PHILADELPHIA WATER DEPARTMENT

Annual CSO Status Report

1999

Chapter 94: Wasteload Management Report

March 31st, 2000

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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 indicates that the permittee submit an Annual CSO Status Report as part of the Chapter 94 Municipal Wasteload Management Report. The status of programs that the City of Philadelphia Water Department (PWD) has implemented is described herein. This years report has been reorganized into a format that will allow the programs discussed to be more easily related to State initiatives occurring in the State Water Plan Watershed Areas.

More specifically, the report is organized as follows: Section 2 Citywide Programs discusses the status of projects as they relate to the continued proper operation of our combined sewage infrastructure pursuant to the meeting the requirements of the continued implementation of the United States Environmental Protection Agencies (US EPA's) Nine Minimum Controls (NMC's) described in the Phase I section of the PWD Long Term CSO Control Plan. Sections 3 through 7 describe the status of the watershed management planning and capital project implementation occurring within each respective watershed. Section 8 provides the status of activities completed pursuant to advancing the concept of the Watershed Technology Center as described in the CSO LTCP.

Post Construction Monitoring of CSO discharges and other performance-related information for each CSO system is also now summarized by watershed. The summary of the estimated annual frequency and volume of CSO is presented on a watershed basis. For example, the frequency and volume statistics for the 5 CSO's discharging to the Pennypack Creek are presented in Section 5: Pennypack Watershed which also discusses the capital projects and watershed work occurring in that watershed.

The fundamental goal of the Philadelphia Water Department's (PWD) combined sewer overflow (CSO) program is to improve and preserve the water environment in the Philadelphia area and to fulfill PWD's obligations under the Clean Water Act and the Pennsylvania Clean Streams Law by implementing technically viable, cost-effective improvements and operational changes. The PWD's strategy to attain these goals has three primary phases: aggressive implementation of a comprehensive program for Nine Minimum Controls; planning, design and construction of 17 capital projects that further enhance system performance and reduce CSO volume and frequency; and, commitment of up to $4 million in services and resources toward comprehensive watershed-based planning and analyses that will identify additional, priority actions to further improve water quality in Philadelphia area water bodies.

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

In contrast to Phases I and II, the PWD's Phase III plan is water quality-based. Its emphasis on the completion of watershed planning for each basin is a result of the uncertainty in each watershed regarding the sources of pollution, the relative impact of each source on the attainment of water quality standards, the measures needed to control various sources in addition to CSOs, and, in fact, the ultimate ability to attain water quality standards. The detailed summary of progress is discussed in the sections to follow.

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. Measures to ensure that the public is informed about the occurrence, location and impacts of CSOs
9. Comprehensive inspection and monitoring programs to characterize and report overflows and other conditions in the combined sewer system.

The status of the specific projects designed to meet the above goals are detailed in the following sections.

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

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

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 in the following sections.

Customized Regulator Inspection Forms

Start: 8/1/95 End: 12/31/2000 Status: In Progress

During the 1999 calendar year the PWD initiated development of customized CSO regulator maintenance database and inspection report forms for each individual regulator chamber. These reports will be used to document the preventative-maintenance performed on a yearly basis and to ensure that proper regulator settings are maintained and system changes are documented. A draft MSACCESS database was developed storing the existing regulator information collected as part of the PWD CSO Program. This database allows for a review of historic inspection data and for a query of the most-recent data collected at each site. This database also stores scanned plan view and profile view drawings of CSO regulator and hydraulic control point chambers for inclusion in the filed inspection report forms. This project is ongoing and will allow for

simplified tracking of site-specific changes made during implementation of NMCs and ensure longevity and validity of the CSO maintenance program.

During this next year, the draft database will be tested during field inspections of CSO regulators and hydraulic control points. The database will be refined to include comments from PWD inspection field crews and field maintenance personnel. The database will facilitate the compilation of the monthly dry weather overflow status report developed by the Flow Control Unit (FCU). This application will facilitate the production of the Flow Control sections of future submissions of the Chapter 94 Wasteload Management report. The data incorporated into this system will include inspection data included on the current FCU inspection forms, data currently deposited in the CSO program databases, and will reflect the most up-to-date information documenting the current operational status of each facility included in the database. The database will include all facilities documented in the System Inventory and Characterization and the System Hydraulic Characterization Reports.

