitat; incorporation of flood attenuation and recharge areas; bioengineered bank stabilization; riparian restoration with site access and a trail network; and long term ecological stability. The total estimated budget for the design portion of this project is $83,664.00 and will be covered in entirety by the PWD to satisfy grant obligations as grant matching funds.

In 2006, the project team will continue to move the design forward to a set of specifications and drawings for bidding.

2.1.6 Main Interceptor I/I Study and Corrective Actions

A combination of I/I study methods, including, flow monitor deployment, facility inspections of the Roxborough Reservoir and Filters, dye testing of Eva and Evergreen, summit manhole/dead end sewer plug

replacement, CCTV inspections of the sewer, and grit profiling studies, has allowed the PWD to identify sources of I/I and reduce or remove sources through corrective actions.

2.1.7 Sewerage Facility Planning Modules

The PWD reviews sewage facility planning modules and downstream sewage conveyance and treatment facilities to ensure that adequate capacity exists within these systems to accommodate flow increases as well as identify sources of extraneous flows during wet weather conditions. I/I studies will continue at the points of connection from outlying communities to quantify excess flow.

2.1.8 Infrastructure Assessments

PWD actively conducts efforts to inventory and prioritize sewerage infrastructure by collecting spatial location data for all points that either hydraulically alter the flow of the creek, or, infrastructure points affected by the stream migration for both infiltration or exfiltration. These studies have identified over 300 points in the Cobbs Watershed and 1000 points in the Tookany/Tacony-Frankford Watershed,

The data collected includes the spatial locations of all bridges, channelized portions, confluences, culverted portions, dams, manholes, outfalls, and pipes within the Watershed. In addition to spatial locations, and depending on the type of infrastructure point, the following information is also collected: Size, Material, Length and Height of Exposed Portion, Condition, Presence and Quality of Dry Weather Flow, Bank Location, Level of Submergence, Dimensions – Height, Width, Length (Channels and Culverts only), Digital Photos and Descriptions, and Additional Field Notes.

Corrective actions are taken when points of concern are identified.

2.2 Real-Time Control Program

2.2.1 Establish Real Time Control Center

Start: 4/1/1998 End: 12/1/2003 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-4.

Description: A Real Time Control center (RTC) will be established at the Fox Street facility over the next 3 years. The ultimate goal for this center is to house a centralized RTC system that will allow telemetered commands to be sent to site-specific, automated controls located throughout the collection and treatment facilities. These signals may be transmitted based upon an optimized response to rainfall patterns and are intended to further enhance capture of CSO volume. Establishing a RTC center will enable PWD to provide 24-hr monitoring and eventually, control of key collection system facilities including automated CSO regulators, pump stations, and inter-district diversions.

An RTC facility also will provide the basis for improved management of many aspects of collector system operations, by centralizing collection and processing of data provided by the various automated functions (e.g., CSO monitoring, automated regulators, etc.). By use of RTC, flows are diverted or stored where capacity exists in the system. This function prevents wet-weather overflows prior to maximum use of available conveyance and/or storage capacities, thus allowing for prioritization of overflow locations based on hydraulic or pollutant load characteristics.

Status: The construction of the Real Time Control Center RTC building was completed in the summer of 2003. A contract to furnish the interior of the control room with computer displays, operator workstations,

projection systems and large flat panel displays as well as all the associated hardware and networking was completed and bid in 2005. By spring of 2006, the room should be fully functional.

The details for the Decision Support System (DSS), which will provide a means for an operator to obtain information relevant to making control decisions in the event that the system is being operated in supervisory mode, are continuing to be designed. The DSS will provide an interface to many different kinds of information that currently exist within PWD, but are not currently available from a single interface. The scope of the DSS will focus on the identification of these relevant data sources and the construction of a "proof-of-concept" prototype DSS.

2.2.1 RTC – SWMG, CC, LSWS

Start: 7/1/1998 End: Status: In-Progress

Reference Long Term CSO Control Plan p. 2-13.

Description: A number of interrelated projects in the Southwest Drainage District (SWDD) were determined to enhance the operation of the high-level and low-level collection systems and consequently maximize capture and treatment of wet-weather flows at the SWWPCP. Each of the high-level interceptor systems that discharge to the SWWPCP can influence the hydraulic capacity and treatment rate of the other high-level interceptor systems, as they compete for capacity in the Southwest Main Gravity (SWMG) into the plant. Therefore, several integrated projects were proposed together to establish a protocol for prioritizing flow from each interceptor system. These projects will be defined and implemented in conjunction with a centralized real-time control (RTC) system (see 10.5.1 - *Real Time Control Center*). In addition, the RTC system will control the Triple Barrel reach of the SWMG, and will control the diversion from the SWMG to the Lower Schuylkill West Side Interceptor (LSWS), thereby enabling use of the full capacities of these interconnected conduits during wet-weather.

The individual projects that constitute the SWMG optimization program are: adding a RTC system with monitoring at approximately six locations and automated gate structures at seven locations, modifying the SWMG Triple Barrel sewer at 70th & Dicks St.; replacing the dry weather outlet (DWO) pipe and raising the dam at regulator C_17, modifying the regulators along the LSWS interceptor, and modifying the hydraulic control point regulators along the SWMG to pass more flow to the LSWS. The total estimated cost for these projects is $1,750,000.

Status: During the first year of the project, Reid Crowther Consulting, Inc. set up an RTC model using SewerCAT software developed by Reid Crowther. Existing Stormwater Management Model (SWMM) data for the SWDD was imported into this model. Hydraulic conditions of the SWDD were assessed, current systems and practices were reviewed, and an RTC objective function was identified. Several technical approaches and operational modes were assessed, and an automatic system with the availability of supervisory control constitutes the present operating strategy. A technical memorandum was completed describing the facilities required for the implementation of RTC in the SWDD; an implementation plan has been developed and preliminary budget estimates were produced.

During the calendar year 2001, the SWDD RTC strategy was further refined and analyzed and a draft conceptual design memorandum was completed describing the RTC facilities, system strategies and objectives, cost estimates for RTC implementation, analysis of alternative scenarios, and work plan for the development of an RTC decision support system. The proposed RTC scenarios were modeled using the EXtended TRANsport (EXTRAN) component of SWMM and were quantified in terms of CSO volume estimates, impact on wet weather hydraulic grade lines (HGLs) and flows at selected locations, and costs/benefits.

The SWDD RTC conceptual design memorandum outlines recommendations for the modifications to the SWDD collection system in three phases. Phase I includes enlarging of the DWO pipe and raising the diversion dam at the C_17 regulator, modifying the operation of CSPS based on the level in the CCLL interceptor, and regulating inflows from S_27 to the SWMG using a DWO sluice gate under RTC. In addition, installation of a side-overflow weir at the West Barrel at the 70th & Dicks Triple Barrel and opening the East and Center Barrels open for dry weather flow is encompassed in Phase I of the RTC project. Phase II concentrates on decreasing overflows in the LSWS by enlarging the S_45 DWO pipe and regulating inflows using a computer-controlled DWO sluice gate. The strategy for Phase II also incorporates closing of DWO shutter gates at S_43 and S_47. The 3rd phase of the RTC conceptual design is enlargement of the S38 DWO pipe and regulating flows using a computer-controlled DWO gate.

Final design for portions of Phase I were completed in 2005. The design for the rehabilitation of the DWO sluice gate chamber was completed with the aid of the consulting engineering firm of Gannett Fleming, and is currently in Projects Control awaiting bid. The engineers estimate for this project is $1,600,000.

The Phase II portion of this project which includes regulator S45 Modifications at 67th Street, is currently under design with the aid of the consultant engineering firm of Hatch Mott MacDonald. Design should be complete in early 2006.

2.3 WPCP Flow Optimization (Stress Testing)

Start: 1/1/1998 End: 5/1/2001 Status: Complete

Reference Long Term CSO Control Plan p. 2-17 – 2-21.

The plant stress-testing project established:

- Maximum and average flows that should be treated in various unit processes for current and future operations;
- Ranges of hydraulic, solids and BOD_5 loads that could be applied to the various unit processes and yet obtain maximum removal efficiencies in each unit process;
- Changes in plant processes and operations (such as increased loads, MLSS levels, changes in sludge wasting, return activated sludge (RAS) ratios, detention times, etc.) that would increase removal efficiencies; and
- Magnitudes of excess capacity, if any, in each unit operation of the plant (increased flow through plant process units) that could be achieved and still meet the discharge permit requirements for each plant.

The results of stress testing allow for a determination of existing and future optimum flows, loads, and operations of the various unit processes. The identification of choke points, deficiencies and unit process capacities are provided in the stress testing summary report that has been developed for each WPCP. Specific WPCP Capital Improvement Projects (CIP) have been identified as potential projects resulting from the findings of the stress testing which were provided as part of the summary reports. The actual need for additional CIPs, and the resulting prioritization of the CIPs and the budgeting, appropriation of monies, scheduling and actual implementation of the CIPs was accomplished within the context of the overall watershed approach to CSO abatement defined in the LTCP.

CH2MHill submitted the Final Reports for each of the three WPCPs on May 1, 2001. The reports provided the following information: project objectives and methodology, current performance, maximum instantaneous flow, current sustainable treatment capacity and potential upgrades. The report also included hydraulic and treatment throughput capacities for each plant process, capacity limiting factors, and the potential operating modifications or capital projects whose purpose would be to increase plant throughput. Recommended modifications or upgrades were prioritized and categorized into those potential projects that could be considered for either immediate implementation, resulting in enhanced treatment, or capital improvement projects that could also increase treatment capability but would require PWD expenditures. The various CIPs were also categorized by four treatment objectives including: process improvements, peak primary treatment capacity, peak secondary treatment capacity, and wet weather treatment capacity. This second categorization provided anticipated combined CIP costs for each of the treatment objectives as well as the peak treatment capacities.

The following table identifies the potential upgrade options at the NE Plant as identified in the Stress Test:

Potential Upgrade Options at Northeast WPCP

Option No.	Description	Priority Classification	Estimated Conceptual Cost
1	Improve mixing in mixed liquor channel to secondary clarifiers 9 through 16	A	$ 472,000
2	Polymer addition on Set 1 secondary clarifiers to maintain effluent quality	B	$ 22,000
3	Separate flow measurement of secondary effluent from sets 1 and 2	C	currently undetermined
4	Automation of step feed operation for aeration tanks	A/B	$ 161,000
5	Modify Set 2 secondary effluent channels to reduce hydraulic restrictions under high flow conditions	B/D	$ 223,000
6	Modify the existing RAS system in the secondary clarifiers	C	$ 2,183,000
7	Provide a second conduit to the Set 2 primary clarifiers to convey additional flow to Set 2 Primary tanks	D	$ 3,312,000
8	Reduce losses and increase capacity between the grit tanks and Set 1 clarifiers by installing another conduit and venturi meter	D	$ 707,000
9	Provide a bypass from the primary effluent channels to the chlorine contact chamber	D	$ 8,291,000
10	Provide separate primary sludge thickening	D	$ 12,254,000
11	Reuse abandoned ABCD tanks in wet weather treatment facility	C	$5.0 - 10.0 million
12	Increase raw sewage pumping and screening by:	D	-
12a	50 mgd	D	$10.0 - 20.0 million

12b	150 mgd	-	$20.0 - 24.0 million
12c	300 mgd	-	$36.0 - 40.0 million

Options numbered 1, 2 & 4 have been completed.

The following table identifies the potential upgrade options at the SW Plant as identified in the Stress Test:

Potential Upgrade Options at Southwest WPCP

Option No.	Description	Priority Classification	Estimated Conceptual Cost
1	Replace caulking on secondary clarifier launders to improve flow distribution	A	$ 1,640,000
2	Provide preliminary treatment for the BRC centrate that is recycled in the plant	B/C	$ 8,585,000
3	Modify existing RAS system in the secondary clarifiers	C	$ 4,256,000
4	Provide primary effluent bypass to secondary clarifiers	D	$ 902,000
5	Provide separate facilities for primary sludge thickening	D	$ 9,892,000
6	Resolve hydraulic limitations between primary clarifiers and aeration basin	D	$ 5,429,000
7	Provide and additional effluent pump at the effluent pumping station	D	$ 806,000

Option number 1 has been completed.

2.4 Specialized Sewer Cleaning Projects

Mobile Dredging and Pumping Company continued to perform sewer cleaning work under Purchase Order # POXX04107108. Mobile Dredging was responsible for cleaning the following sewer site:

Bristol Street / Duncan Street trunk sewers under I-95.

The first trunk sewer starts at Intercepting Chamber F-13 located on Duncan Street and the second trunk sewer starts at chamber F-14 located on Bristol Street. Both of these pipes join downstream at a junction chamber. From the junction chamber, one pipe extends downstream to the Frankford Creek outfall. The length of this sewer is 2,100 linear feet.

This job started on November 24, 2003 and was completed on July 30, 2005. The total bid to clean this sewer was $196,305.30. The total length of this sewer was 2,100 linear feet. The job was completed within budget. The total amount of grit/debris that was pulled out of this sewer was 461 Tons.

New sewer cleaning contract specifications were submitted to the PWD Procurement unit on October 26, 2005. The new specifications will go through the bidding process in early 2006

The sewer cleaning work to be performed shall be at the following location:

Upper Delaware Low Level Interceptor Sewer

This Interceptor sewer starts at a manhole located at the intersection of State Road and Grant Avenue and ends at a manhole located at Wissinoming Street approximately 200 feet north of Cottman Avenue. The length of this section is approximately 17,340 feet. The following is a breakdown of all the sewer sizes in that section of the Interceptor:

Upper Delaware Low Level Interceptor Sewer

Section Size	**Section Length (Linear Feet)**
6'-0" x 5'-0"	10,175
7'-0" x 5'-6"	3,115
36 in	350
9'-0" x 9'-0"	2,330
9'-6" x 9'-0"	1,370
TOTAL	17,340

2.5 Solids / Floatables Control

2.5.1 Solids / Floatables Control Pilot Program

Start: 3/1/1996 End: 7/1/2005 Status: Complete

Reference Long Term CSO Control Plan p. 2-6.

Description: This project involves the reduction in solids and floatable material to receiving waters, most notably the Delaware and Schuylkill Rivers, to improve water quality and aesthetics of surrounding parks and recreational areas. Although the NMCs and the projects contained herein increase system-wide capture of solids and floatables, implementation of additional measures will be examined in pilot projects. For example, the outfall at regulator T-4 was recently equipped with a floatables net trap which will capture floatables at this location. This installation will reduce the quantity of discharge at this location as well as provide data to support the floatables monitoring effort.

Additionally, PWD will pilot the use of a floatables skimming vessel to remove debris from targeted reaches of the Delaware and Schuylkill Rivers. It is proposed that a relatively small (20 to 30 foot) vessel be used for this pilot study at an estimated cost of up to $380,000.

Environmental Benefits: Reduction in floatables improves both water quality and aesthetics of receiving streams. The use of a skimmer vessel also allows for a mobile control program capable of managing debris at various locations, increasing the effectiveness of this control measure. In addition, the boat will be a visible control, and will increase the public awareness and education of floatables' impacts.

Status:
A pilot netting facility at the T-4 outfall has been collecting debris from CSOs since April of 1997. In 2005, ten net replacements were made (5 visits) collecting 1436 pounds of debris. Since the installation of the

netting device, 112 nets have been replaced (56 visits) with an approximate total of 10,988 pounds of captured debris (Appendix A). The floatables removed from the net have been compared with other floatables control technologies employed by the City. More specifically, on an area weighted basis the inlet cleaning program data suggests that street surface litter dominates the volume of material that can enter the sewer system. The pilot in-line netting system installed at T_4 has been shown to capture debris on the same order as the WPCP influent screens indicating that effective floatables control in urban areas needs to control sources in addition to CSOs.

During calendar year 2003, HydroQual, Inc., provided assistance in the evaluation of both skimmer vessel technologies and the individual vessels. The investigation identified the vendors able to provide equipment suitable for use on the Schuylkill and Delaware Rivers. The analysis looked at the following factors: material handling, vessel speed, mobile offloading, seaworthiness, operations and maintenance costs, quiet operation, service area flexibility, capital costs, and life-cycle costs. Through the investigation, the PWD has determined that the front-end loader type vessel would be the most suitable for recovering floatable material within the service area.

The research identified only one front-end loader vessel that meets the City's programs needs, the Rover 12 produced by Hewitt Environmental. The PWD had requested that the Procurement Department purchase a Rover 12 from Hewitt Environmental. The vessel can be described as follows:

A 39-ft, front-end loader, single hull, shallow draft, debris skimming vessel with a hydraulically controlled grated bucket and a 5.6 cubic yard on-board hold equipped with a main diesel engine, Caterpillar Model 3056 205-hp. Four-blade, magnesium bronzed propeller housed in a stainless steel tube, 122 gallon fuel tank, and a fully enclosed, removable, aluminum cabin with heating and air conditioning. The water canon system is run with a 16 HP Mitsubishi Diesel Engine (150 gpm at 100 psi). Hydraulic pumps control the ballast control. The trailer is a Model YH-915XD (rated on-road 12 tons, off-road 15 tons) with electric/hydraulic brakes. Four marine grade stainless steel mooring bollards, four lifting hooks, 35 inch long galvanized anchor, and guard rails. Accessories include a hailer, radar, portable VHF, depth sounder, crew seat, AM/FM radio, and GPS plotter, warehouse supports, working lamps, a manually operated searchlight, a spare parts kit including 4 spare debris containment bins, 5 life jackets, a deluxe telescopic boat hook, and six inflatable heavy duty fenders. Includes operator and technical manuals, a 3-year or 3000-hr warranty on the Cummins engine, and operator training for 2 personnel for 5 days.

On June 18, 2004, the initial payment for the construction of the vessel was authorized by the PWD and the fabrication of the skimming vessel officially began.

On December 17, 2004 the PWD sent a team to Rhode Island for a vessel inspection at Hewitt Environmental's contractors manufacturing facility - Blount Boats, Inc - 461 Water Street, Warren, RI 02885.

The inspection took place in the Blount shipyard. The inspection lasted about 2.5 hours and included weld inspections, review of the water testing performed on the hull, and a thorough visual inspection. Hewitt design engineers also performed a contract drawing review for the PWD representatives.

Fabrication continued throughout the first half of 2005 and the boat was delivered in early July. The vessel completed sea trials and after a few minor modifications, was accepted by the PWD. The total cost of the vessel was $526,690.

The vessel, now known as the R. E. Roy, has been operated in-house by Philadelphia Water Department personnel since delivery **(Figure 1).** These personnel were trained by the vessel construction company on proper operations of the vessel. The vessel has been operated on the Schuylkill and Delaware Rivers performing general debris collection and removal. The vessel has also had dual purpose projects, cleaning up for and serving as a public relations highlight at events such as Schuylkill Regatta. The PWD is currently in

the process of securing a contractor for the permanent operation of the skimming vessel. The vendor selected through this process would become the full-time operator of the skimming vessel for a contract period of at least one year. A contract will be awarded by the spring of 2006.

Figure 1 - Completed skimming vessel in operation

2.5.2 Pontoon Vessel

Start: 10/01/2004 End: Status: In-Progress

Description: The Philadelphia Water Department is in the process of purchasing a pontoon vessel to be used as a workboat on the Upper Schuylkill, Lower Schuylkill, and Delaware Rivers within Philadelphia. The vessel would be used to retrieve floating trash and debris from the waterways within the service area. The debris would be hand netted from the water surface by employees standing on the vessel deck. The hand nets would be emptied into 30-gallon debris containers on the deck, and the containers would be offloaded by hand. The pontoon vessel can be utilized in tight spaces found in marinas, among piers, and in near shore areas.

Status: The contract for the construction of the pontoon vessel is in the process of being awarded. Vessel completion is estimated for May 2006 at an estimated total cost of $23,000 for the vessel. An additional $10,000 worth of upgrades and retrofits will be added once the Philadelphia Water Department takes receipt of the vessel.

3.0 Phase III – Watershed-Based Planning and Management

3.1 Introduction

The third component of the City's CSO strategy involves a substantial commitment by the City to watershed planning to identify long term improvements throughout the watershed, including additional future 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. Because of this deficiency, it is currently impossible to determine what needs to be done for additional CSO control or control of other wet weather sources throughout the watershed. This deficiency, especially with respect to the effects of wet weather discharges and receiving water dynamics, is increasingly recognized nationwide and has led to a broader recognition of the need for watershed-based planning and management to properly define water quality standards and goals. The PWD believes that the National CSO Policy, state and federal permitting and water quality management authorities, cities, environmental groups, and industry, now recognize that effective long-term water quality management can be accomplished only through watershed-based planning.

Further, watershed planning is not only mandated by the CSO Policy and guidance documents, but also is consistent with the current Clean Water Act (CWA) and its regulations, as well as the priorities announced by EPA's Office of Water (See EPA's Watershed Approach Framework, Office of Water, June 1996). Therefore, as discussed in Section II and throughout this report, watershed-based planning and management must not only be fully embraced, but initiatives for development of watershed plans must be actively pursued by the City in cooperation with other stakeholders. This must be done not only to comply with the directions of the CWA, the CSO Policy, and other guidance, but more importantly, to define, prioritize and address the most important causes of non-attainment in the watersheds and to move toward attainment of water quality standards and achievement of beneficial uses.

At the same time, however, the City realizes that effective watershed planning is, even in its simplest form, quite difficult. Understanding the complex, interrelated chemical, biological, hydrologic and hydraulic processes that govern water quality is a very expensive, lengthy process that requires extensive, site-specific data and technical analyses. Establishing stakeholder groups, building consensus, articulating goals and objectives, assessing water quality and water quality impacts of point sources and a vast array of non-point sources, reviewing and possibly revising water quality standards to reflect wet weather processes in water bodies, establishing and implementing water quality based controls, evaluating their effectiveness and financing the cost of studies, design and implementation watershed-wide, requires extensive commitment and resources of a broad range of stakeholders. The process of watershed planning does not happen overnight. The City, nonetheless, is determined to reduce CSO discharges in the near term and undertake, in cooperation with other agencies and stakeholders, comprehensive watershed planning over the next several years.

In light of this commitment and consistent with the CSO LTCP, sections 3-9 describe the status of the various components of the initiative that PWD is undertake to initiate and support watershed-based planning in each of the watersheds within the PWD service area.

3.2 CSO Receiving Water Bodies and Their Watersheds

Water bodies receiving CSO discharges in the PWD service area include the Cobbs/Darby Creeks, the Pennypack Creek, the Tacony/Frankford Creeks, the Schuylkill River and the Delaware River. Although they do not have CSO discharges, the Wissahickon and Poquessing Creeks are important waterways within the PWD service area. These water bodies and the drainage area of the tributary watersheds served by combined

sewers are shown in Figure 3-1. There are 178 point sources of CSO discharge from the PWD sewer system to these waterways. Table 3-1 below indicates the number of CSO point sources and the number of major separate stormwater outfalls on each waterway, as identified in the City's NPDES permits.

Table 3.2.1 CSO and Stormwater Point Source Discharges to Tributaries

Waterway	Number of CSO Point Sources	Number of Major Stormwater Outfalls
Delaware/Schuylkill Rivers (tidal)	95	30
Cobbs/Darby Creeks	34	3
Tacony/Frankford Creeks	31	35
Pennypack Creek	5	130
Schuylkill River (non-tidal)	0	32
Poquessing Creek	0	141
Wissahickon	0	63

3.3 Overview of Watershed Management Planning Work Scope

To meet the regulatory requirements and long-term goals of its CSO, stormwater, and drinking water source protection programs, PWD has embraced a comprehensive watershed characterization, planning, and management program. Watershed management fosters the coordinated implementation of programs to control sources of pollution, reduce polluted runoff, and promote managed growth in the city and surrounding areas, while protecting the region's drinking water supplies, fishing and other recreational activities, and preserving sensitive natural resources such as parks and streams.

Coordination of these different programs has been greatly facilitated by PWD's creation of the Office of Watersheds (OOW). This organization is composed of staff from the PWD's planning and research, CSO, collector systems, laboratory services, and other key functional groups, allowing the organization to combine resources to realize the common goal of watershed protection. OOW is responsible for characterization and analysis of existing conditions in local watersheds to provide a basis for long-term watershed planning and management.

This section outlines the elements of the Phase III Watershed Planning Initiative as described in the PWD CSO LTCP. Watershed planning includes various task ranging from monitoring and resources assessment to technology evaluation and public participation. The following is a list of typical tasks and subtasks that generally describe the work elements in the watershed planning programs being developed.

General Activities

- Management and facilitation
- Public Participation and Information
- Funding Support

Step 1 Preliminary Reconnaissance Survey

- Data collection and assessment
- Preliminary water quality assessment
- Land use and resource mapping

- Inventory of point and non-point sources
- Definition of regulatory issues and requirements
- Preliminary biological habitat assessment
- Reconnaissance stream survey
- Preliminary problem assessment

Step 2 Watershed Work Plan and Assessment

- Monitoring, sampling and bioassessment
- QA/QC and data evaluation
- Watershed modeling
- Waterbody modeling
- Problem definition and water quality goal setting
- Technology evaluation
- Economic assessment and funding requirements
- Public Involvement / Watershed Partnership
- Development of *Watershed Management Plan*

Step 3 Watershed Plan Implementation

- Institutional arrangements
- Implementation programs
- Monitoring and measures of success

The elements to be included for each watershed under the present permit cycle are summarized in Table 3.3.1.

Table 3.3.1 Planning Component to be completed as part of the Watershed Planning initiative

Watershed	Preliminary Reconnaissance	Watershed Work Plan & Assessment
Delaware-Schuylkill Rivers (tidal)	Monitoring Only	
Cobbs-Darby Creeks	X	X
Tacony-Frankford Creeks	X	X
Pennypack Creek	X	
Schuylkill River (non-tidal)	X	
Poquessing Creek	X	
Wissahickon	X	

Past activities have focused on integrating efforts in five major regulatory programs that contain significant elements related to watershed management plans to be developed under Step 2 for the Darby-Cobbs and Tacony-Frankford Watersheds and continuation of monitoring and reconnaissance studies for the remaining basins included in the CSO LTCP. These include: (1) the TMDL process to improve water quality on impaired streams and water bodies; (2) the Phase I and Phase II Stormwater Regulations to control pollution due to stormwater discharges from municipal stormwater systems; (3) PA Act 537 Sewage Facilities Planning to protect and prevent contamination of groundwater and surface water by developing proper sewage disposal plans; (4) the Storm Water Management PA Act 167 to address management of stormwater runoff

quantity particularly in developing areas; and (5) EPA's Combined Sewer Overflow (CSO) Control Policy to minimize mixed sewage and stormwater overflowing directly into streams. Some of the data collection and analyses are common to more than one program; therefore, an integrated watershed management approach seeks to develop a cohesive single plan that effectively meets the requirements of each program.

Watershed planning includes various tasks, ranging from monitoring and resource assessment to technology evaluation and public participation. The scope and importance of each task varies for each watershed, depending on the site-specific factors such as the environmental features of the watershed, regulatory factors such as the need to revise permits or complete TMDLs, available funding, extent of previous work, land use, and the size and degree of urbanization of watershed. It is clear that significant savings can be achieved through coordination of the programs and the development of one comprehensive plan for a watershed that meets all five program needs. Sections 3-10 describe the status of the various components of the initiative that PWD has undertaken to advance watershed-specific capital program implementation and watershed-based planning in each of the watersheds within the PWD service area.

Section 3 - Darby-Cobbs Watershed

1.0 CSO Capital Improvement Projects

1.1 Cobbs Creek Low Level (CCLL) Control Project

Start: 6/1/1998 End: 5/1/2000 Status: Complete

Reference Long Term CSO Control Plan p. 2-16.

Description: Control pipes, located in the CCLL interceptor near Glenmore Avenue, are two 18-inch orifice openings in an interceptor manhole bulkhead. The control pipes were installed to prevent chronic flooding occurring at the 75th and Grays Avenue chamber downstream. The 75th and Grays chamber is a former regulator (C-28), whose outfall to Cobbs Creek was sealed but still contained a 12-inch by 18-inch orifice opening to the interceptor. Grit accumulation has reduced the capacity of this orifice. The orifice opening at the 75th and Gray's chamber was the limiting hydraulic element in the interceptor. The opening restricted flow to the 30-inch interceptor that conveys flow from the 75th and Gray's Avenue chamber to the SWWPCP low level pumping station. The maximum flow through this opening was 11.8 mgd, assuming the 30-inch interceptor downstream of the 75th and Gray's Avenue has been cleaned (*Cobbs Creek Low Level Interceptor Conveyance Improvements.*) Flow was recently rerouted past the orifice in the 75th and Gray's chamber with a new 30-inch pipe, increasing the capacity to 15 mgd. The hydraulic limit of the 30-inch CCLL interceptor can now be realized. This project was completed at a cost of $200,000.

Additionally, the upstream interceptor will be cleaned and lined and a smooth transition between the brick sewer and the new 30-inch RCP bypass will be constructed. The two 18-inch orifices will be reconfigured in order to facilitate cleaning. While these orifices will control flooding problems at the 75th and Grays Avenue, they will not reduce the flow delivered to the interceptor below the interceptor capacity of 15 mgd. The projected cost for this project is $2,500,000.

Environmental Benefits: These projects reduce the frequency and volume of overflows to Cobbs Creek, one of the smaller receiving streams. Interceptor capacity increases from 11.8 to 15 mgd due to the new 30-inch bypass line in conjunction with grit removal in the downstream interceptor (*Cobbs Creek Low Level Interceptor Conveyance Improvements).* The reduction in overflow volume is 10 MG on an average annual basis.

Status: Construction began on November 17, 1998 after the contract was awarded to Empire Sewer Cleaning Company at a cost of $3,447,540. The project schedule proposed by the contractor was for a period of 300 days. Therefore, due to the $947,540 increase in scope, and the subsequent affect on the implementation schedule, the estimated project completion date is January 10, 2000. The scope of work entails Gunite restoration of approximately 10,850 feet (various sizes) of the Cobbs Creek Low Level Intercepting Sewer from 60th Street to 75th and Grays Avenue. During 1999, the remaining 7,000 feet of sewer rehabilitation was completed. The sewer reach was cleaned in preparation for the application of 3 inches of gunite. Bank rehabilitation was completed at three exposed sewer locations along Cobbs Creek and manhole restoration work was completed. The completion date for the minor manhole repair work was May of 2000.

1.2 Cobbs Creek Low Level (CCLL) Improvements

Start: 4/2/1998 End: 12/1/2000 Status: Complete

Reference Long Term CSO Control Plan p. 2-16.

Description: Inspections have revealed that grit has accumulated in the 30-inch Cobbs Creek Low-Level (CCLL) interceptor to a depth of approximately 12 inches. Grit buildup reduces the hydraulic capacity of the interceptor both by constricting its cross sectional area, and by increasing its frictional resistance. This project entails the removal of grit and debris along the entire 30-inch interceptor. The estimated cost for the project is $440,000.

Environmental Benefits: This project will reduce the frequency and volume of overflows to Cobbs Creek by restoring the conveyance capacity of the 30-inch Cobbs Creek interceptor between the 75th and Gray's Avenue chamber and the SWWPCP low level pumping station. When grit is removed from this interceptor segment, the model indicates that the capacity nearly doubles from 5.9 mgd to 15 mgd. This project results in a 50 MG volume reduction on an average annual basis.

Status: The grit buildup in the Island Avenue sewer from 75th and Wheeler Streets to the Southwest WPCP was identified to impede the hydraulic capacity of the Cobbs Creek Low Level Interceptor and will continue to be cleaned as a part of this project. The disposal of debris from these sewers was handled under the BRC grit screening disposal contract with Waste Management, Inc., at a budget of $155,000. The cleaning work on the Cobbs Creek Low Level (CCLL) Interceptor started on 5/3/00. In this project, a 2000-ft section of the Island Avenue sewer is located under Septa's Trolley tracks between Dicks Street and Lindbergh Avenue. The project encountered considerable delays during the work coordination process with SEPTA. SEPTA then agreed to shuttle a bus on Island Avenue between the hours of 9:00 PM and 4:00 AM for a period of two weeks starting 6/19/2000 in order to allow Mobile Dredging to perform the work. The project was completed in calendar 2000.

2.0 Watershed Management Planning

The following sections describe the progress that has been made in advancing the Darby-Cobbs Watershed Initiative. Detailed information on documenting the minutes of partnership meetings, reports produced, and other accomplishments are posted on the partnership web page at www.phillyriverinfo.org.

2.1 Preliminary Reconnaissance Survey

In addition to the formation of an initial stakeholder body, significant progress was made towards developing the technical tools that comprise the preliminary reconnaissance survey as described in the CSO LTCP. The following technical documents comprise the preliminary reconnaissance survey:

- Historical Water Quality for The Darby and Cobbs Creeks Watershed
- Analysis of 1999 Monitoring Data for The Darby and Cobbs Creeks Watershed
- A screening Level Contaminant Loading Assessment for the Darby and Cobbs Creek Watershed
- Documentation of the Biological Assessment of the Cobbs Creek Watershed.

2.2 Watershed Work Planning & Assessment

The Philadelphia Water Department (PWD) has embarked on an ambitious program of watershed management for several creeks within the City limits. The first plan to be completed is for Cobbs Creek. The Cobbs Creek Integrated Watershed Management Plan was completed in June 2004. The watershed plans are designed as integrated watershed planning efforts to address the objectives of several programs, including CSO Long Term Planning, Pennsylvania Stormwater Management programs, potential or existing TMDLs, River Conservation Plans, and Phase II Stormwater permits. PWD's Office of Watersheds (OOW) has carried out an extensive sampling and monitoring program to characterize conditions in the Cobbs Creek watershed.

The program is designed to document the condition of aquatic resources and to provide information for the planning process needed to meet regulatory requirements. The program includes hydrologic and water quality analysis, biological and habitat assessments, and fluvial geomorphological assessments of the entire length of Cobbs Creek and its major tributaries. A SWMM model was developed for the watershed that simulated the watershed response to storms for both the storm sewers as well as combined sewers. The model was used to assess current pollutant loading from CSOs and from stormwater water. The model has also been adapted to simulate a wide array of CSO controls and stormwater BMPs, including swales, green roofs, infiltration basins, porous pavement, and similar techniques. By simulating BMPs at various levels of implementation, graphs of urban BMP effectiveness in controlling CSOs and stormwater were developed and used to make watershed-specific recommendations on the needed degree of implementation and the selection of the most cost-effective approaches to meeting water quality and quantity objectives. The plan has resulted in a careful assessment of the potential for restoration of an urban stream. Proposed for implementation is an array of CSO controls, storm water BMPs, stream restoration measures, non-structural measures, and public education/participation programs. Implementation of the plan recommendations will be carried out in phases to allow for an adaptive management approach.

2.2.1 Watershed Partnership

The Darby-Cobbs Watershed Partnership was facilitated by the Philadelphia Water Department to create a framework for all stakeholders in the 75 square mile Darby-Cobbs watershed basin to work together to provide environmentally sound solutions to improve the water quality of Darby and Cobbs Creeks. Permit holders, participating agencies, and community-based organizations are constructing this framework upon regulatory and voluntary activities. The Partnership itself is a public participation mechanism, and acts as a forum for participating members to work together to develop a watershed strategy that meets state and

federal regulatory requirements and embraces the environmental/public sensitive approach to improve stream water quality and quality of life in communities.

As one of the first steps in defining its framework, the Partnership developed a mission statement: "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 Partnership formed a Public Participation Committee to ensure that the Partnership identifies and recruits representatives of the diverse array of stakeholders in this basin, including municipalities. Members of the Public Participation Committee include representatives of the following agencies/organizations: the Philadelphia Water Department, the Fairmount Park CAC, Fairmount Park Commission, Dove Communications, US Fish and Wildlife Service, Heinz National Wildlife Refuge Center, Pennsylvania Environmental Council (PEC), Cobbs Creek Community Environmental Education Center (CCCEEC), Delaware Creek Valley Association, DCNR, PA Department of Environmental Protection, Trail Boss Program, Delaware County Planning Department, EPA Region III, Delaware Riverkeeper Network, Academy of Natural Sciences, and the Men of Cobbs Creek.

Under the direction of the Partnership Steering Committee, the Partnership will evolve from one that was based upon a planning mandate to one that will focus on the implementation of the watershed management plan. During the summer of 2005, the Partnership Steering Committee teamed with the Eastern Delaware County Council of Government (COG) and the SE PA Resource and Conservation District to apply for a William Penn Foundation grant to facilitate the implementation of the plan in Delaware County. Currently, we are waiting to hear back from the foundation.

2.2.2 Define Preliminary Goals and Objectives

Early in the planning process, a series of project goals and objectives was developed in conjunction with the stakeholders. In general, **goals** represent consensus on a series of "wishes" for the watershed. A series of 10 project goals were established that represent the full spectrum of goals from all the programs relevant to the watershed (e.g. River Conservation Plan, TMDL programs, Act 167 Stormwater Plans etc.) A significant effort was made to consolidate the various goals into a single, coherent set that avoided overlap and was organized into clear categories.

Once the preliminary set of goals was developed, a series of associated **objectives** was developed. Objectives translate the "wishes" into measurable quantities; **indicators** are the means of measuring progress toward those objectives. This relationship is the critical link between the more general project goals and the indicators developed to assess the watershed and to track future improvement. This process was incorporated in to the watershed management plan.

2.2.3 Data Analysis and Indicator Development

An important aspect of the WMP is to provide a basic description of existing conditions within the watershed and stream. To accomplish this, a series of indicators were developed that effectively represent the results of the data collection efforts and the extensive data analysis and modeling that took place as part of the planning effort. An indicator is a measurable quantity that characterizes the current state of one aspect of watershed health. Every indicator is directly linked to one or more project objectives. Thus, they monitor progress and achievement of objectives as management alternatives are implemented over time. This approach is modeled after the EFP2 program.

The indicators selected for their potential use both in assessing current conditions as well as assessing future progress in improving conditions are shown below:

The Land Use and Stream Health Relationship
Indicator 1: Land Use and Impervious Cover
Indicator 2: Streamflow
Indicator 3: Stream Channels and Aquatic Habitat
Indicator 5: Fish
Indicator 6: Benthos

Water Quality
Indicator 7: Effects on Public Health (Bacteria)
Indicator 8: Effects on Public Health (Metals and Fish Consumption)
Indicator 9: Effects on Aquatic Life (Dissolved Oxygen)

Pollutants and Their Sources
Indicator 10: Point Sources
Indicator 11: Non-point Sources

The Stream Corridor
Indicator 12: Riparian Corridor
Indicator 13: Wetlands and Woodlands
Indicator 14: Wildlife
Indicator 15: Flooding

Quality of Life
Indicator 16: Public Understanding and Community Stewardship
Indicator 17: School-Based Education
Indicator 18: Recreational Use and Aesthetics
Indicator 19: Local Government Stewardship
Indicator 20: Business and Institutional Stewardship
Indicator 21: Cultural and Historic Resources

2.2.4 Development and Screening of Management Options

Clear, measurable objectives also provided the guidance needed in developing **options** designed to meet the project goals. A management option is a technique, measure, or structural control that addresses one or more objectives (e.g., a detention basin that gets built, an ordinance that gets passed, and an educational program that gets designed). The following example clarifies the difference between a goal, an objective, and a management option [think of a better one]:

Goal: Improve water quality

Objective: maintain dissolved oxygen levels above 5 mg/L

Management Option: decrease phosphorus loads from stormwater by infiltrating stormwater at specific locations

Lists of management options were developed to meet each of the goals and objectives established for the Cobbs Creek watershed. Some of the options could be eliminated as impractical for reasons of cost, space required, or other considerations. Only those options deemed feasible and practical were considered in the

final list of management options. The list became the basis for assembling the complete Watershed Management Alternatives plan.

2.2.5 Monitoring and Field Data Collection

As part of the 5-yr rotating Watershed Monitoring Program, the Darby-Cobbs Watershed was completed in 2003 to support the development of the watershed management plan and to update the current biological, chemical and physical indicator status. The 2003 monitoring programs focused on developing a biologic and aquatic habitat baseline prior to the implementation of a stream habitat restoration and bank protection project in the Cobbs Creek.

Chemical Sampling

Philadelphia Water Department staff collected surface water grab samples at nine locations within Darby-Cobbs Watershed for chemical and microbial analysis **(Figure 2)**. Sampling events were planned to occur at each site at weekly intervals for one month during three separate seasons. Actual sampling dates were as follows: "winter" samples collected 2/13/03, 2/20/03, 2/27/03, and 3/20/03; "spring" samples collected 3/27/03, 5/22/03, 5/29/03, 6/05/03, and 6/12/03; "summer" samples collected 8/14/03, 8/21/03, 8/28/03, and 09/04/03. A total of 117 discrete, or "grab" samples were taken. To add statistical power, additional discrete water quality samples from PWD's wet weather chemical sampling program were included in analyses when appropriate.

Sites DCC770, DCC455, DCC208, DCD1570, DCD1170, DCD765, DCI010 and DCN010 were included in PWD's baseline chemical assessment of Darby-Cobbs Watershed in 1999. Sites in the Tinicum sub-basin (DCM300 and DCS170) were sampled in 1999 but not in 2003. A single new site (DCD1660), located on Darby Creek upstream of its confluence with Ithan Creek, was added for 2003.

Discrete sampling was conducted on a weekly basis and was not specifically designed to target wet or dry weather flow conditions. Depending on which definition of "dry weather" was used (i.e., 48 hr interval or 72 hr interval), between 6-7 sampling events occurred during dry weather- this data is most pertinent to Target A of the Watershed Management Plan (Dry Weather water quality and aesthetics). Specifically addressed are indicators 7 and 8 - chemical and microbial constituents that are influential in shaping communities of aquatic systems or that are indicative of anthropogenic degradation of water quality in the watershed.

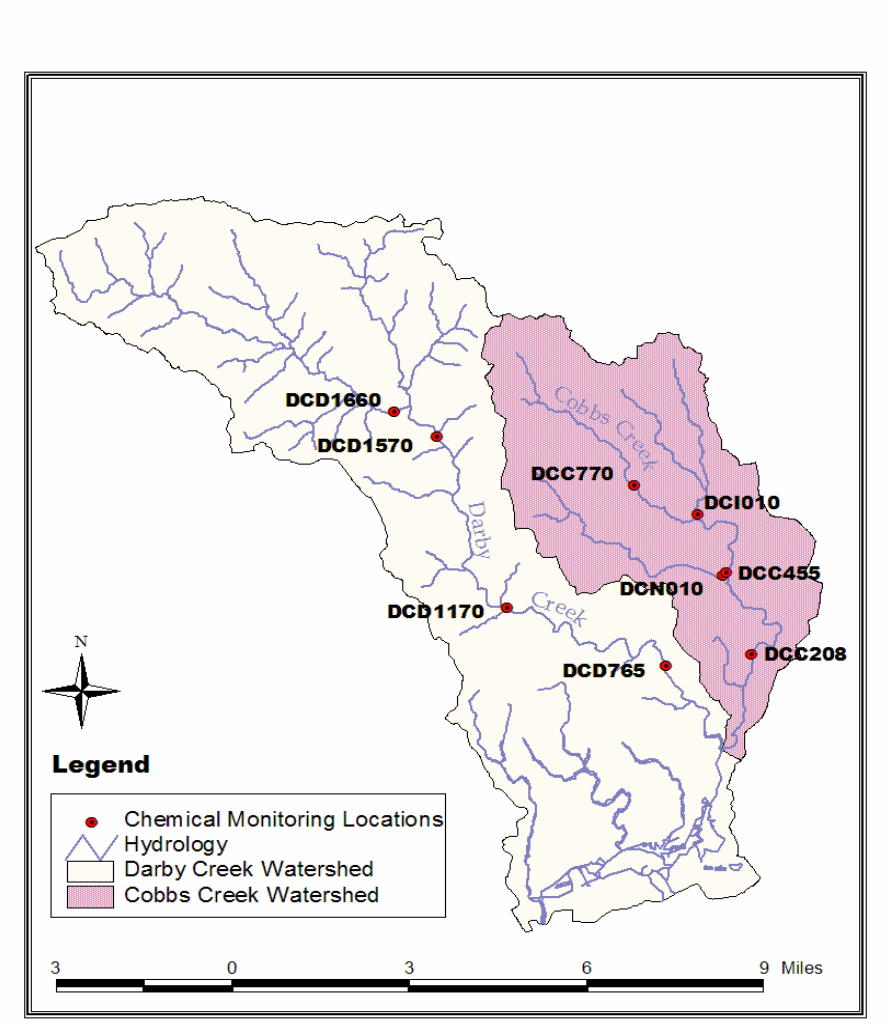


Figure 2 - Discrete water quality stations in the Darby-Cobbs Watersheds (2003)

Wet Weather Targeted Sampling

Target C of the Watershed Management Plan addresses water quality in wet weather. Yet characterization of water quality at several widely spatially distributed sites simultaneously over the course of a storm event presents a unique challenge. Automated samplers (Isco, Inc.) stationed at five monitoring locations were used to collect samples during two runoff producing rain events in July and September 2003 **(Figure 3)**.

The automated sampler system obviated the need for BLS team members to manually collect samples, thereby greatly increasing sampling efficiency. Automated samplers were equipped with vented in-stream pressure transducers that allowed sampling to commence beginning with a small (0.1ft.) increase in stage. Once sampling was initiated, a computer-controlled peristaltic pump and distribution system collected grab samples at 1 hr. intervals.

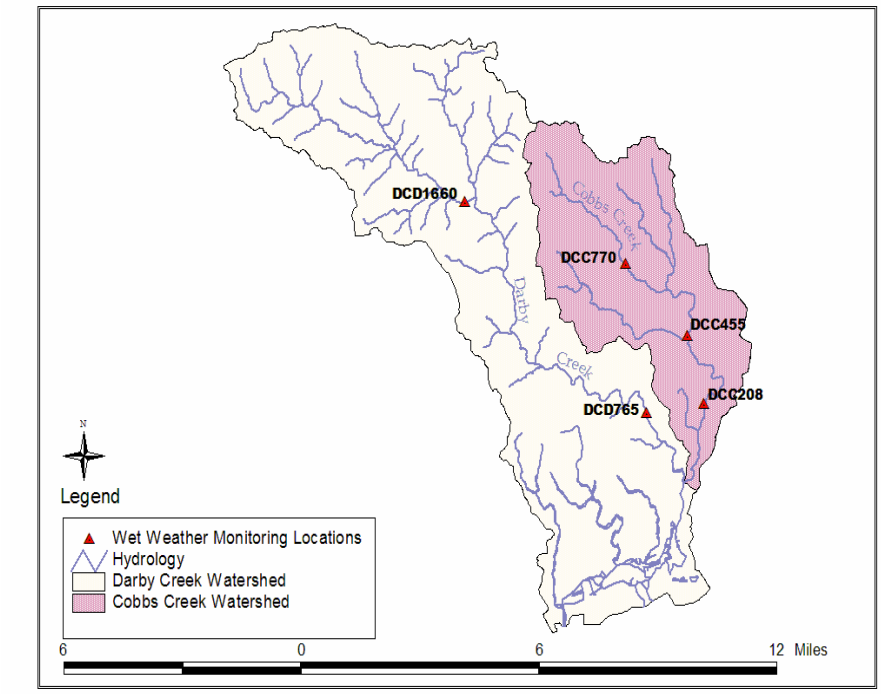


Figure 3 - Wet-weather monitoring locations in Darby-Cobbs Watershed

Use of automated samplers allows for a greater range of flexibility in sampling programs, including flow-weighted composite sampling based on a user defined rating curve, but stage discharge rating curves at these sites were poorly defined for larger flows. Though some difficulties were encountered due to a combination of mechanical failure, individual site characteristics, and/or vandalism, the one hour fixed interval was found to be generally satisfactory in collecting representative samples over a storm event. PWD continues to refine methods of sampling stormwater and experiment with alternative automated sampling programs.

RADAR Rainfall Data and Analysis

Because storm events are inherently variable and do not evenly distribute rainfall spatially or temporally, PWD contracted with Vieux and Associates, to obtain discretized measurements of rainfall intensity during storm events targeted by wet weather sampling. For each 15 minute interval, RADAR tower-mounted equipment measured high frequency radio wave reflection in the atmosphere above Darby Cobbs Watersheds **(Figure 4).**

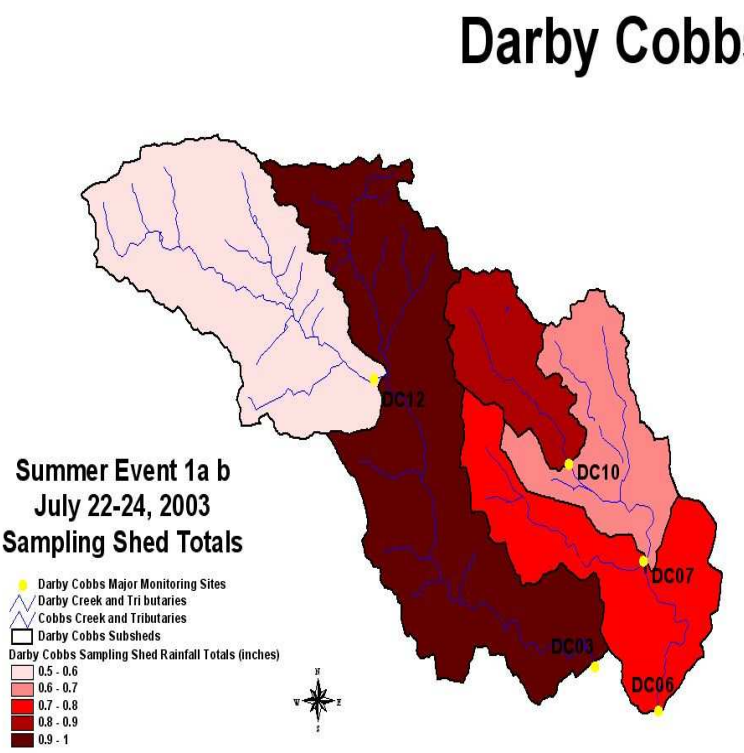


Figure 4 – Radar rainfall data collected in the Darby-Cobbs Watershed (July 22-July 24)

This information was provided to PWD as a series of relative reflectivity measurements for individual blocks 1km2. The resulting grid allowed for the summing of relative rainfall intensity within the sub-shed served by each sampling site over the course of the storm. Individual intensity measurements were also graphed and arranged sequentially to produce animated time series rainfall accumulation graphics. This analysis, combined with data from the PWD rain gauge network and stream stage measurements logged by the automated sampler, allows for more thorough analysis of water quality data, particularly in determining whether some areas or sub-sheds may have contributed more runoff than others.

Biological Assessments and Analyses

Between 3/1/03-3/27/03, PWD staff conducted benthic and habitat assessments at sixteen (n=16) locations within the Darby-Cobbs Watershed **(Figure 5**). Using standard operating procedures developed by the EPA, samples were collected during late winter and analyzed in the laboratory. Similarly, between 6/1/03-7/1/03, PWD biologists conducted fish assessments at ten (n=10) locations. Tidal fish and habitat assessments were also performed at five (n=5) locations in the lower Darby Creek during 8/1/03-9/1/03.

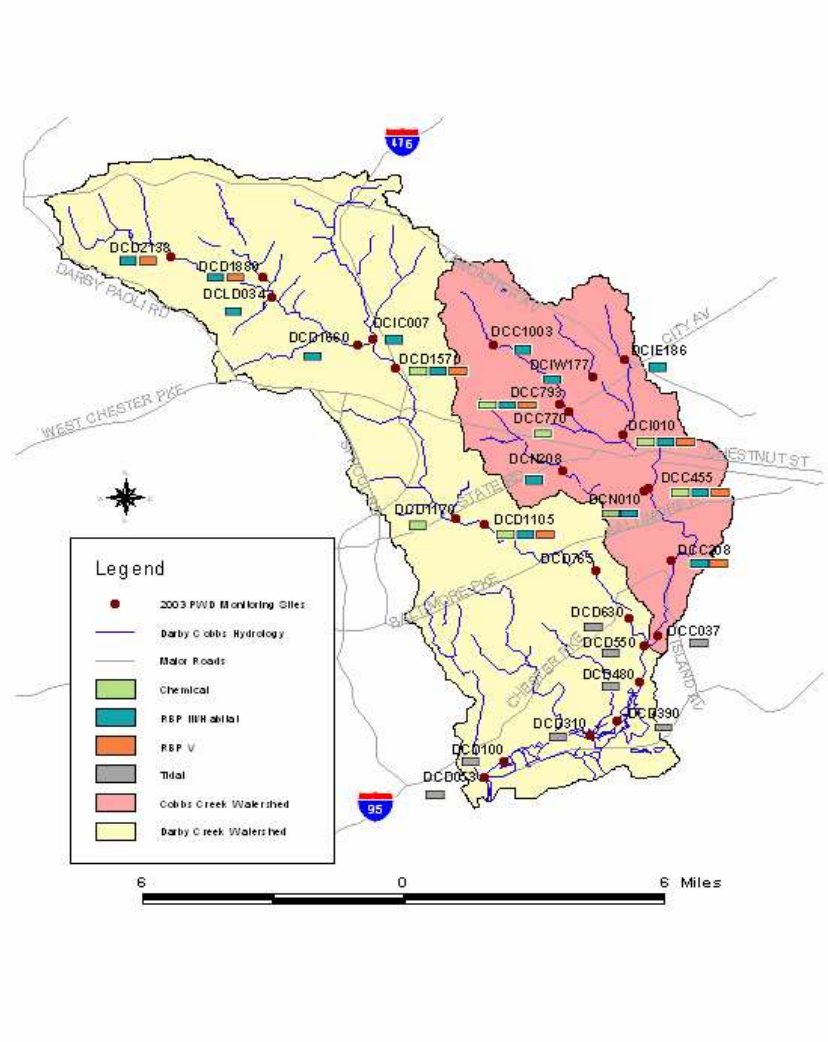


Figure 5 - Biological and habitat monitoring locations in Darby-Cobbs Watershed

2.2.6 Modeling

In most streams in the eastern US, stormwater flows can range from 30% of total annual streamflow in less-developed watersheds to over 70% in highly urbanized settings. Modeling of stormwater flows is, therefore, a critical component of a WMP. The model should, at a minimum, be built to provide storm-by-storm flows to the streams as well as estimates of pollutant loads carried by the stormwater reaching the streams.
Working in partnership with PADEPs Act 167 Stormwater management Planning program, a Stormwater Management Model (SWMM) was built for the entire Cobbs Creek watershed. SWMM is a comprehensive set of mathematical models originally developed for the simulation of urban runoff quantity and quality in storm and combined sewer systems. The model splits the Cobbs creek watershed into 107 subwatersheds, and calculates flow and pollutant loading from each land use type within each of the subwatersheds. It simulates the hydraulics of combined sewers, the open channel of the creek itself, and the floodplain. Thus, the model is useful for simulation of stormwater runoff quantity and quality, combined sewer overflow, and streamflow. It is one tool for simulation and evaluation of watershed management alternatives. The model was calibrated by comparing stormwater runoff to estimated runoff, calculated through hydrograph

separation at USGS gauge 01475550, on Cobbs Creek upstream of the confluence with Darby Creek. Model simulations included:

- A simulation of existing conditions in which annual average flows were provided for various key points along the stream.
- Storm specific flows for storms of various return periods (1-year, 2-year, 5-year, 10-year, 25-year) at various key points along the stream
- Annual average pollutant loads for key pollutants found in stormwater. The list of pollutants includes nutrients such as nitrate and phosphorus, total suspended solids, heavy metals, BOD, and DO.

The model results were also critical for identifying areas where stormwater runoff or pollutant loads are particularly high and in need of control. Model flow results, in combination with the results of the fluvial geomorphic assessment, provide excellent tools for identifying areas of the watershed that are undergoing stormwater related stress.

2.2.7 Development and Evaluation of Management Alternatives

BMPs, stream restoration measures, stormwater and CSO management technologies, and public education measures must be combined into coherent, integrated management plan alternatives that address multiple objectives. In highly urbanized watersheds, however, it is very difficult to develop appropriate water quality, quantity, and habitat objectives. For Cobbs Creek, PWD's approach is to define three separate sets of objectives or targets, and recommend BMPs and programs to achieve each of the targets. Targets are defined here as groups of objectives that each focus on a different problem related to the urban stream system. They can be thought of as different parts of the overall goal of fishable and swimmable waters through improved water quality, more natural flow patterns, and restored aquatic and riparian habitat.

The three targets of watershed restoration for Cobbs Creek are:

- TARGET A: Dry Weather Water Quality and Aesthetics
- TARGET B: Healthy Living Resources
- TARGET C: Wet Weather Water Quality and Quantity

By defining clear and achievable targets, and designing the alternatives and implementation plan to address the targets simultaneously, the plan will have a much higher likelihood of success. It will also result in realizing some of the objectives within a relatively short time frame, providing positive incentive to the communities and agencies involved in the program to continue and expand their efforts. This approach will also result in more immediate benefits to the people living in the watershed than would an approach that attempts to meet all objectives completely in one implementation plan.

2.3 Public Involvement and Education

The Partnership formed a Public Participation Committee to ensure that the Partnership identifies and recruits representatives of the diverse array of stakeholders in this basin, including municipalities. Members of the Public Participation Committee include representatives of the following agencies/organizations: the Philadelphia Water Department, the Fairmount Park CAC, Fairmount Park Commission, Dove Communications, US Fish and Wildlife Service, Heinz National Wildlife Refuge Center, Pennsylvania Environmental Council (PEC), Cobbs Creek Community Environmental Education Center (CCCEEC), Delaware Creek Valley Association, DCNR, PA Department of Environmental Protection, Trail Boss

Program, Delaware County Planning Department, EPA Region III, Delaware Riverkeeper Network, Academy of Natural Sciences, and the Men of Cobbs Creek.

The Water Department is supporting a number of public education initiatives in development by the Public Participation committee of the Darby-Cobbs Watershed Partnership, including: 1) the production and publicizing of the Watershed Status Report, 2) the development of a teachers training workshop funded by a Growing Greener grant, in which twenty middle- and high-school teachers participated in five Saturday workshops on lessons involving: watershed management, stormwater management, water quality, and ecological restoration. The final workshop was dedicated to the design of service-learning projects, 3) the development of a resident survey on watershed awareness and pollution-causing practices, and 4) the development in partnership with Green Works, of a video tour of the Darby-Cobbs Watershed, which became available in the Fall of 2002 and 5) A watershed-wide bus tour, geared to municipal officials, which was hosted in the Cobbs Creek Watershed in May 2003.

In 2003, the Partnership sponsored a number of workshops designed to develop a watershed management plan for the Cobbs sub-basin, including a presentation of the history of Cobbs Creek, developed by researcher Adam Levine, which was held at the CCCEEC in November 2003. All of these events and presentations are designed to engage the residents of the watershed in the development of the watershed management plan. This plan will serve as a template for all urban watersheds in our region. Workshops to date have focused on developing the goals and objectives of the watershed, a problem analysis session to support the goals, a review of the proposed methodology for the plan, and the introduction of the management concepts that will be developed to meet the plan's goals and objectives. In February 2004, the draft Executive Summary and draft management plan was presented to the Partnership's Steering Committee. PWD revised these documents to incorporate Steering Committee suggestions.

The Public Participation and Education Committee's goal is to increase public understanding and encourage grassroots stewardship in the watershed. During 2003, the Public Participation Committee disseminated a 17 minute video titled, 'The Stream That Binds us," that has received rave reviews. The Partnership has been distributing these videos to schools, libraries, EACs (Lower Merion had the video featured on its local cable network). Additional outreach regarding the watershed management plan occurred in May 2003 with a guided bus tour of the Cobbs Creek watershed aimed at municipal officials. During the fall and winter of 2003, members of the Public Participation Committee developed a simple PowerPoint presentation to use at civic and community meetings, to inform residents about the watershed management plan. The presentation has been viewed by a variety of senior citizen, homeowners associations, community groups and municipal boards.

In 2003, the Partnership also focused on tackling the weighting of the goals that will help define the format of the Cobbs Creek Watershed Management Plan. This plan will be a model for an overall basin plan. The goals that Partnership stakeholders have selected include:

- Streamflow and Living Resources
- Stream Habitat and Aquatic Life
- Stream Channels and Banks
- Flooding
- Water Quality
- Pollutant Loads
- Stream Corridors
- Quality of Life
- Stewardship
- Coordination

The Partnership revised the draft Executive Summary and Watershed Management Plan that it shared with the Partnership Steering Committee in February 2004.

In June of 2004, the Cobbs Creek Integrated Watershed Management Plan (CCIWMP) was completed and handed over to the Darby-Cobbs Watershed Partnership with guidelines for watershed-wide implementation of those water management options that were identified as best meeting the planning goals and objectives under the site specific conditions of Cobbs Creek.

Updates on planning progress are posted regularly on the Partnership's website – www.phillyriverinfo.org.

Watershed Tours:
The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices.

3.0 Annual CSO Statistics

COBBS CREEK 2005 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Cobbs Creek High Level	26	32	0 - 61	20	1206 - 1237	50 - 53	0 - 288
Cobbs Creek Low Level	9	12	0 - 51	19	93 - 100	75 - 78	0 - 176

Section 4 - Tacony-Frankford Watershed

1.0 CSO Capital Improvement Projects

1.1 Frankford Siphon Upgrade

Start: 10/1/1997 End: 7/30/1997 Status: Complete

Reference Long Term CSO Control Plan p. 2-10.

Description: A four-barrel siphon conveys flow under Frankford Creek in the Upper Delaware Low Level Interceptor. One of the control valves is not functioning properly, reducing the wet-weather conveyance capacity of the siphon. PWD will repair the control valve in the siphon chamber to restore full capacity and function of the siphon. (Additional repairs to the other valves may be required also.)

Environmental Benefits: Restoring the capacity of the siphon will increase the volume of combined wastewater captured from the combined areas along the upper Delaware River and Pennypack Creek. Additionally, this will allow the increase of flows resulting from the *85% Capture: Pennypack Watershed* project to be conveyed.

On 8/1/1997 the upstream 48" siphon gate valve was opened and the dropped disc was removed from the body. The valve bonnet was replaced and the siphon placed back in service. Dye tests confirmed that the 48" was conveying full flow as the collector rose with the peak daily flow. The three remaining siphons were similarly tested and are flowing full.

1.2 RTC - Rock Run Relief Sewer (R_15)

Start: 10/16/1998 End: 9/3/2004 Status: In-Progress

Reference Long Term CSO Control Plan p. 2-9 – 2-10.

Description: The Rock Run Relief Sewer provides flood relief to combined sewer areas upstream of regulator T_08 in the Northeast Drainage District (NEDD). Currently, CSOs discharge into the Tacony Creek at the Rock Run Relief Sewer outfall – an 11' by 14' sewer - during periods of moderate or greater rainfall. Installation of an inflatable dam in the Rock Run Relief Sewer allows for utilization of approximately 2.3 million gallons (MG) of in-system storage to retain combined flows during a majority of these wet weather events. The inflatable dam stores combined flows in the relief sewer until storm inflows have subsided and capacity exists in the Tacony Interceptor for conveyance of combined flows to the Northeast Water Pollution Control Plant (NEWPCP). This control technology provides an additional margin of protection against dry weather overflows while still maintaining flood protection for upstream areas. The estimated budget for this job is $490,000.

Environmental Benefits: This project will reduce the discharge of combined sewage into Tacony Creek, one of the more-sensitive water bodies exposed to CSO discharges in the City of Philadelphia. An average annual reduction in CSO volume of 190 MG/year, from 1040 to 850 MG/year, is achieved at the Rock Run Relief Sewer outfall through use of the available in-system storage volume. This represents a reduction of roughly 20% in the average annual volume of CSO and a significant reduction in the associated pollutants (bacteria and organic matter from untreated wastes, litter and other solid materials in both wastewater and stormwater runoff, etc.) discharged into Tacony Creek at this location, near Nedro Avenue and Hammond Street in Tacony Creek Park, an area where golfing and other recreational activities may occur. Since this project

modifies an existing structure (the Rock Run Relief Sewer) rather than constructing a new one, it provides control very cost-effectively (unit cost for this storage is $0.14/gal versus roughly $6/gal for siting, design, and construction of a new storage structure).

Status: A design memorandum was completed that documents the expected environmental benefits of the Rock Run Relief Project, quantifies the flooding risks associated with the project, and documents the recommended control logic for the inflatable dam's operation and drain-down control. In support of this memorandum, several alternative control logics for the inflatable dam operation and drain-down gate were investigated to develop a logic that minimized the risks of flooding, increased Rock Run Relief storage utilization and eliminated adverse affects of the project at other CSO regulators on the Tacony Creek. The inflatable dam will result in a reduction of roughly 20% in the average annual volume of CSO and a significant reduction in the associated discharged into Tacony Creek at this location, near Nedro Avenue and Hammond Street in Tacony Creek Park, an area where golfing and other recreational activities frequently occur, through the implementation of this capital project.

In 2004, the engineering firm of Hatch Mott McDonald continued to prepare the bid documents. The final plans and specifications were completed in October, 2005. The bidding of the project is anticipated for January of 2005, with a notice-to-proceed for construction in May. The Engineers estimate for this project is about $2,000,000.

1.3 RTC – Tacony Creek Park (T_14)

Start: 10/16/1998 End: 9/3/2004 Status: In-Progress

Reference - Long Term CSO Control Plan p. 2-8 – 2-9.

Description: The T_14 trunk sewer system conveys combined sewage from the largest combined sewershed in the PWD collection system. Currently, CSOs discharge into the Tacony Creek at the T_14 outfall – a 21' by 24' sewer - during periods of moderate or greater rainfall. Installation of an inflatable dam in the T_14 trunk sewer allows for utilization of approximately 10 million gallons (MG) of in-system storage to retain combined flows during a majority of these wet weather events. The inflatable dam stores combined flows in the trunk sewer until storm inflows have subsided and capacity exists in the Tacony Interceptor for conveyance of combined flows to the Northeast Water Pollution Control Plant (NEWPCP). This control technology provides an additional margin of protection against dry weather overflows and Tacony Creek inflows to the combined system while still maintaining flood protection for upstream areas. The estimated budget for this job is $450,000.

Environmental Benefits: This project will reduce the discharge of combined sewage into Tacony Creek, one of the more-sensitive water bodies exposed to CSO discharges in the City of Philadelphia. The gate installation at T14 will result in a reduction of roughly 30% in the average annual volume of CSO and a significant reduction in the associated pollutants (bacteria and organic matter from untreated wastes, litter and other solid materials in both wastewater and stormwater runoff, etc.) discharged into Tacony Creek at this location, near Juniata Park and Tacony Creek Park, in an area where golfing and other recreational activities frequently occur. Since this project modifies an existing structure (the T14 Trunk Sewer) rather than constructing a new one, it provides control very cost-effectively (unit cost for this storage is $0.03/gal versus roughly $6/gal for a new storage structure).

Status: The engineering firm of O'Brien & Gere was selected in March of 2003 to prepare bid documents. During 2004, the firm continued work on these documents. The design specifications, specifically, the electrical/controls component, should be finalized in March, 2006, and bidding is expected in May. Notice-to-proceed for construction is anticipated during the summer. The Engineers estimate for this project is about $3,000,000.

2.0 Watershed Management Planning

The following sections describe the progress that has been made in advancing the Tacony-Frankford Watershed Initiative. Detailed information on documenting the minutes of partnership meetings, reports produced, and other accomplishments are posted on the partnership web page at www.phillyriverinfo.org.

2.1 Preliminary Reconnaissance Survey

During 2000-2001, the Philadelphia Water Department conducted preliminary biological assessments (Rapid Bioassessment Protocols III and V) and habitat assessments at seven locations (n=7) along the Tookany/Tacony-Frankford Watershed to investigate the various point and nonpoint source stressors. Biological and physical assessments were then compared to a representative site located in the French Creek Watershed, Chester County, Pennsylvania. Chemical data trends of the Tookany/Tacony-Frankford (2000-2001) generated by the Bureau of Laboratory Services were also analyzed. The aggregation of biological, physical and chemical information was utilized as a comprehensive tool to measure the degree of impairment and the major contributing stressors within each assessment site and at the watershed scale. Moreover, the preliminary reconnaissance (i.e., Phase I) report completed on 6/18/02 has served as a template for future monitoring in the Tookany/Tacony-Frankford Watershed.

2.2 Watershed Work Planning & Assessment

The Philadelphia Water Department (PWD) has embarked on an ambitious program of watershed management for several creeks within the City limits. The second plan completed was for Tookany/Tacony-Frankford Creek. The Tookany/Tacony-Frankford Integrated Watershed Management Plan was completed in June 2005. The watershed plans are designed as integrated watershed planning efforts to address the objectives of several programs, including CSO Long Term Planning, Pennsylvania Stormwater Management programs, potential or existing TMDLs, River Conservation Plans, and Phase II Stormwater permits. PWD's Office of Watersheds (OOW) has carried out an extensive sampling and monitoring program to characterize conditions in the Tookany/Tacony-Frankford Creek Watershed.

The program is designed to document the condition of aquatic resources and to provide information for the planning process needed to meet regulatory requirements. The program includes hydrologic and water quality analysis, biological and habitat assessments, and fluvial geomorphological assessments of the entire length of Tookany/Tacony-Frankford Creek and its major tributaries. A SWMM model was developed for the watershed that simulated the watershed response to storms for both the storm sewers as well as combined sewers. The model was used to assess current pollutant loading from CSOs and from stormwater water. The model has also been adapted to simulate a wide array of CSO controls and stormwater BMPs, including swales, green roofs, infiltration basins, porous pavement, and similar techniques. By simulating BMPs at various levels of implementation, graphs of urban BMP effectiveness in controlling CSOs and stormwater were developed and used to make watershed-specific recommendations on the needed degree of implementation and the selection of the most cost-effective approaches to meeting water quality and quantity objectives. The plan has resulted in a careful assessment of the potential for restoration of an urban stream. Proposed for implementation is an array of CSO controls, storm water BMPs, stream restoration measures, non-structural measures, and public education/participation programs. Implementation of the plan recommendations will be carried out in phases to allow for an adaptive management approach.

Completion of Comprehensive Characterization Report

The Comprehensive Characterization Report contains a series of technical documents that form the scientific basis for the Tookany/Tacony-Frankford Integrated Watershed Management Plan (TTFIWMP). The report characterizes the land use, geology, soils, topography, demographics, meteorology, hydrology, water quality, ecology, fluvial geomorphology, and pollutant loads found in the watershed. It presents and discusses data collected through the end of 2004. The report is intended as a single compilation of background and technical documents that can be periodically updated as additional field work or data analysis are completed. This report was completed in August 2005.

2.2.1 Watershed Partnership

The PWD sponsored Tookany/Tacony-Frankford Watershed Partnership kicked off with its first Partnership meeting on October 4, 2001. The Tookany/Tacony-Frankford Watershed drains 29 square miles, or 20,900 acres in Philadelphia and Montgomery counties. It is, for the most part, a highly urbanized watershed with a large diverse population that includes portions of the inner city as well as wealthy suburban communities. This partnership, geographically less diverse than the Darby-Cobbs Watershed, was able to benefit from a number of organizations and groups that are already involved in neighborhood revitalization. Its members are anxious to tackle projects that will see immediate benefits. Members include:

Tacony-Frankford Partnership

- Philadelphia Water Department
- Fairmount Park Commission and the Natural Lands Restoration Project
- Pennsylvania Environmental Council
- Frankford Group Ministry
- Melrose Park Neighbors Association
- Friends of Tacony Park
- Edison High School
- Rohm and Haas Co.
- Senior Environmental Corps.
- Awbury Arboretum
- Frankford United Neighbors
- Frankford Style Community Arts
- PA Department of Environmental Protection
- US Environmental Protection Agency
- US Army Corps of Engineers
- Philadelphia Green
- Phila. Urban Resources Partnership
- Cheltenham Township

This Partnership has been modeled after the Darby-Cobbs Partnership in working structure and the technical documents generated. However, PWD envisions that more "hands-on" type projects will be encouraged and requested on a regular basis. To supplement the work of the Partnership and to further the development of a watershed management plan, the Water Department, Fairmount Park and the Frankford Group Ministry received a DCNR grant in October 2001 to develop a River Conservation Plan for the Philadelphia county portion of the Tacony-Frankford watershed. The Partnership has worked closely to coordinate this grant with the River Conservation Plan in its final draft on the Tookany Watershed in Montgomery County. Cheltenham Township, a Partnership member, developed this RCP.

The creation and completion of a River Conservation Plan (RCP) for the Tacony-Frankford Watershed has provided the Partnership with an environmental and cultural planning inventory for a highly urbanized

watershed with the ultimate goal to develop a holistic management plan that will facilitate restoration, enhancement and sustainable improvements in the watershed. The watershed management plan was completed in June 2005.

This Partnership has elected a Board and has submitted the tax-exempt paperwork for its planned 501c(3). The mission of the Partnership is the implementation of the watershed management plan.

2.2.2 Define Preliminary Goals and Objectives

Refer to section 2.2.2 of Section 3 - Darby-Cobbs Watershed

2.2.3 Data Analysis and Indicator Development

Refer to section 2.2.3 of Section 3 - Darby-Cobbs Watershed

2.2.4 Development and Screening of Management Options

Refer to section 2.2.4 of Section 3 - Darby-Cobbs Watershed

2.2.5 Monitoring and Field Data Collection

Chemical Sampling

During 2004, Philadelphia Water Department (PWD) staff collected surface water grab samples at eight locations within Tacony-Frankford Watershed for chemical and microbial analysis **(Figure 6).** Sampling events were planned to occur at each site at weekly intervals for one month during three separate seasons. Actual sampling dates were as follows: "winter" samples collected 1/15/04, 1/22/04, 1/29/04, and 2/5/04; "spring" samples collected 4/21/04, 4/29/04, 5/6/04, and 5/13/04; "summer" samples collected 8/5/04, 8/12/04, 8/19/04 and 8/26/04. A total of 96 discrete samples, comprising 3552 chemical and microbial analytes, were collected and recorded during the 2004 assessment of the Tacony-Frankford Watershed.

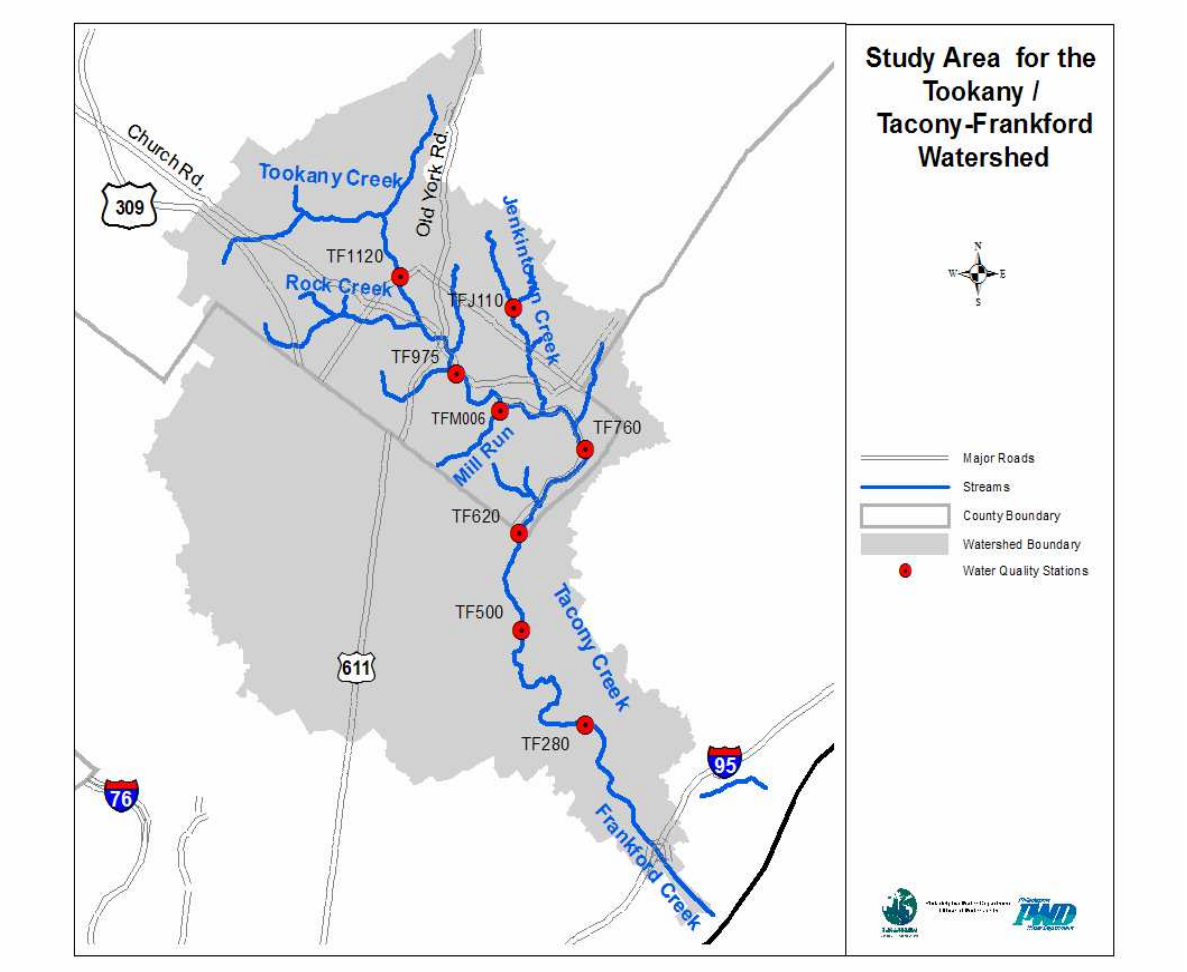


Figure 6 - Discrete water quality stations in the Tacony-Frankford Watershed (2004)

Sites TF 280, TF 500, TF 620, TF 760, TF 975, TF 1120 and TFJ 110 were included in PWD's baseline chemical assessment of Tacony-Frankford Watershed in 2000. A single new site (TFM006), located on Mill Run and the Tacony Creek confluence was added for 2004. Discrete sampling was conducted on a weekly basis and was not specifically designed to target wet or dry weather flow conditions. Depending on which definition of "dry weather" was used (i.e., 48 hr interval or 72 hr interval), between 6-7 sampling events occurred during dry weather- this data is most pertinent to Target A of the Watershed Management Plan (Dry Weather Water Quality and Aesthetics). Specifically addressed are indicators 7 and 8 - chemical and microbial constituents that are influential in shaping communities of aquatic systems or that are indicative of anthropogenic degradation of water quality in the watershed.

Wet Weather Targeted Sampling

Target C of the Watershed Management Plan addresses water quality in wet weather. Yet characterization of water quality at several widely spatially distributed sites simultaneously over the course of a storm event presents a unique challenge. Automated samplers (Isco, Inc.) stationed at six monitoring locations were used to collect samples during two runoff producing rain events on 7/7/04 and 8/30/04 **(Figure 7).**

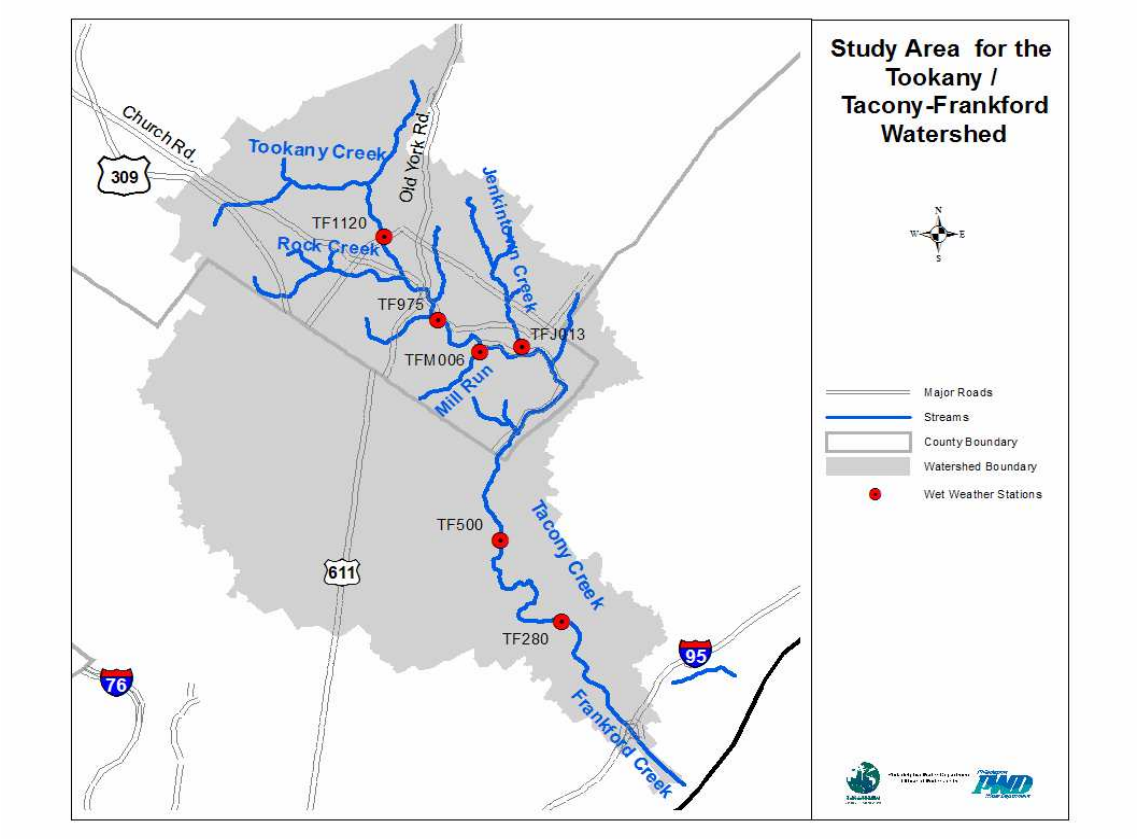


Figure 7 - Wet-weather monitoring locations in Tacony-Frankford Watershed

The automated sampler system obviated the need for BLS team members to manually collect samples, thereby greatly increasing sampling efficiency. Automated samplers were equipped with vented in-stream pressure transducers that allowed sampling to commence beginning with a small (0.1ft.) increase in stage. Once sampling was initiated, a computer-controlled peristaltic pump and distribution system collected grab samples at 1 hr. intervals. Use of automated samplers allows for a greater range of flexibility in sampling programs, including flow-weighted composite sampling based on a user defined rating curve, but stage discharge rating curves at these sites were poorly defined for larger flows. Though some difficulties were encountered due to a combination of mechanical failure, individual site characteristics, and/or vandalism, the one hour fixed interval was found to be generally satisfactory in collecting representative samples over a storm event **(Figure 8).**

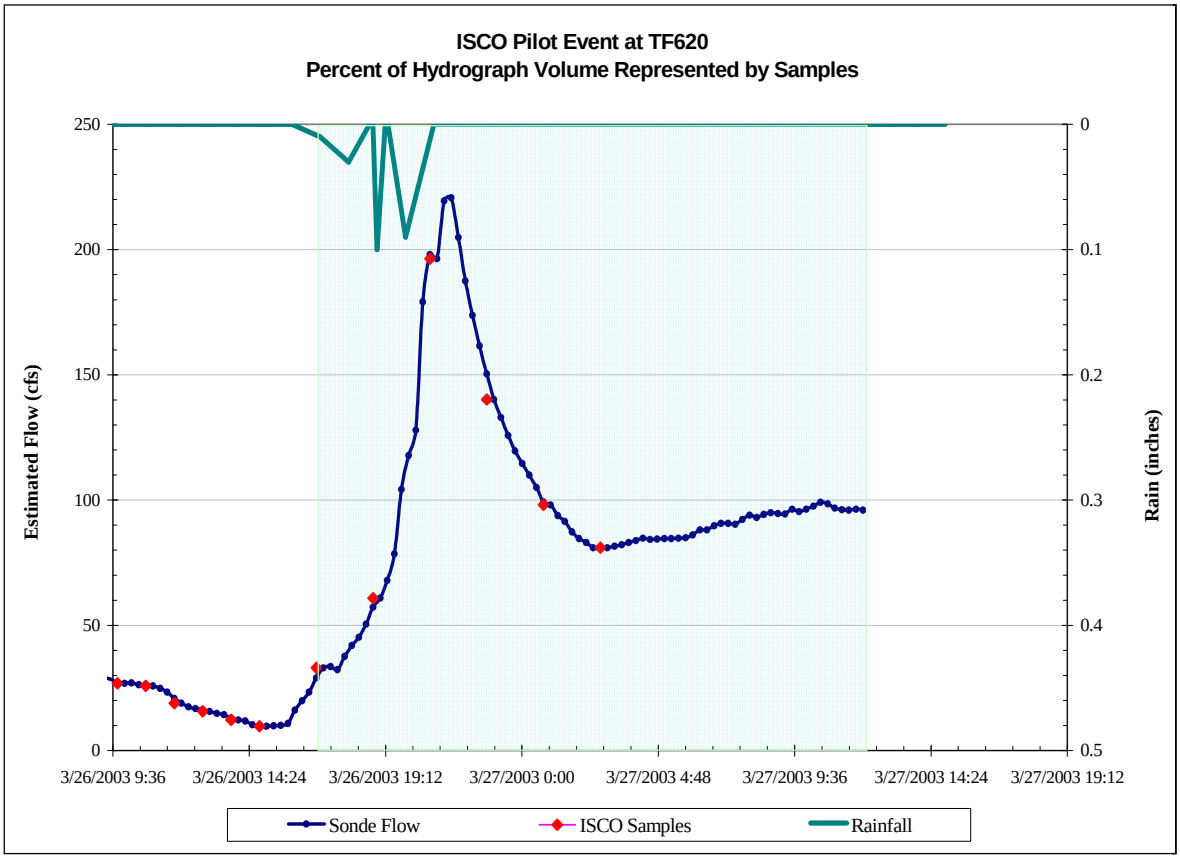


Figure 8 - Example of sample collection times with respect to a wet weather event in the Tacony-Frankford Watershed (2003)

To date, PWD has successfully characterized nine storm events (n=9) in the Tacony-Frankford Watershed. PWD continues to refine methods of sampling stormwater and experiment with alternative automated sampling programs.

Biological Assessments and Analyses

Between 3/24/04 – 4/1/04, PWD staff conducted benthic and habitat assessments at twelve (n=12) locations within the Tacony-Frankford Watershed **(Figure 9)**. Using standard operating procedures developed by the EPA, samples were collected during late winter and analyzed in the laboratory.