1.1.2 Pumping Station Maintenance

Start: 8/1/95 End: Status: Ongoing

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. In calendar year 1999, 65 cubic yards of debris was removed from the two grit pockets. Throughout much of the year, the underwater divers completing structural rehabilitation of the siphon tubes were able to provide regular reports on the depth of debris in the grit pockets and reported no excessive accumulation.

WW Pumping Predictive Maintenance Program

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

The goal of this program is to allow the operating unit to anticipate maintenance needs before they develop into problems. The program is ongoing and has had several benefits in the past year. Several of the main pump units were scheduled for early overhauls after analyzing flow and vibration data. Yearly infrared testing of the electrical switchgear at all stations has revealed several loose electrical connections that were corrected on the spot.

Pump Station Emergency Backup Power

Start: 9/27/1995 End: Status: Complete

Due to unforeseeable electric utility power outages, pumping stations cannot operate and sewer overflows can result if the outage last for any appreciable length of time. This project entailed the installation of emergency back-up power generators at 8 pumping stations that presently only have a single electrical source and was completed in 1999. During the first year of service, the alternate power source at several of the stations had to be utilized approximately 12 times. At the Rennard Street PS, the generator was called into

service two times for a total of 36 hours backup power as PECO made repairs to the districts service. This one example represents a significant volume of dry weather discharge that was prevented with this upgrade. Projections indicate that this project will eliminate approximately 95% of pumping station failures attributed to power outages. See pump station maintenance annual summaries in Appendix B.

1.1.2 Sewer Cleaning Contracts

Start: 12/1/1995 End: Status: Completed

Recent sewer cleaning projects have expanded in scope in recent years and due to the expense being much greater than would typically be characterized by a NMC, will now be considered part of the capital program.

1.1.3 Inflow Prevention Program

Start: 8/1/1995 End: 6/4/1999 Status: Completed

Program can be referenced on p 2-12 of the NMC Documentation under NMC #2 Maximize Storage It has been moved to the O & M section of this report for organizational and scheduling purposes. The intention of this program was to evaluate specific locations and to develop implementation schedules for collection system improvements designed to prevent tidal inflow of river water into the conveyance and treatment system.

Tide Gate Inspection and Maintenance Program

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

Summaries of the tide gate inspection and maintenance completed during calendar 1997 are found in Appendix A which documents the locations where preventative maintenance was performed on the tide gates.

Emergency Overflow Weir Modification

Start: 11/7/1994 End: 6/4/1999 Status: Completed

The System Inventory and Characterization Report (SIAC) identified 88 CSO's 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. These measures will significantly reduce the likelihood of tide inflow into the conveyance and treatment system.

A tide inflow study was completed and corrective actions determined for the remaining sites which may be periodically (excessively high peak high tides) experiencing inflow problems. This study reviewed monitored tide data, modeled inflow rates, and researched past O & M records. For monitored sites, frequency and magnitudes of inflow were determined on a site-specific basis. From this information, a prioritized listing of sites, the selected control alternative, and implementation schedule was developed. The installation of the last three gates was completed in 1999 and the total project cost was approximatey$238,000. and overall implementation summarized in Table 1.1 with progress made in calendar year 1999 detailed in Table 1.2.

Table 1.1.1 Status tide inflow protection project.

Drainage District	Total # Sites	# Completed
Northeast	20	20
Southwest	7	7
Southeast	6	6
Total	33	33

The following sites were modified during calendar 1999 to have flexible flap gates installed in the emergency overflow weir area:

Table 1.1.2 Emergency overflow weir gates installed during calendar 1999 as part of tide inflow protection project.

	Site	Ordered	Received	Installed
S_16	Locust St. and 25th St.	07/01/98	11/17/98	01/19/99
S_14	Schuylkill Exp. Under Walnut St. Bridge	07/01/98	11/17/98	01/21/99
D_73	Pattison Ave. and Swanson St.	07/01/98	11/04/98	06/04/99

Cobbs Creek Inflow Reduction Project
Start: 8/1/1995 End: 6/1/1997 Status: Moved to Section 3: Darby Cobbs Watershed

1.2 Maximize In-System Storage

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

An effective control for providing in-system storage is to raise the overflow elevation by physically modifying the overflow structure. However, this approach must be implemented cautiously, since raising the overflow elevation also raises the hydraulic grade line in the combined sewer during storm flows, and therefore can increase the risk of basement and other structural flooding within the upstream sewer system.