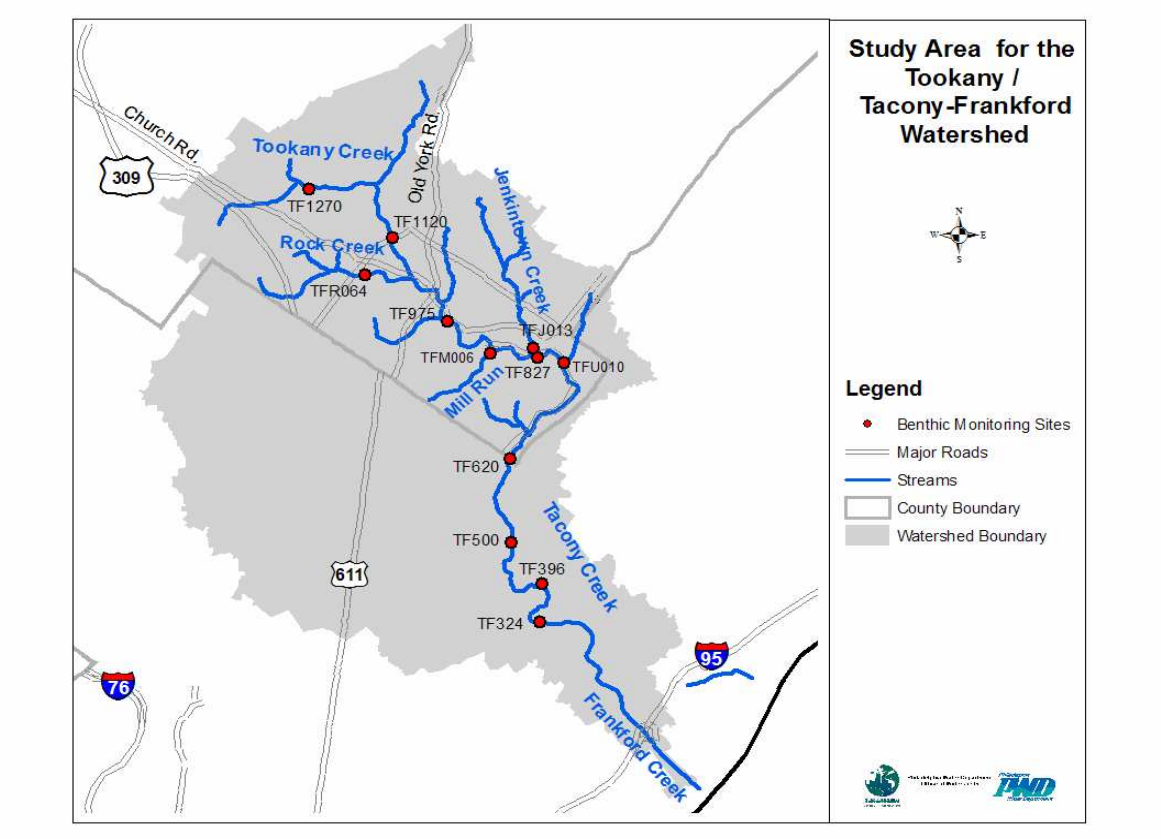


Figure 9 - Benthic and habitat monitoring locations in the Tacony-Frankford Watershed

Fish Assessments

Similarly, between 6/2/04-6/16/04, PWD biologists conducted fish assessments at seven (n=7) locations within Tacony-Frankford Watershed **(Figure 10).** Standard operating procedures, developed by the EPA and refined by the USGS, were used to assess fish community health at the watershed-scale. In addition, tidal fish assessments were also performed at two (n=2) locations in the lower Frankford Creek between 8/1/04 – 8/8/04 **(Figure 11).**

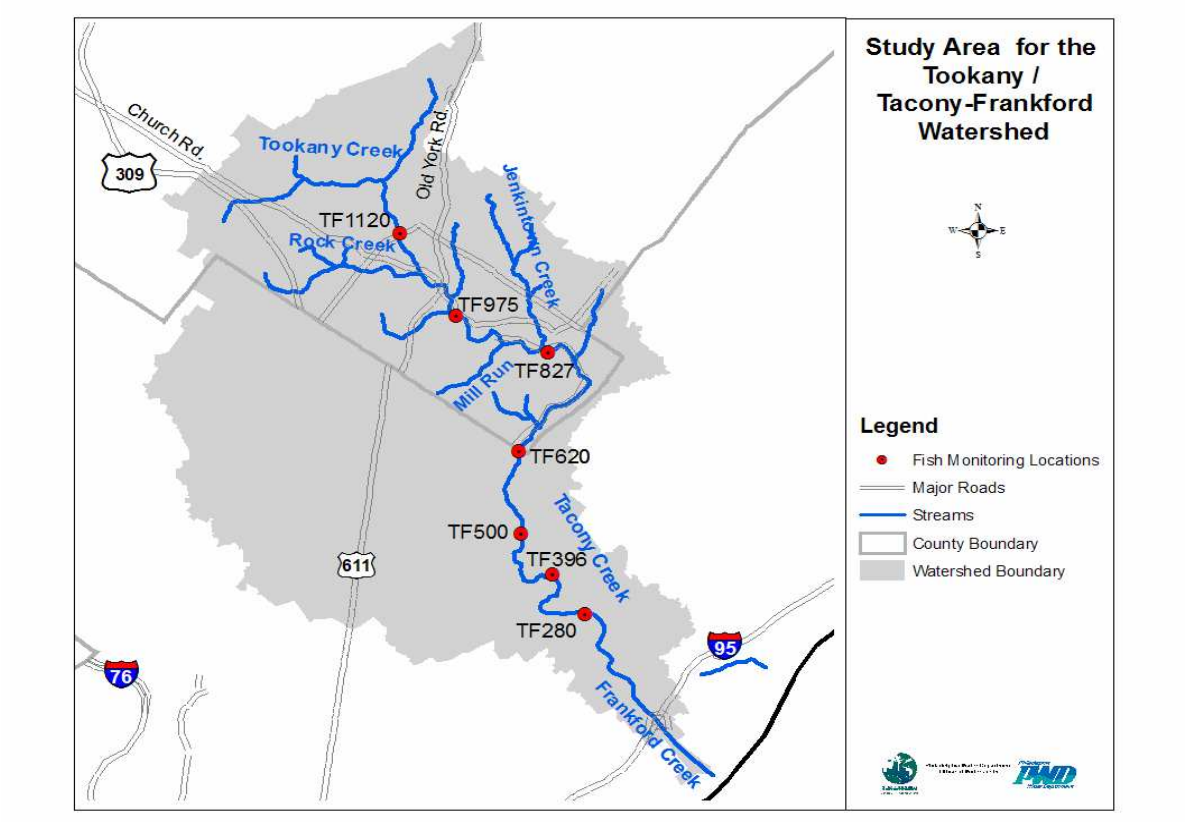


Figure 10 – Fish monitoring locations in Tacony-Frankford Watershed (2004)

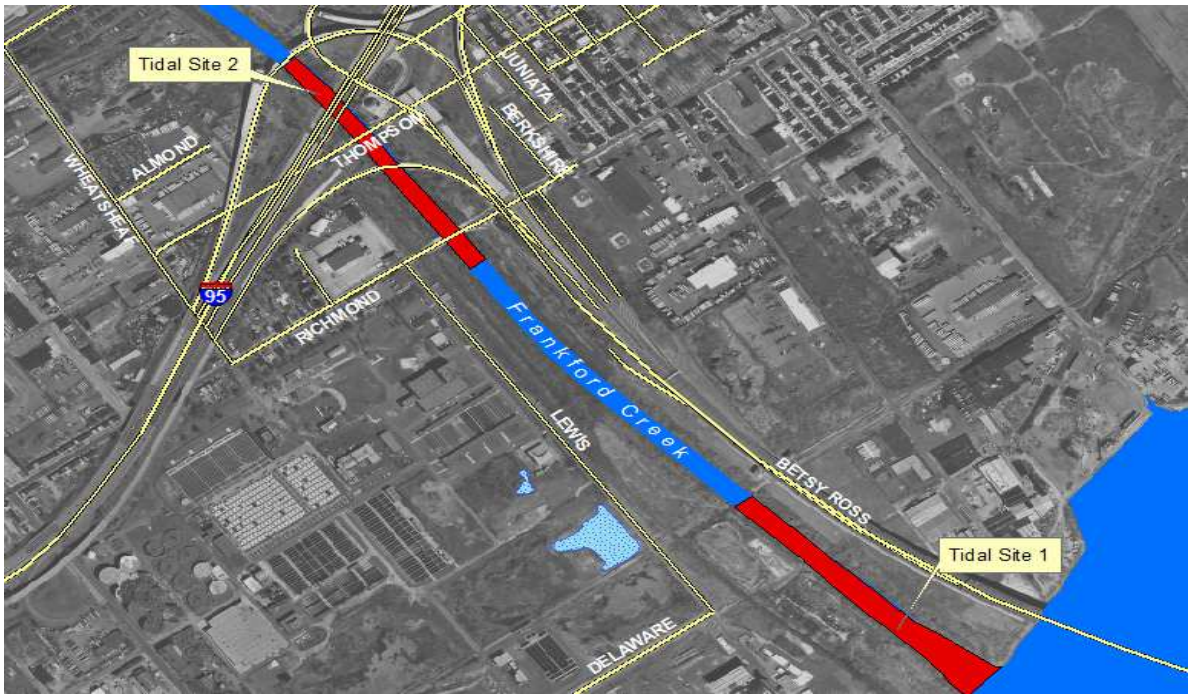


Figure 11 - Tidal monitoring locations in lower Frankford Creek (2004)

Algae Assessments

Replicate algae samples were collected from TF280and TF620 on the Tacony-Frankford Creek (TFC) on 6 occasions in August and September 2004 to determine the biomass of benthic algae in terms of chlorophyll a (chl a), spatial variation in biomass within and between sites, the scouring effects of high flows, and algal accrual rates following a high flow event **(Figure 12).** The goals of the project were to explain patterns in dissolved oxygen (DO) concentrations at base flow, and during and following high flow events. The study indicated spatial differences in mean chl a concentrations between sites but consistent temporal patterns. Main results include:

Dissolved oxygen profiles of the 2 sites during the study period showed that mean daily DO concentration at TF280 was typically in the order of 6mg/l with daily minimum and maximum concentrations generally ±1.5 mg/m^2. At TF620, mean daily DO concentrations were approximately 8 mg/l with daily minimum and maximum concentrations in the order of ±1mg/l.

Chlorophyll a concentrations were consistently significantly greater at TF620 than at TF280 with mean concentrations ranging from 29.8 (±3.79) to 88.5 (±11.0) mg/m^2 at TF280, and from 108.5 (±14.8) to 127.9 (±12.8) mg/m^2 at 620. Mean chl a concentration at TF500 sampled 19 August 2004 was 34.9 (± 6.9) mg/m^2.

Mean chl a at the TF620 site on 8 September 2004 was significantly lower (49.8 ± 6.5 mg/m^2) than on other sampling dates. This is possibly due to seasonal changeover in benthic algal community structure (summer die-off).

Algal accrual rates during the first 5 days following an artificial scouring experiment were similar to accrual rates on non-scoured rocks for each site. The average daily accrual rate for TF280 and TF620 was 8.36 ±1.30 mg/m^2 and 16.7 ± 4.34 mg/m^2, respectively. The accrual rate at TF620 of non-scoured rocks was 11.7 mg/m^2. During days 5-9 of the experiment, both sites lost biomass with an average daily loss rate of 1.73 (± 0.99) mg/m^2 at TF280 and 4.56 (± 1.31) mg/m^2 at TF620. The mean daily accrual rate of non-scoured rocks at TF280 during this time period was 8.96 mg/m^2 and 2.48 mg/m^2 at TF620.

Among the factors affecting algal biomass discussed above, grazing, nutrients, current velocity, and scouring disturbances are likely the most important in driving algal communities in the TFC. Differences in algal community structure between the two sites are likely the result of differential nutrient conditions, grazing pressures, and disturbance regimes. Light may also play a factor in explaining site differences (especially when data from TF500 is considered).

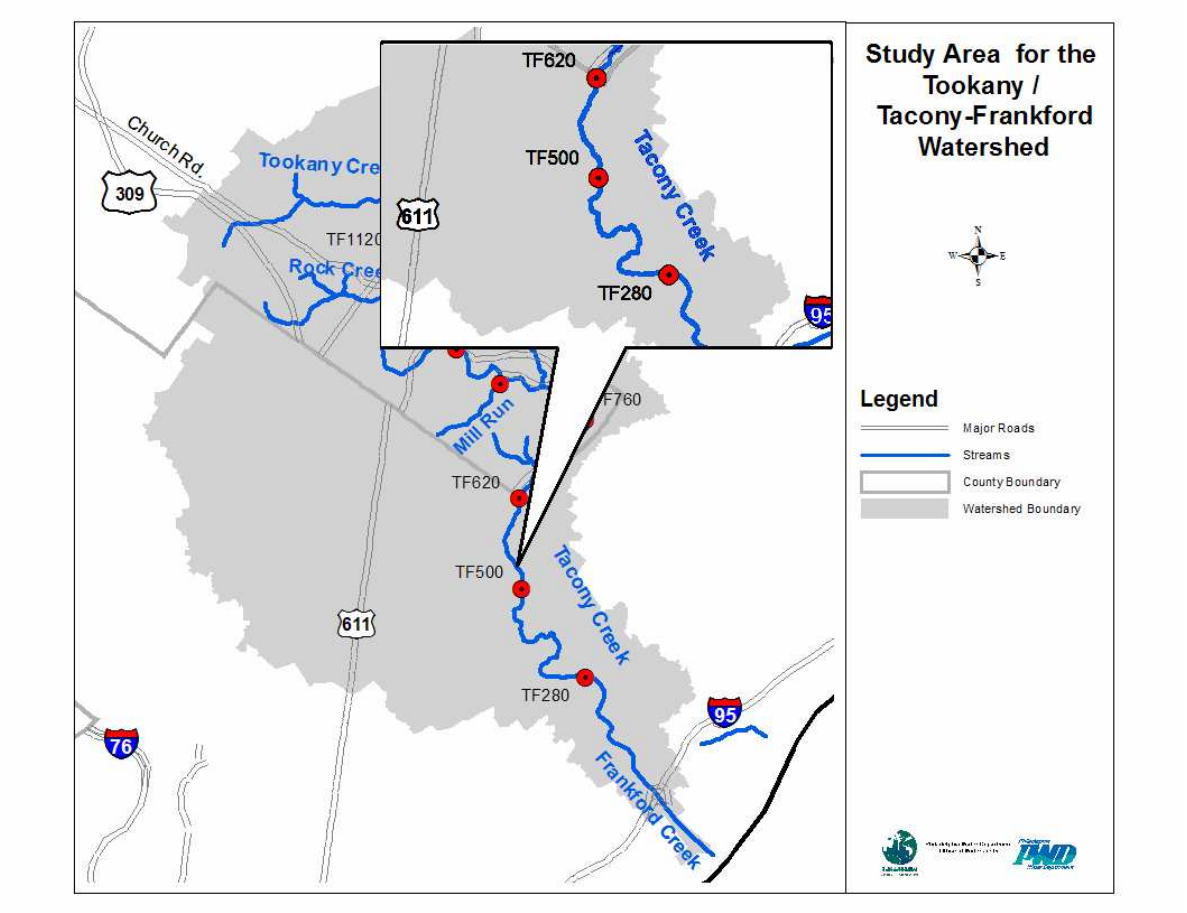


Figure 12 - Algae monitoring stations on Tacony-Frankford Creek

RADAR Rainfall Data and Analysis

PWD extended its contract with Vieux and Associates, to further quantify rainfall intensity during storm events targeted by wet weather sampling in the Tacony Frankford Watershed. A total of six (n=6) rain events were captured using RADAR rainfall techniques during the spring and summer of 2003, and two rain events (n=2) were captured during 2004. Wet-weather data accompanied by rainfall intensity was used to model pollution loadings in various sub-watersheds along the Tacony-Frankford Creek **(Figure 13).**

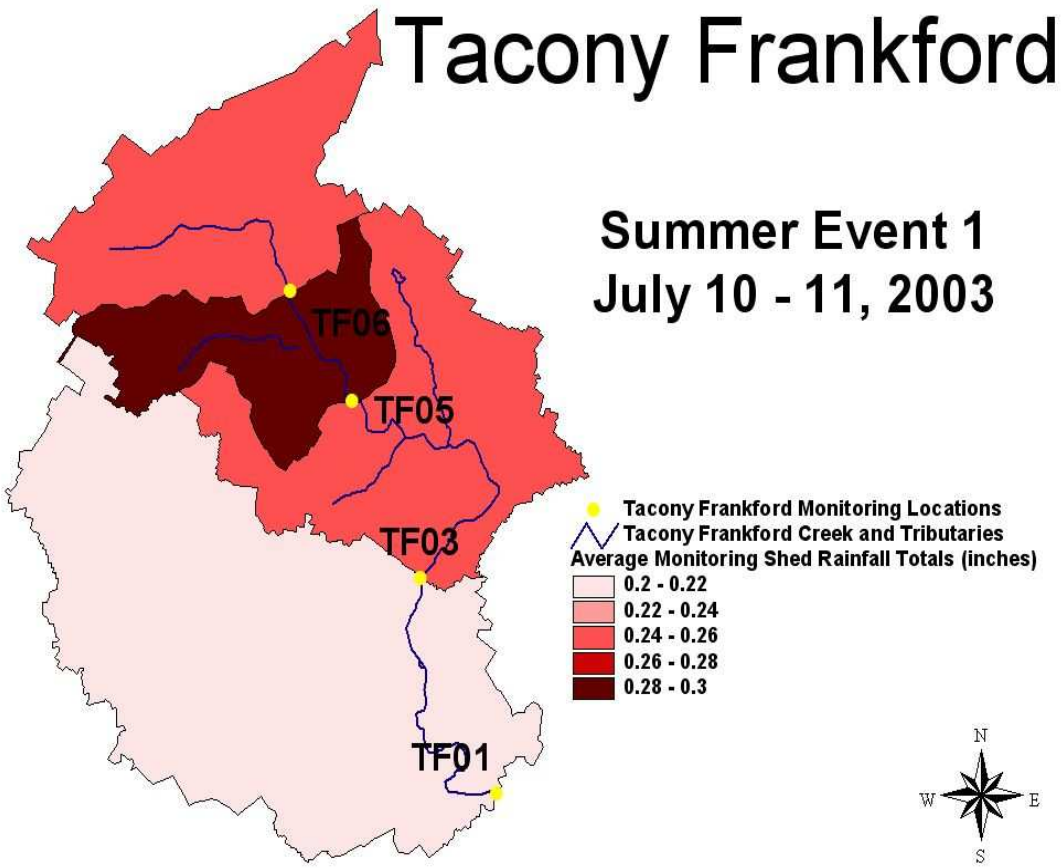


Figure 13 - RADAR rainfall data collected in the Tacony-Frankford Watershed (July 10-July 11)

2.2.6 Modeling

A SWMM model is being updated and calibrated for the watershed that can simulate the watershed response to storms for both the storm sewers as well as combined sewers. The model will be used to assess current pollutant loading from CSOs and from stormwater water. The model will also be used to test a wide array of CSO controls and stormwater BMPs, including swales, green roofs, infiltration basins, porous pavement, and similar techniques. By simulating BMPs at various levels of implementation, graphs of urban BMP effectiveness in controlling CSOs and stormwater will be developed and used to make watershed-specific recommendations on the needed degree of implementation and the selection of the most cost-effective approaches to meeting water quality and quantity objectives.

2.2.7 Development and Evaluation of Management Alternatives

Refer to section 2.2.7 of Section 3 – Darby Cobbs Watershed

2.3 Public Involvement and Education

River Conservation Plan

The Tacony-Frankford River Conservation Plan (RCP) is a holistic plan to improve the Tacony-Frankford watershed. It is developed through a collaborative process of local organizations and residents, and addresses various types of projects that will make the watershed a better place to live. It addresses history, water quality, culture, art, parks, trails, youth education, municipal education, etc.

The goal is to create a grassroots driven watershed conservation plan. The plan will reflect the character of the watershed and the issues and concerns of the residents of the watershed. The planning process also creates or enhances partnership possibilities among plan participants.

The RCP was completed in July of 2004.

Watershed Tours

The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices.

Refer to section 1.7 – Pollution Prevention of Section 2 for additional public outreach in this watershed.

3.0 Annual CSO Statistics

TACONY CREEK 2005 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency				CSO Volume (MG)			CSO Capture (%)			CSO Duration (hrs)		
			Range per subsystem			Avg per subsystem	Range per subsystem			Range per subsystem			Range per subsystem		
Tacony	16	16	1	-	62	36	3859	-	3933	39	-	43	4	-	306
Upper Frankford Low Level	12	12	8	-	55	36	358	-	377	58	-	62	14	-	255

Section 5 - Pennypack Watershed

1.0 CSO Capital Improvement Projects

1.1 85% CSO Capture – Pennypack Watershed

Start: 2/1/1996 End: 9/7/2004 Status: Complete

Reference Long Term CSO Control Plan p. 2-8.

Description: Addressing CSO discharges to Pennypack Creek is a high priority for the CSO Program and is mainly a result of the proximity of the CSO to a smaller receiving stream which enters the Delaware just below the Baxter WTP intake structure. This project will enable capture of 85% of the combined sewer flow in all five Pennypack (PP) CSO basin areas while maintaining existing overall system-wide CSO capture on an average annual basis by modifying the PP, UDLL and LFLL regulators. It was determined that an increase in capacity of approximately 20 cfs was required for the PP interceptor to achieve 85% capture (consistent with the "presumptive" CSO control target defined in national CSO policy). The construction project entails construction of new dry weather outlet (DWO) conduit at 3 of the Pennypack CSO regulators. In addition, the diversion dam height at four PP regulator locations will be raised. Lastly, modifications at twelve Brown & Brown type and automated regulators along the UDLL and LFLL interceptors will be completed in order to provide the required capacity in the UDLL interceptor. These actions will result in 85% CSO capture in the Pennypack watershed. The projected budget for this project is $230,000.

Environmental Benefits: This project will significantly reduce the CSO discharge into Pennypack Creek. The average annual volume of CSO is reduced by 91 MG, from 130 to 58 MG. This represents a reduction of roughly 55% in the average annual volume of CSO and the associated pollutants (bacteria and organic matter from untreated wastes, litter and other solid materials in both wastewater and stormwater runoff, etc.) discharged into Pennypack Creek between Frankford Avenue and the Delaware River. Additionally, this project protects a small stream surrounded by public parkland where recreational activities occur.

1.1.1 Regulator Modifications (P1-P4)

Start: 11/18/1998 End: 7/1/2005 Status: Complete

The hydrologic and hydraulic computer models developed by the PWD for the CSO Program were applied to determine new dry weather outlet (DWO) pipe diameters and diversion dam heights necessary to achieve 85% capture of combined flows in the Pennypack basins. A preliminary site plan for the CSO regulator modifications necessary to achieve 85% capture of Pennypack combined flows was completed. Additional monitoring was performed to verify model representations of wet weather inflows in the Pennypack interceptor.

Status: A preliminary site plan was developed for the construction of new CSO regulator chambers at P_1, P_2 and P_4. Model analyses in 1999 refined initial estimates of regulator modifications including new DWO pies and diversion dam heights at these three chambers. In 2000, PWD staff finalized the project's design memorandum and site plans documenting chamber modification specifics that allow for 85% capture of combined flows in the Pennypack basins while maintaining existing levels of CSO capture in the Northeast Low Level System.

The final designs for the new CSO regulator chambers and DWO pipes were completed in 2004. The design plans and specifications were forwarded to Projects Control the first week of January. The project was bid in April and won by METRO for a total of $1,709,334.00. The new DWO (dry weather overflow) pipes have

been installed in Frankford Avenue and the installation of the gates is complete. The project was completed in July of 2005.

1.1.2 Integrate Water Quality Programs with Storm Flood Relief (WQ & SRF) - Sheffield Ave.
Start: 2/1/1996 End: 6/31/2000 Status: Complete

Reference Long Term Control Plan on page 2-6.

Description: There are several flood relief projects defined and currently in various stages of implementation. However, these projects have been developed to better manage the relatively high flows associated with larger, less frequent events. CSO control is primarily concerned with lower, more frequent flows. There is a potential opportunity to realize multiple benefits from the flood relief projects by expanding the scope of these projects to address both storm flood relief and CSO control objectives. Generally this will require adjusting the design of the individual projects to manage both low and high flows, resulting in the dual benefit of CSO control and flood relief. For example, it may be possible to use a new flood relief sewer to provide storage of low flows for CSO control and conveyance of high flows for flood control. The costs for implementing CSO controls in flood relief projects will be defined on a case-by-case basis.

Environmental Benefits: The specific benefits that accrue will be defined on a case-by-case basis.

Status: The Sheffield Ave. Relief sewer project was undertaken as a demonstration project to examine the process by which the Department could utilize the existing flood relief sewer planning process to gain increased CSO benefit. Design level modeling of the Sheffield and Cottman Avenue sewershed was undertaken from the period from 2/1/1996 to 12/13/1996. The storage and treatment requirements to achieve the 85% capture objective were determined in conjunction with the DWO conduit re-sizing to be completed as part of project 10.3.2 Regulator Modifications (P_1 – P_4) from 12/16/1996 to 3/7/1997. The treatment rates and storage volumes required to achieve 85% capture were used to evaluate diversion structure and regulator alternatives from 3/10/1997 to 7/11/1997. Design specifications were developed from 7/14/1997 to 6/1/1998. The contract was awarded to Lisbon Contractor Inc., at a cost of $5,630,462. This project is now complete.

2.0 Watershed Management Planning

The following sections describe the progress that has been made in advancing the Pennypack Watershed Initiative. Detailed information on documenting the minutes of partnership meetings, reports produced, and other accomplishments are posted on the partnership web page at www.phillyriverinfo.org.

2.1 Preliminary Reconnaissance Survey

The preliminary reconnaissance survey for the Pennypack Creek had been completed. Specifically the physical, chemical, and biologic assessment was completed in calendar year 2002 with a comprehensive report completed in 2003.

2.2 Watershed Work Planning & Assessment

The Philadelphia Water Department (PWD) has embarked on an ambitious program of watershed management for several creeks within the City limits. The watershed plans are designed as integrated watershed planning efforts to address objectives of several programs, including CSO Long Term Planning,

Pennsylvania Stormwater Management programs, potential or existing TMDLs, River Conservation Plans, and Phase II Stormwater permits. PWD's Office of Watersheds (OOW) has carried out an extensive sampling and monitoring program to characterize conditions in the Pennypack Creek Watershed. The program is designed to document the condition of aquatic resources and to provide information for the planning process needed to meet regulatory requirements. The program included hydrologic and water quality analysis, biological and habitat assessments, and fluvial geomorphological assessments of the entire length of Pennypack Creek and its major tributaries.

A Watershed Management Plan is set to be developed for this watershed in 2008.

2.2.1 Watershed Partnership

The PWD and its partners – the Fairmount Park Commission, the Friends of Pennypack Park, the Friends of Fox Chase Farms, the Pennypack Ecological Trust and the Montgomery County Planning Commission – received notice in Summer 2002 that it was awarded a grant from DCNR to develop a river conservation plan for the Pennypack Creek Watershed – Philadelphia, Montgomery and Bucks Counties. In the Fall 2002, team members toured various sections of the watershed to gain a better understanding of its current physical topography and condition.

Pennypack Watershed Partnership Meetings

- The Partnership's second public meeting on the RCP was held in March 2005 at the Pennypack Environmental Center and featured a presentation by a Historical Consultant to the Philadelphia Water Department, Adam Levine. Mr. Levine presented information on the changing landscapes of the Pennypack Creek Watershed and how these changes affect the Pennypack Creek.
- The Draft River Conservation Plan document was presented at a series of public meetings in September and October of 2005.
- Homeowner Presentation on Watershed Protection, Pennypack Ecological Restoration Trust, April 26, 2005
- Stream Restoration Presentation, Pennypack Ecological Restoration Trust, April 7, 2005

2.2.2 Define Preliminary Goals and Objectives

Refer to section 2.2.2 of Section 3 – Darby-Cobbs Watershed

2.2.3 Data Analysis and Indicator Development

Refer to section 2.2.3 of Section 3 – Darby-Cobbs Watershed

2.2.4 Development and Screening of Management Options

Refer to section 2.2.4 of Section 3 – Darby-Cobbs Watershed

2.2.5 Monitoring and Field Data Collection

During 2002-2003, the Philadelphia Water Department's Office of Watersheds and Bureau of Laboratory Services conducted biological assessments (Rapid Bioassessment Protocols III and V) and physical habitat assessments at twenty locations in Pennypack Creek Watershed to investigate point and non-point source stressors **(Figure 14)**. Biological and physical assessments were then compared to two reference sites located

in French Creek Watershed, Chester County, Pennsylvania. Spatial differences in water quality were evaluated with a series of discrete chemical samples taken from 13 monitoring stations in Pennypack Creek (n = 7) and its tributaries (n = 6). The aggregation of biological, physical and chemical information was utilized as a comprehensive tool to measure the degree of impairment and the major contributing stressors within each assessment site and at a watershed scale.

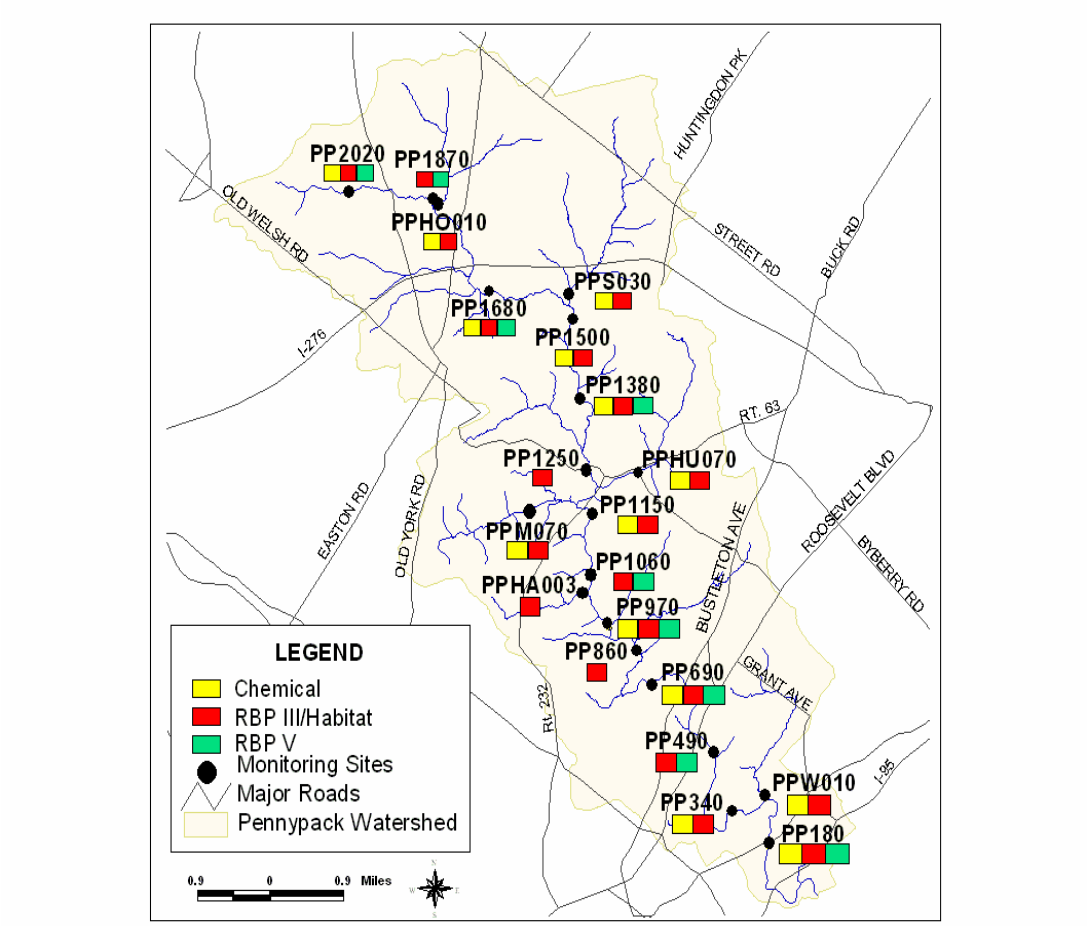


Figure 14 - Biological, chemical and physical monitoring locations within the Pennypack Watershed (2002-2003)

Chemical Sampling

Sampling was conducted on weekly intervals without regard for weather or other environmental factors **(Figure 15)**. As a result, samples were taken under a variety of conditions (e.g., wet weather) that may have influenced results of many chemical and water quality analyses. For example, instream measurements of dissolved oxygen and grab samples taken for fecal coliform analyses may exhibit great variability in response to environmental conditions. The former may be heavily dependent on time of day and sunlight intensity, while the latter may vary with rainfall.

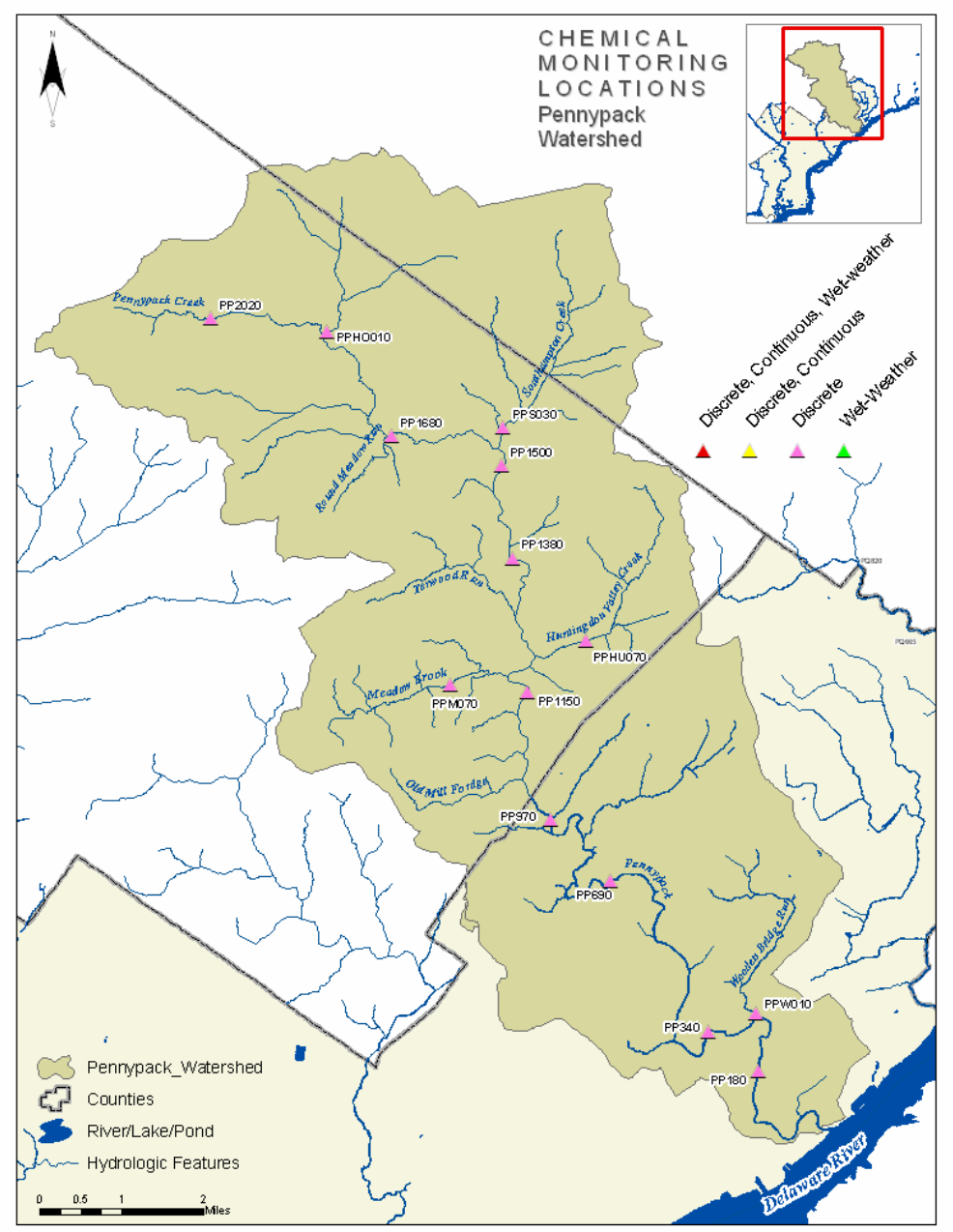


Figure 15 - Chemical monitoring locations in Pennypack Watershed

Benthic Assessments

A total of 3,452 individuals from 30 taxa were identified during the 2002 benthic macroinvertebrate survey of Pennypack Creek Watershed **(Figure 16).** Average taxa richness was 9.8. Throughout the watershed, moderately pollution tolerant taxa were dominant (93.62%). Few pollution sensitive taxa were found, and pollution sensitive EPT taxa (families Ephemeroptera, Plecoptera and Trichoptera) were not present. Mean Hilsenhoff Biotic Index (HBI) of all assessment sites was 5.743. Family Chironomidae (midges) and the net-spinning caddisfly genera Hydropsyche and Cheumatopsyche dominated the benthic assemblage (proportional abundance 55.13% and 24.83%, respectively). Riffle beetles (Stenelmis) contributed 6.66%, and all other taxa, including amphipods, tipulids, and oligochaetes, contributed 2% or less. Trophic levels were

dominated by generalist feeders (89.63%). A combination of poor taxa richness, elevated HBI scores, and virtual lack of EPT taxa and specialized feeders characterizes the overall watershed as "severely impaired."

Ichthyofaunal Assessments

A total of 16,869 individuals of 39 species representing 10 families were collected throughout Pennypack Creek Watershed in the 2002 bioassessment. Most abundant species were swallowtail shiner (Notropis procne) and white sucker (Catostomus commersoni), which comprised about 33% of all fish collected. Other common species were satinfin shiner (Cyprinella analostana), banded killifish (Fundulus diaphanus), redbreast sunfish (Lepomis auritus), spottail shiner (Notropis hudsonius), and blacknose dace (Rhinichthys atratulus). Out of 39 species collected, seven species comprised over 80% of the entire fish assemblage. Similarly, three species made up 80% of total biomass, with white sucker contributing greater than 50%. Despite the high abundance and species richness, the unbalanced community structure is typical of impaired streams experiencing eutrophic conditions.

Habitat Assessments

Habitat impairments in Pennypack Creek Watershed mirror those of other urban stream systems assessed by PWD. Firstly, preponderance of impervious surfaces within the watershed and its sub-basins causes small streams to exhibit increasingly "flashy" hydrographs in response to rain events. Periods of high flow result in erosion of banks and deposition of sediment in pools and on point bars. Erosion and sedimentation may decrease reproductive success of invertebrates and fish by washing away eggs, or alternately, covering eggs with sediment. Furthermore, stream organisms may be washed downstream and displaced from their optimum habitat.

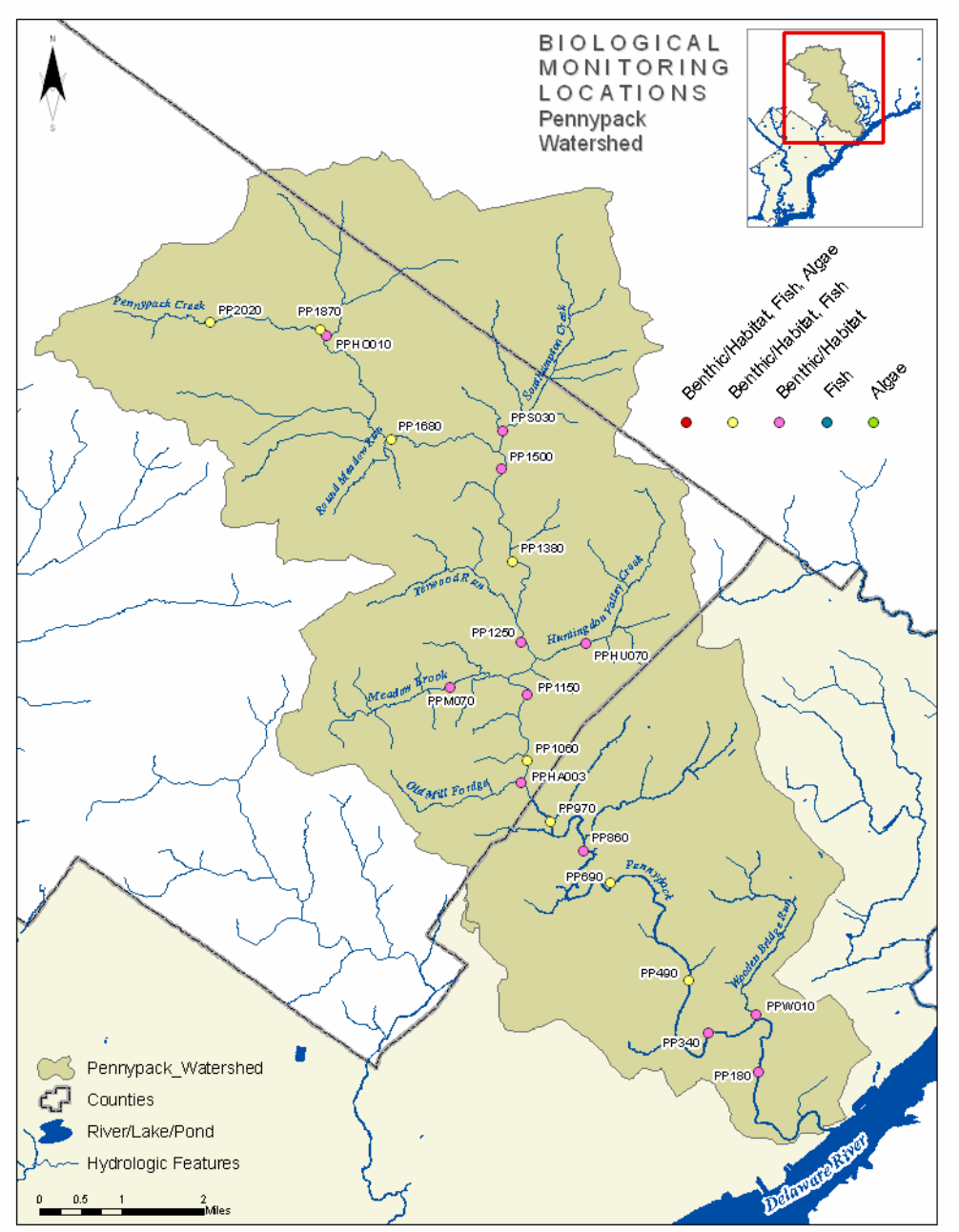


Figure 16 - Biological and physical assessment sites in Pennypack Watershed

2.2.6 Modeling

The PWD envisions the development of a SWMM model for the watershed that can simulate the watershed response to storms for both the storm sewers as well as combined sewers. The model will be used to assess current pollutant loading from CSOs and from stormwater water. The model will also be used to test a wide array of CSO controls and stormwater BMPs, including swales, green roofs, infiltration basins, porous pavement, and similar techniques. By simulating BMPs at various levels of implementation, graphs of urban BMP effectiveness in controlling CSOs and stormwater will be developed and used to make watershed-

specific recommendations on the needed degree of implementation and the selection of the most cost-effective approaches to meeting water quality and quantity objectives.

2.2.7 Development and Evaluation of Management Alternatives

Refer to section 2.2.7 of Section 3 – Darby-Cobbs Watershed

2.3 Public Involvement and Education

River Conservation Plan

The Partnership developed a Request for Proposals for a consultant to lead the data collection and public outreach components of the plan, under the guidance of the RCP team. The consultant, F.X. Browne, Inc. was selected to oversee both the data collection and public outreach components of the RCP and began this work in the Fall 2003. In January 2004, the first RCP Steering Committee took place and a public outreach schedule and suggested public workshops were discussed and planned for the spring. In 2005, a number of public outreach and education events took place, including:

- April 2005 Stream Restoration Workshop
- April 2005 Watershed Friendly Homeowners Workshop
- September 2005 Fish Shocking Demo on Pennypack and presentation of draft plan
- September 2005 Presentation of draft plan at Pennypack Trust Ecological Restoration Plant Sale
- October 2005 – Presentation of draft plan at Montco Trout Unlimited
- October 2005 – Presentation of draft plant at annual Applefest Celebration at Fox Chase Farms

The RCP Plan was completed in December 2005. Work to implement some of its recommendations will continue into the future and will act as a platform for the development of a watershed management plan in 2008.

Watershed Tours

The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices.

Refer to section 1.7 – Pollution Prevention of Section 2 for additional public outreach in this watershed.

3.0 Annual CSO Statistics

PENNYPACK CREEK 2005 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency		CSO Volume (MG)	CSO Capture (%)	CSO Duration (hrs)
			Range per subsystem	Avg per subsystem	Range per subsystem	Range per subsystem	Range per subsystem
Pennypack	5	5	12 - 49	26	73 - 79	67 - 71	27 - 178

Section 6 – Wissahickon Creek Watershed

1.0 CSO Capital Improvement Projects

NOT APPLICABLE

2.0 Watershed Management Planning

The following sections describe the progress that has been made in advancing the Wissahickon Watershed Initiative. Detailed information on documenting the minutes of partnership meetings, reports produced, and other accomplishments are posted on the partnership web page at www.phillyriverinfo.org.

2.1 Preliminary Reconnaissance Survey

The preliminary reconnaissance survey for the Wissahickon Creek has been completed. Specifically the physical, chemical, and biologic assessment was completed in calendar year 2001 with a comprehensive report completed in 2001.

2.2 Watershed Work Planning & Assessment

In November 2005, the Philadelphia Water Department (PWD) sponsored the Wissahickon Creek Watershed Partnership to begin the development of an integrated watershed management plan – a long-range road map designed to serve the twin goals of protecting natural resources and advancing vital communities. It reaches out to include municipal and conservation planning efforts that strive to ensure that growth within the watershed occurs only with special care to the environment.

The integrated Watershed Management Plan aims to:

- Serve as a holistic, comprehensive management tool that facilitates restoration and revitalization efforts throughout the watershed.
- Accommodate all regulatory and planning requirements affecting municipalities, which must address "point" (specific discharges) and "non-point" (generalized runoff) sources of pollution and flooding.
- Improve the water quality and natural environment of these heavily stressed streams, including highly urbanized areas.
- Boost the ability of the streams to support a diversity of wildlife, such as fish, insects, and birds.
- Enhance parkland and "riparian" (riverside) buffers, creating an enjoyable natural environment for the communities within the watershed.
- Develop a flexible "adaptive management" approach that will ensure sustainable improvements to the watershed.

This planning effort also benefits from the resources of other earlier and ongoing planning processes. In addition, the integrated plan is designed to serve the needs of municipal and government entities by addressing and satisfying the many related regulatory programs. Some of the reports, plans, and programs that will be taken into consideration by the Wissahickon Creek Integrated Watershed Management Plan include the following:

- Phase I and Phase II of the Clean Water Act's stormwater regulations to control pollution due to discharges from municipal stormwater systems.
- PA Sewage Facilities Act 537 to protect and prevent contamination of groundwater and surface water by developing proper sewage disposal plans.
- PA Stormwater Management Act 167 to address management of stormwater runoff quantity, particularly in developing areas.
- The Wissahickon TMDL (Total Maximum Daily Load) process to improve water quality of impaired streams and water bodies by calculating and limiting pollutant loads.
- Schuylkill Action Network (SAN) ongoing partnership projects.
- Fairmount Park Commission Master Plan for the Wissahickon Creek.
- Wissahickon Creek River Conservation Plan (2000).
- Sandy Run River Conservation Plan (2003)
- "Wissahickon Creek Watershed: Physical Characteristics and Water Quality," National Institute for Environmental Renewal (1999).

2.2.1 Watershed Partnership

The foundation of the watershed planning effort is the comprehensive collection of data that will prioritize pollution and impairment sources and confirm the best strategies for alleviating these impairments and restoring the watershed to one that is fishable, swimmable and enjoyable. PWD has committed to the watershed-wide collection of biological, chemical and physical data (including fluvial geomorphologic analysis and modeling), in addition to providing professional facilitation services to support the Wissahickon Creek Watershed Partnership.

Current Wissahickon Watershed Partners include:

- Wissahickon Valley Watershed Association
- Whitpain Township
- PA DEP
- Whitemarsh Township
- Merck & Co., Inc.
- Abington Township
- McNeil CSP
- Center for Sustainable Communities
- Philadelphia Water Department
- Pennsylvania Environmental Council
- Lower Gwynedd Township
- Upper Gwynedd Township
- Ambler Wastewater Treatment Plant
- Upper Dublin Township
- US EPA
- Lansdale Borough
- Morris Arboretum

- Friends of the Wissahickon
- FX Browne, Inc.
- Cheltenham Township
- Montgomery County Planning Commission
- Fairmount Park Commission
- Montgomery County Conservation District
- North Wales Water Authority
- EEMA, Inc.
- Philadelphia University
- Schuylkill Riverkeeper
- Clean Water Action
- Wissahickon Restoration Volunteers
- Senior Environmental Corps, Center in the Park
- Schuylkill Center for Environmental Education

2.2.2 Define Preliminary Goals and Objectives

Refer to section 2.2.2 of Section 3 – Darby-Cobbs Watershed

2.2.3 Data Analysis and Indicator Development

Refer to section 2.2.3 of Section 3 – Darby-Cobbs Watershed

2.2.4 Development and Screening of Management Options

Refer to section 2.2.4 of Section 3 – Darby-Cobbs Watershed

2.2.5 Monitoring and Field Data Collection

Chemical Sampling

A total of 12 samples were collected from each of ten (n=10) sites **(Figure 17).** Sample dates: Winter: 1/13/05, 1/20/05, 1/27/05 and 2/3/05; Spring: 4/21/05, 4/28/05, 5/5/05, and 5/12/05; Summer: 8/4/05, 8/11/05, 8/18/05, 9/1/05

Wet Weather Targeted Sampling

One wet weather event was captured from ten (n=10) sites 7/7/05-7/9/05. One additional wet weather event was captured in Monoshone Creek (WSMC016) and Radium Run (MCRR002) on 5/20/05.

Continuous Water Quality Sampling

Sondes were deployed at six (n=6) sites, beginning 3/10/05. Sondes will be deployed continuously until December 2005.

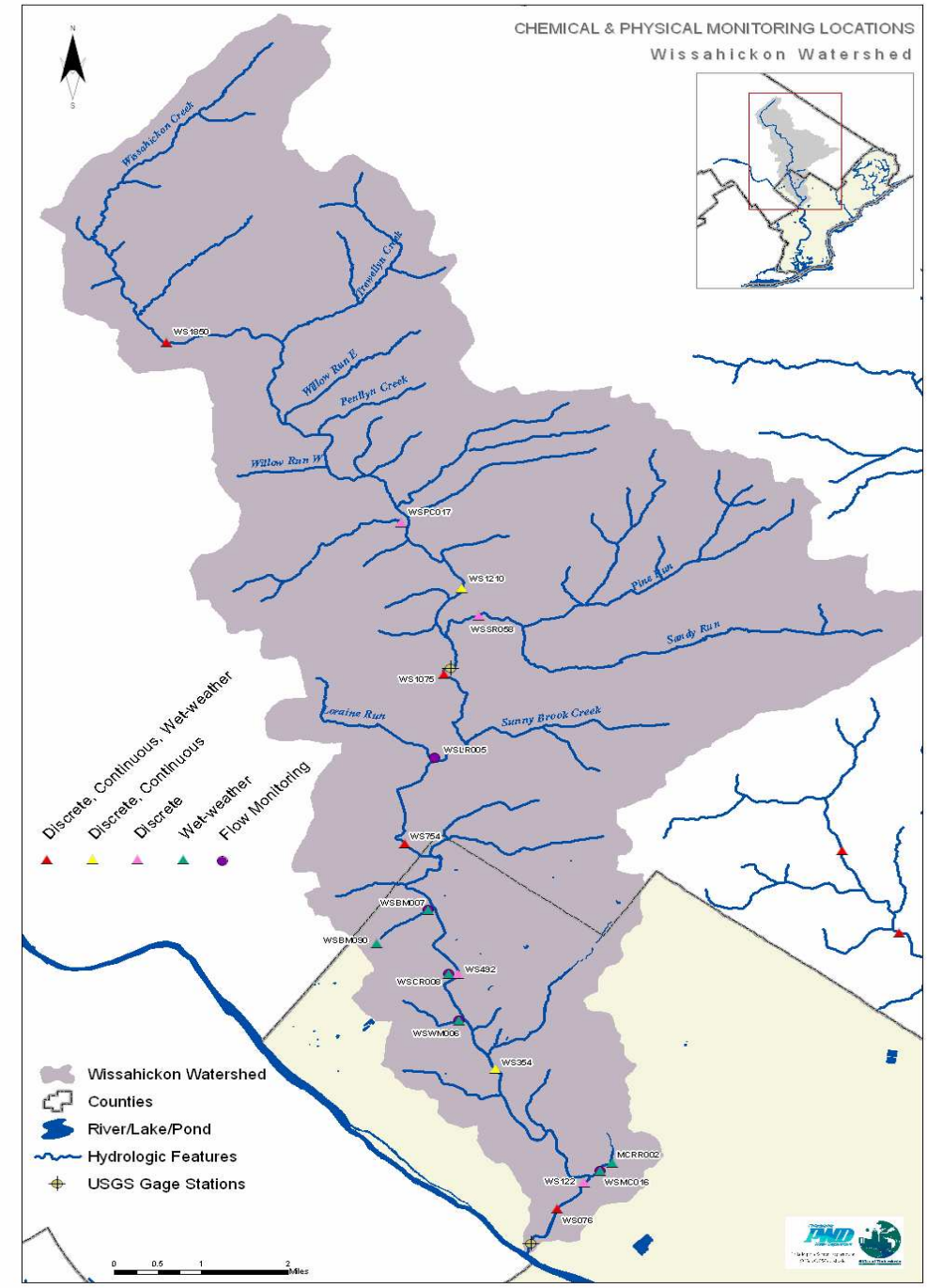


Figure 17 - Chemical monitoring locations in the Wissahickon watershed

Biological Assessment and Analyses

Sampling occurred at thirty-two (n=32) sites, during the period 2/24/05-3/17/05 **(Figure 18).** Samples are preserved in alcohol and will be analyzed over the winter months.

Fish Sampling

Sampling occurred at ten (n=10) sites during the period 6/1/05-6/17/05. Reference sites in French Creek watershed (n=3) were sampled 6/22/05-6/30/05.

Algae Sampling
Periphyton samples collected from four (n=4) sites 4/22/05. PWD has discussed sharing of chemical and algae data with researchers from PADEP and Penn State University conducting a large-scale periphyton study in the Wissahickon Creek basin.

Habitat Assessment
EPA methods were used to assess physical habitat at thirty-two (n=32) sites, concurrent with benthic macroinvertebrate sampling, during the period 2/24/05-3/17/05.

Habitat Suitability Index Modeling
Additional physical habitat data were collected at ten (n=10) sites concurrent with fish assessments, during the period 6/1/05-6/17/05. Reference sites in French Creek watershed (n=3) were assessed 6/22/05-6/30/05.

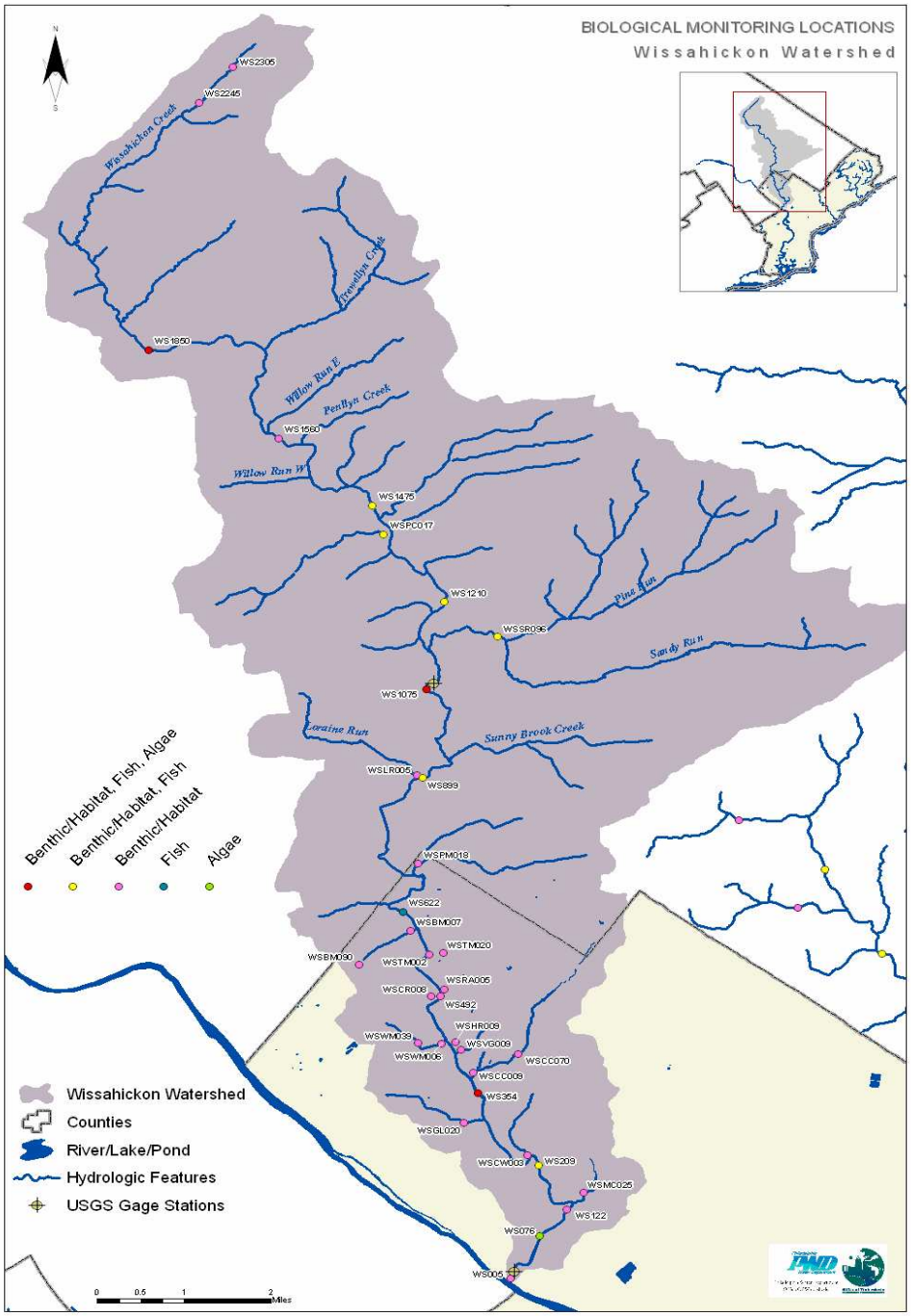


Figure 18 - Biological monitoring stations in the Wissahickon watershed

2.2.6 Modeling

Modeling Sediment Loads

Four tributaries have been selected for sediment monitoring and will be modeled using cross section data already collected for FGM studies and water level data being collected. Measured discharge, total sediment, and bank pin data will be used to calibrate hydrologic and hydraulic models. The model will be used to estimate the sediment load of each tributary as well as understand the relative importance of each component

of the sediment load (overland versus bank erosion). Once models of existing conditions are constructed and calibrated, the models can be used to evaluate proposed controls both in the watershed and in the stream itself. The hydrologic, hydraulic, sediment and water quality models are yet to be determined.

Lorraine Run will also be modeled in order to determine what effect different discharge scenarios will have on the water quality in Wissahickon Creek.

2.2.7 Development and Evaluation of Management Alternatives

Refer to section 2.2.7 of Section 3 – Darby-Cobbs Watershed

2.3 Public Involvement and Education

River Conservation Plan
NOT APPLICABLE

Watershed Tours
The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices.

Refer to section 1.7 – Pollution Prevention of Section 2 for additional public outreach in this watershed.

3.0 Annual CSO Statistics

NOT APPLICABLE

Section 7 – Poquessing Creek Watershed

1.0 CSO Capital Improvement Projects

NOT APPLICABLE

2.0 Watershed Management Planning

The following sections describe the progress that has been made in advancing the Poquessing Watershed Initiative. Detailed information on documenting the minutes of partnership meetings, reports produced, and other accomplishments are posted on the partnership web page at www.phillyriverinfo.org.

2.1 Preliminary Reconnaissance Survey

Most elements of the preliminary reconnaissance survey for the Poquessing Creek have been completed. Specifically the physical, chemical, and biologic assessment was completed in calendar year 2001 with a comprehensive report completed in 2001.

2.2 Watershed Work Planning & Assessment

The Philadelphia Water Department (PWD) has embarked on an ambitious program of watershed management for several creeks within the City limits. PWD anticipates developing a Poquessing Integrated Watershed Management Plan in the future. The watershed plans are designed as integrated watershed planning efforts to address the objectives of several programs, including CSO Long Term Planning, Pennsylvania Stormwater Management programs, potential or existing TMDLs, River Conservation Plans, and Phase II Stormwater permits. PWD's Office of Watersheds (OOW) has carried out an extensive sampling and monitoring program to characterize conditions in the Poquessing Creek Watershed.

2.2.1 Watershed Partnership

In 2004, the PWD, along with its partners, the Fairmount Park Commission and the Friends of Poquessing Creek, were awarded a state river conservation plan grant for the Poquessing Creek Watershed. In 2005, our RCP consultant, Borton-Lawson, began the data collection and public outreach components of the plan, including civic presentations, surveys, key person interviews, and have conducted a number of steering committee meetings. The first public meeting is planned for April 2006 and the first public event – a major clean up of the stream segment behind the Franklin Mills Mall, is planned for April 2006.

2.2.2 Define Preliminary Goals and Objectives

Refer to section 2.2.2 of Section 3 - Darby-Cobbs Watersheds

2.2.3 Data Analysis and Indicator Development

Refer to section 2.2.3 of Section 3 - Darby-Cobbs Watersheds

2.2.4 Development and Screening of Management Options

Refer to section 2.2.4 of Section 3 - Darby-Cobbs Watersheds

2.2.5 Monitoring and Field Data Collection

Chemical and Nutrient Sampling

Samples collected by the Philadelphia Water Department (2001) revealed low to moderate nutrient levels within the watershed, suggesting that nutrient enrichment may not be as serious a concern as in other watersheds in Southeastern Pennsylvania **(Figure 19).** Studies of other stream systems in Philadelphia by the Water Department and of nearby Chester county streams by the United States Geological Survey (USGS) showed greater concentrations of Phosphorus and Nitrogen species (i.e., Nitrate, Nitrite, Ammonia) than those encountered in the Poquessing-Byberry watershed (Reif 2000). The relative paucity of agriculture and point sources of nutrients (e.g., wastewater treatment plants) in the Poquessing-Byberry watershed probably explains its low nutrient concentrations. Potential point and non-point sources include fertilized yards, golf courses and commercial landscaping; animal waste; rain and atmospheric deposition; and sewage from faulty infrastructure.

A search for water quality data discovered scant recent historical (i.e., within the past 20 years) water quality data for the Poquessing-Byberry watershed, underscoring the need for continued monitoring efforts by PWD and other regulatory agencies. Since the USGS discontinued Water quality sampling at its 5 gauging stations in the watershed from 1970 to 1973, there has been no regular sampling of water quality in the Poquessing-Byberry watershed.

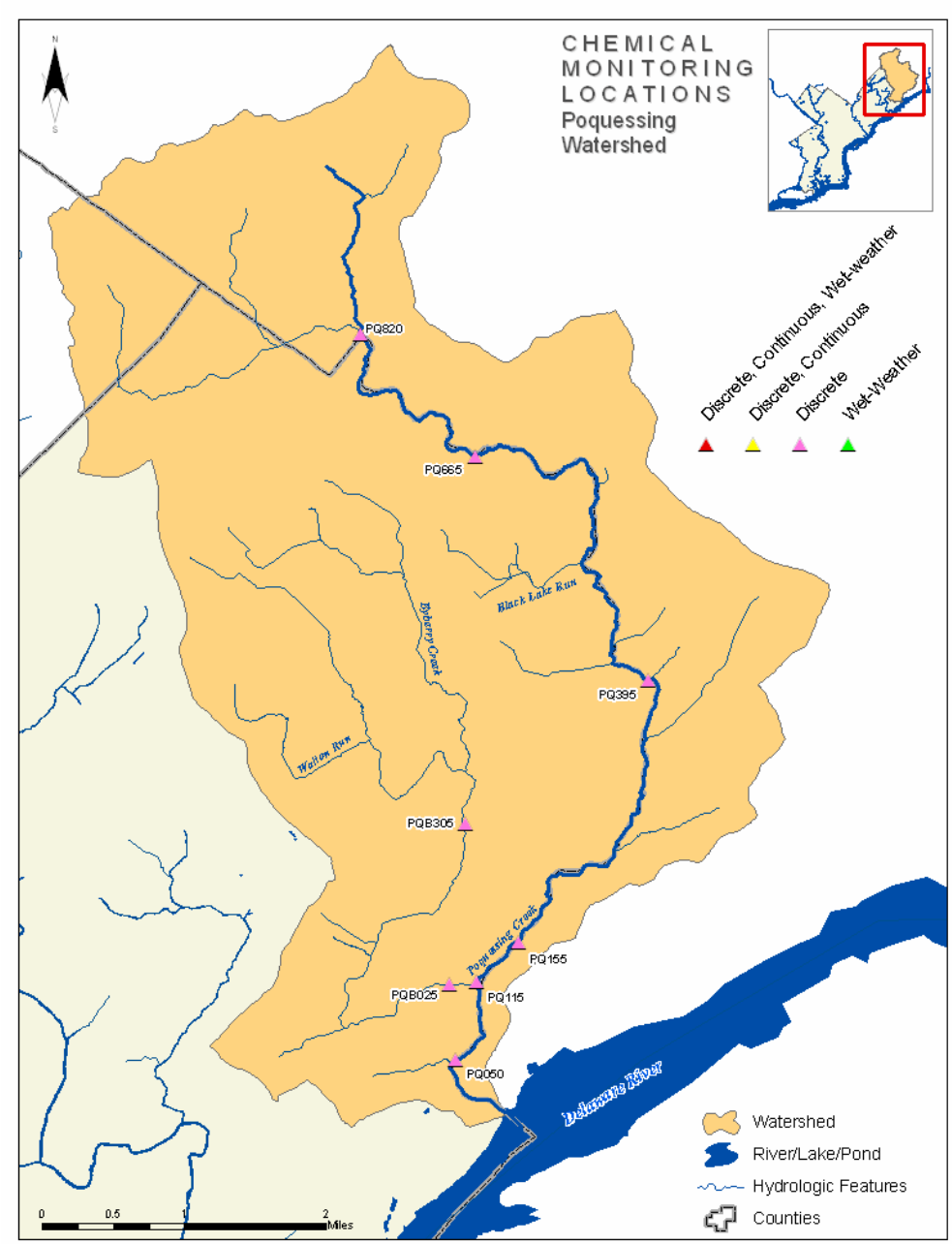


Figure 19 - Chemical monitoring locations in Poquessing-Byberry Watershed

Benthic Assessments

Benthological assessments conducted by the Philadelphia Water Department during December 11th through 18th, 2001, have identified biological impairments in the macroinvertebrate community at all assessment locations in the Poquessing-Byberry watershed, including Byberry Creek and the unnamed tributary to Poquessing Creek **(Figure 20)**. While community composition may vary slightly at each site, the pollution tolerance values and trophic designations indicate that the benthic assemblage in the Poquessing-Byberry watershed is skewed towards a more moderately tolerant generalist feeding community. Moreover, all sites showed elevated Hilsenhoff Biotic Index (HBI) scores along with poor representation of pollution sensitive mayfly, stonefly and caddisfly (EPT) taxa.

Moderately tolerant taxa (i.e., hydropsychid caddisflies and chironomid midges) were present throughout the watershed but the spatial distribution of their respective dominance clearly showed a shift from the dominance of chironomids in upstream reaches and tributaries of Poquessing Creek to dominance by hydropsychid caddisflies (i.e., genera Hydropsyche and Cheumatopsyche) in the lower portions of the watershed. Percent contributions of Chironomidae and Hydropsychidae ranged from 33.67% to 71.32% and from 31.37% to 66.67%, respectively.

This trophic shift from gatherer- collectors (i.e., chironomids) to filterer-collectors (i.e., hydropsychid caddisflies) appears to proceed in a downstream direction, perhaps in response to a change in food availability. Upstream sites may have greater amounts of algal periphyton when compared to downstream sites, which might be richer in fine particulate organic matter (FPOM)

Physical properties associated with available habitat appear to be limiting resources for benthic establishment or recolonization. Results show that a majority of assessment locations scored in the sub-optimal to poor ranges for both embeddedness and sediment deposition. Accumulation of sediment in the interstitial spaces of riffles has been shown to limit available habitat and possibly smother benthic invertebrate life stages (Cormier, 2000).

Ichthyofaunal Assessments

Ichthyofaunal assessments conducted by the Philadelphia Water Department during October 2001 revealed a total of 24 species of seven families. Spatial variation in fish communities was evident both longitudinally (i.e., upstream vs. downstream) and among streams (i.e., Poquessing Creek and Byberry Creek). Most notably was the upstream decrease in potential predators in both streams. As previously stated, American eel (*A. rostrata*) constituted a majority of the predator numbers and biomass at all locations. Potential predatory sunfish (e.g., *L. auritus* > 75 mm) and bass (e.g., *M. dolomieui and M. salmodies* > 100m *)* either decreased in an upstream manner or were poorly represented throughout the drainage. The absence of native predators, such as rock bass (*A. rupestris*) and paucity of catfish species (e.g., *A. natalis* and *A. nebulosus*) could potentially be an indicator to the abundance of minnow species in the drainage (i.e., top-down effect). Although longitudinal decrease in piscivores in the Poquessing-Byberry watershed is apparent, there are several possible reasons for differences in upstream (i.e., headwater) communities relative to downstream sites. One possible reason is the decrease in habitat heterogeneity along the stream gradient. Environmental variability in upstream sites, such as the abundance of well-defined pool systems and variation in stream depth and temperature, could possibly account for the differences in predator biomass (Paller, 1994). Moreover, physical obstructions, such as check dams or low flow across riffle systems during summer months, may also impede upstream migration of larger predatory species.

Habitat Assessments

Physical habitat assessments conducted by PWD scientists suggest that physical parameters are likely the chief source of impairment within benthic macroinvertebrate and ichthyofaunal communities in the Poquessing-Byberry watershed. The majority of assessed sites were categorized as "partially supporting" or "non supporting" when compared to the reference stream. Moreover, the Pennsylvania Department of Environmental Protection has listed 22.5 assessed river miles within the watershed as "Impaired", due to the effects of urban runoff and storm sewers (PADEP 2002).

Many benthic invertebrate taxa rely heavily on riffle systems to carry out a majority of the aquatic portion of their life cycle. Sediment deposition and scouring were evident in many sites within the Poquessing-Byberry watershed; it is likely that these disturbances were sufficiently severe to have hindered reproduction and food acquisition for many species of macroinvertebrates. Certainly, those species not adapted to extreme hydrologic fluctuations have been extirpated from this area.

The fish assemblage present in the Poquessing-Byberry watershed appears to have suffered a similar fate. Species that are well adapted to hydrologic extremes and pollution currently dominate the assessed areas.

Like the benthic invertebrate community, fish communities rely heavily on specific habitats within a stream reach. Many species frequent shallow riffles systems for food acquisition while other species rely on large pools for foraging and reproduction. Stream runs with vegetated areas are also important habitat components for many species of fish.

Extremes in the hydrologic profile of The Poquessing-Byberry watershed may contribute to the low species diversity observed in the fish community. Many species rely on vegetation or rocks to deposit their eggs, while other species build nests that are closely guarded by the parent or parents. Extreme flow conditions contribute to deposition of sediment in pool systems and scouring of regions where offspring have been deposited, thus decreasing recruitment of fish populations and minimizing habitat utilization in certain species.

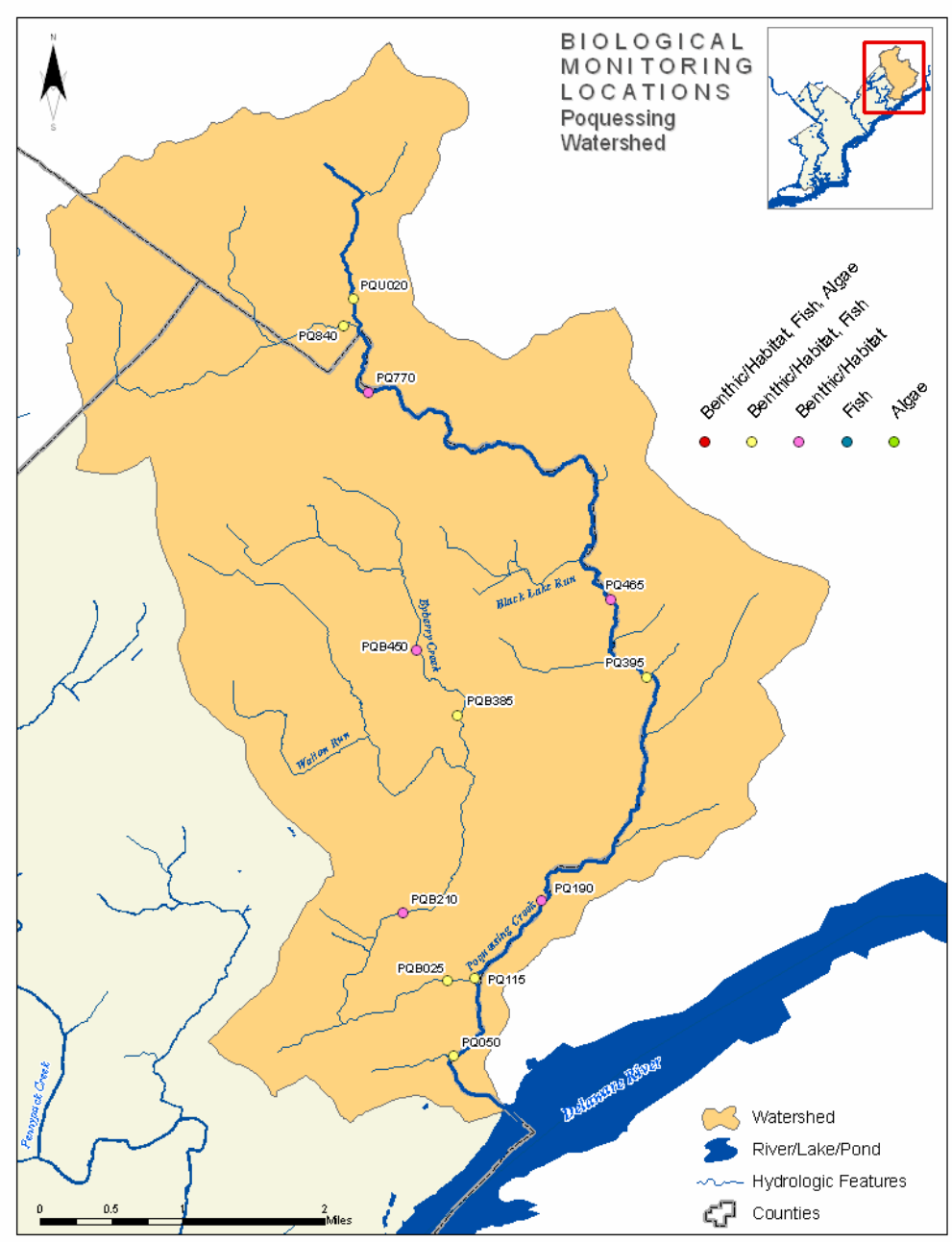


Figure 20 - Biological and physical assessment sites in Poquessing-Byberry Watershed

2.2.6 Modeling

The PWD envisions the development of a SWMM model for the watershed that can simulate the watershed response to storms for the storm sewers. The model will be used to assess current pollutant loading from stormwater water. The model will also be used to test a wide array of stormwater BMPs, including swales, green roofs, infiltration basins, porous pavement, and similar techniques. By simulating BMPs at various levels of implementation, graphs of urban BMP effectiveness in controlling stormwater will be developed and

used to make watershed-specific recommendations on the needed degree of implementation and the selection of the most cost-effective approaches to meeting water quality and quantity objectives.

2.2.7 Development and Evaluation of Management Alternatives

Refer to section 2.2.7 of Section 3 – Darby-Cobbs Watershed

2.3 Public Involvement and Education

River Conservation Plan

The Poquessing Creek River Conservation Plan (RCP) will contain important background information on the Poquessing watershed. The plan will have a variety of recommended strategies to improve, protect and manage the Poquessing Creek, its' tributaries and the surrounding communities in the watershed. The Poquessing Creek RCP will be a blueprint for conservation action for the watershed partners.

Watershed Tours

The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices.

Refer to section 1.7 – Pollution Prevention of Section 2 for additional public outreach in this watershed.

3.0 Annual CSO Statistics

NOT APPLICABLE

Section 8 – Delaware River Watershed

1.0 CSO Capital Improvement Projects

1.1 Somerset Interceptor Cleaning

Start: 11/1/1997 End: 1/21/1998 Status: Complete

Reference Long Term CSO Control Plan p. 2-10.

Description: The Somerset Interceptor conveys wastewater and combined flows from Somerset Street East of Richmond Street north to the Northeast Water Pollution Control Plant (NEWPCP) for treatment. Historically, this interceptor has been susceptible to solids accumulation over time. Removal of grit, sediment and debris from the Somerset Interceptor enables the hydraulic capacity of the interceptor to be utilized fully. Maximum utilization of the interceptor allows for increased CSO capture for Somerset Interceptor regulators.

Environmental Benefits: It is estimated that an average annual reduction in CSO volume of 210 MG/year, from 2290 to 2080 MG/year, will be achieved as a result of the completion of this project. In addition, this represents an estimated 10% reduction in the average annual volume of CSO from this interceptor system.

Status: This project was completed on 1/21/1998 by Mobile Dredging and Pumping Co. Inc., of Chester, PA at a cost of $273,867. The cleaning of this 8,800 lineal foot sewer extending from Richmond and Somerset Streets to the NEWPCP at Castor and Balfour Streets, was completed in ninety-four calendar days. The Somerset Interceptor comprises of sewer sections with sizes varying from 48 to 66 inches in diameter. An estimated 460 tons of grit, sediment and debris were removed from the Somerset Interceptor and transported by the contractor to the Southwest Water Pollution Control Plant (SWWPCP) for combination with existing grit disposal methods. Prior to disposal, contractor trucks were weighed at the Biosolids Recycling Center (BRC). The disposal was handled under the BRC Grit / Screenings disposal contract with Waste Management, Inc. The disposal costs were approximately $16,000 ($35.00 per ton).

1.2 Inflow Reduction

Start: End: Status: Complete

An analysis of tidal inflows at CSO regulators was performed to quantify the frequency of river inflows across regulator emergency overflow weirs due to tidal-influenced river levels. Emergency overflow weirs are designed at CSO regulators to prevent flooding of upstream trunk sewer systems during tide gate malfunction. However, during extreme high tides, flow reversals may occur across these weirs resulting in an inflow of river water to the CSO regulator chamber and combined sewer system. To free up capacity taken up by this flow during high tide periods, the PWD has installed tide gates at CSO regulators with low-lying emergency overflow weirs. A list of regulators for installation of overflow weir tide gates was developed through review of PWD's CSO regulator level monitoring data and review of PWD's CSO regulator databases.

Model analyses and review of PWD CSO level monitoring regulator data were performed to estimate the reduction in inflow frequency due to installation of overflow weir gates. Model analyses were performed to quantify the expected decrease in inflow volumes and frequencies in the SEDD for a one-year period, 1998. Table 1 lists the expected decreases in tidal inflow frequencies and volumes in the SEDD, due to the installation of overflow weir tide gates.

Table 1-1 Tidal Inflow Reductions in the SEDD Due to Installation of Overflow Weir Gates

CSO regulator	Reduced inflow frequency	Reduced inflow volume (MG)
D_39	2	0.03
D_44	5	0.38
D_45	103	23.34
D_47	11	1.77
D_51	1	0.36
D_62	1	0.16
D_63	6	1.36
D_64	1	0.13
D_66	6	1.22
D_73	39	24.12

2.0 Watershed Management Planning

The following sections describe the progress that has been made in advancing the Delaware Watershed Initiative. Detailed information on documenting the minutes of partnership meetings, reports produced, and other accomplishments are posted on the partnership web page at www.phillyriverinfo.org.

PWD continues to support the analysis and management of CSO discharges to the Delaware Estuary by participating in committee meetings, sampling, and contributing to the development of source track down and various monitoring programs. Specifically during 2003, PWD has actively supported the PCB TMDL for the Delaware.

Past reports from the DRBC regarding general water quality monitoring and specific monitoring for wet weather impacts suggest that fecal coliform standards are being met in the main stem estuary in the Philadelphia region most of the time. [1] DRBC indicated that further work on Bacteria Total Maximum Daily loads that might be required would occur in 2005. Past studies have shown dissolved oxygen concentrations in the Estuary are largely unaffected by CSO contributions. [2] As a result, monitoring and planning priorities continue to focus on the tributaries.

[1] Santoro, E., Draft Delaware Estuary Monitoring Report, November 1999.
[2] Hydroqual, Inc., Task 3.0 Evaluation of Wet Weather Impacts, 1999

3.0 Annual CSO Statistics

DELAWARE RIVER 2005 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency				CSO Volume (MG)			CSO Capture (%)			CSO Duration (hrs)		
			Range per subsystem			Avg per subsystem	Range per subsystem			Range per subsystem			Range per subsystem		
Upper Delaware Low Level	12	12	4	-	54	27	851	-	903	58	-	62	7	-	213
Somerset	8	9	22	-	58	41	3586	-	3545	47	-	50	45	-	292
Lower Delaware Low Level	27	27	4	-	56	34	2533	-	2658	59	-	63	7	-	301
Oregon	5	6	1	-	52	36	1179	-	1197	38	-	41	2	-	191
Lower Frankford Low Level	5	6	20	-	54	36	1034	-	1082	45	-	49	40	-	224

Section 9 – Schuylkill River

1.0 CSO Capital Improvement Projects

1.1 RTC – Main Relief Sewer

Start: 8/1/1999 End: 6/15/2005 Status: Complete

Reference Long Term CSO Control Plan p. 2-13 – 2-14.

Description: The Main Relief Sewer provides flood relief to combined sewer areas in all three of PWD's drainage districts (Northeast, Southeast and Southwest). The Main Relief Sewer discharges to the Schuylkill River at Fairmount Park, a highly visible recreational area. Currently CSO is released into the river at the Main Relief Sewer outfalls during periods of moderate or greater rainfall. There exists within the single large (13.5' by 13.5' box) sewer above these outfalls a potential storage volume of approximately 4.0 million gallons (MG), and during all but the largest rainfalls most or all of this volume is available to store the overflow that otherwise discharges to the river. However, in order to use this 4.0 MG of storage, an inflatable dam is required in the box sewer just above the Main Relief Sewer outfalls to the Schuylkill River. This dam will reduce CSO discharges to the Schuylkill River by utilizing the relief sewer's 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 inflatable dam maintains the stored flow in the relief sewer and a new connecting sewer drains the stored flow to an existing, nearby interceptor. The projected cost for this project is $650,000.

Environmental Benefits: This project will reduce the discharge of combined sewer overflow (CSO) into the Schuylkill River. An average annual reduction in CSO volume of 50 MG/year is expected at the Main Relief Sewer outfalls through use of the available in-system storage volume. This represents a reduction of approximately 70% in the average annual volume of CSO and a significant reduction in the associated pollutants (bacteria and organic matter from untreated wastes, litter and other solid materials in both wastewater and stormwater runoff, etc.) discharged into the Schuylkill River at this location, within Fairmount Park, at the historic Fairmount Water Works. Since this project modifies an existing structure (the Main Relief Sewer) rather than constructing a new one, it provides control very cost-effectively (unit cost for this storage is $0.10/gal versus roughly $6/gal for siting, designing, and constructing a new storage structure).

Status: In November of 2003, the project was advertised and bid. The bid was awarded in mid-December to Ross Arrco for an amount of $1,029,919. All submittals were approved and construction began in June, 2004 and was completed in mid-summer of 2005. The dam is operational but will not be fully automated until the Dauphin Street job, which is using a portion of the Main Relief Sewer as a bypass during construction, is completed. This is expected to be complete in the spring of 2006.

1.2 Elimination / Consolidation of Outfalls - Main & Shurs

Start: 9/4/1998 End: Status: In-Progress

Reference Long Term CSO Control Plan p. 2-15.

Description: The relief overflow at R_20 (Main Street and Shurs Lane) was constructed due to chronic flooding during wet weather. High flow in the Upper Schuylkill East Side (USES) Interceptor, caused by infiltration and inflow from separate sanitary areas, reduces the available capacity at R_20. Currently, overflows occur during periods of relative high rainfall. Preliminary estimates indicate that a 2.0 MG of storage would be required under current conditions to eliminate R_20. However, given the sensitivity of the

project design to inflow and infiltration (I/I), further evaluation of I/I (see *Targeted Infiltration and Inflow Studies*) and available sewer capacity is required in order to refine the indicated facility size. The estimated cost (prior to design and land acquisition) for this project is $12,000,000.

Environmental Benefits: An average annual reduction in CSO volume of 10 MG is achieved by eliminating the R_20 overflow.

Status: During 2005, the Engineering firm of Hazen & Sawyer continued and finalized the extensive engineering modeling necessary to finalize tank size and siting.. Meetings are still taking place with the business community, the Recreation Department, the Fairmount Park Commission, and neighborhood groups to address concerns raised over parking and traffic congestion in the area sited for the tank. The PWD is also negotiating the extent of the Manayunk Development Corps Conceptual Plan components to be incorporated in the final design. The estimated date for bidding is May 2006 and the new Engineers estimate is $18,000,000.

1.3 Elimination / Consolidation of Outfalls - 32nd & Thompson

Start: 4/1/1998 End: 9/15/2003 Status: Complete

Reference Long Term CSO Control Plan p. 2-15.

Description: Structure R_19 (32nd and Thompson) is a storm relief chamber located on a trunk sewer chamber that flows to structure R_12 (Pennsylvania Ave. & Fairmount Ave). Due to flat conduit slopes and resulting low flow velocities, the trunk has experienced sediment and grit accumulation across 75% to 90% of its cross-section between R_19 and R_12. Flow Control Unit has operated a temporary monitor in the overflow conduit at R_19 for approximately one year. In this time, there have been six recorded wet-weather overflows. Inspections indicated this sewer is difficult to clean and the historical records indicated there might be structural deficiencies. Therefore this sewer will be reconstructed at a steeper grade.

Once the sewer is reconstructed, it will be monitored. Model runs currently indicate that a reconstructed sewer will have sufficient capacity to eliminate all overflows from this site. Grit accumulation will be monitored at this location and cleaning will be scheduled as needed. Subsequently R_19 will be bulkhead and removed from service. The estimated cost for this project is $1,500,000.

Environmental benefits: This project will eliminate one of the City's CSO overflows, resulting in 0.5 MG reduction of overflow volume on an average annual basis.

Status: Construction at this site commenced in the summer of 2003 and was completed in October of 2003.

1.4 Elimination / Consolidation of Outfalls - Stokely & Roberts (R_ 22)

1.4.1 Stokely & Roberts (R_ 22) - Dobson's Run Phase I

Start: 5/1/1996 End: 10/4/1998 Status: Complete

Reference Long Term CSO Control Plan p. 2-14 – 2-15.

Description: Temporary dams were installed in the Dobson's run storm sewer. Flow was diverted to the Wissahickon High Level interceptor at Stokely St. & Roberts Ave. through hydraulic control point R_22, and to the Upper Schuylkill East Side interceptor at South Ferry Road and Kelly Drive through CSO S_01T. The LTCP includes a $6,500,000 program of sewer construction in the upper reaches that will allow R_22 to be

removed from service. Two additional phases of the project will eliminate branch-sewer contributions of sanitary sewage from S_01T at an estimated cost of $18,700,000.

Environmental Benefits: This project will eliminate two of the City's intercepting chambers and will completely eliminate CSO overflows, resulting in a 173-MG reduction of overflow volume on an average annual basis.

Status: This project entails the reconstruction of the storm and sanitary sewer from Wissahickon Ave. to Roberts Ave. and elimination of the overflow chamber located at Stokely & Roberts (R_22). The contract was awarded to A.P. Construction and construction commenced on 7/18/1996. The construction, including the elimination of the R_22 chamber, was completed on 10/4/1998 at a total cost of $7,040,000. (The estimated construction cost was $ 5.8 million).

1.4.2 Kelly Drive (S_01T) - Dobson's Run Phase II

Start: 6/1/1997 End: Status: In-Progress

Reference Long Term CSO Control Plan p. 2-14 – 2-15.

Phase II of the Dobson's Run Reconstruction consists of the sewer reach from Henry Ave. to Kelly Drive and eliminates branch sewer contributions of sanitary sewage from reaching temporary CSO S_01T. In order to take advantage of economies of scale, design work for Phase II and III of Dobson's Run has been combined into one project because both phases involve tunneling.

Bid documents were completed and forwarded to the PWD's Project Control Unit in November of 2005. The project will be the end of January 2006. The estimated cost of this project is approximately 25 million dollars.

1.4.3 Kelly Drive (S_01T) - Dobson's Run Phase III

Start: 7/1/2001 End: Status: In-Progress

Reference Long Term CSO Control Plan p. 2-14 – 2-15.

Phase III will eliminate all CSO discharge from occurring at S_01T and has been combined with Phase II for contract development and bid purposes. See Above.

2.0 Watershed Management Planning

The following sections describe the progress that has been made in advancing the Schuylkill Watershed Initiative. Detailed information on documenting the minutes of partnership meetings, reports produced, and other accomplishments are posted on the partnership web page at www.phillyriverinfo.org.

2.1 Preliminary Reconnaissance Survey

A comprehensive, watershed-based, Source Water Assessment was complete by PWD in conjunction with PADEP and other watershed stakeholders for the Schuylkill River Basin above Fairmount Dam. The information generated satisfies the elements of the Step 1 - Preliminary Reconnaissance Survey outline. Even though Step 2 Watershed Planning and Assessment is not specifically called for in the CSO long term control plan, the integrated programs philosophy allowed for progress to be made towards a comprehensive

watershed plan through the Source Water Assessment program efforts. The following elements of the Step 2 process were included in the Source Water Assessment for the Schuylkill River:

- Monitoring, sampling and bioassessment
- QA/QC and data evaluation
- Watershed modeling
- Problem definition and water quality goal setting
- Technology evaluation
- Public Involvement

The Source Water Assessment Program reports, information, and updates can be accessed at http://www.schuylkillswa.org/

Information pertaining the Schuylkill Action Network (SAN) and Rivercast can be obtained from www.phillyriverinfo.org

2.2 Watershed Work Planning & Assessment

Protocol Development Support - Biologic Assessments in Tidal Waters
During spring and summer months of calendar year 2003, PWD scientists continued biological assessments along tidal and non-tidal portions of the Schuylkill River. Studies were focused on assessing the biotic integrity of migratory and resident fish species and to provide qualitative information on the efficiency of the existing fish passage structure located at Fairmount Dam. Using a boat electrofisher, biologists collected fish species during 20-minute interval passes (4 passes per assessment). Lengths, weights, presence of DELTA (i.e., deformities, lesions, tumors and anomalies), and catch-per-unit-effort (CPUE) were recorded. A total of 20 days were recorded over the course of the two seasons. Results from the continued bioassessment will serve as a baseline for future monitoring projects along the tidal and non-tidal portions of the Schuylkill and other waterways.

2.2.5 Monitoring and Field Data Collection

From 3/1/05 to present, PWD staff biologists have been conducting various water quality monitoring activities in the tidal and non-tidal portions of the Schuylkill River to characterize water quality during periods of dry and wet weather. The following is an abbreviated activity description of work that is currently being conducting in this locality.

Wet Weather Water Sampling
During the reporting period, staff biologists from the Philadelphia Water Department collected discrete water quality samples at four monitoring stations in the lower Schuylkill River, three stations located in the tidal reach and one station positioned in the non-tidal portion of the river **(Figure 21).**

Chemical samples were collected prior to a designated storm event (i.e., 0.5" inches of rain with 72 hours of dry weather beforehand) using a horizontal sampler. Subsequent samples were then collected 1 day, 2 days and 3 days following the rain event and immediately transported to the department's laboratory for analyses. Chemical properties measured from the collection samples are displayed in Table 1. To date, two baseline samples and two completed wet weather events have been captured, with plans to continue monitoring through 2005-2006. Overall objectives of this study are to determine the impact and variation of runoff producing events in the tidal portion of the Schuylkill Drainage with respect to the upstream (non-tidal) and to ascertain any residual or continuing impacts from the recent 2005 oil spill in the Delaware River.