Adding a diversion dam was proposed as a means to increase the hydraulic capacity of slot regulators that presently do not have a diversion dam. The flow maximization plan detailed in NMC #4 included the addition of dams at these locations. The NMC report recommended 57 locations for the addition of a diversion dam; 40 locations in the SWDD, 15 locations in the NEDD and 2 locations in the SEDD. As a means to increase both the hydraulic capacity of the regulators and the available in-system storage, it was deemed feasible to raise the overflow weir elevation at these selected regulator locations. Additionally, an analysis was completed to determine the opportunity for implementing Real Time Control (RTC) of CSO discharges.

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

See section 2 City Wide Programs

1.2.2 Install Diversion Dams

Start: 8/1/1995 End: 6/30/1997 Status: Completed

The NMC Documentation listed 57 sites which did not have diversion dams installed to aid in diverting the combined flow into the orifice opening of a slot-type regulator. Of these 57, 40 were located in the SW DD, 15 in the NE DD, and 2 in the SE DD. Construction of diversion dams increases in-system storage at a relatively low cost and reduces susceptibility to dry weather discharge. All CSO's now have diversion dams installed.

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: Completed

Inventory Significant Non-Domestic

Start: 8/1/1995 End: 8/21/1995 Status: Completed

An inventory of significant non-domestic discharges to the combined sewer system was completed by Industrial Waste Unit engineering support staff.

Guidance Memorandum

Start: 8/1/1995 End: 1/26/1996 Status: Completed

A guidance memorandum was created to permit the administrators to evaluate all SIU's and target those capable of avoiding or reducing pollutant discharge during wet weather events in which there is an overflow.

Develop Data Form for Annual Inspections

Start: 3/1/1996 End: 9/1/1997 Status: Completed

Inspection write-ups were completed for the industries with batch discharges. Copies of the write-ups are available upon request.

Pretreatment Inspections - 1st 50%

Start: 3/1/1996 End: 7/1/1996 Status: Completed

Initiated and completed annual pretreatment inspections for 50% of the SIU's. Used guidance criteria to judge the capability of process discharge restrictions or determine other wet weather process pollution prevention actions. Industry specific assessment memos were completed for the industries with batch discharges. Copies of the write-ups are available upon request.

Asses SIU Wet Weather Monitoring

Start: 7/1/1996 End: 8/1/1997 Status: Completed

The determination of a significant wet weather event is it would be left up to the SIU to determine the status or the potential for a wet weather event to occur during or immediately preceding a planned process discharge.

1st 50% of SIU's Reduce Discharge
Start: 10/1/1996 End: 1/1/1997 Status: Completed

This project entails initiating an outreach program to those of the first 50% of SIU's who exhibit the potential to restrict discharges. In calendar 1997, two out of three industries indicated a willingness to move forward with changes on their own. The third industry did not indicate that it would move forward with any restrictions.

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

All SIUs have been evaluated for the potential to restrict process flow in wet weather. Under the criteria and definitions established at the outset of this program, batch discharge was narrowly defined to mean to apply at the end of the pipe. For continuous dischargers there may be an opportunity to hold a pollutant-bearing batch process stream apart from other continuous process streams in a wet weather event. Inspections to be carried in 1998 will evaluate if any internal batches exist in a continuous end of the pipe discharge upstream of a CSO.

2nd 50% SIU's Reduce Discharge
Start: 1/1/1997 End: 12/31/1998 Status: Completed

This task includes initiation of an outreach program to the remaining 50% of SIU's who exhibit the potential to restrict discharges. This task has been modified to initiate an outreach program to those continuous dischargers who have batch pollutant dischargers within a continuous discharge stream.

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

Phase II implementation will assess discharge reductions realized from the Phase I Implementation Program. The 1998 inspections will evaluate those two dischargers who indicated that they would go forward with some controls voluntarily. Of the two dischargers willing to go forward on their own to curtail wet weather process discharging one industry has complied.

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

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

Inspections are now being conducted using guidance criteria on evaluating wet weather pollution prevention efforts for those industries who may have batch operations within a continuous discharge. For the upcoming calendar year, the Department's Industrial Waste Unit will be examining dry weather flow data collected from the trunk sewer at each CSO structure. The CSO's were sampled in 1997 for conventional pollutants and heavy metals. While this database was created for a consultant to model an expected loading to the stream from a particular CSO merging the data with Storet values for stormwater, the data is proving useful in identifying sewersheds that have a strong IW(non-domestic)character. With this as a screening basis IWU is will continue to investigate further up the trunk sewer 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 results of the hydraulic modeling of the interceptor sewers and regulators documented in the System Hydraulic Characterization Report (PWD; June 27, 1995) clearly demonstrated that CSOs occur before the WPCPs have reached capacity, and in most cases before the interceptor sewers have reached capacity. This is an intentional result of the prevailing regulator design philosophy at the time that these structures were designed and built. Although an appropriate approach when protection of the WPCPs from hydraulic overloading was the principal concern, this approach is now obsolete in the current situation where the primary objective is maximizing the capture and treatment of wet-weather flows.