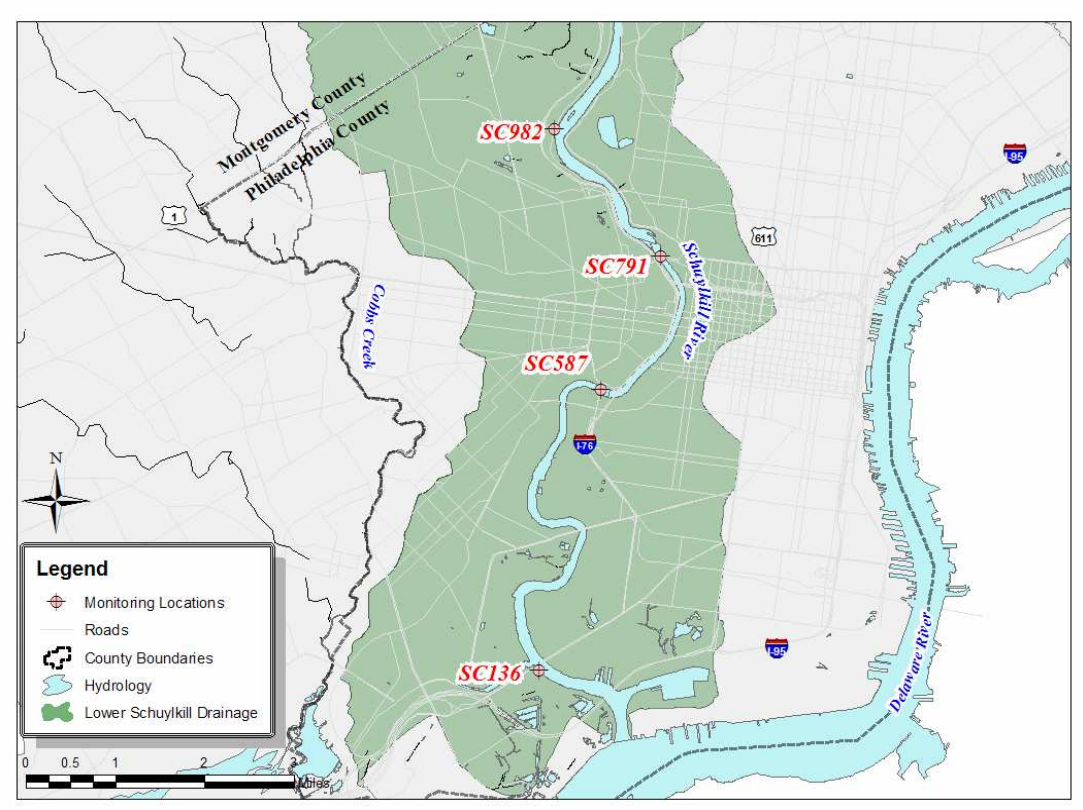


Figure 21 - Wet weather monitoring stations in the lower Schuylkill River

Chemical parameters monitored in tidal and non-tidal portions of the Schuylkill River.

Categories	Parameters
Microbial	Fecal Coliform; *E. coli*
Nutrients	NO3, NO2, OPO4, TKN, NH3, TP
Total Metals	Cu, Zn, Pb, Cr, Cd, Al, Ca, Mg (Hardness)
Dissolved Metals	Cu, Zn, Cr, Cd
Hydrocarbons/VOCs	BTEX - BLS; EPA Method 529
	Oil & Grease/TPH; EPA Method 413.2/418
Field Measurements	pH, conductivity, DO, temperature

Continuous Water Quality Monitoring

In addition to discrete chemical monitoring, PWD staff biologists deployed automated water quality monitors at two locations in the tidal Schuylkill River **(Figure 22).** Self-contained, data-logging continuous water quality monitoring Sondes (YSI Inc. Models 6600, 600XLM) were installed to measure various physiochemical properties and to identify spatial (i.e., upstream versus downstream) and temporal (i.e., seasonal) changes in the tidal reach during wet and dry weather. To date, a total 1440 hours of data comprising four chemical attributes (i.e., dissolved oxygen, pH, conductivity and temperature) have been recorded. Operation and maintenance of these two stations through 2006 have already been planned.

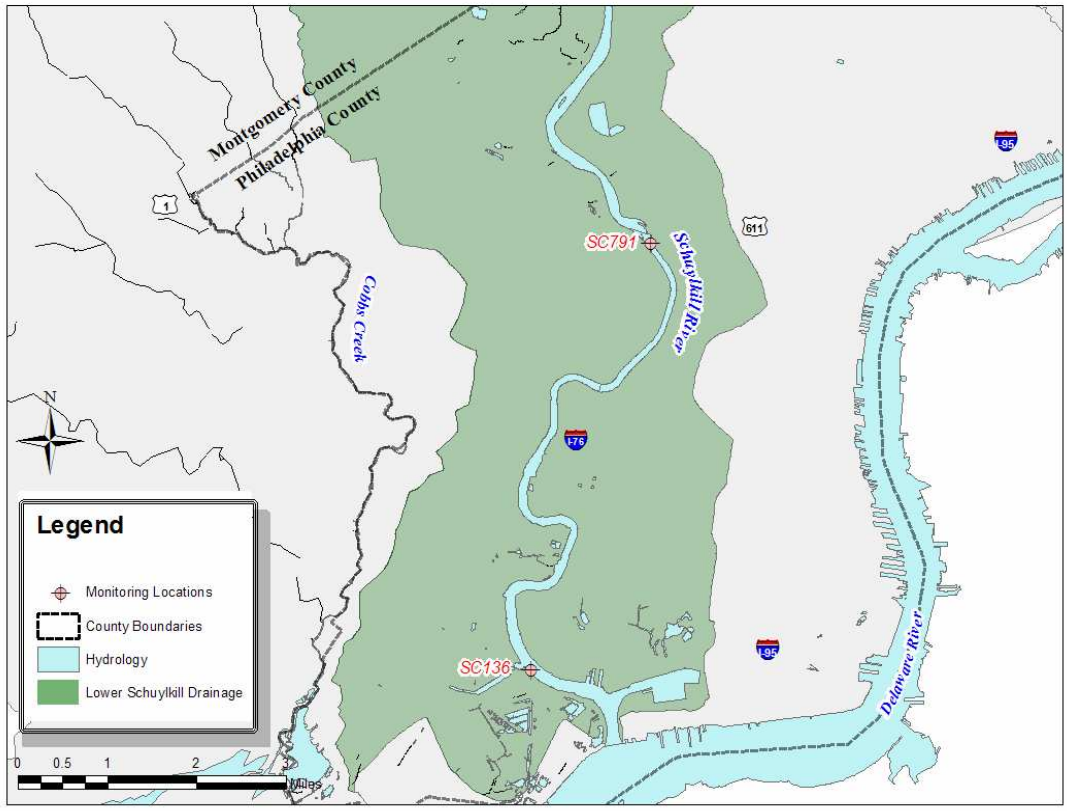


Figure 22 - Continuous water quality monitoring stations in the tidal Schuylkill River

Biological Monitoring

During 2004-2005, PWD scientists performed multiple electrofishing surveys on the Schuylkill River from Flatrock Dam downstream to the confluence with the Delaware River **(Figure 23).** The overall objectives of this program are to assess the relative health of the resident and migratory fish assemblage in the lower Schuylkill River and to relate the utilization of the Fairmount fish ladder by migratory fish species with their presence in the river. During the 2004 sampling season, a total of 3028 fish, representing 31 different species, were identified and assessed for individual health. Data from the 2005 monitoring season is currently being analyzed and will be available in the next permit cycle. In addition, under water video survey from the Fairmount fish ladder was used to determine relative abundance of migratory species. During the three month monitoring season, a total of 6438 fish, representing 26 species, were identified in 2004. Data from the 2005 monitoring season is currently being analyzed.

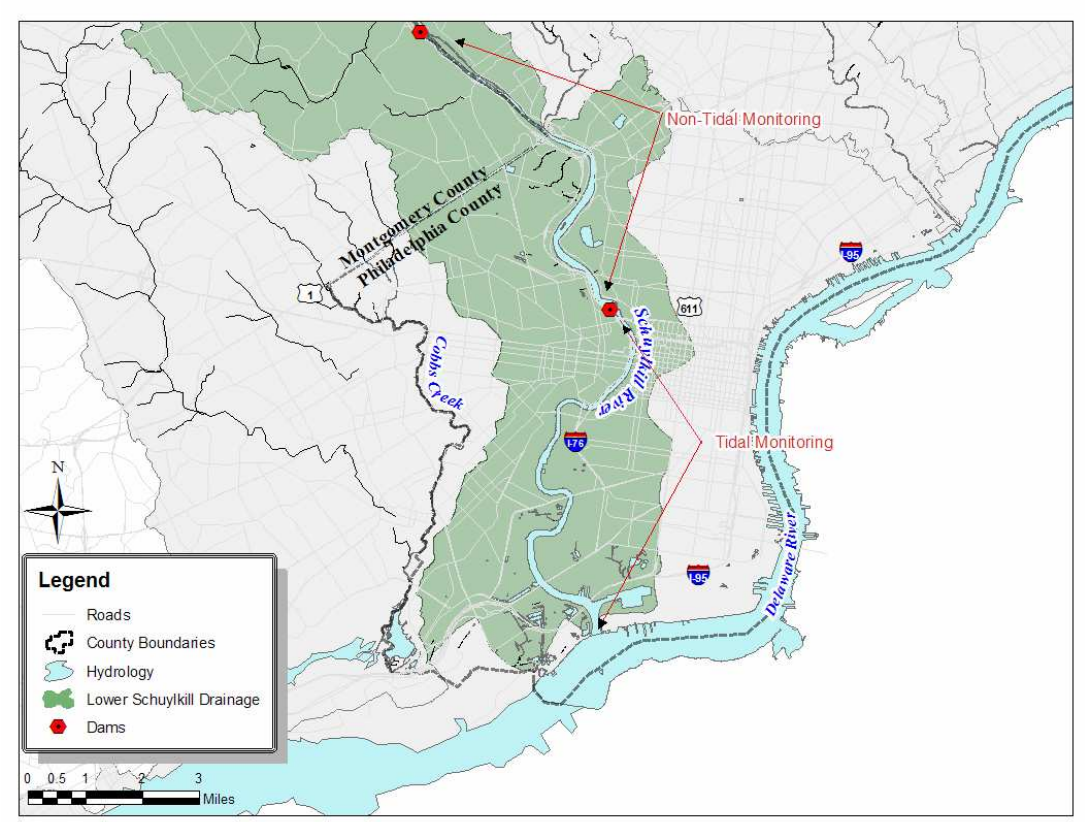


Figure 23 - Tidal and non-tidal fish monitoring locations in the lower Schuylkill River

2.3 Public Involvement and Education

Watershed Tours:

The City continues to conduct watershed tours in Philadelphia's nine (9) watersheds (Tacony, Frankford, Poquessing, Pennypack, Wissahickon, Cobbs, Darby, Schuylkill, and Delaware) to further enhance the public's understanding and appreciation of watershed issues. Tour guides describe the watershed concept, point out natural and manmade stormwater features and infrastructure, anthropogenic impacts on receiving water quality, benthic and ichthyfaunal assessments, and watershed protection practices.

Refer to section 1.7 – Pollution Prevention of Section 2 for additional public outreach in this watershed.

3.0 Annual CSO Statistics

SCHUYLKILL RIVER 2005 CSO Statistics

Interceptor	# of point sources	# of structures	Frequency					CSO Volume (MG)			CSO Capture (%)			CSO Duration (hrs)		
			Range per subsystem			Avg per subsystem		Range per subsystem			Range per subsystem			Range per subsystem		
Central Schuylkill East Side	20	26	1	-	75	29		1136	-	1192	58	-	61	2	-	393
Central Schuylkill West Side	10	10	1	-	57	37		599	-	624	49	-	53	1	-	309
Lower Schuylkill East Side	7	9	4	-	56	38		695	-	724	53	-	57	7	-	285
Lower Schuylkill West Side	4	4	5	-	57	42		1095	-	1116	20	-	23	10	-	226
Southwest Main Gravity	2	2	4	-	55	30		1810	-	1862	63	-	67	7	-	236

Section 10 - Watershed Information Center

During FY 2005, the Philadelphia Water Department (PWD) decided to further develop the existing Watershed Technology Center from separate partnership-based web pages into a fully integrated website. A conceptual plan was developed and the new "Watershed Information Center" was launched in July 2005. The Center is a regional resource of Southeastern Pennsylvania watershed-related information that centrally locates technical, management, and administrative tools and capabilities to support those involved in watershed planning. The Watershed Information Center is located at www.PhillyRiverInfo.org and www.SoutheastPaRiverInfo.org. Information on the site is organized by watershed and by the Philadelphia Water Department program that generated the information. PWD is still developing and adding content to the website. The Department is also refining the homepage to include more interactive capabilities, a search function, and discussion boards.

Appendix A – Flow Control CSO Maintenance Summaries

PWD FLOW CONTROL UNIT

COMBINED SEWER OVERFLOW MAINTENANCE

CALENDAR YEAR 2005

PART 1 | **PHILADELPHIA WATER DEPARTMENT** | **Section 1**

DRY WEATHER STATUS | **WASTE AND STORM WATER COLLECTION**

REPORT | **FLOW CONTROL UNIT** | **June 2005**

COLLECTOR	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	15	17	22	7	11	19	18	15	15	10	12	10	171
DISCHARGES	0	2	0	0	0	0	0	0	0	0	0	0	2
BLOCKS CLEARED	2	3	4	1	2	1	0	0	2	0	3	1	19
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	25	27	40	18	42	44	34	30	30	12	25	29	356
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	3	2	7	1	6	6	3	8	7	1	7	5	56
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	21	20	13	13	25	18	15	12	24	18	13	18	210
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	6	2	1	1	2	2	2	0	2	7	1	2	28
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	34	39	23	25	36	22	25	16	29	22	21	30	322
DISCHARGES	0	1	1	1	0	0	0	0	0	0	0	0	3
BLOCKS CLEARED	4	7	4	1	1	2	3	0	1	2	3	3	31
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	65	91	40	33	48	61	56	34	39	59	43	58	627
DISCHARGES	3	2	0	0	0	0	0	0	0	1	0	0	6
BLOCKS CLEARED	7	9	2	3	4	3	3	3	3	6	6	5	54
SOMERSET - 9 UNITS													
INSPECTIONS	59	61	32	16	22	37	43	34	37	24	38	20	423
DISCHARGES	0	0	1	0	0	0	0	0	0	0	0	0	1
BLOCKS CLEARED	9	8	8	3	0	1	1	0	1	0	1	0	32
LOWER DELAWARE LOW LEVEL - 33 UNITS													
INSPECTIONS	133	129	109	116	135	171	117	97	130	152	123	98	1510
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	1	1
BLOCKS CLEARED	7	5	4	17	7	11	4	3	6	6	5	9	84
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	102	140	109	76	121	95	120	54	105	75	85	96	1178
DISCHARGES	0	1	0	0	0	0	0	0	0	0	1	0	2
BLOCKS CLEARED	3	10	2	1	3	3	4	7	4	1	7	2	47
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	33	45	25	35	40	44	37	16	42	31	33	30	411
DISCHARGES	0	1	0	1	1	0	0	0	0	0	0	0	3
BLOCKS CLEARED	3	9	4	7	4	11	1	1	3	6	5	6	60
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	37	45	37	40	38	45	40	38	45	48	39	29	481
DISCHARGES	0	0	0	2	0	0	0	2	0	1	0	1	6
BLOCKS CLEARED	0	3	0	5	0	2	0	3	1	2	3	2	21
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	62	70	57	55	51	66	41	38	61	58	45	39	643
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	8	10	7	6	6	10	5	1	3	2	3	4	65
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	32	30	32	20	32	29	31	14	34	27	22	28	331
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	4	3	9	7	8	8	6	2	3	3	1	8	62
COBBS CREEK HIGH LEVEL - 23 UNITS													
INSPECTIONS	80	143	94	78	107	84	80	52	108	75	99	110	1110
DISCHARGES	0	3	1	0	0	0	1	1	1	0	0	0	7
BLOCKS CLEARED	8	5	14	1	1	1	1	1	1	2	1	0	36
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	39	41	62	40	39	58	27	26	47	27	52	46	504
DISCHARGES	0	0	0	0	0	0	0	0	0	0	1	1	2
BLOCKS CLEARED	3	1	9	1	1	0	0	0	0	0	1	1	17
RELIEF SEWERS - 26 UNITS													
INSPECTIONS	40	46	35	55	53	70	32	46	71	49	53	54	604
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	0	0	0	0	0	1	0	0	0	0	0	0	1
TOTALS / MONTH for 201 REGULATOR UNITS													Totals
TOTAL INSPECTIONS	777	944	730	627	800	863	716	522	817	687	703	695	8881
TOTAL DISCHARGES	3	10	3	4	1	0	1	3	1	2	2	3	33
TOTAL BLOCKS CLEARED	67	77	75	55	45	62	33	29	37	38	47	48	613
AVER. # of INSP. / BC	12	12	10	11	18	14	22	18	22	18	15	14	15
DISC / 100 INSPECTIONS	0.4	1.1	0.4	0.6	0.1	0.0	0.1	0.6	0.1	0.3	0.3	0.4	0.4

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK 5 NEWPC UNITS															
P01	3	3	3	0	2	4	4	3	3	2	2	2	31	2.6	11.8
P02	3	3	3	0	2	4	4	3	3	2	3	2	32	2.7	11.4
P03	3	3	5	3	3	4	4	3	3	2	2	2	37	3.1	9.9
P04	3	5	5	1	1	4	3	3	3	2	3	2	35	2.9	10.4
P05	3	3	6	3	3	3	3	3	3	2	2	2	36	3.0	10.1
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS															
D02	3	3	6	4	4	4	3	2	3	1	2	2	37	3.1	9.9
D03	3	3	5	4	4	6	3	3	3	1	4	5	44	3.7	8.3
D04	3	3	5	1	4	4	4	5	5	1	2	3	40	3.3	9.1
D05	3	2	5	1	4	4	2	3	3	1	2	2	32	2.7	11.4
D06	2	2	4	1	4	5	3	3	2	1	2	3	32	2.7	11.4
D07	2	2	4	1	4	3	2	3	2	1	2	2	28	2.3	13.0
D08	2	2	4	1	3	3	3	3	2	1	1	2	27	2.3	13.5
D09	2	2	2	1	3	3	3	3	2	1	2	2	26	2.2	14.0
D11	2	2	2	1	3	3	3	2	2	1	2	2	25	2.1	14.6
D12	1	2	1	1	3	3	3	1	2	1	2	2	22	1.8	16.6
D13	1	2	1	1	3	3	3	1	2	1	2	2	22	1.8	16.6
D15	1	2	1	1	3	3	2	1	2	1	2	2	21	1.8	17.4
LOWER FRANKFORD CREEK 6 NEWPC UNITS															
F13	3	3	3	3	5	3	2	2	4	6	2	3	39	3.3	9.4
F14	4	3	2	2	4	2	2	2	4	4	2	3	34	2.8	10.7
F21	2	3	2	2	4	3	2	1	4	2	2	3	30	2.5	12.2
F23	6	4	2	2	4	3	3	3	4	2	3	3	39	3.3	9.4
F24	4	4	2	2	4	5	4	3	4	2	2	3	39	3.3	9.4
F25	2	3	2	2	4	2	2	1	4	2	2	3	29	2.4	12.6
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS															
F03	3	4	2	3	4	2	3	1	4	3	2	3	34	2.8	10.7
F04	3	4	2	3	3	2	2	1	4	3	2	3	32	2.7	11.4
F05	3	2	2	2	3	2	2	2	4	2	2	3	29	2.4	12.6
F06	4	3	2	2	3	2	3	2	3	2	2	3	31	2.6	11.8
F07	4	3	2	1	3	2	2	2	2	2	2	3	28	2.3	13.0
F08	3	3	2	2	3	2	2	2	2	2	2	3	28	2.3	13.0
F09	5	8	4	6	5	5	4	3	3	2	3	3	51	4.3	7.2
F10	5	6	3	2	6	2	3	1	3	2	2	3	38	3.2	9.6
F11	2	3	2	2	3	1	2	1	2	2	2	3	25	2.1	14.6
F12	2	3	2	2	3	2	2	1	2	2	2	3	26	2.2	14.0
FRANKFORD HIGH LEVEL 14 NEWPC UNITS															
T01	4	6	3	2	3	4	4	2	4	4	4	4	44	3.7	8.3
T03	4	5	3	2	3	4	4	2	2	4	3	4	40	3.3	9.1
T04	4	6	3	2	3	6	4	2	2	4	3	4	43	3.6	8.5
T05	4	5	3	2	3	4	4	2	2	4	3	3	39	3.3	9.4
T06	4	4	3	2	3	4	4	2	2	4	3	4	39	3.3	9.4
T07	3	4	3	2	3	5	4	2	2	3	3	5	39	3.3	9.4
T08	5	4	4	2	3	6	4	2	2	3	3	6	44	3.7	8.3
T09	7	6	3	3	3	5	4	2	2	3	3	3	44	3.7	8.3
T10	7	7	3	4	4	4	4	3	3	5	3	4	51	4.3	7.2
T11	10	12	3	3	4	4	4	3	4	5	3	6	61	5.1	6.0
T12	3	9	3	3	4	4	4	3	4	5	3	4	49	4.1	7.4
T13	4	13	3	2	4	4	4	3	4	5	3	4	53	4.4	6.9
T14	3	5	2	2	4	4	4	3	3	5	3	4	42	3.5	8.7
T15	3	5	1	2	4	3	4	3	3	5	3	3	39	3.3	9.4

13 TOTAL DISCHARGES FOR NE & SE DISTRICTS DTR = DAYS TO RETURN TO SITE

1.1 AVERAGE DISCHARGES PER MONTH I/D/C = INSPECTIONS PER DAY PER CREW

#DIV/0! AVER. DAYS BEFORE RETURNING TO SITE I/D = INSPECTIONS PER DISCHARGE

5.0 AVER. INSPECTIONS PER DAY PER CREW

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL 9 NEWPC UNITS															
D17	5	5	3	2	2	4	5	4	4	3	4	3	44	3.7	8.3
D18	5	5	3	2	2	4	5	4	4	3	4	2	43	3.6	8.5
D19	9	9	5	3	4	4	5	4	3	3	4	2	55	4.6	6.6
D20	9	8	8	2	3	4	5	4	4	3	4	2	56	4.7	6.5
D21	4	5	3	0	2	4	5	4	4	2	4	2	39	3.3	9.4
D22	5	5	2	1	2	4	5	4	4	2	4	2	40	3.3	9.1
D23	4	5	2	1	2	4	5	4	4	2	4	2	39	3.3	9.4
D24	4	5	2	1	2	4	4	3	4	2	4	2	37	3.1	9.9
D25	14	14	4	4	3	5	4	3	6	4	6	3	70	5.8	5.2
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS															
D37	6	6	2	5	4	8	4	3	4	5	4	2	53	4.4	6.9
D38	6	5	2	4	4	5	4	3	4	5	4	2	48	4.0	7.6
D39	4	4	3	2	3	6	4	3	4	6	6	2	47	3.9	7.8
D40	0	4	2	6	4	5	5	3	4	3	4	3	43	3.6	8.5
D41	4	3	3	3	3	5	4	3	4	4	3	2	41	3.4	8.9
D42	3	4	2	3	2	6	4	3	4	3	4	2	40	3.3	9.1
D43	3	4	2	3	2	6	4	3	4	3	4	2	40	3.3	9.1
D44	4	5	3	1	4	8	5	3	3	3	4	2	45	3.8	8.1
D45	10	7	5	6	6	5	4	3	5	8	5	7	71	5.9	5.1
D46	6	4	4	3	4	5	4	3	4	4	4	4	49	4.1	7.4
D47	4	4	4	3	4	5	4	3	4	4	4	4	47	3.9	7.8
D48	7	6	5	4	4	5	4	3	3	7	4	4	56	4.7	6.5
D49	6	4	4	3	5	5	4	3	4	4	4	3	49	4.1	7.4
D50	5	4	6	5	6	5	4	3	4	6	4	3	55	4.6	6.6
D51	4	3	5	3	5	5	4	3	5	6	4	3	50	4.2	7.3
D52	4	4	4	3	5	5	4	3	4	5	4	3	48	4.0	7.6
D53	4	4	3	3	5	5	4	3	4	4	5	2	46	3.8	7.9
D54	4	4	4	3	5	5	3	3	4	4	4	3	46	3.8	7.9
D58	5	5	7	3	7	8	4	3	5	5	4	2	58	4.8	6.3
D61	4	4	2	3	4	5	3	3	4	4	4	2	42	3.5	8.7
D62	4	3	4	3	4	5	3	3	4	5	4	2	44	3.7	8.3
D63	4	4	4	5	5	5	4	3	4	7	5	2	52	4.3	7.0
D64	4	3	3	4	5	5	3	3	4	4	4	2	44	3.7	8.3
D65	4	3	4	5	4	5	3	3	4	4	4	2	45	3.8	8.1
D66	3	3	3	4	4	5	3	3	4	6	3	2	43	3.6	8.5
D67	2	3	4	5	4	5	3	3	4	4	3	3	43	3.6	8.5
D68	2	3	3	3	4	5	3	4	5	6	3	9	50	4.2	7.3
D69	2	4	3	2	4	5	3	3	4	5	3	5	43	3.6	8.5
D70	4	5	2	6	4	5	4	3	4	6	3	5	51	4.3	7.2
D71	3	4	2	4	3	5	3	3	4	5	3	3	42	3.5	8.7
D72	4	3	3	4	4	5	3	3	4	4	3	3	43	3.6	8.5
D73	4	3	2	2	4	4	2	3	4	3	2	3	36	3.0	10.1
D75	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
TOTAL	352	384	279	228	319	372	308	238	304	297	275	263	3619		
I /D/C	5.8	6.3	4.6	3.7	5.2	6.1	5.1	3.9	5.0	4.9	4.5	4.3			
UP	15	17	22	7	11	19	18	15	15	10	12	10	171	2.9	10.7
UDLL	25	27	40	18	42	44	34	30	30	12	25	29	356	2.5	13.0
LFC	21	20	13	13	25	18	15	12	24	18	13	18	210	2.9	10.6
LFLL	34	39	23	25	36	22	25	16	29	22	21	30	322	2.7	11.8
FHL	65	91	40	33	48	61	56	34	39	59	43	58	627	3.7	8.3
SLL	59	61	32	16	22	37	43	34	37	24	38	20	423	3.9	8.1
LDLL	133	129	109	116	135	171	117	97	130	152	123	98	1510	3.8	7.6

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UPPER PENNYPACK 5 NEWPC UNITS													
P01	0	0	0	0	0	0	0	0	0	0	0	0	0
P02	0	0	0	0	0	0	0	0	0	0	0	0	0
P03	0	0	0	0	0	0	0	0	0	0	0	0	0
P04	0	2	0	0	0	0	0	0	0	0	0	0	2
P05	0	0	0	0	0	0	0	0	0	0	0	0	0
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS													
D02	0	0	0	0	0	0	0	0	0	0	0	0	0
D03	0	0	0	0	0	0	0	0	0	0	0	0	0
D04	0	0	0	0	0	0	0	0	0	0	0	0	0
D05	0	0	0	0	0	0	0	0	0	0	0	0	0
D06	0	0	0	0	0	0	0	0	0	0	0	0	0
D07	0	0	0	0	0	0	0	0	0	0	0	0	0
D08	0	0	0	0	0	0	0	0	0	0	0	0	0
D09	0	0	0	0	0	0	0	0	0	0	0	0	0
D11	0	0	0	0	0	0	0	0	0	0	0	0	0
D12	0	0	0	0	0	0	0	0	0	0	0	0	0
D13	0	0	0	0	0	0	0	0	0	0	0	0	0
D15	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD CREEK 6 NEWPC UNITS													
F13	0	0	0	0	0	0	0	0	0	0	0	0	0
F14	0	0	0	0	0	0	0	0	0	0	0	0	0
F21	0	0	0	0	0	0	0	0	0	0	0	0	0
F23	0	0	0	0	0	0	0	0	0	0	0	0	0
F24	0	0	0	0	0	0	0	0	0	0	0	0	0
F25	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS													
F03	0	0	0	0	0	0	0	0	0	0	0	0	0
F04	0	0	0	0	0	0	0	0	0	0	0	0	0
F05	0	0	0	0	0	0	0	0	0	0	0	0	0
F06	0	0	0	0	0	0	0	0	0	0	0	0	0
F07	0	0	0	0	0	0	0	0	0	0	0	0	0
F08	0	0	0	0	0	0	0	0	0	0	0	0	0
F09	0	1	1	1	0	0	0	0	0	0	0	0	3
F10	0	0	0	0	0	0	0	0	0	0	0	0	0
F11	0	0	0	0	0	0	0	0	0	0	0	0	0
F12	0	0	0	0	0	0	0	0	0	0	0	0	0
FRANKFORD HIGH LEVEL 14 NEWPC UNITS													
T01	0	0	0	0	0	0	0	0	0	0	0	0.00	0
T03	0	0	0	0	0	0	0	0	0	0	0	0	0
T04	0	0	0	0	0	0	0	0	0	0	0	0	0
T05	0	0	0	0	0	0	0	0	0	0	0	0	0
T06	0	0	0	0	0	0	0	0	0	0	0	0	0
T07	0	0	0	0	0	0	0	0	0	0	0	0	0
T08	0	0	0	0	0	0	0	0	0	0	0	0	0
T09	0	0	0	0	0	0	0	0	0	0	0	0	0
T10	0	0	0	0	0	0	0	0	0	0	0	0	0
T11	2	1	0	0	0	0	0	0	0	1	0	0	4
T12	0	0	0	0	0	0	0	0	0	0	0	0	0
T13	1	1	0	0	0	0	0	0	0	0	0	0	2
T14	0	0	0	0	0	0	0	0	0	0	0	0	0
T15	0	0	0	0	0	0	0	0	0	0	0	0	0

	NO OF DISCHARGES IN DISTRICT												TOTAL
UP	0	2	0	0	0	0	0	0	0	0	0	0	2
UDLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LFC	0	0	0	0	0	0	0	0	0	0	0	0	0
LFLL	0	1	1	1	0	0	0	0	0	0	0	0	3
FHL	3	2	0	0	0	0	0	0	0	1	0	0	6
SLL	0	0	1	0	0	0	0	0	0	0	0	0	1
LDLL	0	0	0	0	0	0	0	0	0	0	0	1	1

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL 9 NEWPC UNITS													
D17	0	0	0	0	0	0	0	0	0	0	0	0	0
D18	0	0	0	0	0	0	0	0	0	0	0	0	0
D19	0	0	0	0	0	0	0	0	0	0	0	0	0
D20	0	0	0	0	0	0	0	0	0	0	0	0	0
D21	0	0	0	0	0	0	0	0	0	0	0	0	0
D22	0	0	0	0	0	0	0	0	0	0	0	0	0
D23	0	0	0	0	0	0	0	0	0	0	0	0	0
D24	0	0	0	0	0	0	0	0	0	0	0	0	0
D25	0	0	1	0	0	0	0	0	0	0	0	0	1
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS													
D37	0	0	0	0	0	0	0	0	0	0	0	0	0
D38	0	0	0	0	0	0	0	0	0	0	0	0	0
D39	0	0	0	0	0	0	0	0	0	0	0	0	0
D40	0	0	0	0	0	0	0	0	0	0	0	0	0
D41	0	0	0	0	0	0	0	0	0	0	0	0	0
D42	0	0	0	0	0	0	0	0	0	0	0	0	0
D43	0	0	0	0	0	0	0	0	0	0	0	0	0
D44	0	0	0	0	0	0	0	0	0	0	0	0	0
D45	0	0	0	0	0	0	0	0	0	0	0	0	0
D46	0	0	0	0	0	0	0	0	0	0	0	0	0
D47	0	0	0	0	0	0	0	0	0	0	0	0	0
D48	0	0	0	0	0	0	0	0	0	0	0	0	0
D49	0	0	0	0	0	0	0	0	0	0	0	0	0
D50	0	0	0	0	0	0	0	0	0	0	0	0	0
D51	0	0	0	0	0	0	0	0	0	0	0	0	0
D52	0	0	0	0	0	0	0	0	0	0	0	0	0
D53	0	0	0	0	0	0	0	0	0	0	0	0	0
D54	0	0	0	0	0	0	0	0	0	0	0	0	0
D58	0	0	0	0	0	0	0	0	0	0	0	0	0
D61	0	0	0	0	0	0	0	0	0	0	0	0	0
D62	0	0	0	0	0	0	0	0	0	0	0	0	0
D63	0	0	0	0	0	0	0	0	0	0	0	0	0
D64	0	0	0	0	0	0	0	0	0	0	0	0	0
D65	0	0	0	0	0	0	0	0	0	0	0	0	0
D66	0	0	0	0	0	0	0	0	0	0	0	0	0
D67	0	0	0	0	0	0	0	0	0	0	0	0	0
D68	0	0	0	0	0	0	0	0	0	0	0	1	1
D69	0	0	0	0	0	0	0	0	0	0	0	0	0
D70	0	0	0	0	0	0	0	0	0	0	0	0	0
D71	0	0	0	0	0	0	0	0	0	0	0	0	0
D72	0	0	0	0	0	0	0	0	0	0	0	0	0
D73	0	0	0	0	0	0	0	0	0	0	0	0	0
D75	0	0	0	0	0	0	0	0	0	0	0	0	0
													TOTAL DISC
	3	5	2	1	0	0	0	0	0	1	0	1	13

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
UP	0	1	0	0	0	0	0	0	0	0	0	0	1
UDLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LFC	0	0	0	0	0	0	0	0	0	0	0	0	0
LFLL	0	1	1	1	0	0	0	0	0	0	0	0	3
FHL	2	2	0	0	0	0	0	0	0	1	0	0	5
SLL	0	0	1	0	0	0	0	0	0	0	0	0	1
LDLL	0	0	0	0	0	0	0	0	0	0	0	1	1

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UPPER PENNYPACK 5 NEWPC UNITS													
P01	0	0	0	0	0	0	0	0	0	0	1	0	1
P02	0	0	0	0	0	0	0	0	0	0	0	0	0
P03	1	1	1	0	1	1	0	0	0	0	0	0	5
P04	1	2	1	0	0	0	0	0	0	0	1	1	6
P05	0	0	2	1	1	0	0	0	2	0	1	0	7
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS													
D02	0	0	0	0	0	0	0	0	0	0	1	0	1
D03	1	0	1	1	2	2	1	2	2	0	3	3	18
D04	1	0	1	0	2	0	0	4	4	1	1	1	15
D05	0	0	0	0	0	0	1	0	0	0	0	1	2
D06	1	0	1	0	1	2	0	2	0	0	1	0	8
D07	0	0	1	0	0	0	0	0	0	0	1	0	2
D08	0	1	1	0	0	1	1	0	0	0	0	0	4
D09	0	0	0	0	0	0	0	0	0	0	0	0	0
D11	0	1	1	0	0	0	0	0	0	0	0	0	2
D12	0	0	0	0	1	1	0	0	1	0	0	0	3
D13	0	0	1	0	0	0	0	0	0	0	0	0	1
D15	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD CREEK 6 NEWPC UNITS													
F13	0	0	0	1	1	0	1	0	0	4	0	0	7
F14	2	2	1	0	1	1	0	0	1	2	0	1	11
F21	0	0	0	0	0	0	0	0	0	0	0	0	0
F23	4	0	0	0	0	1	1	0	1	0	0	1	8
F24	0	0	0	0	0	0	0	0	0	1	1	0	2
F25	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS													
F03	0	0	1	0	0	1	0	0	0	0	0	0	2
F04	0	0	0	0	0	0	0	0	0	0	0	0	0
F05	2	2	0	0	0	1	1	0	1	1	1	1	10
F06	0	0	0	0	0	0	1	0	0	0	0	0	1
F07	0	1	1	0	0	0	1	0	0	0	1	1	5
F08	0	0	0	0	0	0	0	0	0	0	0	0	0
F09	0	3	1	1	0	0	0	0	0	1	0	0	6
F10	1	0	1	0	1	0	0	0	0	0	1	1	5
F11	0	1	0	0	0	0	0	0	0	0	0	0	1
F12	1	0	0	0	0	0	0	0	0	0	0	0	1
FRANKFORD HIGH LEVEL 14 NEWPC UNITS													
T01	0	0	1	1	2	0	1	0	1	0	0	0	6
T03	0	0	0	0	0	0	0	0	0	0	0	0	0
T04	0	1	0	0	0	1	0	0	0	1	0	1	4
T05	0	0	0	0	0	0	0	0	0	0	0	0	0
T06	0	0	1	0	0	0	0	0	0	1	1	1	4
T07	0	0	0	0	0	0	0	0	0	0	0	1	1
T08	1	1	0	1	1	1	1	1	1	1	1	1	11
T09	1	0	0	0	1	0	0	0	0	0	0	0	2
T10	1	0	0	0	0	0	0	0	0	0	0	1	2
T11	3	2	0	0	0	1	0	0	0	2	0	0	8
T12	0	2	0	0	0	0	0	0	0	0	1	0	3
T13	1	2	0	1	0	0	0	0	0	0	1	0	5
T14	0	0	0	0	0	0	0	1	0	0	2	0	3
T15	0	1	0	0	0	0	1	1	1	1	0	0	5

25.33 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL 9 NEWPC UNITS													
D17	0	1	0	1	0	0	0	0	0	0	0	0	2
D18	0	0	1	0	0	0	0	0	0	0	0	0	1
D19	2	4	4	1	0	0	1	0	0	0	0	0	12
D20	0	1	1	0	0	0	0	0	0	0	0	0	2
D21	0	0	0	0	0	0	0	0	0	0	0	0	0
D22	0	0	0	0	0	0	0	0	0	0	0	0	0
D23	0	0	0	0	0	0	0	0	0	0	0	0	0
D24	0	0	0	0	0	0	0	0	0	0	0	0	0
D25	7	2	2	1	0	1	0	0	1	0	1	0	15
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS													
D37	1	1	0	3	0	2	0	0	1	0	0	0	8
D38	0	0	0	2	0	0	0	0	1	0	0	0	3
D39	0	0	0	1	0	0	1	1	0	0	0	0	3
D40	2	0	0	2	0	0	0	0	0	0	0	0	4
D41	0	0	0	0	0	0	1	0	0	0	0	0	1
D42	0	0	0	0	0	0	0	0	0	0	0	0	0
D43	0	0	0	0	0	0	0	0	0	0	0	0	0
D44	0	0	1	0	0	2	0	0	0	1	1	0	5
D45	1	1	0	0	2	0	0	0	0	0	1	2	7
D46	0	0	0	0	0	0	0	0	0	0	0	0	0
D47	0	0	0	1	0	0	0	0	1	0	0	0	2
D48	1	0	0	0	0	0	0	1	0	1	1	0	4
D49	0	0	0	0	0	0	0	0	0	0	0	0	0
D50	0	0	0	1	0	1	0	1	0	1	0	1	5
D51	0	0	0	0	0	0	0	0	0	0	1	0	1
D52	1	0	0	0	0	0	0	0	0	0	0	0	1
D53	0	0	0	0	0	0	0	0	0	0	1	0	1
D54	0	0	0	0	0	0	0	0	0	0	0	0	0
D58	1	1	0	0	1	3	0	0	1	0	0	0	7
D61	0	0	0	0	0	0	0	0	0	0	0	0	0
D62	0	0	0	1	0	0	1	0	0	0	0	0	2
D63	0	0	1	1	0	0	1	0	0	0	0	0	3
D64	0	0	0	0	1	0	0	0	1	0	0	0	2
D65	0	1	0	0	1	2	0	0	0	1	0	1	6
D66	0	0	0	1	0	0	0	0	1	0	0	0	2
D67	0	0	0	1	0	0	0	0	0	0	0	0	1
D68	0	0	0	0	0	1	0	0	0	0	0	3	4
D69	0	0	0	0	0	0	0	0	0	1	0	1	2
D70	0	0	0	2	1	0	0	0	0	1	0	1	5
D71	0	0	0	0	0	0	0	0	0	0	0	0	0
D72	0	1	2	1	1	0	0	0	0	0	0	0	5
D73	0	0	0	0	0	0	0	0	0	0	0	0	0
D75	0	0	0	0	0	0	0	0	0	0	0	0	0

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	38	36	30	27	22	26	16	14	22	22	26	25	304

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UP	2	3	4	1	2	1	0	0	2	0	3	1	19
UDLL	3	2	7	1	6	6	3	8	7	1	7	5	56
LFC	6	2	1	1	2	2	2	0	2	7	1	2	28
LFLL	4	7	4	1	1	2	3	0	1	2	3	3	31
FHL	7	9	2	3	4	3	3	3	3	6	6	5	54
SLL	9	8	8	3	0	1	1	0	1	0	1	0	32
LDLL	7	5	4	17	7	11	4	3	6	6	5	9	84

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS															
S05	6	14	6	5	5	5	9	5	5	6	5	7	78	6.5	4.7
S06	6	8	6	5	7	5	9	3	6	6	5	5	71	5.9	5.1
S07	6	8	6	5	7	5	8	4	6	4	5	5	69	5.8	5.3
S08	5	8	6	5	7	5	6	2	5	5	5	5	64	5.3	5.7
S09	6	8	6	5	7	5	9	4	6	4	5	5	70	5.8	5.2
S10	6	8	4	3	7	5	8	3	6	4	5	5	64	5.3	5.7
S12	6	9	8	4	7	5	9	3	6	5	6	6	74	6.2	4.9
S12A	6	9	8	4	7	5	9	3	6	5	6	6	74	6.2	4.9
S13	6	8	5	4	7	6	8	3	6	2	4	6	65	5.4	5.6
S15	6	8	6	4	7	5	7	3	5	3	4	5	63	5.3	5.8
S16	6	7	6	4	7	5	6	3	6	4	4	5	63	5.3	5.8
S17	6	8	6	4	6	5	6	3	6	5	4	5	64	5.3	5.7
S18	6	6	5	4	7	5	6	3	6	3	5	5	61	5.1	6.0
S19	5	7	7	4	7	4	4	3	6	4	4	6	61	5.1	6.0
S21	5	7	6	4	7	6	4	3	6	4	5	5	62	5.2	5.9
S23	5	6	6	4	6	7	4	2	6	4	4	5	59	4.9	6.2
S25	5	6	6	4	6	6	4	2	6	4	5	5	59	4.9	6.2
S26	5	5	6	4	7	6	4	2	6	3	4	5	57	4.8	6.4
LOWER SCHUYLKILL EAST SIDE 9 S															
S31	6	7	3	4	8	6	6	3	7	6	5	6	67	5.6	5.4
S35	4	6	2	6	5	6	6	2	6	6	5	4	58	4.8	6.3
S36	2	3	1	2	1	2	1	1	2	2	2	2	21	1.8	17.4
S36A	3	3	3	5	4	6	6	2	6	2	4	2	46	3.8	7.9
S37	2	3	3	2	1	2	1	1	2	2	2	2	23	1.9	15.9
S42	5	9	4	5	9	8	6	4	6	3	5	4	68	5.7	5.4
S42A	4	7	4	4	6	6	6	1	6	4	3	4	55	4.6	6.6
S44	2	3	3	2	2	2	1	1	2	2	2	1	23	1.9	15.9
S46	5	4	2	5	4	6	4	1	5	4	5	5	50	4.2	7.3
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS															
S01	5	5	5	8	6	5	4	3	6	5	4	3	59	4.9	6.2
S02	5	5	5	3	5	5	4	3	7	6	4	3	55	4.6	6.6
S03	3	4	5	3	5	5	4	3	6	4	2	2	46	3.8	7.9
S04	4	6	4	5	4	5	5	3	5	6	6	3	56	4.7	6.5
S11	3	5	3	3	2	5	3	3	3	4	4	2	40	3.3	9.1
S14	4	5	3	4	4	5	5	3	5	6	4	3	51	4.3	7.2
S20	5	5	4	4	4	5	5	10	3	6	5	4	60	5.0	6.1
S22	4	5	4	6	4	5	5	6	5	6	5	5	60	5.0	6.1
S24	4	5	4	4	4	5	5	4	5	5	5	4	54	4.5	6.8
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS															
S27	6	7	6	5	5	5	3	4	7	5	5	4	62	5.2	5.9
S28	6	6	6	5	5	5	3	3	7	5	5	3	59	4.9	6.2
S30	5	5	4	5	3	5	3	3	7	5	4	2	51	4.3	7.2
S34	4	4	4	5	4	5	2	3	5	5	4	3	48	4.0	7.6
S39	4	6	3	4	4	4	2	3	4	5	4	3	46	3.8	7.9
S40	3	4	3	3	4	4	1	3	3	4	2	3	37	3.1	9.9
S43	4	5	3	4	4	4	2	3	4	3	4	3	43	3.6	8.5
S47	4	5	3	4	4	5	2	3	4	3	4	3	44	3.7	8.3
S50	17	16	13	12	9	18	13	7	11	13	8	10	147	12.3	2.5
S51	9	12	12	8	9	11	10	6	9	10	5	5	106	8.8	3.4
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS															
S32	7	8	7	6	9	7	8	4	9	7	5	6	83	6.9	4.4
S33	10	8	8	6	9	7	10	4	10	8	6	6	92	7.7	4.0
S38	7	7	10	5	7	7	6	3	7	6	5	7	77	6.4	4.7
S45	8	7	7	3	7	8	7	3	8	6	6	9	79	6.6	4.6