The basic strategy of flow maximization, or Modified Regulator Plan (MRP) is 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.

Since the completion of these modifications, the Department has been compiling data to study the impact that these changes have on the effects of the treatment plants with respect to cost, permit limits, and high flow management issues. High-flow management practices will be further analyzed in Section 2 Citywide Programs where the stress testing of individual WPCP unit processes will be completed to ensure adequate factors of safety and process availability under high flow circumstances. The following sections detail the status of the NMC flow maximization efforts.

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

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

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

NE WPCP - 50% MRP
Start: 1/1/1996 End: 6/1/1996 Status: Completed

NE WPCP – Determine Additional Modifications for 100% MRP
Start: 11/4/1996 End: 12/14/1997 Status: Completed

NE WPCP - 100% MRP
Start: 9/1/1996 End: 7/1/1998 Status: Completed

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

SW WPCP - 50% MRP
Start: 11/11/1995 End: 6/1/1996 Status: Completed

SW WPCP - Determine Additional Modifications for 100% MRP
Start: 11/4/1996 End: 12/14/1997 Status: Completed

SW WPCP - 100% MRP
Start: 9/1/1996 End: 7/1/1998 Status: Completed

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

SE WPCP - 50% MRP
Start: 10/30/1995 End: 6/1/1996 Status: Completed

SE WPCP - Determine Additional Modifications for 100% MRP
Start: 10/30/1995 End: 6/1/1996 Status: Completed

SE WPCP - 100% MRP
Start: 9/1/1996 End: 7/1/1998 Status: Completed

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

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.

1.5.1 CSO Monitoring Network
Start: 8/1/1995 End: 12/31/2000 Status: In-Progress

The Philadelphia Water Department's CSO Monitoring Expansion Project is based upon installing state-of-the-art technologies selected from a six month CSO monitoring demonstration held in 1994. Although the monitoring network is designed to provide a high level of confidence with respect to minimizing dry weather overflow to the furthest extent possible, the network is expected to provide valuable data to support the evaluation of further CSO mitigation practices which may result from the watershed management programs.

The CSO monitoring network is still in construction and site acceptance testing. A site specific status report is provided in Table 5.1 for the each of the major site types in the contract including:

- CSO & Storm Flood Relief Chambers
- Township Metering Stations
- Pump Stations
- Hydraulic Control Points (Miscellaneous points of interest)
- Raingauges

The following descriptors are provided to indicate the status of the major phases of acceptance testing of site components. Since phone and electric service are required in order to make a site operational, utility availability in remote areas has significantly impacted the implementation schedule. The acceptance testing is a 3-part process design to ensure short and long term reliability along with assurance that the individual sites will work with the entire system. Please refer to Table 1.5.1 for a summary of the construction status of each remote site.

Aerial Service -	Power provided by above ground service
Underground Service -	Power provided by below ground service
Peco Service -	Electric service operational.
Bell Service -	Phone service operational.
One-Day Test (P/F) –	Current Status (Pass / Fail) of one-day site acceptance testing
7-Day Test -	Current Status (Pass / Fail) of 7-day site acceptance testing
Site Acceptance Date-	Date on which the entire site was accepted

The new computer system currently collects data from approximately 130 sites throughout Philadelphia and the surrounding areas. Currently around 150 sites have been accepted, although a few sites remain without power or phone service. Upgraded computer hardware was installed in the fall of 1999. Updated software for the system is in the debugging stage, with fixes applied on an as needed basis. Graphs for operating sites can now be displayed and printed. Reports are in the development stage where data is verified on continuous basis. These reports are expected to be completed and accepted in 2000. Accepted sites are regularly monitored and reconfigured for consistent data collection. The data remains provisional until the computer system is fully implemented and accepted. Shutdown of the of the old computer system will be completed once the 7 remaining sites report to the new computer system.

The overall expansion of the program into the Southeast and Southwest districts of the city will allow for the observance and rapid abatement of line blockages and dry weather discharges, as currently practiced in the Northeast district. In addition, the network will provide calibration data for the continued application of the CSO models. These models are presently used to produce the monthly and annual estimates of CSO frequency and volume.

Implement Event Notification Systems (ENS) for DWO's & Inflow
Start: 8/1/1995 End: 12/31/2000 Status: In Progress

The implementation of the CSO monitoring network was designed to include the use of an Event Notification System (ENS) to reduce the response time to abate dry weather discharges and river inflow which may occur when the tide gate becomes wedged open by debris. In the Northeast Drainage District, automated monitoring system is common practice. In light of these improvements, it is expected that the frequency of visual inspections performed by the maintenance crews will decrease considerably, allowing for additional resources to be focused on preventative, comprehensive, and specialized maintenance activities. The implementation of the ENS is ongoing as the new computer system is implemented and site-specific

requirements of newly monitored sites are incorporated. The upgraded computer hardware and software installed in 1999 should increase the ability to which this function can be used in 2000.

Table 1.5.1 Site Status Report for CSO Monitoring Network Implementation

Site Type	# of Sites	# with Aerial Service	# with Underground Service	% with PECO Service	% with BELL Service	# passing 1 day test	# failing 1 day test	# passing 7 day test	# failing 7 day test	# sites accepted	% of sites accepted
Cobbs Creek CSO's	34	19	8	76	94	32	2	25	0	32	94
Delaware River CSO's	52	32	11	60	81	39	2	31	0	43	83
Frankford Creek CSO's	15	11	0	7	100	4	7	4	0	4	27
Pennypack Creek CSO's	5	4	0	0	5	0	4	0	0	0	0
Schuylkill River CSO's	50	28	10	52	74	36	5	21	3	35	70
Tacony Creek CSO's	14	9	0	14	100	6	7	6	0	6	43
Hydraulic Control Points	20	6	0	55	75	9	1	8	1	8	40
Relief Structures	10	5	0	10	70	3	5	2	1	2	20
Siphons	1	1	0	0	100	1	0	1	0	1	100
Pump Stations	18	0	0	100	83	14	0	13	1	14	78
Rain Gages	23	0	0	100	96	12	3	12	3	17	74
Township Meters	23	0	0	96	96	23	0	21	1	22	96

1.5.2 WTP Residuals Management

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

In the past, periodic overflows have been observed at D_39 when certain filter backwash operations were conducted at the Queen Lane Water Treatment Plant; however, these overflows were not chronic or continuous. As part of the original NMC plan, regulator modifications and operational changes with respect to back washing minimized the likelihood of dry weather overflow at this site. Further corrective source control flow reduction measures at D_39 were studied within the context of the Department's Water Treatment Plant Residuals Management Study. The final version of the Residuals management report did not recommend constructing facilities to attenuate flow peaks associated with Queen Lane backwash operations. Furthermore, backwash hydraulics were not cited as a problem in the report based upon analysis performed 1995 and 1996.

In 1997 all 40 sand filters were modernized and replaced with dual media filters. Filter run times were significantly extended resulting in the reduced need to backwash a filter from three washes per hour to 1 filter backwash per hour. As a result, the 1999 total half-hour peak discharge flow has been reduced by two-thirds. Therefore, the collection system modifications to increase CSO capture, combined with water plant operational modifications have significantly increased the margin of protection against dry-weather overflows at the Susquehanna Ave (D-39) regulator. The Department will continue to monitor the effectiveness of the operational changes and report any DWO's 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.

The Somerset Grit Chamber was cleaned 4 times in 1999 on the following dates:

Date	Cu. Yards Removed
03/26/99	110.92
06/15/99	94.97
09/08/99	84.42
10/29/99	56.24

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 CSO's 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 cost of the sewer reconstruction project was $738,991 and the netting installation required a marginal cost increase of $28,000 in addition to the original contract. The quantity of material collected is now being monitored and a floatables quantification study will be initiated to evaluate the feasibility of any further implementation of this type of control facility.

Status: A pilot netting facility at the T-4 outfall has been collecting debris from CSO's since April of 1997. Since the installation of the netting device, 50 nets have been replaced (25 visits) with an approximate total of 3100 pounds of debris captured. Statistics show that the nets are replaced approximately every 42 days with debris disposal averaging 62 pounds per net (drained weight) or 2.90 pounds of debris per day. 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 CSO's.

1.6.2 Repair, Rehabilitation, and Expansion of Outfall Debris Grills

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

Debris grills are maintained 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.