20 TOTAL DISCHARGES IN SW DISTRICT
1.7 AVERAGE DISCHARGES PER MONTH
7.3 AVER. DAYS BEFORE RETURNING TO SITE
4.3 AVER. INSPECTIONS PER DAY PER CREW

DTR = DAYS TO RETURN TO SITE
I/D/C = INSPECTIONS PER DAY PER CREW
I/D = INSPECTIONS PER DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
COBBS CREEK HIGH LEVEL 23 SWWPC UNITS															
C01	3	4	3	3	6	3	4	2	4	3	4	5	44	3.7	8.3
C02	3	4	3	3	5	3	4	2	4	3	4	5	43	3.6	8.5
C04	3	4	3	2	5	2	4	2	4	3	4	4	40	3.3	9.1
C04A	3	4	3	3	5	3	4	2	4	3	4	4	42	3.5	8.7
C05	3	5	3	3	5	3	4	2	4	3	4	4	43	3.6	8.5
C06	4	9	6	7	5	5	5	2	6	5	5	6	65	5.4	5.6
C07	3	12	6	5	5	4	4	2	5	4	4	5	59	4.9	6.2
C09	4	12	5	5	5	6	5	3	7	5	5	6	68	5.7	5.4
C10	4	11	6	4	5	6	3	2	6	5	4	6	62	5.2	5.9
C11	5	5	3	3	5	4	3	2	4	3	4	4	45	3.8	8.1
C12	3	4	3	3	5	4	3	2	4	3	4	4	42	3.5	8.7
C13	3	4	3	3	3	4	3	2	4	3	4	4	40	3.3	9.1
C14	4	5	8	4	3	4	3	2	6	3	4	6	52	4.3	7.0
C15	2	5	5	3	3	4	3	2	4	2	4	4	41	3.4	8.9
C16	3	5	5	3	3	4	3	2	4	2	4	4	42	3.5	8.7
C17	3	5	5	3	3	4	3	1	5	3	4	4	43	3.6	8.5
C31	4	6	4	3	5	3	3	3	5	4	5	5	50	4.2	7.3
C32	3	5	3	3	5	3	3	2	4	3	4	5	43	3.6	8.5
C33	4	6	3	3	5	3	3	3	5	3	5	5	48	4.0	7.6
C34	4	6	3	3	5	3	3	3	5	3	5	5	48	4.0	7.6
C35	4	6	3	3	5	3	3	3	5	3	5	5	48	4.0	7.6
C36	4	10	4	3	5	3	3	3	5	3	4	5	52	4.3	7.0
C37	4	6	4	3	6	3	4	3	4	3	5	5	50	4.2	7.3
COBBS CREEK LOW LEVEL 13 SWWPC UNITS															
C18	3	4	6	3	3	4	3	2	4	3	4	4	43	3.6	8.5
C19	3	4	7	3	3	4	3	2	4	3	4	4	44	3.7	8.3
C20	3	3	5	3	3	5	2	2	4	2	8	4	44	3.7	8.3
C21	3	3	4	3	3	5	1	2	4	2	5	4	39	3.3	9.4
C22	3	3	6	4	3	5	2	2	4	3	4	5	44	3.7	8.3
C23	3	3	4	3	3	6	2	2	4	2	4	3	39	3.3	9.4
C24	3	3	5	5	3	4	2	2	5	3	4	4	43	3.6	8.5
C25	3	3	5	4	3	5	2	2	3	2	4	3	39	3.3	9.4
C26	3	3	5	3	3	5	2	2	3	2	3	3	37	3.1	9.9
C27	3	3	6	3	3	5	2	2	3	2	3	3	38	3.2	9.6
C28A	3	4	3	2	3	4	2	2	3	1	3	3	33	2.8	11.1
C29	3	3	3	2	3	4	2	2	3	1	3	3	32	2.7	11.4
C30	3	2	3	2	3	2	2	2	3	1	3	3	29	2.4	12.6
TOTAL	385	514	416	344	428	421	376	238	442	341	375	378	4658		
I /D/C	4.2	5.6	4.6	3.8	4.7	4.6	4.1	2.6	4.8	3.7	4.1	4.1			
CSES	102	140	109	76	121	95	120	54	105	75	85	96	1178	5.5	5.6
LSES	33	45	25	35	40	44	37	16	42	31	33	30	411	3.8	9.8
CSW	37	45	37	40	38	45	40	38	45	48	39	29	481	4.5	6.9
SWMG	62	70	57	55	51	66	41	38	61	58	45	39	643	5.4	6.7
LSW	32	30	32	20	32	29	31	14	34	27	22	28	331	6.9	4.4
CCHL	80	143	94	78	107	84	80	52	108	75	99	110	1110	4.0	7.7
CCLL	39	41	62	40	39	58	27	26	47	27	52	46	504	3.2	9.6

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS													
S05	0	1	0	0	0	0	0	0	0	0	0	0	1
S06	0	0	0	0	0	0	0	0	0	0	0	0	0
S07	0	0	0	0	0	0	0	0	0	0	0	0	0
S08	0	0	0	0	0	0	0	0	0	0	0	0	0
S09	0	0	0	0	0	0	0	0	0	0	0	0	0
S10	0	0	0	0	0	0	0	0	0	0	0	0	0
S12	0	0	0	0	0	0	0	0	0	0	1	0	1
S12A	0	0	0	0	0	0	0	0	0	0	0	0	0
S13	0	0	0	0	0	0	0	0	0	0	0	0	0
S15	0	0	0	0	0	0	0	0	0	0	0	0	0
S16	0	0	0	0	0	0	0	0	0	0	0	0	0
S17	0	0	0	0	0	0	0	0	0	0	0	0	0
S18	0	0	0	0	0	0	0	0	0	0	0	0	0
S19	0	0	0	0	0	0	0	0	0	0	0	0	0
S21	0	0	0	0	0	0	0	0	0	0	0	0	0
S23	0	0	0	0	0	0	0	0	0	0	0	0	0
S25	0	0	0	0	0	0	0	0	0	0	0	0	0
S26	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER SCHUYLKILL EAST SIDE 9 S													
S31	0	0	0	0	0	0	0	0	0	0	0	0	0
S35	0	0	0	0	0	0	0	0	0	0	0	0	0
S36	0	0	0	0	0	0	0	0	0	0	0	0	0
S36A	0	0	0	0	0	0	0	0	0	0	0	0	0
S37	0	0	0	1	0	0	0	0	0	0	0	0	1
S42	0	1	0	0	1	0	0	0	0	0	0	0	2
S42A	0	0	0	0	0	0	0	0	0	0	0	0	0
S44	0	0	0	0	0	0	0	0	0	0	0	0	0
S46	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS													
S01	0	0	0	1	0	0	0	0	0	0	0	0	1
S02	0	0	0	0	0	0	0	0	0	0	0	0	0
S03	0	0	0	0	0	0	0	0	0	0	0	0	0
S04	0	0	0	0	0	0	0	0	0	0	0	0	0
S11	0	0	0	0	0	0	0	0	0	0	0	0	0
S14	0	0	0	0	0	0	0	0	0	0	0	0	0
S20	0	0	0	0	0	0	0	1	0	0	0	0	1
S22	0	0	0	1	0	0	0	1	0	1	0	1	4
S24	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS													
S27	0	0	0	0	0	0	0	0	0	0	0	0	0
S28	0	0	0	0	0	0	0	0	0	0	0	0	0
S30	0	0	0	0	0	0	0	0	0	0	0	0	0
S34	0	0	0	0	0	0	0	0	0	0	0	0	0
S39	0	0	0	0	0	0	0	0	0	0	0	0	0
S40	0	0	0	0	0	0	0	0	0	0	0	0	0
S43	0	0	0	0	0	0	0	0	0	0	0	0	0
S47	0	0	0	0	0	0	0	0	0	0	0	0	0
S50	0	0	0	0	0	0	0	0	0	0	0	0	0
S51	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS													
S32	0	0	0	0	0	0	0	0	0	0	0	0	0
S33	0	0	0	0	0	0	0	0	0	0	0	0	0
S38	0	0	0	0	0	0	0	0	0	0	0	0	0
S45	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL 23 SWWPC UNITS													
C01	0	0	0	0	0	0	0	0	0	0	0	0	0
C02	0	0	0	0	0	0	0	0	0	0	0	0	0
C04	0	0	0	0	0	0	0	0	0	0	0	0	0
C04A	0	0	0	0	0	0	0	0	0	0	0	0	0
C05	0	0	0	0	0	0	0	0	0	0	0	0	0
C06	0	0	1	0	0	0	0	0	0	0	0	0	1
C07	0	0	0	0	0	0	0	0	0	0	0	0	0
C09	0	1	0	0	0	0	1	0	0	0	0	0	2
C10	0	0	0	0	0	0	0	0	0	0	0	0	0
C11	0	0	0	0	0	0	0	0	0	0	0	0	0
C12	0	0	0	0	0	0	0	0	0	0	0	0	0
C13	0	0	0	0	0	0	0	0	0	0	0	0	0
C14	0	1	0	0	0	0	0	0	1	0	0	0	2
C15	0	0	0	0	0	0	0	0	0	0	0	0	0
C16	0	0	0	0	0	0	0	0	0	0	0	0	0
C17	0	0	0	0	0	0	0	0	0	0	0	0	0
C31	0	0	0	0	0	0	0	0	0	0	0	0	0
C32	0	0	0	0	0	0	0	0	0	0	0	0	0
C33	0	0	0	0	0	0	0	0	0	0	0	0	0
C34	0	0	0	0	0	0	0	1	0	0	0	0	1
C35	0	0	0	0	0	0	0	0	0	0	0	0	0
C36	0	1	0	0	0	0	0	0	0	0	0	0	1
C37	0	0	0	0	0	0	0	0	0	0	0	0	0
COBBS CREEK LOW LEVEL 13 SWWPC UNITS													
C18	0	0	0	0	0	0	0	0	0	0	0	0	0
C19	0	0	0	0	0	0	0	0	0	0	0	0	0
C20	0	0	0	0	0	0	0	0	0	0	1	0	1
C21	0	0	0	0	0	0	0	0	0	0	0	0	0
C22	0	0	0	0	0	0	0	0	0	0	0	1	1
C23	0	0	0	0	0	0	0	0	0	0	0	0	0
C24	0	0	0	0	0	0	0	0	0	0	0	0	0
C25	0	0	0	0	0	0	0	0	0	0	0	0	0
C26	0	0	0	0	0	0	0	0	0	0	0	0	0
C27	0	0	0	0	0	0	0	0	0	0	0	0	0
C28A	0	0	0	0	0	0	0	0	0	0	0	0	0
C29	0	0	0	0	0	0	0	0	0	0	0	0	0
C30	0	0	0	0	0	0	0	0	0	0	0	0	0
													TOTAL DISC
	0	5	1	3	1	0	1	3	1	1	2	2	20

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
CSE	0	1	0	0	0	0	0	0	0	0	1	0	2
LSE	0	1	0	1	1	0	0	0	0	0	0	0	3
CSW	0	0	0	2	0	0	0	2	0	1	0	1	6
SWG	0	0	0	0	0	0	0	0	0	0	0	0	0
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	0	3	1	0	0	0	1	1	1	0	0	0	7
CCLL	0	0	0	0	0	0	0	0	0	0	1	1	2

	NO OF DISCHARGES IN DISTRICT												TOTAL
CSE	0	1	0	0	0	0	0	0	0	0	1	0	2
LSE	0	1	0	1	1	0	0	0	0	0	0	0	3
CSW	0	0	0	2	0	0	0	2	0	1	0	1	6
SWG	0	0	0	0	0	0	0	0	0	0	0	0	0
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	0	3	1	0	0	0	1	1	1	0	0	0	7
CCLL	0	0	0	0	0	0	0	0	0	0	1	1	2

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS													
S05	0	2	1	0	0	0	0	1	0	0	0	2	6
S06	0	0	0	0	0	0	0	0	0	0	0	0	0
S07	0	0	1	0	0	0	1	2	1	1	0	0	6
S08	0	0	0	0	1	0	0	1	0	0	0	0	2
S09	0	0	0	0	0	0	0	1	0	0	0	0	1
S10	0	0	0	0	0	0	0	0	0	0	0	0	0
S12	0	1	0	0	0	0	0	0	1	0	2	0	4
S12A	0	1	0	0	0	0	0	0	0	0	2	0	3
S13	0	1	0	0	0	0	1	0	0	0	1	0	3
S15	0	1	0	0	0	0	0	0	0	0	1	0	2
S16	0	1	0	0	0	1	0	1	1	0	0	0	4
S17	0	0	0	0	0	0	0	0	0	0	0	0	0
S18	0	0	0	0	0	0	0	0	0	0	0	0	0
S19	1	1	0	0	0	0	1	1	0	0	0	0	4
S21	1	1	0	0	0	1	1	0	0	0	1	0	5
S23	0	0	0	0	1	1	0	0	1	0	0	0	3
S25	0	1	0	1	1	0	0	0	0	0	0	0	3
S26	1	0	0	0	0	0	0	0	0	0	0	0	1
LOWER SCHUYLKILL EAST SIDE 9 SV													
S31	0	0	0	0	0	0	0	0	1	0	0	0	1
S35	0	1	0	3	1	4	1	0	1	2	0	2	15
S36	0	0	0	0	0	0	0	0	0	0	0	0	0
S36A	0	1	1	1	0	1	0	0	1	1	1	0	7
S37	1	2	2		0	0	0	0	0	0	0	2	7
S42	2	3	0	1	3	2	0	1	0	0	1	2	15
S42A	0	1	0	1	0	2	0	0	0	1	1	0	6
S44	0	0	0	0	0	0	0	0	0	0	0	0	0
S46	0	1	1	1	0	2	0	0	0	2	2	0	9
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS													
S01	0	0	0	3	0	0	0	0	0	0	1	0	4
S02	0	0	0	0	0	0	0	0	0	0	0	0	0
S03	0	0	0	0	0	0	0	0	0	0	0	0	0
S04	0	0	0	0	0	0	0	0	0	0	0	0	0
S11	0	0	0	0	0	0	0	0	1	0	0	0	1
S14	0	1	0	0	0	0	0	1	0	0	0	0	2
S20	0	0	0	0	0	0	0	1	0	0	0	0	1
S22	0	1	0	1	0	0	0	1	0	1	1	1	6
S24	0	1	0	1	0	2	0	0	0	1	1	1	7
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS													
S27	0	0	0	0	0	0	0	0	0	0	0	0	0
S28	0	0	1	0	0	1	0	0	0	0	0	0	2
S30	0	0	0	0	0	0	0	0	0	0	0	0	0
S34	0	0	0	0	0	0	0	0	0	0	0	0	0
S39	0	0	0	0	1	0	0	0	0	0	0	0	1
S40	0	0	0	0	0	0	0	0	0	0	0	0	0
S43	0	0	0	0	1	0	0	1	0	0	0	0	2
S47	0	0	0	0	0	1	0	0	0	0	0	0	1
S50	4	7	2	3	2	6	3	0	2	3	3	3	35
S51	4	3	4	3	2	2	2	0	1	2	0	1	24
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS													
S32	3	2	4	4	3	5	2	1	1	2	0	2	29
S33	1	0	1	1	2	2	3	1	1	0	0	2	14
S38	0	1	2	1	2	1	1	0	0	0	1	2	11
S45	0	0	2	1	1	0	0	0	1	1	0	2	8

25.67 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL 23 SWWPC UNITS													
C01	0	0	0	0	0	0	0	0	0	0	0	0	0
C02	0	0	0	0	0	0	0	0	0	0	0	0	0
C04	0	0	0	0	0	0	0	0	0	0	0	0	0
C04A	0	0	0	0	0	0	0	0	0	0	0	0	0
C05	0	0	0	0	0	0	0	0	0	1	0	0	1
C06	0	0	1	0	0	0	0	0	0	1	0	0	2
C07	0	1	0	0	0	0	0	0	0	0	0	0	1
C09	0	2	0	0	0	0	1	0	0	0	0	0	3
C10	1	0	0	0	0	0	0	0	0	0	0	0	1
C11	1	0	1	0	0	0	0	0	0	0	0	0	2
C12	2	0	1	0	0	0	0	0	0	0	0	0	3
C13	0	0	1	0	0	0	0	0	0	0	0	0	1
C14	2	1	3	1	0	0	0	0	1	0	0	0	8
C15	1	0	0	0	0	0	0	0	0	0	0	0	1
C16	1	0	2	0	0	0	0	0	0	0	0	0	3
C17	0	0	0	0	0	0	0	0	0	0	0	0	0
C31	0	0	1	0	0	0	0	0	0	0	0	1	2
C32	0	0	0	0	0	0	0	0	0	0	0	0	0
C33	0	0	0	0	0	0	0	0	0	0	0	0	0
C34	0	0	1	0	0	0	0	1	0	0	0	0	2
C35	0	0	1	0	0	0	0	0	0	0	0	0	1
C36	0	1	1	0	0	0	0	0	0	0	0	0	2
C37	0	0	1	0	1	1	0	0	0	0	0	0	3
COBBS CREEK LOW LEVEL 13 SWWPC UNITS													
C18	1	0	0	0	0	0	0	0	0	0	0	0	1
C19	2	0	0	0	0	0	0	0	0	0	0	0	2
C20	0	0	1	1	1	0	0	0	0	0	1	0	4
C21	0	0	0	0	0	0	0	0	0	0	0	0	0
C22	0	0	0	0	0	0	0	0	0	0	0	1	1
C23	0	0	1	0	0	0	0		0	0	0	0	1
C24	0	0	2	0	0	0	0	0	0	0	0	0	2
C25	0	0	1	0	0	0	0	0	0	0	0	0	1
C26	0	1	2	0	0	0	0	0	0	0	0	0	3
C27	0	0	1	0	0	0	0	0	0	0	0	0	1
C28A	0	0	0	0	0	0	0	0	0	0	0	0	0
C29	0	0	1	0	0	0	0	0	0	0	0	0	1
C30	0	0	0	0	0	0	0	0	0	0	0	0	0
													TOTAL
	29	41	45	28	23	35	17	15	15	16	21	23	308

CSE	3	10	2	1	3	3	4	7	4	1	7	2	47
LSE	3	9	4	7	4	11	1	1	3	6	5	6	60
CSW	0	3	0	5	0	2	0	3	1	2	3	2	21
SWG	8	10	7	6	6	10	5	1	3	2	3	4	65
LSW	4	3	9	7	8	8	6	2	3	3	1	8	62
CCHL	8	5	14	1	1	1	1	1	1	2	1	0	36
CCLL	3	1	9	1	1	0	0	0	0	0	1	1	17

June 2005 RELIEF SEWER MONTHLY INSPECTION

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R1	2	3	1	3	2	3	2	2	3	2	2	2	27
R2	2	3	1	3	2	3	2	2	3	2	2	2	27
R3	2	3	1	3	2	3	2	2	3	2	3	2	28
R4	2	3	1	3	2	3	1	2	3	2	2	2	26
R5	2	3	1	3	2	3	1	1	3	2	2	2	25
R6	2	3	1	3	2	3	1	1	3	2	2	2	25
MAIN RELIEF SEWER													
R7	2	1	2	3	3	3	1	2	3	2	2	2	26
R8	2	1	2	4	2	3	1	2	3	2	2	2	26
R9	2	1	2	3	2	2	1	2	3	2	2	3	25
R10	1	1	3	3	2	2	1	2	4	2	2	3	26
R11	1	1	2	3	2	2	1	2	3	2	2	2	23
R11A	1	1	2	3	2	2	1	2	3	2	2	2	23
R12	1	1	1	2	2	2	1	2	3	1	2	2	20
WAKLING RELIEF SEWER													
R13	1	2	1	1	2	2	1	2	2	2	2	2	20
R14	1	2	1	1	2	2	1	2	2	2	2	2	20
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	1	2	1	1	2	2	1	2	3	2	2	2	21
OREGON AVE RELIEF SEWER													
R16	2	2	1	1	2	5	2	2	4	2	2	2	27
R17	2	2	1	1	2	5	2	2	4	2	2	2	27
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	2	2	1	2	2	2	1	2	3	2	2	2	23
32ND ST RELIEF SEWER													
R19	1	1	1	1	2	2	1	1	2	2	2	2	18
MAIN STREET RELIEF SEWER													
R20	1	1	1	1	2	2	1	1	2	2	2	2	18
SOMERSET SYSTEM DIVERSION CHAMBER													
R21	1	1	1	1	2	3	1	1	2	2	2	2	19
TEMPORARY REGULATOR CHAMBER													
R22									]				
R23	1	1	1	1	2	2	1	1	2	2	2	2	18
ARCH ST RELIEF SEWER													
R24	1	1	1	2	1	3	1	1	1	1	2	2	17
16TH & SNYDER													
R25	2	2	3	2	3	3	2	2	1	2	2	2	26
GRANT & STATE RD. RELIEF													
R26	2	2	1	1	2	3	1	3	3	1	2	2	23
TOTAL	40	46	35	55	53	70	32	46	71	49	53	54	604
AVER	1.5	1.7	1.3	2.0	2.0	2.6	1.2	1.7	2.6	1.8	2.0	2.0	1.9

RELIEF SEWER MONTHLY DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R1	0	0	0	0	0	0	0	0	0	0	0	0	0
R2	0	0	0	0	0	0	0	0	0	0	0	0	0
R3	0	0	0	0	0	0	0	0	0	0	0	0	0
R4	0	0	0	0	0	0	0	0	0	0	0	0	0
R5	0	0	0	0	0	0	0	0	0	0	0	0	0
R6	0	0	0	0	0	0	0	0	0	0	0	0	0
MAIN RELIEF SEWER													
R7	0	0	0	0	0	0	0	0	0	0	0	0	0
R8	0	0	0	0	0	0	0	0	0	0	0	0	0
R9	0	0	0	0	0	0	0	0	0	0	0	0	0
R10	0	0	0	0	0	0	0	0	0	0	0	0	0
R11	0	0	0	0	0	0	0	0	0	0	0	0	0
R11A	0	0	0	0	0	0	0	0	0	0	0	0	0
R12	0	0	0	0	0	0	0	0	0	0	0	0	0
WAKLING RELIEF SEWER													
R13	0	0		0	0	0	0	0	0	0	0	0	0
R14	0	0	0	0	0	0	0	0	0	0	0	0	0
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	0	0	0	0	0	0	0	0	0	0	0	0	0
OREGON AVE RELIEF SEWER													
R16	0	0	0	0	0	0	0	0	0	0	0	0	0
R17	0	0	0	0	0	0	0	0	0	0	0	0	0
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	0	0	0	0	0	0	0	0	0	0	0	0	0
32ND ST RELIEF SEWER													
R19	0	0	0	0	0	0	0	0	0	0	0	0	0
MAIN STREET RELIEF SEWER													
R20	0	0	0	0	0	0	0	0	0	0	0	0	0
SOMERSET SYSTEM DIVERSION CHAMBER													
R21	0	0	0	0	0	0	0	0	0	0	0	0	0
TEMPORARY REGULATOR CHAMBER													
R22													0
R23	0	0	0	0	0	0	0	0	0	0	0	0	0
ARCH ST RELIEF SEWER													
R24	0	0	0	0	0	0	0	0	0	0	0	0	0
16TH & SNYDER													
R25	0	0	0	0	0	0	0	0	0	0	0	0	0
GRANT & STATE RD. RELIEF													
R26	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
UNITS	0	0	0	0	0	0	0	0	0	0	0	0	

June 2005 RELIEF SEWER MONTHLY BLOCKS CLEARED

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R1	0	0	0	0	0	0	0	0	0	0	0	0	0
R2	0	0	0	0	0	0	0	0	0	0	0	0	0
R3	0	0	0	0	0	0	0	0	0	0	0	0	0
R4	0	0	0	0	0	0	0	0	0	0	0	0	0
R5	0	0	0	0	0	0	0	0	0	0	0	0	0
R6	0	0	0	0	0	0	0	0	0	0	0	0	0
MAIN RELIEF SEWER													
R7	0	0	0	0	0	0	0	0	0	0	0	0	0
R8	0	0	0	0	0	0	0	0	0	0	0	0	0
R9	0	0	0	0	0	0	0	0	0	0	0	0	0
R10	0	0	0	0	0	1	0	0	0	0	0	0	1
R11	0	0	0	0	0	0	0	0	0	0	0	0	0
R11A	0	0	0	0	0	0	0	0	0	0	0	0	0
R12	0	0	0	0	0	0	0	0	0	0	0	0	0
WAKLING RELIEF SEWER													
R13	0	0	0	0	0	0	0	0	0	0	0	0	0
R14	0	0	0	0	0	0	0	0	0	0	0	0	0
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	0	0	0	0	0	0	0	0	0	0	0	0	0
OREGON AVE RELIEF SEWER													
R16	0	0	0	0	0	0	0	0	0	0	0	0	0
R17	0	0	0	0	0	0	0	0	0	0	0	0	0
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	0	0	0	0	0	0	0	0	0	0	0	0	0
32ND ST RELIEF SEWER													
R19	0	0	0	0	0	0	0	0	0	0	0	0	0
MAIN STREET RELIEF SEWER													
R20	0	0	0	0	0	0	0	0	0	0	0	0	0
SOMERSET SYSTEM DIVERSION CHAMBER													
R21	0	0	0	0	0	0	0	0	0	0	0	0	0
TEMPORARY REGULATOR CHAMBER													
R22													0
R23	0	0	0	0	0	0	0	0	0	0	0	0	0
ARCH ST RELIEF SEWER													
R24	0	0	0	0	0	0	0	0	0	0	0	0	0
16TH & SNYDER													
R25	0	0	0	0	0	0	0	0	0	0	0	0	0
GRANT & STATE RD. RELIEF													
R26	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	1	0	0	0	0	0	0	1
AVER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

June 2005 MISCELLANEOUS SITE INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST	1	2	1	1	3	3	1	2	3	2	2	2	23
SOMERSET GRIT LEVEL	2	3	1	1	1	1	1	2	3	1	3	2	21
(H-20) 70th & Dicks	2	1	1	2	1	3	1	1	1	2	2	3	20
CCLL CONTROL PIPE @ ISLAND AVE.	3	4	3		3	4	2	2	3	1	4	3	32
RHOM & HAAS FLAP GATE	2	2	1	1	3	3	3	1	2	1	2	2	23
DROP SWIRL ON CSE COLLECTOR	2	2	3	2	2	2	0	1	3	2	2	3	24
UPPER DARBY OVERFLOW	2	1	1	1	1	3	1	1	1	2	2	3	19
P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR	13	15	6	4	9	9	7	3	6	3	7	16	98
O & ERIE DIVERSION GATE	1	2	1	2	2	2	2	2	3	1	2	2	22
T-04 NET REPLACEMENTS	JUL 23,2004	, 2004	N/A	, 2004	N/A	, 2004	N/A	N/A	N/A	, 2005	N/A	6/2	12
T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE	5	5	4	3	4	4	2	2	4	3	5	8	49
T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.	5	4	4	2	3	2	1	2	3	2	3	7	38
T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST.	4	5	3	3	4	4	2	2	4	3	5	8	47
T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST.	2	4	2	3	3	3	1	2	4	2	5	8	39
T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST.	4	5	3	3	3	4	1	2	5	3	5	8	46
T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.	4	5	2	3	3	4	1	2	4	3	5	8	44
W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE.	4	3	2	2	3	2	1	2	4	2	4	4	33
W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST.	4	3	2	2	3	2	1	2	4	2	4	4	33

June 2005 MISCELLANEOUS SITE DISCHARGES

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST			0			0							
SOMERSET GRIT LEVEL													
(H-20) 70th & Dicks													
CCLL CONTROL PIPE @ ISLAND AVE.	0	0	0		0	0	0	0	0	0	0	0	0
RHOM & HAAS FLAP GATE													
DROP SWIRL ON CSE COLLECTOR	0	0	0	0	0	0	0	0	0	0	0	0	0
UPPER DARBY OVERFLOW													
P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR	2	0	0	0	0	0	0	0	0	0	1	2	5
O & ERIE DIVERSION GATE													
T-04 NET WEIGHT	215 LB	375		175 LB	N/A	395 lbs	N/A	N/A	N/A	430 lbs	N/A	304 LBS.	
T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE	0	0	0	0	0	0	0	0	0	0	0	0	0
T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.	0	0	0	0	0	0	0	0	0	0	0	1	1
T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST.	0	0	0	0	0	0	0	0	0	0	0	1	1
T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST.	0	0	0	0	0	0	0	0	0	0	0	0	0
T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST.	0	0	0	0	0	0	0	0	0	0	1	0	1
T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.	0	0	0	0	0	0	0	0	0	0	0	0	0
W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE.	0	0	0	0	0	0	0	0	0	0	0	0	0
W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST.	0	0	0	0	0	0	0	0	0	0	0	0	0

June 2005 MISCELLANEOUS SITE BLOCKAGES CLEARED

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST	0	0	0	0	0	0	0	0	0	0	0	0	
SOMERSET GRIT LEVEL													
(H-20) 70th & Dicks	0	0	0	0		0	0	0	0	0	0	0	
CCLL CONTROL PIPE @ ISLAND AVE.	0	0	1		0	0	0	0	0	0	0	0	1
RHOM & HAAS FLAP GATE													
DROP SWIRL ON CSE COLLECTOR	0	0	0	0	0	0	0	0	0	0	0	0	0
UPPER DARBY OVERFLOW													
P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR	4	4	0	0	1	0	0	0	0	1	2	3	15
O & ERIE DIVERSION GATE	0	0	0	0	0	0	0	0	0	0	0	0	
T-04 NET ****													
T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE	1	0	2	0	0	0	0	0	0	0	0	1	4
T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.	1	3	1	1	0	0	1	0	0	1	2	1	11
T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST.	0	1	1	0	0	0	0	0	0	0	0	1	3
T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST.	1	0	1	0	0	0	0	0	0	0	2	1	5
T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST.	0	1	1	0	0	0	0	0	2	0	1	0	5
T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.	0	0	0	0	0	0	0	0	0	0	0	0	0
W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE.	0	0	0	0	0	0	0	0	0	0	0	0	0
W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST.	0	0	0	0	0	0	0	0	0	0	0	0	0

FY2005 Dry Weather Discharges

Discharge Observed		Discharge Stopped		Last Inspection						
DateDO	TimeDO	DateDS	TimeDS	DateLI	TimeLI	SiteID	Collector	TypeUnit	Location	Comment
07/15/04	01:35 PM	07/16/04	02:40 PM	07/08/04	02:15 PM	T-11	FHL	SLOT	Ruscomb St. E of Tacony Creek.	Grit & debris in slot box going to connecting pipe blocked the flow.
07/31/04	10:10 AM	07/31/04	05:00 PM	07/27/04	11:14 AM	T-13	FHL	SLOT	Whitaker Ave. W of Tacony Creek.	Connecting line to the interceptor blocked with grit & a large rock.
07/31/04	10:10 AM	07/31/04	02:20 PM	07/27/04	12:00 PM	T-11	FHL	SLOT	Ruscomb St. E of Tacony Creek.	Connecting line to the interceptor blocked with grit & other unknown debris.
08/02/04	12:00 PM	08/03/04	01:00 PM	07/29/04	10:30 AM	C-09	CCHL	SLOT	64th St. & Cobbs Creek.	Returned on the 3rd, the connecting pipe level dropped from 7' to approximately 2' allowing more visibility to completely remove the blockage.
08/02/04	01:50 PM	08/02/04	02:20 PM	07/31/04	02:20 PM	T-11	FHL	SLOT	Ruscomb St. East Of Tacony Creek	Grit & debris in the connecting pipe blocked the flow.
08/02/04	08:35 AM	08/02/04	02:55 PM	07/31/04	05:00 PM	T-13	FHL	SLOT	Whitaker Ave. East Of Tacony Creek	Grit, debris & large rock in connecting pipe blocked the flow.
08/06/04	11:00 AM	08/06/04	02:15 PM	07/30/04	10:35 AM	P-04	PP	SLOT	Cottage Ave. & Holmesburg Ave.	The connecting pipe was obstructed with unknown debris.
08/06/04	09:00 AM	08/07/04	10:30 AM	08/30/00	09:25 AM	S-05	CSES	B & B	24th St. 155 S of Park Towne Place	A large section of red brick which appeared to be part of a sewer was lodged in trunk opening to regulator chamber. Crew diligently tried to dislodge the obstruction. They were able to reposition the obstruction to allow it to relieve itself. Returned on aug. 7th and were able to completely remove the obstruction.
08/07/04	11:15 AM	08/07/04	01:35 PM	07/27/04	09:25 AM	S-42	LSES	B & B	Passyunk Ave. & 29th St.	Shuttergate was stuck in the closed position.
08/10/04	11:00 AM	08/10/04	12:30 PM	08/06/04	01:10 PM	C-14	CCHL	SLOT	Baltimore Ave. & Cobbs Creek.	Large tree branch got stuck in the slot box
08/10/04	02:10 PM	08/10/04	02:45 PM	07/29/04	11:40 AM	F-09	LFLL	WH-S	Frankford Ave. N or Frankford Creek.	Wood & trash blocked the flow through the gate valve.
08/24/04	01:40 PM	08/24/04	02:35 PM	08/23/04	01:35 PM	C-36	CCHL	SLOT	69th St. & Woodbine Ave S of Brentwood	A towel and other debris blocked the slot opening.
08/31/04	08:40 AM	08/31/04	09:57 AM	08/18/04	09:15 AM	P-04	PP	SLOT	Cottage Ave. & Holmesburg Ave.	Grit in slot box & connecting pipe blocked the flow.
09/04/04	07:30 AM	09/04/04	10:35 AM	08/30/04	12:00 PM	F-09	LFLL	WH-S	Frankford Ave. N or Frankford Creek.	Plastic milk jug and trash in mouth of the gate caused a partial overflow.
09/30/04	10:05 AM	09/30/04	05:00 PM	09/09/04	12:45 PM	C-06	CCHL	SLOT	Lebanon Ave. & 68th St.	Slot box and connecting pipe were blocked with grit.
09/30/04	10:30 AM	09/30/04	12:20 PM	09/20/04	10:10 AM	D-25	SOM	B & B	Somerset St. E of Richmond St.	PVC and construction lumber in tide gate and trunk opening to regulator from construction site at C & Indiana ave.
10/05/04	11:00 AM	10/05/04	12:38 PM	09/28/04	12:00 PM	S-01	CSW	B & B	Mantua Ave. & West River Dr.	Stones, pieces of brick, grit & other debris blocked the shutter gate.
10/06/04	01:55 PM	10/06/04	02:45 PM	10/02/04	11:15 AM	F-09	LFLL	WH-S	Frankford Ave. N or Frankford Creek.	Plastic food tray & trash in mouth of gate caused overflow over dam.
10/07/04	01:00 PM	10/07/04	02:00 PM	10/01/04	11:26 AM	S-22	CSW	B & B	660' S of South St E of Penn Field	Shutter gate was stuck partially down, blocking flow.
10/29/04	08:30 AM	10/29/04	11:15 AM	10/19/04	10:05 AM	S-37	LSES	B & B	Vare Ave. & Jackson St.	Regulator invert was blocked with grit and bricks.
11/15/04	11:00 AM	11/15/04	01:00 PM	11/10/04	12:25 PM	S-42	LSES	B & B	Passyunk Ave. & 29th St.	Large log was stuck in the trunk opening to the regulator.
01/12/05	10:20 AM	01/12/05	11:40 AM	01/04/05	11:40 AM	C-09	CCHL	SLOT	64th St. & Cobbs Creek.	Boulder in slot box restricted flow causing a discharge.
02/08/05	09:30 AM	02/09/05	09:30 AM	02/03/05	10:45 AM	S-20	CSW	B & B	NNW of South St. (Behind Penn Stad.)	Rags & other debris got caught in shutter gate. We were unable to gain access until the day after it was first observed due to coordination with SEPTA regional rail to be escorted across the tracks.
02/16/05	10:40 AM	02/16/05	12:00 PM	02/08/05	10:30 AM	C-34	CCHL	SLOT	Woodcrest Ave & Morris Park	Sticks & debris blocked the slot opening.
02/22/05	10:50 AM	02/22/05	02:35 PM	02/08/05	01:50 PM	S-22	CSW	B & B	660' S of South St E of Penn Field	Rags & other debris wrapped around a metal bar stuck in shutter gate. Debris also blocked the trunk opening to regulator.
03/18/05	01:00 PM	03/18/05	02:00 PM	03/11/05	09:30 AM	C-14	CCHL	SLOT	BALTIMORE AVE. & COBBS CREEK	Log blocked the slot opening to the DWO pipe.
04/01/05	12:30 PM	04/01/05	01:55 PM	03/30/05	01:20 PM	S-22	CSW	B & B	660' S of South St E of Penn Field	Small log & other debris stuck in trunk opening to regulator chamber.
04/28/05	10:00 AM	04/28/05	10:45 AM	04/18/05	10:45 AM	T-11	FHL	SLOT	Ruscomb St. E of Tacony Creek.	Trash in DWO pipe leading to clean-out blocked the flow.
05/04/05	01:25 PM	05/04/05	03:35 PM	04/21/05	10:25 AM	C-20	CCLL	DAM	65th St. & Cobbs Creek. Parkway	Unit was blocked from clean out to connecting pipe.
05/09/05	11:10 AM	05/09/05	12:20 PM	05/02/05	11:30 AM	S-12	CSES	SLOT	24th St. N of Chestnut St. Bridge	There was a grease build up in the slot box causing the discharge.
06/17/05	11:30 AM	06/18/05	12:00 PM	06/16/05	12:20 PM	D-68	LDLL	B & B	Snyder Ave. & Delaware Ave.	Wood wrapped around tide gate chain caused inflow and then wood debris blocked the regulator. Discharged during outgoing tides until problem was corrected.
06/21/05	09:40 AM	06/21/05	10:20 AM	06/07/05	10:30 AM	C-22	CCLL	SLOT	70th St. & Cobbs Creek. Parkway	Debris blocked the slot opening.
06/28/05	01:15 PM	06/28/05	02:00 PM	06/24/05	09:24 AM	S-22	CSW	B & B	660' S of South St E of Penn Field	The debris around shutter gate caused it to become stuck partially closed.

PART 1 | **PHILADELPHIA WATER DEPARTMENT** | **Section 1**

DRY WEATHER STATUS | **WASTE AND STORM WATER COLLECTION**

REPORT | **FLOW CONTROL UNIT** | **January 2006**

COLLECTOR	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	14	5	10	10	10	11	10	0	0	0	0	0	70
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	2	0	2	5	2	2	0	0	0	0	0	0	13
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	22	15	40	32	30	33	26	0	0	0	0	0	198
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	2	2	6	4	5	4	1	0	0	0	0	0	24
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	12	17	12	14	12	14	12	0	0	0	0	0	93
DISCHARGES	0	1	0	0	0	0	0	0	0	0	0	0	1
BLOCKS CLEARED	1	0	0	1	1	2	1	0	0	0	0	0	6
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	14	26	13	24	22	26	23	0	0	0	0	0	148
DISCHARGES	0	2	0	0	1	0	1	0	0	0	0	0	4
BLOCKS CLEARED	2	5	1	3	1	0	3	0	0	0	0	0	15
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	37	18	19	18	23	37	20	0	0	0	0	0	172
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	0	2	2	0	0	2	0	0	0	0	0	0	6
SOMERSET - 9 UNITS													
INSPECTIONS	14	21	29	22	22	32	26	0	0	0	0	0	166
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	1	0	0	0	0	0	0	0	0	0	0	0	1
LOWER DELAWARE LOW LEVEL - 33 UNITS													
INSPECTIONS	83	73	74	95	106	102	88	0	0	0	0	0	621
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	5	3	0	3	0	0	1	0	0	0	0	0	12
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	114	54	57	72	88	96	96	0	0	0	0	0	577
DISCHARGES	1	0	0	0	0	0	0	0	0	0	0	0	1
BLOCKS CLEARED	6	0	2	5	5	1	0	0	0	0	0	0	19
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	22	42	30	36	16	36	44	0	0	0	0	0	226
DISCHARGES	1	1	0	0	0	0	0	0	0	0	0	0	2
BLOCKS CLEARED	3	2	7	7	6	0	5	0	0	0	0	0	30
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	17	26	25	31	44	32	41	0	0	0	0	0	216
DISCHARGES	0	0	0	0	2	0	0	0	0	0	0	0	2
BLOCKS CLEARED	0	0	0	1	1	1	0	0	0	0	0	0	3
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	32	52	34	60	27	48	46	0	0	0	0	0	299
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	0	0	4	7	3	0	3	0	0	0	0	0	17
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	27	12	23	25	11	25	16	0	0	0	0	0	139
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKS CLEARED	2	4	2	5	6	5	1	0	0	0	0	0	25
COBBS CREEK HIGH LEVEL - 23 UNITS													
INSPECTIONS	67	60	60	88	74	77	71	0	0	0	0	0	497
DISCHARGES	0	0	0	0	0	1	0	0	0	0	0	0	1
BLOCKS CLEARED	0	0	0	15	10	14	2	0	0	0	0	0	41
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	28	26	43	32	39	40	27	0	0	0	0	0	235
DISCHARGES	1	0	0	0	0	0	0	0	0	0	0	0	1
BLOCKS CLEARED	1	0	1	5	10	7	2	0	0	0	0	0	26
RELIEF SEWERS - 26 UNITS													
INSPECTIONS	49	30	47	41	39	67	54	0	0	0	0	0	327
DISCHARGES	1	0	0	0	0	0	0	0	0	0	0	0	1
BLOCKS CLEARED	1	0	0	3	4	0	0	0	0	0	0	0	8
TOTALS / MONTH for 201 REGULATOR UNITS													Totals
TOTAL INSPECTIONS	552	477	516	600	563	676	600	0	0	0	0	0	3984
TOTAL DISCHARGES	4	4	0	0	3	1	1	0	0	0	0	0	13
TOTAL BLOCKS CLEARED	26	18	27	64	54	38	19	0	0	0	0	0	246
AVER. # of INSP. / BC	21	27	19	9	10	18	32	n/a	n/a	n/a	n/a	n/a	19
DISC / 100 INSPECTIONS	0.7	0.8	0.0	0.0	0.5	0.1	0.2						0.3

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK 5 NEWPC UNITS															
P01	3	1	2	2	2	2	2						14	2.0	15.2
P02	3	1	2	2	2	2	2						14	2.0	15.2
P03	3	1	2	2	2	2	2						14	2.0	15.2
P04	3	1	2	2	2	3	2						15	2.1	14.2
P05	2	1	2	2	2	2	2						13	1.9	16.4
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS															
D02	3	1	3	2	3	4	3						19	2.7	11.2
D03	3	1	3	4	3	3	3						20	2.9	10.6
D04	2	3	4	2	2	6	2						21	3.0	10.1
D05	2	1	4	4	3	4	2						20	2.9	10.6
D06	2	1	6	2	2	2	2						17	2.4	12.5
D07	2	1	3	4	5	2	2						19	2.7	11.2
D08	2	2	3	2	2	2	2						15	2.1	14.2
D09	2	1	3	2	2	2	2						14	2.0	15.2
D11	1	1	4	4	2	2	2						16	2.3	13.3
D12	1	1	2	2	2	2	2						12	1.7	17.7
D13	1	1	2	2	2	2	2						12	1.7	17.7
D15	1	1	3	2	2	2	2						13	1.9	16.4
LOWER FRANKFORD CREEK 6 NEWPC UNITS															
F13	2	2	2	2	2	2	2						14	2.0	15.2
F14	2	2	2	2	1	2	2						13	1.9	16.4
F21	2	3	3	2	3	3	2						18	2.6	11.8
F23	2	4	2	3	2	3	2						18	2.6	11.8
F24	2	2	2	3	2	2	2						15	2.1	14.2
F25	2	4	1	2	2	2	2						15	2.1	14.2
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS															
F03	2	2	2	2	2	2	2						14	2.0	15.2
F04	1	2	1	2	2	2	2						12	1.7	17.7
F05	1	3	2	2	2	2	2						14	2.0	15.2
F06	2	2	1	2	2	4	3						16	2.3	13.3
F07	1	2	1	2	2	2	1						11	1.6	19.3
F08	1	2	1	2	2	2	1						11	1.6	19.3
F09	2	4	2	5	2	4	7						26	3.7	8.2
F10	2	2	1	2	2	2	1						12	1.7	17.7
F11	1	2	1	2	2	2	1						11	1.6	19.3
F12	1	5	1	3	4	4	3						21	3.0	10.1
FRANKFORD HIGH LEVEL 14 NEWPC UNITS															
T01	3	1	1	1	2	2	2						12	1.7	17.7
T03	2	1	1	1	3	2	2						12	1.7	17.7
T04	2	1	3	3	3	3	1						16	2.3	13.3
T05	2	1	1	1	2	2	1						10	1.4	21.3
T06	2	1	1	1	2	2	1						10	1.4	21.3
T07	2	1	1	1	2	2	1						10	1.4	21.3
T08	3	2	2	1	2	3	1						14	2.0	15.2
T09	3	2	2	2	1	2	1						13	1.9	16.4
T10	3	2	2	1	1	5	2						16	2.3	13.3
T11	3	2	1	1	1	3	3						14	2.0	15.2
T12	3	1	1	1	1	3	1						11	1.6	19.3
T13	3	1	1	1	1	3	2						12	1.7	17.7
T14	3	1	1	1	1	3	1						11	1.6	19.3
T15	3	1	1	2	1	2	1						11	1.6	19.3

5	TOTAL DISCHARGES FOR NE & SE DISTRICTS	DTR	= DAYS TO RETURN TO SITE
0.7	AVERAGE DISCHARGES PER MONTH	I/D/C	= INSPECTIONS PER DAY PER CREW
15.0	AVER. DAYS BEFORE RETURNING TO SITE	I/D	= INSPECTIONS PER DISCHARGE
3.4	AVER. INSPECTIONS PER DAY PER CREW		

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL 9 NEWPC UNITS															
D17	2	3	3	3	2	4	2						19	2.7	11.2
D18	2	2	3	2	2	4	2						17	2.4	12.5
D19	2	3	3	2	3	5	2						20	2.9	10.6
D20	2	2	4	2	2	3	2						17	2.4	12.5
D21	1	2	3	2	2	3	2						15	2.1	14.2
D22	1	3	4	2	3	3	2						18	2.6	11.8
D23	1	2	3	2	2	3	2						15	2.1	14.2
D24	1	2	2	2	2	3	2						14	2.0	15.2
D25	2	2	4	5	4	4	10						31	4.4	6.9
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS															
D37	1	2	3	2	5	3	3						19	2.7	11.2
D38	1	2	2	4	5	3	3						20	2.9	10.6
D39	1	2	4	4	4	3	3						21	3.0	10.1
D40	3	2	2	2	3	3	3						18	2.6	11.8
D41	3	2	2	4	3	3	3						20	2.9	10.6
D42	1	2	3	2	3	3	3						17	2.4	12.5
D43	1	2	3	2	3	3	3						17	2.4	12.5
D44	2	3	3	3	4	3	3						21	3.0	10.1
D45	4	2	2	11	4	4	5						32	4.6	6.7
D46	3	1	4	3	3	4	3						21	3.0	10.1
D47	4	2	3	2	3	4	3						21	3.0	10.1
D48	5	2	2	5	3	4	4						25	3.6	8.5
D49	3	2	2	2	3	4	3						19	2.7	11.2
D50	4	3	2	4	4	4	4						25	3.6	8.5
D51	3	2	2	2	3	5	5						22	3.1	9.7
D52	4	2	2	2	3	3	3						19	2.7	11.2
D53	4	2	2	3	3	3	2						19	2.7	11.2
D54	5	2	2	3	3	3	2						20	2.9	10.6
D58	4	2	2	2	4	6	2						22	3.1	9.7
D61	2	2	2	2	3	3	2						16	2.3	13.3
D62	2	2	2	2	3	3	2						16	2.3	13.3
D63	4	2	2	2	3	3	3						19	2.7	11.2
D64	5	2	2	2	3	3	2						19	2.7	11.2
D65	1	3	2	2	3	4	2						17	2.4	12.5
D66	2	2	2	2	3	3	2						16	2.3	13.3
D67	2	2	2	2	4	2	2						16	2.3	13.3
D68	2	2	1	7	4	2	2						20	2.9	10.6
D69	2	3	3	3	3	2	2						18	2.6	11.8
D70	1	5	2	2	3	3	3						19	2.7	11.2
D71	1	5	2	3	2	2	2						17	2.4	12.5
D72	1	1	2	2	3	2	2						13	1.9	16.4
D73	1	3	2	2	3	2	2						15	2.1	14.2
D75	1	0	1	0	0	0	0						2	0.3	105.9
TOTAL	196	175	197	215	225	255	205	0	0	0	0	0	1468		
I /D/C	3.2	2.9	3.2	3.5	3.7	4.2	3.4	0.0	0.0	0.0	0.0	0.0			
UP	14	5	10	10	10	11	10	0	0	0	0	0	70	2.0	15.2
UDLL	22	15	40	32	30	33	26	0	0	0	0	0	198	2.4	13.4
LFC	12	17	12	14	12	14	12	0	0	0	0	0	93	2.2	13.9
LFLL	14	26	13	24	22	26	23	0	0	0	0	0	148	2.1	15.6
FHL	37	18	19	18	23	37	20	0	0	0	0	0	172	1.8	17.7
SLL	14	21	29	22	22	32	26	0	0	0	0	0	166	2.6	12.1
LDLL	83	73	74	95	106	102	88	0	0	0	0	0	621	2.7	14.2

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UPPER PENNYPACK 5 NEWPC UNITS													
P01	0	0	0	0	0	0	0						0
P02	0	0	0	0	0	0	0						0
P03	0	0	0	0	0	0	0						0
P04	0	0	0	0	0	0	0						0
P05	0	0	0	0	0	0	0						0
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS													
D02	0	0	0	0	0	0	0						0
D03	0	0	0	0	0	0	0						0
D04	0	0	0	0	0	0	0						0
D05	0	0	0	0	0	0	0						0
D06	0	0	0	0	0	0	0						0
D07	0	0	0	0	0	0	0						0
D08	0	0	0	0	0	0	0						0
D09	0	0	0	0	0	0	0						0
D11	0	0	0	0	0	0	0						0
D12	0	0	0	0	0	0	0						0
D13	0	0	0	0	0	0	0						0
D15	0	0	0	0	0	0	0						0
LOWER FRANKFORD CREEK 6 NEWPC UNITS													
F13	0	0	0	0	0	0	0						0
F14	0	0	0	0	0	0	0						0
F21	0	0	0	0	0	0	0						0
F23	0	1	0	0	0	0	0						1
F24	0	0	0	0	0	0	0						0
F25	0	0	0	0	0	0	0						0
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS													
F03	0	0	0	0	0	0	0						0
F04	0	1	0	0	0	0	0						1
F05	0	0	0	0	0	0	0						0
F06	0	0	0	0	0	0	0						0
F07	0	0	0	0	1	0	0						1
F08	0	0	0	0	0	0	0						0
F09	0	1	0	0	0	0	1						2
F10	0	0	0	0	0	0	0						0
F11	0	0	0	0	0	0	0						0
F12	0	0	0	0	0	0	0						0
FRANKFORD HIGH LEVEL 14 NEWPC UNITS													
T01	0	0	0	0	0	0	0						0
T03	0	0	0	0	0	0	0						0
T04	0	0	0	0	0	0	0						0
T05	0	0	0	0	0	0	0						0
T06	0	0	0	0	0	0	0						0
T07	0	0	0	0	0	0	0						0
T08	0	0	0	0	0	0	0						0
T09	0	0	0	0	0	0	0						0
T10	0	0	0	0	0	0	0						0
T11	0	0	0	0	0	0	0						0
T12	0	0	0	0	0	0	0						0
T13	0	0	0	0	0	0	0						0
T14	0	0	0	0	0	0	0						0
T15	0	0	0	0	0	0	0						0

													TOTAL
UP	0	0	0	0	0	0	0	0	0	0	0	0	0
UDLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LFC	0	1	0	0	0	0	0	0	0	0	0	0	1
LFLL	0	2	0	0	1	0	1	0	0	0	0	0	4
FHL	0	0	0	0	0	0	0	0	0	0	0	0	0
SLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LDLL	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL 9 NEWPC UNITS													
D17	0	0	0	0	0	0	0						0
D18	0	0	0	0	0	0	0						0
D19	0	0	0	0	0	0	0						0
D20	0	0	0	0	0	0	0						0
D21	0	0	0	0	0	0	0						0
D22	0	0	0	0	0	0	0						0
D23	0	0	0	0	0	0	0						0
D24	0	0	0	0	0	0	0						0
D25	0	0	0	0	0	0	0						0
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS													
D37	0	0	0	0	0	0	0						0
D38	0	0	0	0	0	0	0						0
D39	0	0	0	0	0	0	0						0
D40	0	0	0	0	0	0	0						0
D41	0	0	0	0	0	0	0						0
D42	0	0	0	0	0	0	0						0
D43	0	0	0	0	0	0	0						0
D44	0	0	0	0	0	0	0						0
D45	0	0	0	0	0	0	0						0
D46	0	0	0	0	0	0	0						0
D47	0	0	0	0	0	0	0						0
D48	0	0	0	0	0	0	0						0
D49	0	0	0	0	0	0	0						0
D50	0	0	0	0	0	0	0						0
D51	0	0	0	0	0	0	0						0
D52	0	0	0	0	0	0	0						0
D53	0	0	0	0	0	0	0						0
D54	0	0	0	0	0	0	0						0
D58	0	0	0	0	0	0	0						0
D61	0	0	0	0	0	0	0						0
D62	0	0	0	0	0	0	0						0
D63	0	0	0	0	0	0	0						0
D64	0	0	0	0	0	0	0						0
D65	0	0	0	0	0	0	0						0
D66	0	0	0	0	0	0	0						0
D67	0	0	0	0	0	0	0						0
D68	0	0	0	0	0	0	0						0
D69	0	0	0	0	0	0	0						0
D70	0	0	0	0	0	0	0						0
D71	0	0	0	0	0	0	0						0
D72	0	0	0	0	0	0	0						0
D73	0	0	0	0	0	0	0						0
D75	0	0	0	0	0	0	0						0

													TOTAL DISC
	0	3	0	0	1	0	1	0	0	0	0	0	5

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
UP	0	0	0	0	0	0	0	0	0	0	0	0	0
UDLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LFC	0	1	0	0	0	0	0	0	0	0	0	0	1
LFLL	0	2	0	0	1	0	1	0	0	0	0	0	4
FHL	0	0	0	0	0	0	0	0	0	0	0	0	0
SLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LDLL	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
UPPER PENNYPACK 5 NEWPC UNITS													
P01	0	0	0	1		0	0						1
P02	0	0	0	0	0	0	0						0
P03	0	0	0	2	0	1	0						3
P04	2	0	2	2	2	1	0						9
P05	0	0											0
UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS													
D02	1	0	0	0	0	0	0						1
D03	0	0	1	2	2	0	1						6
D04	0	0	1	0	1	3	0						5
D05	0	0	0	0	0	0	0						0
D06	1	0	0	1	1	0	0						3
D07	0	0	0	0	0	0	0						0
D08	0	0	2	0	0	0	0						2
D09	0	0	0	0	0	0	0						0
D11	0	0	0	0	1	0	0						1
D12	0	1	0	1	0	1	0						3
D13	0	1	0	0	0	0	0						1
D15	0	0	2	0	0	0	0						2
LOWER FRANKFORD CREEK 6 NEWPC UNITS													
F13	0	0	0	0	0	0	0						0
F14	1	0	0	0	0	0	1						2
F21	0	0	0	0	0	1	0						1
F23	0	0	0	1	1	1	0						3
F24	0	0	0	0	0	0	0						0
F25	0	0	0	0	0	0	0						0
LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS													
F03	0	0	0	0	0	0	0						0
F04	0	0	0	0	0	0	1						1
F05	0	0	0	1	0	0	0						1
F06	1	0	0	0	0	0	0						1
F07	0	0	0	1	0	0	0						1
F08	0	1	0	0	0	0	0						1
F09	0	3	1	1	1	0	1						7
F10	1	1	0	0	0	0	0						2
F11	0	0	0	0	0	0	0						0
F12	0	0	0	0	0	0	1						1
FRANKFORD HIGH LEVEL 14 NEWPC UNITS													
T01	0	0	0	0	0	0	0						0
T03	0	0	0	0	0	0	0						0
T04	0	0	0	0	0	0	0						0
T05	0	0	0	0	0	0	0						0
T06	0	0	0	0	0	0	0						0
T07	0	0	0	0	0	0	0						0
T08	0	0	0	0	0	0	0						0
T09	0	1	2	0	0	0	0						3
T10	0	0	0	0	0	0	0						0
T11	0	1	0	0	0	0	0						1
T12	0	0	0	0	0	0	0						0
T13	0	0	0	0	0	2	0						2
T14	0	0	0	0	0	0	0						0
T15	0	0	0	0	0	0	0						0

11 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL 9 NEWPC UNITS													
D17	0	0	0	0	0	0	0						0
D18	1	0	0	0	0	0	0						1
D19	0	0	0	0	0	0	0						0
D20	0	0	0	0	0	0	0						0
D21	0	0	0	0	0	0	0						0
D22	0	0	0	0	0	0	0						0
D23	0	0	0	0	0	0	0						0
D24	0	0	0	0	0	0	0						0
D25	0	0	0	0	0	0	0						0
LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS													
D37	0	0	0	0	0	0	0						0
D38	0	0	0	0	0	0	0						0
D39	0	0	0	0	0	0	0						0
D40	1	0	0	0	0	0	0						1
D41	0	0	0	0	0	0	0						0
D42	0	0	0	0	0	0	0						0
D43	0	0	0	0	0	0	0						0
D44	1	2	0	0	0	0	0						3
D45	0	0	0	1	0	0	0						1
D46	0	0	0	0	0	0	0						0
D47	0	0	0	1	0	0	0						1
D48	1	0	0	0	0	0	0						1
D49	0	0	0	0	0	0	0						0
D50	0	0	0	0	0	0	0						0
D51	0	0	0	0	0	0	1						1
D52	0	0	0	0	0	0	0						0
D53	0	0	0	0	0	0	0						0
D54	0	0	0	0	0	0	0						0
D58	0	0	0	0	0	0	0						0
D61	0	0	0	0	0	0	0						0
D62	0	0	0	0	0	0	0						0
D63	1	0	0	0	0	0	0						1
D64	0	0	0	0	0	0	0						0
D65	0	0	0	0	0	0	0						0
D66	0	0	0	0	0	0	0						0
D67	0	0	0	0	0	0	0						0
D68	0	0	0	0	0	0	0						0
D69	0	0	0	0	0	0	0						0
D70	0	0	0	0	0	0	0						0
D71	0	1	0	1	0	0	0						2
D72	1	0	0	0	0	0	0						1
D73	0	0	0	0	0	0	0						0
D75	0	0	0	0	0	0	0						0
													TOTAL
	13	12	11	16	9	10	6	0	0	0	0	0	77

UP	2	0	2	5	2	2	0	0	0	0	0	0	13
UDLL	2	2	6	4	5	4	1	0	0	0	0	0	24
LFC	1	0	0	1	1	2	1	0	0	0	0	0	6
LFLL	2	5	1	3	1	0	3	0	0	0	0	0	15
FHL	0	2	2	0	0	2	0	0	0	0	0	0	6
SLL	1	0	0	0	0	0	0	0	0	0	0	0	1
LDLL	5	3	0	3	0	0	1	0	0	0	0	0	12

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS															
S05	8	3	3	4	5	6	5						34	4.9	6.3
S06	7	3	3	4	5	6	5						33	4.7	6.4
S07	6	3	3	4	5	6	5						32	4.6	6.7
S08	6	3	3	4	6	6	4						32	4.6	6.7
S09	6	3	2	4	5	5	5						30	4.3	7.1
S10	7	3	4	4	5	6	5						34	4.9	6.3
S12	7	3	4	5	6	5	6						36	5.1	5.9
S12A	7	3	4	5	6	5	6						36	5.1	5.9
S13	7	3	3	6	6	5	6						36	5.1	5.9
S15	9	3	3	6	5	5	6						37	5.3	5.8
S16	6	3	3	5	5	5	5						32	4.6	6.7
S17	6	3	3	3	4	5	5						29	4.1	7.3
S18	5	3	3	3	4	5	5						28	4.0	7.6
S19	5	3	4	3	4	5	6						30	4.3	7.1
S21	6	3	3	3	5	6	5						31	4.4	6.9
S23	6	3	3	3	4	5	7						31	4.4	6.9
S25	5	3	3	3	4	5	5						28	4.0	7.6
S26	5	3	3	3	4	5	5						28	4.0	7.6
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS															
S31	3	7	6	6	1	5	4						32	4.6	6.7
S35	2	4	5	3	1	5	4						24	3.4	8.9
S36	1	4	3	3	1	3	2						17	2.4	12.5
S36A	3	4	1	3	1	6	2						20	2.9	10.6
S37	3	6	3	3	1	3	2						21	3.0	10.1
S42	5	4	3	6	4	3	20						45	6.4	4.7
S42A	1	4	3	5	3	3	6						25	3.6	8.5
S44	2	4	3	3	1	3	2						18	2.6	11.8
S46	2	5	3	4	3	5	2						24	3.4	8.9
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS															
S01	2	3	3	4	2	3	6						23	3.3	9.3
S02	2	3	3	4	2	3	5						22	3.1	9.7
S03	2	3	2	4	2	3	5						21	3.0	10.1
S04	2	3	3	3	1	3	4						19	2.7	11.2
S11	1	3	3	4	1	3	4						19	2.7	11.2
S14	2	2	3	3	1	3	4						18	2.6	11.8
S20	2	3	2	3	6	2	4						22	3.1	9.7
S22	2	3	3	3	23	8	5						47	6.7	4.5
S24	2	3	3	3	6	4	4						25	3.6	8.5
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS															
S27	2	3	3	4	2	5	4						23	3.3	9.3
S28	1	3	2	4	2	3	4						19	2.7	11.2
S30	1	3	3	4	2	3	4						20	2.9	10.6
S34	1	3	2	3	2	3	4						18	2.6	11.8
S39	2	3	2	4	2	3	4						20	2.9	10.6
S40	2	2	2	4	1	3	3						17	2.4	12.5
S43	2	3	2	4	2	3	3						19	2.7	11.2
S47	2	3	2	4	2	3	3						19	2.7	11.2
S50	10	15	8	17	7	13	10						80	11.4	2.7
S51	9	14	8	12	5	9	7						64	9.1	3.3
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS															
S32	8	5	5	5	3	7	5						38	5.4	5.6
S33	7	5	5	7	3	8	5						40	5.7	5.3
S38	6	2	8	7	3	5	3						34	4.9	6.3
S45	6	0	5	6	2	5	3						27	3.9	7.9

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
COBBS CREEK HIGH LEVEL 23 SWWPC UNITS															
C01	3	3	2	4	3	4	3						22	3.1	9.7
C02	3	3	2	4	3	4	3						22	3.1	9.7
C04	2	3	2	4	3	3	3						20	2.9	10.6
C04A	2	3	2	4	3	3	3						20	2.9	10.6
C05	3	3	2	4	3	3	3						21	3.0	10.1
C06	3	3	3	4	3	4	4						24	3.4	8.9
C07	3	3	3	5	3	3	2						22	3.1	9.7
C09	3	3	3	4	3	3	5						24	3.4	8.9
C10	3	3	4	4	3	3	3						23	3.3	9.3
C11	3	3	2	4	3	3	2						20	2.9	10.6
C12	2	2	2	4	3	3	3						19	2.7	11.2
C13	2	2	2	3	3	2	2						16	2.3	13.3
C14	2	2	3	3	3	3	3						19	2.7	11.2
C15	2	2	4	3	3	3	2						19	2.7	11.2
C16	2	2	3	3	3	3	2						18	2.6	11.8
C17	2	2	3	3	3	3	2						18	2.6	11.8
C31	4	3	3	4	4	4	4						26	3.7	8.2
C32	3	3	2	4	3	4	3						22	3.1	9.7
C33	4	3	3	4	4	4	4						26	3.7	8.2
C34	4	3	3	4	4	4	4						26	3.7	8.2
C35	4	3	3	4	4	4	4						26	3.7	8.2
C36	4	3	2	4	4	3	4						24	3.4	8.9
C37	4		2	4	3	4	3						20	3.3	10.6
COBBS CREEK LOW LEVEL 13 SWWPC UNITS															
C18	2	2	3	3	3	3	2						18	2.6	11.8
C19	4	2	3	3	3	3	2						20	2.9	10.6
C20	2	2	3	3	3	3	2						18	2.6	11.8
C21	2	2	3	2	3	3	3						18	2.6	11.8
C22	2	2	3	4	3	3	2						19	2.7	11.2
C23	2	2	4	2	3	3	2						18	2.6	11.8
C24	2	2	3	3	3	3	2						18	2.6	11.8
C25	2	2	3	2	3	4	2						18	2.6	11.8
C26	2	2	3	2	3	3	2						17	2.4	12.5
C27	2	2	4	2	3	3	2						18	2.6	11.8
C28A	2	2	5	2	3	3	2						19	2.7	11.2
C29	2	2	3	2	3	3	2						17	2.4	12.5
C30	2	2	3	2	3	3	2						17	2.4	12.5
TOTAL	307	272	272	344	299	354	341	0	0	0	0	0	2189		
I /D/C	3.4	3.0	3.0	3.8	3.3	3.9	3.7	0.0	0.0	0.0	0.0	0.0			
CSES	114	54	57	72	88	96	96	0	0	0	0	0	577	4.6	6.7
LSES	22	42	30	36	16	36	44	0	0	0	0	0	226	3.6	9.2
CSW	17	26	25	31	44	32	41	0	0	0	0	0	216	3.4	9.6
SWMG	32	52	34	60	27	48	46	0	0	0	0	0	299	4.3	9.4
LSW	27	12	23	25	11	25	16	0	0	0	0	0	139	5.0	6.3
CCHL	67	60	60	88	74	77	71	0	0	0	0	0	497	3.1	10.0
CCLL	28	26	43	32	39	40	27	0	0	0	0	0	235	2.6	11.8

7 TOTAL DISCHARGES IN SW DISTRICT — DTR = DAYS TO RETURN TO SITE

1.0 AVERAGE DISCHARGES PER MONTH — I/D/C = INSPECTIONS PER DAY PER CREW

9.0 AVER. DAYS BEFORE RETURNING TO SITE — I/D = INSPECTIONS PER DISCHARGE

3.4 AVER. INSPECTIONS PER DAY PER CREW

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS													
S05	0	0	0	0	0	0	0						0
S06	0	0	0	0	0	0	0						0
S07	0	0	0	0	0	0	0						0
S08	0	0	0	0	0	0	0						0
S09	0	0	0	0	0	0	0						0
S10	0	0	0	0	0	0	0						0
S12	0	0	0	0	0	0	0						0
S12A	0	0	0	0	0	0	0						0
S13	0	0	0	0	0	0	0						0
S15	1	0	0	0	0	0	0						1
S16	0	0	0	0	0	0	0						0
S17	0	0	0	0	0	0	0						0
S18	0	0	0	0	0	0	0						0
S19	0	0	0	0	0	0	0						0
S21	0	0	0	0	0	0	0						0
S23	0	0	0	0	0	0	0						0
S25	0	0	0	0	0	0	0						0
S26	0	0	0	0	0	0	0						0
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS													
S31	0	0	0	0	0	0	0						0
S35	0	0	0	0	0	0	0						0
S36	0	0	0	0	0	0	0						0
S36A	0	0	0	0	0	0	0						0
S37	0	1	0	0	0	0	0						1
S42	1	0	0	0	0	0	0						1
S42A	0	0	0	0	0	0	0						0
S44	0	0	0	0	0	0	0						0
S46	0	0	0	0	0	0	0						0
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS													
S01	0	0	0	0	0	0	0						0
S02	0	0	0	0	0	0	0						0
S03	0	0	0	0	0	0	0						0
S04	0	0	0	0	0	0	0						0
S11	0	0	0	0	0	0	0						0
S14	0	0	0	0	0	0	0						0
S20	0	0	0	0	1	0	0						1
S22	0	0	0	0	1	0	0						1
S24	0	0	0	0	0	0	0						0
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS													
S27	0	0	0	0	0	0	0						0
S28	0	0	0	0	0	0	0						0
S30	0	0	0	0	0	0	0						0
S34	0	0	0	0	0	0	0						0
S39	0	0	0	0	0	0	0						0
S40	0	0	0	0	0	0	0						0
S43	0	0	0	0	0	0	0						0
S47	0	0	0	0	0	0	0						0
S50	0	0	0	0	0	0	0						0
S51	0	0	0	0	0	0	0						0
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS													
S32	0	0	0	0	0	0	0						0
S33	0	0	0	0	0	0	0						0
S38	0	0	0	0	0	0	0						0
S45	0	0	0	0	0	0	0						0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL 23 SWWPC UNITS													
C01	0	0	0	0	0	0	0						0
C02	0	0	0	0	0	0	0						0
C04	0	0	0	0	0	0	0						0
C04A	0	0	0	0	0	0	0						0
C05	0	0	0	0	0	0	0						0
C06	0	0	0	0	0	0	0						0
C07	0	0	0	0	0	1	0						1
C09	0	0	0	0	0	0	0						0
C10	0	0	0	0	0	0	0						0
C11	0	0	0	0	0	0	0						0
C12	0	0	0	0	0	0	0						0
C13	0	0	0	0	0	0	0						0
C14	0	0	0	0	0	0	0						0
C15	0	0	0	0	0	0	0						0
C16	0	0	0	0	0	0	0						0
C17	0	0	0	0	0	0	0						0
C31	0	0	0	0	0	0	0						0
C32	0	0	0	0	0	0	0						0
C33	0	0	0	0	0	0	0						0
C34	0	0	0	0	0	0	0						0
C35	0	0	0	0	0	0	0						0
C36	0	0	0	0	0	0	0						0
C37	0			0	0	0	0						0
COBBS CREEK LOW LEVEL 13 SWWPC UNITS													
C18	0	0	0	0	0	0	0						0
C19	1	0	0	0	0	0	0						1
C20	0	0	0	0	0	0	0						0
C21	0	0	0	0	0	0	0						0
C22	0	0	0	0	0	0	0						0
C23	0	0	0	0	0	0	0						0
C24	0	0	0	0	0	0	0						0
C25	0	0	0	0	0	0	0						0
C26	0	0	0	0	0	0	0						0
C27	0	0	0	0	0	0	0						0
C28A	0	0	0	0	0	0	0						0
C29	0	0	0	0	0	0	0						0
C30	0	0	0	0	0	0	0						0
													TOTAL DISC
	3	1	0	0	2	1	0	0	0	0	0	0	7

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
CSE	1	0	0	0	0	0	0	0	0	0	0	0	1
LSE	1	1	0	0	0	0	0	0	0	0	0	0	2
CSW	0	0	0	0	2	0	0	0	0	0	0	0	2
SWG	0	0	0	0	0	0	0	0	0	0	0	0	0
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	0	0	0	0	0	1	0	0	0	0	0	0	1
CCLL	1	0	0	0	0	0	0	0	0	0	0	0	1

	NO OF DISCHARGES IN DISTRICT												TOTAL
CSE	1	0	0	0	0	0	0	0	0	0	0	0	1
LSE	1	1	0	0	0	0	0	0	0	0	0	0	2
CSW	0	0	0	0	2	0	0	0	0	0	0	0	2
SWG	0	0	0	0	0	0	0	0	0	0	0	0	0
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	0	0	0	0	0	1	0	0	0	0	0	0	1
CCLL	1	0	0	0	0	0	0	0	0	0	0	0	1

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS													
S05	0	0	0	0	0	0	0						0
S06	0	0	0	0	0	0	0						0
S07	0	0	0	0	0	0	0						0
S08	1	0	1	0	0	0	0						2
S09	0	0	0	0	0	0	0						0
S10	0	0	0	0	0	0	0						0
S12	0	0	0	1	1	0	0						2
S12A	0	0	0	1	1	0	0						2
S13	0	0	0	1	1	0	0						2
S15	3	0	0	1	1	0	0						5
S16	0	0	0	0	0	0	0						0
S17	0	0	0	0	0	0	0						0
S18	0	0	0	0	0	0	0						0
S19	0	0	0	0	0	0	0						0
S21	1	0	0	0	0	0	0						1
S23	1	0	0	0	0	1	0						2
S25	0	0	1	1	1	0	0						3
S26	0	0	0	0	0	0	0						0
LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS													
S31	0	0	0	1	1	0	0						2
S35	0	0	3	1	1	0	1						6
S36	0	0	0	0	0	0	0						0
S36A	0	0	1	0	1	0	0						2
S37	1	1	0	1	1	0	0						4
S42	2	1	0	0	0	0	4						7
S42A	0	0	1	2	2	0	0						5
S44	0	0	0	0	0	0	0						0
S46	0	0	2	2	0	0	0						4
CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS													
S01	0	0	0	0	0	0	0						0
S02	0	0	0	0	0	0	0						0
S03	0	0	0	0	0	0	0						0
S04	0	0	0	0	0	0	0						0
S11	0	0	0	0	0	0	0						0
S14	0	0	0	1	1	0	0						2
S20	0	0	0	0	0	0	0						0
S22	0	0	0	0	0	1	0						1
S24	0	0	0	0	0	0	0						0
SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS													
S27	0	0	0	0	0	0	0						0
S28	0	0	0	1	1	0	0						2
S30	0	0	0	0	0	0	0						0
S34	0	0	0	0	0	0	0						0
S39	0	0	0	0	0	0	0						0
S40	0	0	0	0	0	0	0						0
S43	0	0	0	0	0	0	0						0
S47	0	0	0	0	0	0	0						0
S50	0	0	2	1	1	0	2						6
S51	0	0	2	5	1	0	1						9
LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS													
S32	0	0	1	1	1	2	1						6
S33	0	0	0	2	1	1	0						4
S38	2	0	0	1	2	1	0						6
S45	0	4	1	1	2	1	0						9

23 AVERAGE BLOCKAGES PER MONTH

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL 23 SWWPC UNITS													
C01	0	0	0	0	1	2	0						3
C02	0	0	0	0	0	2	0						2
C04	0	0	0	1	0	0	0						1
C04A	0	0	0	0	0	0	0						0
C05	0	0	0	0	1	0	0						1
C06	0	0	0	1	1	0	0						2
C07	0	0	0	3	0	0	0						3
C09	0	0	0	0	0	2	0						2
C10	0	0	0	1	0	0	0						1
C11	0	0	0	1	1	0	1						3
C12	0	0	0	2	0	0	0						2
C13	0	0	0	0	0	0	0						0
C14	0	0	0	1	2	1	1						5
C15	0	0	0	0	0	0	0						0
C16	0	0	0	1	0	0	0						1
C17	0	0	0	0	0	0	0						0
C31	0	0	0	1	2	1	0						4
C32	0	0	0	0	0	0	0						0
C33	0	0	0	1	0	1	0						2
C34	0	0	0	2	1	2	0						5
C35	0	0	0	0	0	1	0						1
C36	0	0	0	0	1	1	0						2
C37	0		0	0	0	1	0						1
COBBS CREEK LOW LEVEL 13 SWWPC UNITS													
C18	0	0	0	0	0	0	0						0
C19	1	0	0	1	1	1	1						5
C20	0	0	0	1	1	0	0						2
C21	0	0	0	0	0	0	0						0
C22	0	0	0	0	2	2	1						5
C23	0	0	0	0	0	0	0						0
C24	0	0	0	0	2	1	0						3
C25	0	0	0	0	1	0	0						1
C26	0	0	1	0	0	1	0						2
C27	0	0	0	1	0	1	0						2
C28A	0	0	0	0	1	0	0						1
C29	0	0	0	1	2	0	0						3
C30	0	0	0	1	0	1	0						2
													TOTAL
	12	6	16	45	41	28	13	0	0	0	0	0	161

CSE	6	0	2	5	5	1	0	0	0	0	0	0	19
LSE	3	2	7	7	6	0	5	0	0	0	0	0	30
CSW	0	0	0	1	1	1	0	0	0	0	0	0	3
SWG	0	0	4	7	3	0	3	0	0	0	0	0	17
LSW	2	4	2	5	6	5	1	0	0	0	0	0	25
CCHL	0	0	0	15	10	14	2	0	0	0	0	0	41
CCLL	1	0	1	5	10	7	2	0	0	0	0	0	26

January 2006 **RELIEF SEWER MONTHLY INSPECTION**

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R01	4	1	2	3	2	3	4						19
R02	4	1	2	3	2	3	4						19
R03	4	1	2	3	2	3	4						19
R04	3	1	2	2	2	3	3						16
R05	3	1	2	2	2	3	3						16
R06	3	1	2	2	2	3	3						16
MAIN RELIEF SEWER													
R07	2	2	3	2	2	3	8						22
R08	2	2	4	2	1	3	7						21
R09	2	1	3	2	1	3	1						13
R10	2	1	3	2	1	3	1						13
R11	2	1	3	1	2	3	1						13
R11A	2	1	2	1	2	3	1						12
R12	2	1	2	1	3	3	1						13
WAKLING RELIEF SEWER													
R13	1	1	1	1	1	2	1						8
R14	1	1	1	1	1	2	1						8
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	1	1	1	1	1	2	1						8
OREGON AVE RELIEF SEWER													
R16	1	1	1	1	2	2	1						9
R17	1	1	1	1	2	2	1						9
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	1	1	1	1	1	2	1						8
32ND ST RELIEF SEWER													
R19	1	1	1	1	1	2	1						8
MAIN STREET RELIEF SEWER													
R20	1	1	1	1	1	2	1						8
SOMERSET SYSTEM DIVERSION CHAMBER													
R21	1	1	1	2	1	2	1						9
TEMPORARY REGULATOR CHAMBER													
R22													
R23	1	2	1	1	1	2	1						9
ARCH ST RELIEF SEWER													
R24	1	2	2	1	1	3	1						11
16TH & SNYDER													
R25	2	1	2	2	1	3	1						12
GRANT & STATE RD. RELIEF													
R26	1	1	1	1	1	2	1						8
TOTAL	49	30	47	41	39	67	54	0	0	0	0	0	327
AVER	1.8	1.1	1.7	1.5	1.4	2.5	2.0	0.0	0.0	0.0	0.0	0.0	1.0

RELIEF SEWER MONTHLY DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R01	1	0	0	0	0	0	0						1
R02	0	0	0	0	0	0	0						0
R03	0	0	0	0	0	0	0						0
R04	0	0	0	0	0	0	0						0
R05	0	0	0	0	0	0	0						0
R06	0	0	0	0	0	0	0						0
MAIN RELIEF SEWER													
R07	0	0	0	0	0	0	0						0
R08	0	0	0	0	0	0	0						0
R09	0	0	0	0	0	0	0						0
R10	0	0	0	0	0	0	0						0
R11	0	0	0	0	0	0	0						0
R11A	0	0	0	0	0	0	0						0
R12	0	0	0	0	0	0	0						0
WAKLING RELIEF SEWER													
R13	0	0	0	0	0	0	0						0
R14	0	0	0	0	0	0	0						0
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	0	0	0	0	0	0	0						0
OREGON AVE RELIEF SEWER													
R16	0	0	0	0	0	0	0						0
R17	0	0	0	0	0	0	0						0
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	0	0	0	0	0	0	0						0
32ND ST RELIEF SEWER													
R19	0	0	0	0	0	0	0						0
MAIN STREET RELIEF SEWER													
R20	0	0	0	0	0	0	0						0
SOMERSET SYSTEM DIVERSION CHAMBER													
R21	0	0	0	0	0	0	0						0
TEMPORARY REGULATOR CHAMBER													
R22													0
R23	0	0	0	0	0	0	0						0
ARCH ST RELIEF SEWER													
R24	0	0	0	0	0	0	0						0
16TH & SNYDER													
R25	0	0	0	0	0	0	0						0
GRANT & STATE RD. RELIEF													
R26	0	0	0	0	0	0	0						0
TOTAL	1	0	0	0	0	0	0	0	0	0	0	0	1
UNITS	1	0	0	0	0	0	0	0	0	0	0	0	

January 2006 **RELIEF SEWER MONTHLY BLOCKS CLEARED** PAGE 7

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER													
R01	1	0	0	1	1	0	0						3
R02	0	0	0	1	1	0	0						2
R03	0	0	0	0	0	0	0						0
R04	0	0	0	1	1	0	0						2
R05	0	0	0	0	0	0	0						0
R06	0	0	0	0	0	0	0						0
MAIN RELIEF SEWER													
R07	0	0	0	0	0	0	0						0
R08	0	0	0	0	0	0	0						0
R09	0	0	0	0	0	0	0						0
R10	0	0	0	0	0	0	0						0
R11	0	0	0	0	1	0	0						1
R11A	0	0	0	0	0	0	0						0
R12	0	0	0	0	0	0	0						0
WAKLING RELIEF SEWER													
R13	0	0	0	0	0	0	0						0
R14	0	0	0	0	0	0	0						0
ROCK RUN STORM FLOOD RELIEF SEWER													
R15	0	0	0	0	0	0	0						0
OREGON AVE RELIEF SEWER													
R16	0	0	0	0	0	0	0						0
R17	0	0	0	0	0	0	0						0
FRANKFORD HIGH LEVEL RELIEF SEWER													
R18	0	0	0	0	0	0	0						0
32ND ST RELIEF SEWER													
R19	0	0	0	0	0	0	0						0
MAIN STREET RELIEF SEWER													
R20	0	0	0	0	0	0	0						0
SOMERSET SYSTEM DIVERSION CHAMBER													
R21	0	0	0	0	0	0	0						0
TEMPORARY REGULATOR CHAMBER													
R22													0
R23	0	0	0	0	0	0	0						0
ARCH ST RELIEF SEWER													
R24	0	0	0	0	0	0	0						0
16TH & SNYDER													
R25	0	0	0	0	0	0	0						0
GRANT & STATE RD. RELIEF													
R26	0	0	0	0	0	0	0						0
TOTAL	1	0	0	3	4	0	0	0	0	0	0	0	8
AVER	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

January 2006 MISCELLANEOUS SITE INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST													
	1	1											2
SOMERSET GRIT LEVEL													
	2	2											4
(H-20) 70th & Dicks													
	2	1											3
CCLL CONTROL PIPE @ ISLAND AVE.													
	2	2											4
RHOM & HAAS FLAP GATE													
	1	1											2
DROP SWIRL ON CSE COLLECTOR													
	1	3											4
UPPER DARBY OVERFLOW													
	2												2
P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR													
	3	5	2	5	7	4							26
O & ERIE DIVERSION GATE													
	1	1											2
T-04 NET REPLACEMENTS													
	July 20,05	1/0											2
T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE													
	2	3	1	2	2	3							13
T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.													
	2	4	1	2	2	3							14
T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST.													
	2	3	1	2	2	3							13
T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST.													
	2	2	1	2	2	3							12
T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST.													
	2	3	1	2	2	3							13
T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.													
	2	2	1	2	2	4							13
W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE.													
	2	3	1	2	2	3							13
W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST.													
	2	3	1	2	2	3							13

January 2006 MISCELLANEOUS SITE DISCHARGES

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST													
SOMERSET GRIT LEVEL													
(H-20) 70th & Dicks													
CCLL CONTROL PIPE @ ISLAND AVE.													
	0	0											0
RHOM & HAAS FLAP GATE													
DROP SWIRL ON CSE COLLECTOR													
	0	0											0
UPPER DARBY OVERFLOW													
P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR													
	0	1	0	1	2	0							4
O & ERIE DIVERSION GATE													
T-04 NET WEIGHT													
	175lbs.												
T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE													
	0	0	0	0	0	0							0
T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.													
	0	1	0	0	0	0							1
T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST.													
	0	0	0	0	0	0							0
T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST.													
	0	0	0	0	0	0							0
T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST.													
	0	1	0	0	0	0							1
T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.													
	0	0	0	0	0	0							0
W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE.													
	0	0	0	0	0	0							0
W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST.													
	0	0	0	0	0	0							0

January 2006 MISCELLANEOUS SITE BLOCKAGES CLEARED

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST													
	0	0											
SOMERSET GRIT LEVEL													
(H-20) 70th & Dicks													
	0	0											
CCLL CONTROL PIPE @ ISLAND AVE.													
	0	0											0
RHOM & HAAS FLAP GATE													
DROP SWIRL ON CSE COLLECTOR													
	0	0											0
UPPER DARBY OVERFLOW													
P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR													
	0	0	0	0	0	1							1
O & ERIE DIVERSION GATE													
	0	0											
T-04 NET ****													
T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE													
	0	0	1	0	0	1							2
T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST.													
	0	1	0	1	0	1							3
T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST.													
	0	0	1	0	0	1							2
T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST.													
	1	0	0	0	0	2							3
T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST.													
	0	0	1	0	0	2							3
T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE.													
	0	0	0	0	0	0							0
W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE.													
	0	0	0	1	0	1							2
W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST.													
	0	0	1	1	0	0							2

FY2006 Dry Weather Discharges To Date

Discharge Observed		Discharge Stopped		Last Inspection						
DateDO	TimeDO	DateDS	TimeDS	DateLI	TimeLI	SiteID	Collector	TypeUnit	Location	Comment
07/15/05	11:15 AM	07/15/05	11:30 AM	07/07/05	01:45 PM	C-19	CCLL	SLOT	Mount Moriah Cemetery & 62nd St.	Grit And Trash Blocked Dwo Causing Blockage
07/26/05	09:40 AM	07/26/05	09:55 AM	07/21/05	11:10 AM	R-01	--------	DAM	56th St. & Locust St.	Bricks Blocked The Dwo Connecting Pipe
07/26/05	01:55 PM	07/26/05	02:00 PM	07/18/05	01:38 PM	S-15	CSES	B & B	Walnut St. W of 24th St.	Dwo Was Blocked With Grit, Rags & Debris
08/05/05	11:30 AM	08/05/05	12:20 PM	07/13/05	09:30 AM	F-04	LFLL	WH-S	Wingohocking St. E of Adams Ave.	Bricks And Bottles Blocking Connecting Pipe
08/08/05	10:30 AM	08/08/05	11:00 AM	07/19/05	12:00 PM	F-23	LFC	WH-S	Bridge St. NW of Creek Basin	Regulator Blocked With Bottles, Cans And Grit. Bottles And Cans In Tide Gate
08/08/05	11:10 AM	08/10/05	11:00 AM	07/22/05	09:00 AM	S-37	LSES	B & B	Vare Ave. & Jackson St.	Unit Was Block Behind Shuttergate On Trunk Side With Rock And Debris. Sunco Would Not Allow Entry For Two Days While Waiting On A Security Clearance Permit.
08/15/05	02:50 PM	08/15/05	03:20 PM	08/09/05	01:40 PM	F-09	LFLL	WH-S	Frankford Ave. N or Frankford Creek	Plastic Milk Jug Got Caught In Regulator
07/01/05	09:10 AM	07/01/05	10:30 AM	06/30/05	09:10 AM	S-42	LSES	B & B	Passyunk Ave. & 29th St.	High Sewer Flows From Tige Gate Inflow And A Patial Regulator Block Caused A Discharge.
11/04/05	09:00 AM	11/04/05	10:40 AM	11/03/05	09:30 AM	S-22	CSW	B & B	660' S of South St E of Penn Field	Debris Stuck In Shutter Gate
11/04/05	09:00 AM	11/05/05	08:10 AM	11/03/05	10:30 AM	S-20	CSW	B & B	NNW of South St. (Behind Penn Stad.)	Soccerball And Basketball Stuck In Shuttergate
11/10/05	09:30 AM	11/10/05	10:40 AM	10/27/05	01:20 PM	F-07	LFLL	WH-S	Worrell St. W of Frankford Creek.	Half Auto Tire, Skateboard And Trash In Dwo. Septa Delayed Site Entry.
12/22/05	10:40 AM	12/22/05	11:20 AM	12/14/05	10:00 AM	C-07	CCHL	SLOT	Lansdowne Ave. & 69th St.	Unkown Debris Blocking Slot Opening
01/21/06	08:40 AM	01/21/06	06:00 PM	01/11/06	10:10 AM	F-09	LFLL	WH-S	Frankford Ave. N or Frankford Creek	A Fresh Water Leak From A Hydrant Repair At Torresdale And Frankford Aves. Was Not Isolated Completely And Water Ran Into Inlet Overtaxing The Regulator.

Collector System - Flow Control Unit - Miscellaneous Major Maintenance - 2002 TO 2005

CSPS GRIT POCKET GRIT REMOVAL

DATE	CU. YRDS.
4/24/2002	15
7/30/2002	15
11/4/2002	15
2/25/2003	20
7/7/2003	20
10/1/2003	20
1/21/2004	30
2/28/2004	20
9/16/2004	40
3/16/2005	13
7/15/2005	20
1/17/2006	20

SOMERSET GRIT CHAMBER - GRIT REMOVAL REMOVAL

DATE	TONS
4/15/2002	70.70
6/22/2002	13.13
6/29/2002	30.36
7/1/2002	72.09
7/6/2002	13.38
7/13/2002	6.77
7/18/2002	51.94
9/23/2002	64.46
1/6/2003	56.82
3/18/2003	45.52
7/2/2003	75.56
9/9/2003	94.00
11/19/2003	53.20
1/7/2004	73.46
2/24/2004	33.89
5/19/2004	62.08
7/22/2004	81.69
9/17/2004	78.45
3/8/2005	62.77
5/18/2005	62.00
7/27/2005	57.48
9/30/2005	81.69
11/10/2005	95.90

CSO B&B REGULATOR PREVENTATIVE MAINTENANCE

SITE	DATE
D-38	1/2/2002
D-40	1/2/2002
D-45	1/2/2002
D-58	1/2/2002
D-61	1/2/2002
D-62	1/2/2002
S-15	1/2/2002
S-16	1/2/2002
S-31	1/2/2002
S-45	1/2/2002
S-33	6/2/2002
D-17	7/2/2002
D-19	7/2/2002
D-37	7/2/2002
D-38	7/2/2002
S-22	7/2/2002
S-15	7/2/2002
S-5	9/2/2002
D-62	10/2/2002
S-26	10/2/2002
D-19	11/13/2003
D-61	7/22/2003
S-34	7/22/2003
S-38	7/22/2003
S-19	10/11/2003
S-16	11/1/2003
S-18	11/1/2003
S-8	11/8/2003
S-9	11/8/2003
D-18	12/4/2003
D-20	12/4/2003
D-48	12/27/2003
D-50	12/27/2003
D-37	1/6/2004
S-5	1/6/2004
D-21	1/12/2004
D-45	6/19/2004
S-50	6/19/2004
D-19	7/22/2004
D-61	7/22/2004
S-34	7/22/2004
S-38	7/22/2004
S-50	12/11/2004
D-58	12/18/2004
S-23	12/18/2004
S-47	12/18/2004
D-58	3/17/2005
D-38	3/17/2005
D-37	3/17/2005
D-65	4/15/2005
F-14	4/20/2005
D-50	4/25/2005
D-26	4/26/2005
D-51	5/4/2005
S-33	7/18/2005
D-65	8/8/2005
S-07	8/17/2005
F-14	8/24/2005
F-13	8/24/2005
D-68	9/14/2005
D-58	9/12/2005
S-15	10/29/2005
D-20	9/21/2005
S-33	10/17/2005
D-04	12/7/2005

CSO TIDE GATE PREVENTATIVE MAINTENANCE

SITE	DATE
D-37	1/1/2002
D-39	1/1/2002
D-40	1/1/2002
D-45	1/1/2002
D-68	1/1/2002
D-31	1/1/2002
S-45	1/1/2002
D-62	10/1/2002
S-16	7/31/2003
D-38	7/30/2003
S-38	7/30/2003
D-37	7/29/2003
D-44	9/27/2003
D-25	9/27/2003
D-19	11/13/2003
D-18	2/3/2003
D-40	7/19/2004
D-37	7/29/2004
D-20	7/30/2004
D-38	7/30/2004
S-16	7/31/2004
D-25	8/18/2004
F-24	12/29/2004
S-38	10/1/2005
D-11	10/6/2005
D-71	10/17/2005
F-09	9/3/2005
D-68	10/18/2005
D-45	10/13/2005
S-50	12/17/2005
D-20	12/20/2005

COMPUTER CONTROL CHAMBER PREVENTATIVE MAINTENANCE

SITE	DATE	SITE	DATE
D-02	6/10/2002	D-5	1/20/2005
D-02	9/26/2002	D-2	2/7/2005
D-03	9/26/2002	D-3	2/9/2005
D-05	6/10/2002	D-5	2/7/2005
D-05	9/25/2002	D-7	2/11/2005
D-07	9/30/2002	D-9	2/11/2005
D-09	9/30/2002	D-11	2/11/2005
D-11	9/30/2002	D-15	2/11/2005
D-15	6/10/2002	D-2	6/9/2005
D-15	9/30/2002	D-3	6/9/2005
D-2	2/25/2003	D-5	6/9/2005
D-3	2/25/2003	D-7	6/10/2005
D-5	2/26/2003	D-9	6/10/2005
D-7	2/25/2003	D-11	6/10/2005
D-9	2/25/2003	D-15	6/9/2005
D-11	2/24/2003	F-25	6/10/2005
D-15	2/26/2003	D-2	8/24/2005
F-25	2/24/2003	D-3	8/23/2005
D-2	7/16/2003	D-5	8/24/2005
D-3	7/16/2003	D-9	8/23/2005
D-5	7/16/2003	D-11	8/23/2005
D-7	7/16/2003	D-15	8/24/2005
D-9	7/17/2003	D-2	10/12/2005
D-11	7/17/2003	D-3	10/12/2005
D-15	7/17/2003	D-2	11/7/2005
F-25	7/17/2003	D-3	11/7/2005
D-2	9/25/2003	D-9	11/18/2005
D-3	9/25/2003	D-11	11/10/2005
D-5	9/25/2003	D-15	11/18/2005
D-7	9/25/2003	F-25	11/21/2005
D-9	9/26/2003	D-2	12/8/2005
D-11	9/26/2003	D-3	12/8/2005
D-15	9/29/2003	D-5	12/8/2005
F-25	9/26/2003	D-7	12/8/2005
D-2	11/19/2003	D-9	12/7/2005
D-3	12/8/2003	D-11	12/7/2005
D-5	11/17/2003	D-15	12/7/2005
D-7	11/18/2003	F-25	12/7/2005
D-9	11/19/2003	D-2	1/10/2006
D-11	11/19/2003	D-3	1/10/2006
D-15	12/8/2003	D-5	1/12/2006
F-25	12/8/2003	D-7	1/12/2006
D-2	1/14/2004	D-9	1/12/2006
D-3	1/16/2004	D-11	1/15/2006
D-5	1/15/2004	D-15	1/15/2006
D-7	1/15/2004	F-25	1/15/2006
D-9	1/13/2004	D-2	2/21/2006
D-11	1/13/2004	D-3	2/21/2006
D-15	1/13/2004	D-5	2/21/2006
F-25	1/14/2004	D-7	2/21/2006
D-2	4/12/2004	D-9	2/16/2006
D-3	4/12/2004	D-11	2/16/2006
D-5	4/2/2004	D-15	2/16/2006
D-7	4/12/2004	F-25	2/16/2006
D-9	4/12/2004		
D-11	4/14/2004		
D-15	6/18/2004		
F-25	4/24/2004		
D-2	6/17/2004		
D-3	6/18/2004		
D-5	6/17/2004		
D-7	6/22/2004		
D-9	6/22/2004		
D-11	6/22/2004		
D-15	8/23/2004		
F-25	6/24/2004		
D-2	8/19/2004		
D-3	8/19/2004		
D-5	8/19/2004		
D-7	8/19/2004		
D-9	8/23/2004		
D-11	8/23/2004		
D-15	11/4/2004		
F-25	8/23/2004		
D-2	10/6/2004		
D-3	10/6/2004		
D-5	11/1/2004		
D-7	11/1/2004		
D-9	11/4/2004		
D-11	11/4/2004		
F-25	11/4/2004		

CSO OUTFALL - DEBRIS GRILL PREVENTATIVE MAINTENANCE

SITE	DATE
F-05	3/1/2002
F-05	5/1/2002
F-05	6/1/2002
F-05	8/1/2002
F-05	9/1/2002
F-05	10/1/2002
F-05	12/1/2002
D-05	5/1/2002
D-02	7/17/2003
D-02	12/20/2003
D-03	12/19/2003
F-05	1/21/2003
F-05	5/19/2003
F-05	6/6/2003
F-05	6/27/2003
F-05	7/21/2003
F-05	9/25/2003
F-05	11/21/2003
F-05	12/20/2003
T-08	12/20/2003
Sandy Run	12/22/2003
F-05	2/27/2004
T-04	2/13/2004
T-08	2/5/2004
T-08	2/27/2004
Sandy Run	2/27/2004
F-05	3/22/2004
T-04	3/22/2004
T-08	3/22/2004
T-14	3/22/2004
Sandy Run	3/23/2004
F-05	3/31/2004
T-08	4/16/2004
Sandy Run	4/16/2004
T-15	5/14/2004
T-04	5/17/2004
T-08	5/17/2004
F-05	5/27/2004
F-05	6/8/2004
T-08	6/8/2004
T-11	6/8/2004
T-15	6/9/2004
Sandy Run	6/9/2004
T-08	6/22/2004
T-15	6/23/2004
F-05	6/25/2004
F-05	7/21/2004
T-08	7/26/2004
F-05	8/10/2004
T-08	8/24/2004
T-15	8/24/2004
Sandy Run	8/24/2004
T-08	9/16/2004
T-08	10/6/2004
T-08	11/22/2004
F-05	1/7/2005
T-08	1/12/2005
T-15	1/12/2005
T-08	2/23/2005
T-15	2/23/2005
F-05	3/22/2005
T-08	3/14/2005
T-15	3/16/2005
F-05	4/12/2005
T-08	4/15/2005
T-15	4/19/2005
Sandy Run	4/19/2005
F-05	5/17/2005
T-08	5/3/2005
T-15	5/5/2005
F-05	6/20/2005
Sandy Run	6/6/2005
T-08	8/1/2005
F-05	8/1/2005
F-05	8/9/2005
F-05	8/29/2005
Sandy Run	8/2/2005
Sandy Run	9/19/2005
F-05	9/29/2005
Sandy Run	9/29/2005
F-05	10/11/2005
T-08	10/14/2005
F-05	10/27/2005
T-08	10/31/2005
T-08	11/29/2005
F-05	12/14/2005

T-04 DEBRIS NET FLOATABLES REMOVAL

DATE	TOTAL WEIGHT
4/24/1997	75
5/8/1997	150
6/6/1997	200
7/18/1997	200
8/19/1997	150
10/2/1997	75
11/19/1997	75
12/27/1997	90
3/6/1998	100
7/8/1998	125
8/13/1998	150
9/4/1998	150
11/18/1998	150
1/20/1999	225
4/7/1999	175
6/2/1999	100
6/15/1999	75
3/8/2000	150
4/6/2000	250
6/9/2000	130
7/5/2000	Net lost
8/10/2000	265
9/11/2000	115
10/12/2000	160
11/1/2000	100
2/21/2001	275
3/13/2001	Net lost
4/5/2001	135
6/5/2001	235
7/20/2001	105
8/23/2001	185
10/4/2001	155
1/3/2002	240
2/13/2002	140
4/18/2002	150
5/17/2002	325
6/21/2002	375
9/5/2002	210
12/18/2002	235
3/11/2003	240
6/11/2003	275
7/31/2003	282
9/10/2003	190
9/26/2003	250
10/17/2003	175
12/19/2003	175
2/13/2004	135
5/7/2004	210
6/21/2004	260
7/23/2004	215
8/25/2004	375
10/5/2004	175
12/28/2004	395
4/4/2005	430
6/2/2005	304
7/20/2005	175
9/8/2005	242
12/21/2005	285

MONITORING NETWORK - MONTHLY OPERATIONAL STATUS REPORT

Month of: **January-06**

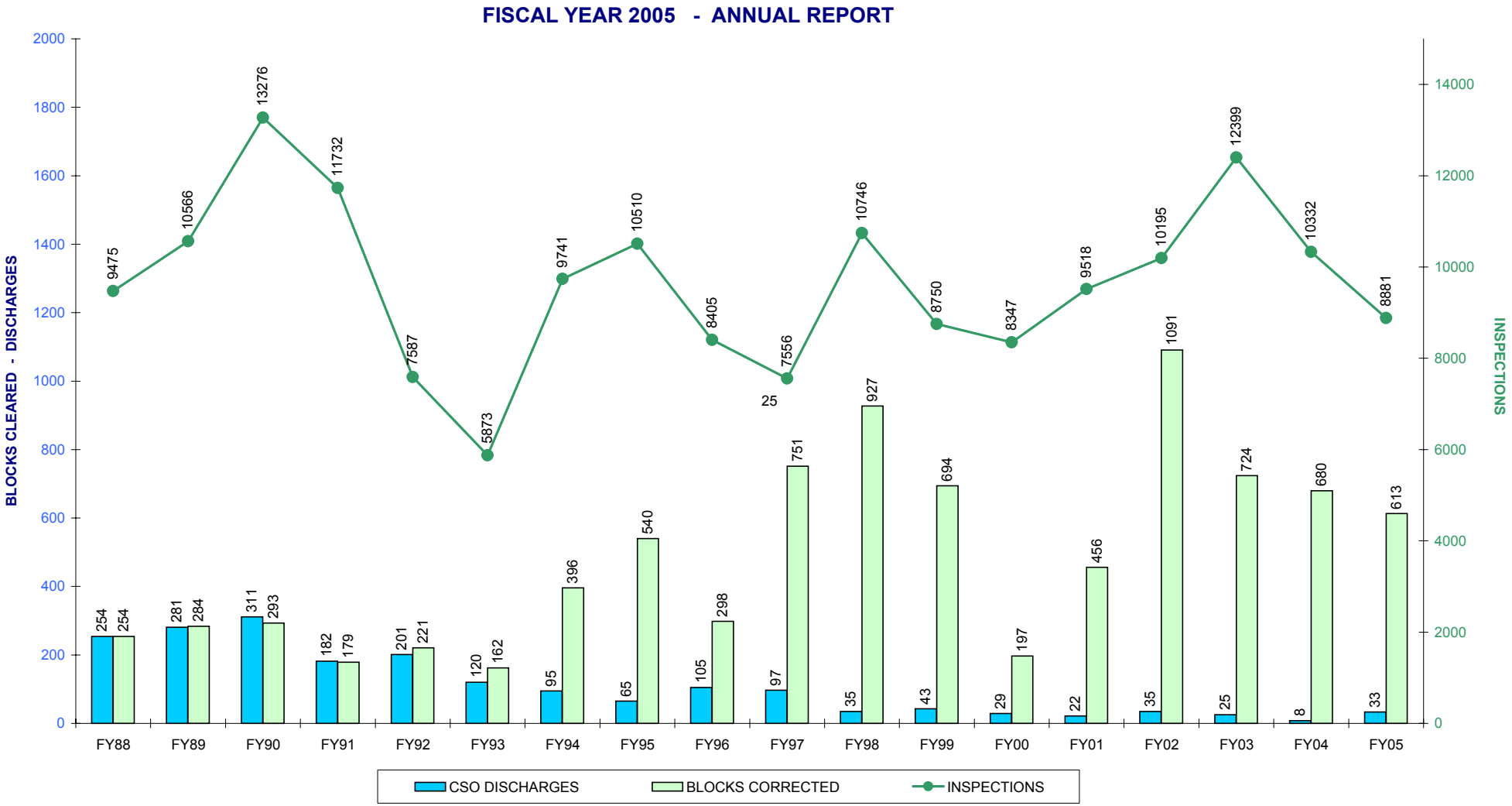
381 TOTAL of ALL NETWORK MONITORING SITES

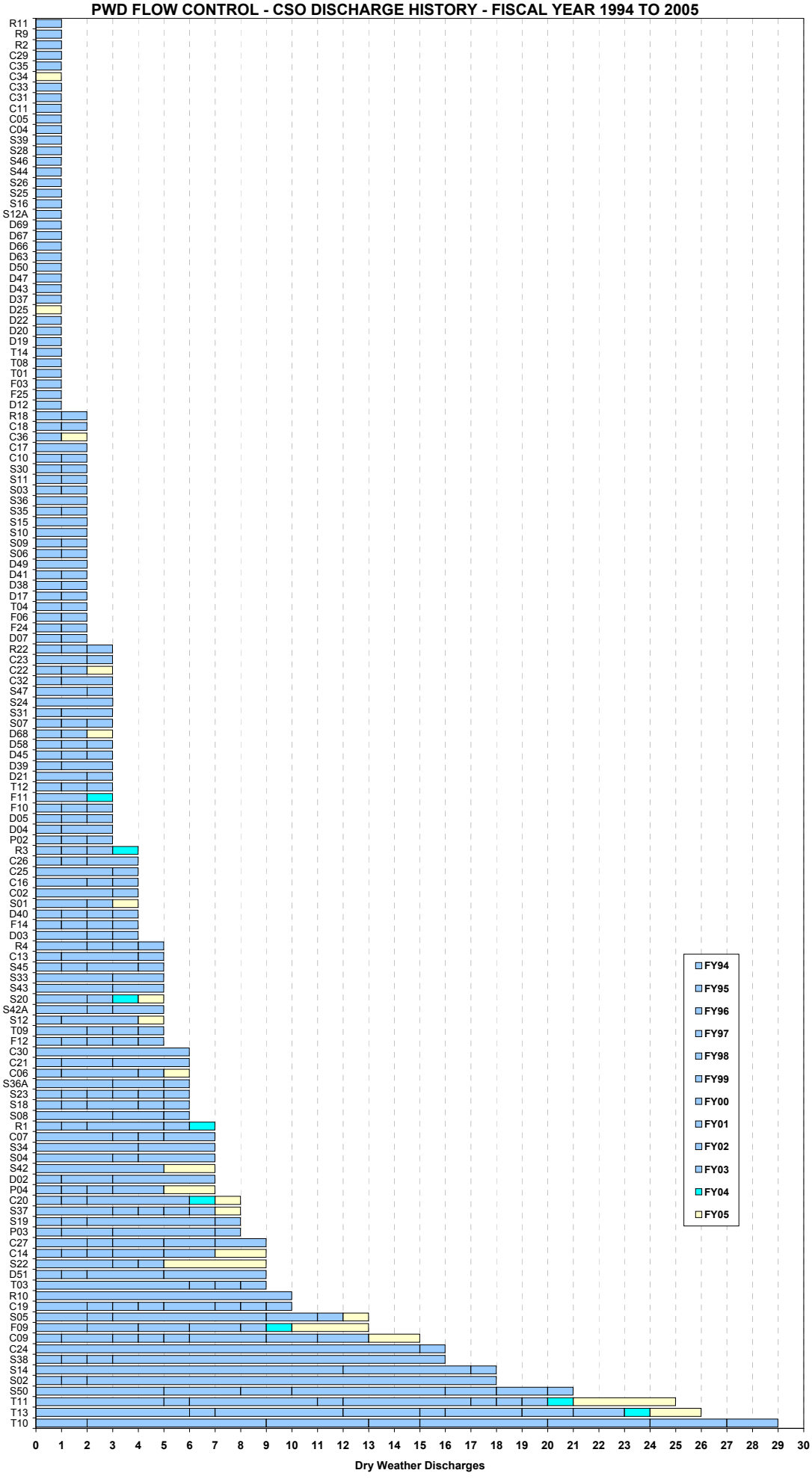
20 SITES NOT INSTALLED

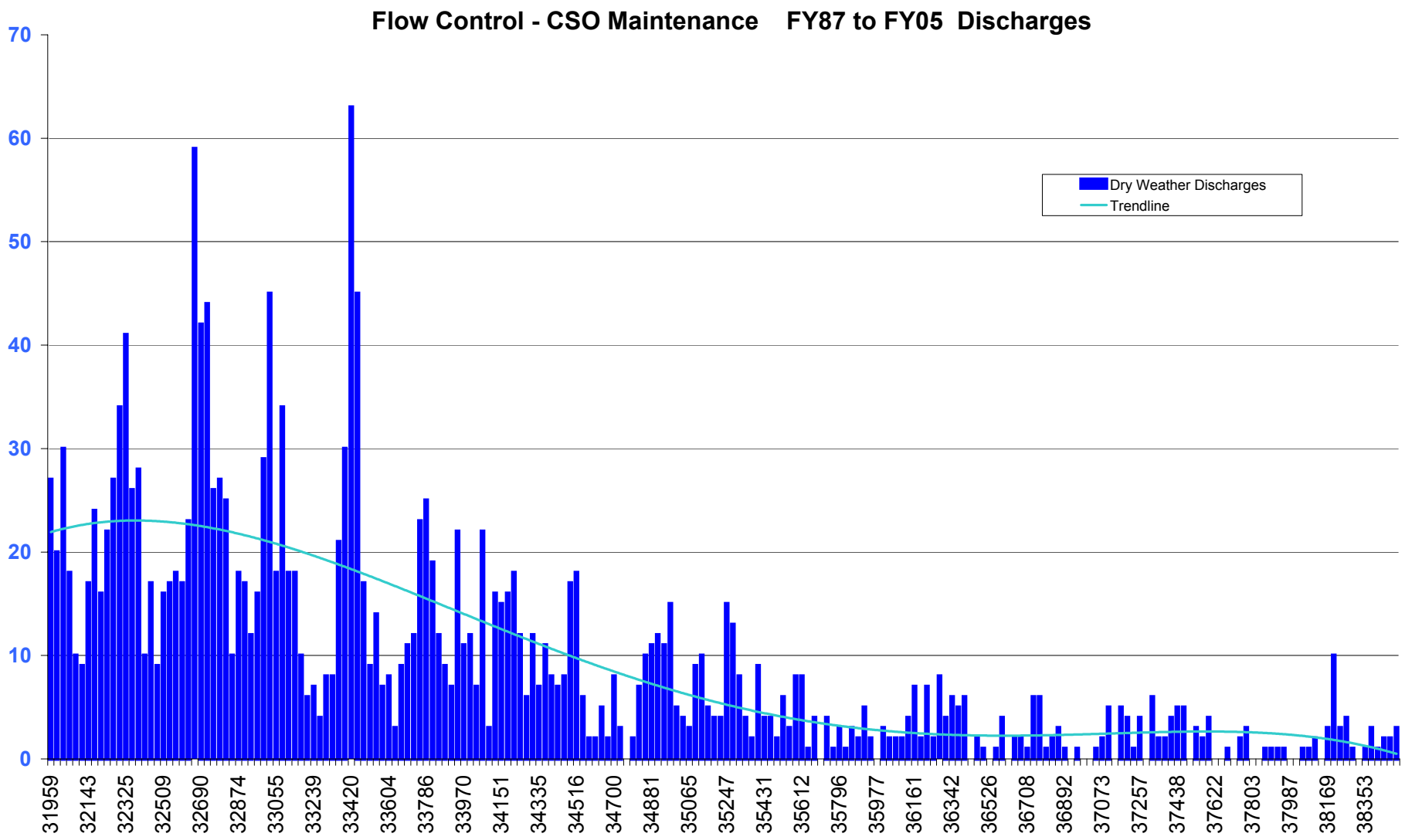
361 SITES INSTALLED

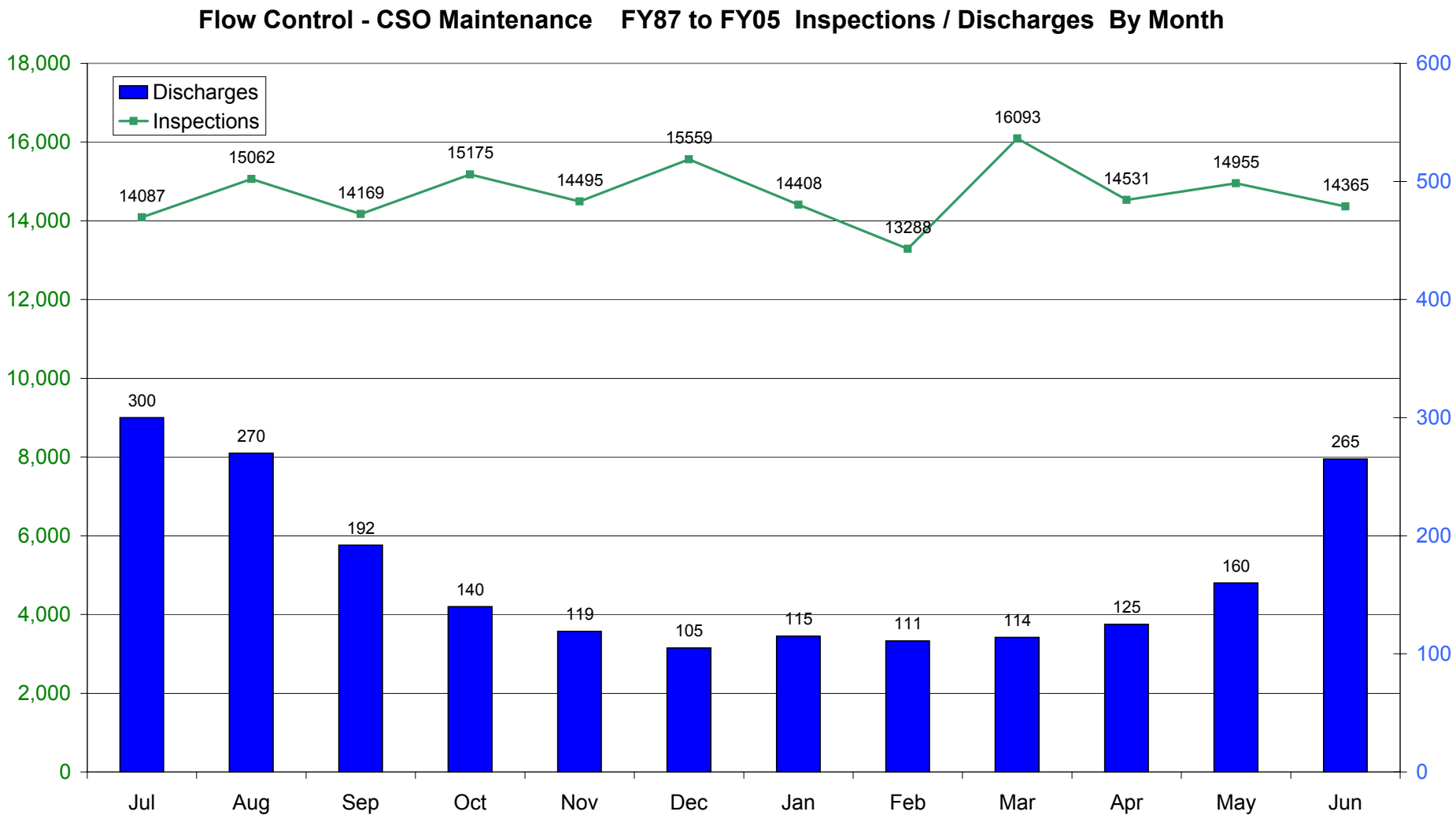
23 of 24 METERING CHAMBERS INSTALLED	86.8%	Operational
24 of 24 RAIN GAUGE SITES INSTALLED	96.0%	Operational
198 of 200 CSO SITES INSTALLED	22.2%	Operational
116 of 116 Prority Sites	29.6%	Operational

accurate


FISCAL YEAR 2005 - ANNUAL REPORT
BLOCKS CLEARED - DISCHARGES
INSPECTIONS
2000
1800
1600
1400
1200
1000
800
600
400
200
0
14000
12000
10000
8000
6000
4000
2000
0
FY88 FY89 FY90 FY91 FY92 FY93 FY94 FY95 FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03 FY04 FY05
9475 10566 13276 11732 7587 5873 9741 10510 8405 7556 10746 8750 8347 9518 10195 12399 10332 8881
254 281 311 182 201 120 95 65 105 97 35 43 29 22 35 25 8 33
254 284 293 179 221 162 396 540 298 751 927 694 197 456 1091 724 680 613
CSO DISCHARGES
BLOCKS CORRECTED
INSPECTIONS


PWD FLOW CONTROL - CSO DISCHARGE HISTORY - FISCAL YEAR 1994 TO 2005
R11
R9
R2
C29
C35
C34
C33
C31
C11
C05
C04
S39
S28
S46
S44
S26
S25
S16
S12A
D69
D67
D66
D63
D50
D47
D43
D37
D25
D22
D20
D19
T14
T08
T01
F03
F25
D12
R18
C18
C36
C17
C10
S30
S11
S03
S36
S35
S15
S10
S09
S06
D49
D41
D38
D17
T04
F06
F24
D07
R22
C23
C22
C32
S47
S24
S31
S07
D68
D58
D45
D39
D21
T12
F11
F10
D05
D04
P02
R3
C26
C25
C16
C02
S01
D40
F14
D03
R4
C13
S45
S33
S43
S20
S42A
S12
T09
F12
C30
C21
C06
S36A
S23
S18
S08
R1
C07
S34
S04
S42
D02
P04
C20
S37
S19
P03
C27
C14
S22
D51
T03
R10
C19
S05
F09
C09
C24
S38
S14
S02
S50
T11
T13
T10
FY94
FY95
FY96
FY97
FY98
FY99
FY00
FY01
FY02
FY03
FY04
FY05
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Dry Weather Discharges


Flow Control - CSO Maintenance FY87 to FY05 Discharges
70
60
50
40
30
20
10
0
Dry Weather Discharges
Trendline
31959
32143
32325
32509
32690
32874
33055
33239
33420
33604
33786
33970
34151
34335
34516
34700
34881
35065
35247
35431
35612
35796
35977
36161
36342
36526
36708
36892
37073
37257
37438
37622
37803
37987
38169
38353


Flow Control - CSO Maintenance FY87 to FY05 Inspections / Discharges By Month
Discharges
Inspections
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
600
500
400
300
200
100
0
14087
15062
14169
15175
14495
15559
14408
13288
16093
14531
14955
14365
300
270
192
140
119
105
115
111
114
125
160
265
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun

Appendix B – Flow Control Pumping Station Maintenance Summaries

PWD FLOW CONTROL UNIT

PUMPING STATION MAINTENANCE

CALENDAR YEAR 2005

OUTLYING PUMPING STATION - CAPACITIES

There are sixteen outlying wastewater pumping stations that pump to the three Water Pollution Control Plants. Listed below are the station capacities, maximum flows and general condition.

WASTEWATER PUMPING STATION LOCATION	NO. PUMPS IN STATION	RATED CAPACITY PER PUMP GPM	ACTUAL STATION CAPACITY GPM	MAXIMUM INFLOW PERIOD GPM	WPC PLANT FLOW DESTINATION	GENERAL CONDITION
BANK STREET	2	250	496	49	SEWPC	Good, new pumps, controls and electric gear installed in 1994
BELFRY DRIVE	2	150	389	71	SWWPC	Good, built 1978 One pump rebuilt in 2005 One pump rebuilt in 2005
C.S.P.S. VARIABLE SPEED UNIT CONSTANT SPEED UNIT	 4 2	 29,000 29,000	135,417	135,417	SWWPC	Good, station was fully automated in oct. 1996. One pump rebuilt in 2002 Two pumps rebuilt in 2005 One pump rebuilt in 2003 Two pumps rebuilt in 1999
FORD ROAD	2	900	1,467	148	SWWPC	Excellent, station completely One pump rebuilt in 2005 One pump rebuilt in 2005
HOG ISLAND ROAD	2	500	927	450	SWWPC	Excellent, new facility in 1989 One pump rebuilt in 2000 One pump rebuilt in 2005
LINDEN AVENUE	2	1,400	2,378	179	NEWPC	Good, built in 1967 One pump rebuilt in 2001 One pump rebuilt in 2000
LOCKART STREET	2	600	1,243	148	NEWPC	Good, built in 1967 One pump rebuilt in 2005 One pump rebuilt in 2005
MILNOR STREET	3	300	1,096	479	NEWPC	Good, built in 1947 One pump rebuilt in 2000 One in 1998, one in 2005
NEILL DRIVE	3	1,800	5,568	3,712	SWWPC	Good, completely rehabilitated in 2002
POLICE ACADEMY	2	100	53	22	NEWPC	Good, new pumps, controls and electric gear installed in 1993
PHILA NAVAL BUSINESS CTR PS796	3	2,250	6,750	1,110	SEWPC	Good, new pumps, controls and electric gear installed in 2000
PHILA NAVAL BUSINESS CTR PS120	2	700	1,400	939	SEWPC	Good, built in 2000
PHILA NAVAL BUSINESS CTR PS542	2	300	600	113	SEWPC	Good, built in 2000
RENNARD STREET	2	400	329	49	NEWPC	Good, built in 1968 One pump rebuilt in 1999 One pump rebuilt in 2002
SPRING LANE	2	122	242	20	SWWPC	Good, built in 2000
42ND STREET	3	2,000	5,953	5,953	SWWPC	Good, complete rehab in 2002

COLLECTOR SYSTEMS - FLOW CONTROL - MAIN PUMP UNIT MAJOR OVERHAULS 2005

DATEOUT	TIMEOUT	DATEIN	TIMEIN	UNIT	STATION	REASON
28-Nov-05	10:00:00 AM	30-Nov-05	2:00:00 PM	1	FORD ROAD	COMPLETE OVERHAUL
14-Nov-05	11:00:00 AM	19-Nov-05	12:00:00 PM	2	LOCKART ST	COMPLETE OVERHAUL
02-Nov-05	10:00:00 AM	04-Nov-05	3:00:00 PM	1	LOCKART ST	COMPLETE OVERHAUL
08-Aug-05	10:00:00 AM	17-Aug-05	1:00:00 PM	1	MILNOR ST	COMPLETE OVERHAUL
22-Jul-05	9:00:00 AM	05-Aug-05	11:00:00 AM	1	HOG ISLAND	COMPLETE OVERHAUL
06-Jun-05	10:00:00 AM	24-Jun-05	10:00:00 AM	4	CENTRAL SCH	COMPLETE OVERHAUL
04-May-05	9:30:00 AM	06-May-05	1:00:00 PM	2	FORD ROAD	COMPLETE OVERHAUL
23-Feb-05	12:00:00 PM	26-Feb-05	1:00:00 PM	2	BELFRY DRIVE	COMPLETE OVERHAUL
16-Feb-05	9:00:00 AM	18-Feb-05	11:30:00 AM	1	BELFRY DRIVE	COMPLETE OVERHAUL
03-Jan-05	9:00:00 AM	14-Feb-05	9:45:00 AM	2	CENTRAL SCH	COMPLETE OVERHAUL

COLLECTOR SYSTEMS - FLOW CONTROL - PUMP STATION OUTAGES 2005

DATEOUT	FROM	TO	STATION	REASON
12/26/2005	5:00:00 PM	8:00:00 PM	NEILL DRIVE	There was an intermittent dry weather discharge that totaled 55 minutes. An alarm was received at 5:00 pm and a technician was dispatched and found a faulty pump control contactor

FLOW CONTROL UNIT
2005 PUMP STATION YEARLY FLOW REPORT

WASTEWATER PUMP STATIONS	PUMP #1	PUMP #2	PUMP #3	PUMP #4	PUMP #5	PUMP #6	STATION FLOW (MG)
BANK STREET	3.349	3.235					6.584
BELFRY DRIVE	3.908	4.573					8.481
CENTRAL SCHUYLKILL	4,451.346	4,588.592	671.002	1,583.435	4,042.731	5,703.499	21,040.605
FORD ROAD	83.613	45.846					129.459
HOG ISLAND	7.724	8.366					16.091
LINDEN AVENUE	30.712	60.654					91.366
LOCKHART STREET	34.101	31.880					65.981
MILNOR STREET	1.272	2.686	1.179				5.136
NEILL DRIVE	141.464	136.797	147.589				425.851
POLICE ACADEMY	3.654	1.807					5.461
RENNARD STREET	4.607	4.361					8.968
SPRING LANE	3.998	4.007					8.006
42ND STREET	331.633	382.188	144.903				858.724
STORMWATER PUMP STATIONS							
BROAD & BOULEVARD	43.509	46.718	1.246	2.344			93.818
MINGO CREEK	11.485	33.442	500.957	522.577	480.689	805.315	2,354.466
26TH & VARE	0.470	0.512					0.982

PHILADELPHIA WATER DEPARTMENT	FISCAL YEAR 2005 ACTUAL	SERVICE LEVEL GOALS AND PERFORMANCE MEASURES

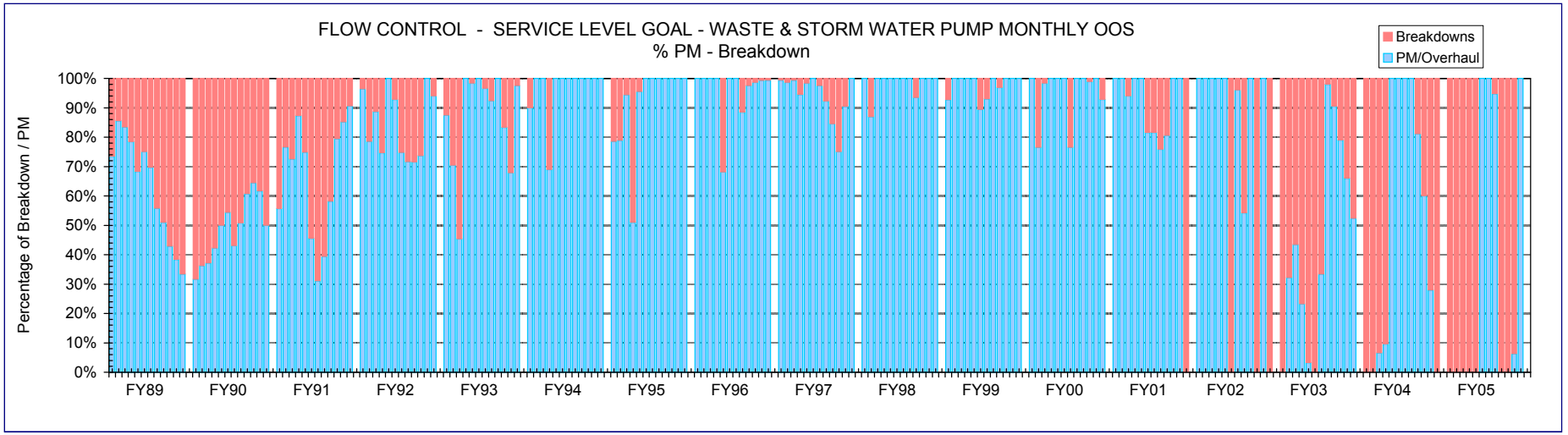
Division	BY	RESPONSIBILITY CENTER	NO.	FUND	DATE PREPARED
OPERATIONS	GEORGE COLLIER	COLLECTOR SYSTEM - FLOW CONTROL	28	WATER	#N/A

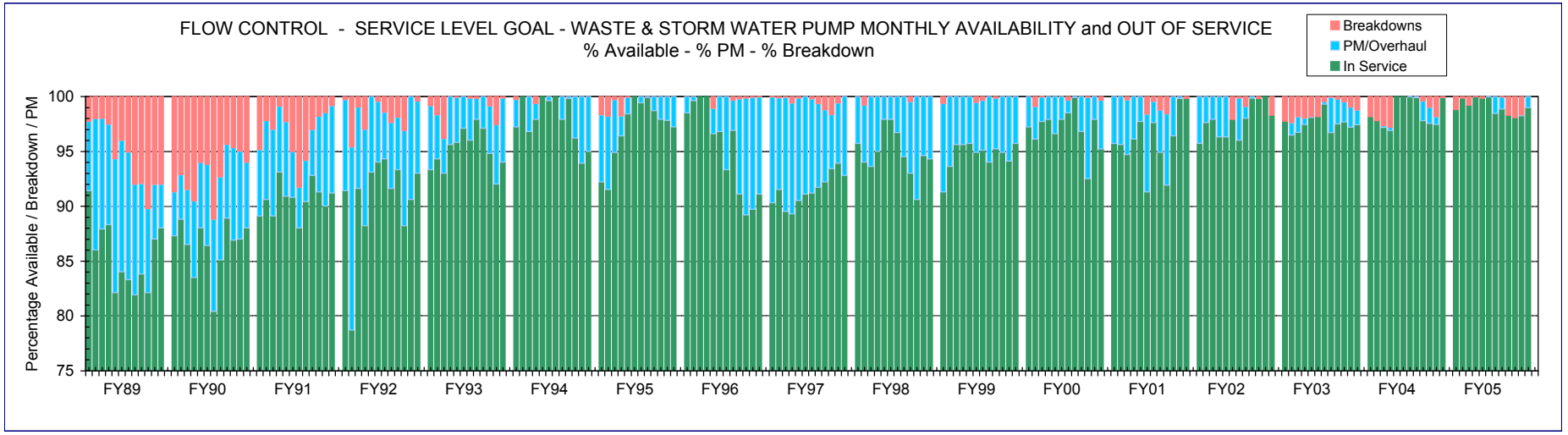
MAJOR SERVICE ACTIVITIES PERFORMED BY THIS DIVISION / RESPONSIBILITY CENTER

NAME/DESCRIPTION OF SERVICE	UNIT OF MEASUREMENT (1)	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	**Monthly Average**	**Yearly Total**
Main Wastewater Pump Availability (goal is 95% or higher)	Percent	98.7%	99.8%	99.1%	99.9%	99.8%	99.9%	98.3%	98.7%	98.1%	97.9%	98.1%	98.9%	**99%**	---
CSO Dry Weather Discharges (goal is zero discharges)	CSO Discharges / 100 Inspections	0.4	1.1	0.4	0.6	0.1	0.0	0.1	0.6	0.1	0.3	0.3	0.4	**0.37**	**4.4**
CCTV Inspections of Sewer Infrastructure	Feet	34,554	28,738	24,443	24,163	28,079	25,629	21,869	23,331	23,472	25,307	31,882	28,015	**26,624**	**319,482**
(goal is 1 Mile/ Crew / Week = 30.3 Miles)	Miles	6.5	5.4	4.6	4.6	5.3	4.9	4.1	4.4	4.4	4.8	6.0	5.3	**5.0**	**61**
Metering Chamber Meters Operational (goal is 95% or higher)	% of 23 Meters / mo.	78%	72%	72%	77%	82%	90%	71%	80%	79%	78%	79%	80%	**78%**	---
CSO Level/Flow Meters Operational (goal is 90% or higher)	% of 142 Sites / mo.	28%	27%	26%	30%	30%	30%	31%	35%	35%	37%	35%	37%	**32%**	---

WASTEWATER PUMPING - MAIN PUMPING UNITS OUT OF SERVICE REPORT 2005

DATE/TIME OUT	DATE/TIME IN	STATION	UNIT	TYPE	REASON
Sun - 12/18/05 - 9:00 AM	Mon - 12/19/05 - 3:00 PM	HOG ISLAND	2	BD	LEAKING PACKING GLAND
Thu - 12/15/05 - 10:00 AM	Sat - 2/25/06 - 1:00 PM	CENTRAL SCH	6	BD	HOLE IN DISCHARGE PIPE BELOW THE VENTURI
Thu - 12/15/05 - 12:00 PM	Mon - 12/19/05 - 3:00 PM	BUCKS HYPO	2	BD	PUMP NOT PUMPING
Mon - 11/28/05 - 10:00 AM	Wed - 11/30/05 - 2:00 PM	FORD ROAD	1	OV	COMPLETE OVERHAUL
Mon - 11/14/05 - 11:00 AM	Sat - 11/19/05 - 12:00 PM	LOCKART ST	2	OV	COMPLETE OVERHAUL
Wed - 11/2/05 - 10:00 AM	Fri - 11/4/05 - 3:00 PM	LOCKART ST	1	OV	OVERHAUL
Tue - 8/30/05 - 2:00 PM	Thu - 9/1/05 - 1:00 PM	BELFRY DRIVE	1	BD	LOUD NOISE
Mon - 8/15/05 - 12:00 PM	Wed - 9/14/05 - 12:00 PM	CENTRAL SCH	5	BD	EXCESSIVE PUMP LINE BEARING VIBRATION
Mon - 8/8/05 - 10:00 AM	Wed - 8/17/05 - 1:00 PM	MILNOR ST	1	OV	COMPLETE OVERHAUL
Fri - 7/22/05 - 9:00 AM	Fri - 8/5/05 - 11:00 AM	HOG ISLAND	1	OV	OVERHAUL
Mon - 7/18/05 - 2:00 PM	Thu - 8/11/05 - 3:00 PM	NEILL DRIVE	2	BD	ROTOVALVE FAILURE
Wed - 7/6/05 - 12:00 PM	Thu - 7/7/05 - 3:00 PM	CENTRAL SCH	5	BD	VIBRATION TRIP
Mon - 6/6/05 - 10:00 AM	Fri - 6/24/05 - 10:00 AM	CENTRAL SCH	4	OV	OVERHAUL - COMPLETE UNIT
Wed - 5/4/05 - 9:30 AM	Fri - 5/6/05 - 1:00 PM	FORD ROAD	2	OV	OVERHAUL - COMPLETE UNIT
Mon - 4/18/05 - 1:22 PM	Fri - 4/22/05 - 2:45 PM	FORD ROAD	1	BD	PUMP SUCTION PLATE WORN
Sun - 2/27/05 - 7:00 AM	Tue - 5/31/05 - 3:00 PM	CENTRAL SCH	5	BD	VIBRATION TRIP
Wed - 2/23/05 - 12:00 PM	Sat - 2/26/05 - 1:00 PM	BELFRY DRIVE	2	OV	OVERHAUL - COMPLETE UNIT
Wed - 2/16/05 - 9:00 AM	Fri - 2/18/05 - 11:30 AM	BELFRY DRIVE	1	OV	OVERHAUL - COMPLETE UNIT
Mon - 1/3/05 - 9:00 AM	Mon - 2/14/05 - 9:45 AM	CENTRAL SCH	2	OV	OVERHAUL - COMPLETE UNIT


FLOW CONTROL - SERVICE LEVEL GOAL - WASTE & STORM WATER PUMP MONTHLY OOS
% PM - Breakdown
Breakdowns
PM/Overhaul
Percentage of Breakdown / PM
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
FY89
FY90
FY91
FY92
FY93
FY94
FY95
FY96
FY97
FY98
FY99
FY00
FY01
FY02
FY03
FY04
FY05


FLOW CONTROL - SERVICE LEVEL GOAL - WASTE & STORM WATER PUMP MONTHLY AVAILABILITY and OUT OF SERVICE
% Available - % PM - % Breakdown
Breakdowns
PM/Overhaul
In Service
Percentage Available / Breakdown / PM
100
95
90
85
80
75
FY89
FY90
FY91
FY92
FY93
FY94
FY95
FY96
FY97
FY98
FY99
FY00
FY01
FY02
FY03
FY04
FY05