Repair, Rehabilitation, and / or expansion of debris grills was performed at the following sites during calendar year 1999:

D-25 Somerset St. E of Richmond St – Repaired 1 existing grill and fabricated 1 new one.
- Extensive concrete work to the headwall was required to secure the new grills.

D-07 Lardner St. SE of Milnor St – repaired twisted metal after large storm.

D-05 Magee St. SE of Milnor St. - repaired twisted metal after large storm.

D-03 Princeton Ave SE of Milnor St. - repaired twisted metal after large storm.

F-04 'Wingohocking St. SW of Adams Ave. – Installed new debris grill.

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.

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 1999 include:

- General Stormwater Education
- Cleaner Watersheds Mean Cleaner Water (Introduction to the Cobbs/Darby Watershed Partnership)
- Streets Department Recycling Program
- Grass Clippings & Recycling
- In's & Out's of Sewer Inlets

1.7.2 Waterwheel Watershed Newsletters

The Water Department's watershed newsletters are usually published on a 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.

Fall Edition 1996 - This newsletter introduced watershed concepts in a general fashion and outlined the department's responsibilities for CSO compliance.

Spring Edition 1997 - This newsletter promoted the watershed walks discussed in section 10.9.1 as a token of the department's participation in National Clean-Up Rivers Week. Additionally, this newsletter included specific information on the department's implementation of the US EPA's Nine Minimum Controls and featured watershed specific maps of Philadelphia's waterways with CSO outfall locations designated in order to promote public awareness of CSO issues. The media was invited to attend the watershed walks to introduce them to the CSO program and to begin to develop the framework for project 7.6.2 Media Workshops.

Fall/Winter '97/'98 Edition - Edition featured a capsule update on the PWD's LTCP which highlighted the pilot in-line netting system installed in a CSO outfall. The article detailed the types of trash and debris captured in the outfall, illustrated the "Anatomy of a Sewer System," which showed how separate and combined systems work, how overflows occur, and publicized the planned spring dates for the Streets Department Household Hazardous Waste Collection.

Spring '98 Edition - This edition highlighted the watershed tours hosted by the Water Department and its Stormwater Pollution Prevention CAC held during National River Clean Up Week, May 9 - May 16). Walking tours were featured in Philadelphia's eight watersheds. Tours pointed out the relation between the urban sewer/stormwater collection system and the natural watershed. Participants saw CSO and stormwater outfalls, and learned how these outfalls affect the quality of water. This edition of Waterwheel also addressed the department's CSO LTCP and how it is being implemented in specific watersheds.

Spring '99 Edition - This edition featured pollution prevention tips that ordinary citizens can adopt in their daily lives to protect water quality by practicing litter prevention and "smart" gardening. Information concerning the Streets Department Household Hazardous Waste Collection was also featured. A half page of the edition was dedicated to an illustrated cutaway of a residential street which graphically detailed how chemicals, trash and oil spilled into an inlet can enter a nearby river or stream.

Summer '00 Edition - This edition will introduce the public to the recent formation of the Cobbs/Darby Watershed Partnership and discuss the watershed components of the LTCP

1.7.3 Comprehensive Education Materials

The following projects were initiated and/or completed in calendar year 1999:

- Comprehensive History of the city's sewer system
- Watershed educational partnerships with Bodine High School, Fairmount Park, Phila. Recreation Dept., Academy of Natural Sciences, and the Schuylkill Center for Environmental Education
- Development of watershed self-guided tour booklets for the city's eight watersheds
- Design conceit for the watershed exhibit to be installed at the Fairmount Water Works Interpretive Center
- Implementation of the Cobbs/Darby Watershed Partnership, facilitated by the Water Department and its consultant, the Pennsylvania Environmental Council.

Anticipated Educational projects in calendar year 2000 - A great variety of public information materials concerning the CSO LTCP in relation to the watershed framework will be developed as a result of the watershed partnerships, including: fact sheets, press releases, brochures, watershed status reports, websites, and presentation materials.

1.7.4 Citizen Advisory Committee (CAC)

The Water Department's consultant, the Pennsylvania Environmental Council, facilitates the CAC advisory committee meetings and the project specific team meetings (this format has changed from the past practice of subcommittee meetings). The CAC is comprised of the following members:

Frankford United Neighbors
Schuylkill River Development Corp.
Friends of the Wissahickon
Philadelphia Canoe Club
Collaborations, Inc.
Phila. More Beautiful Committee
Bridesburg Civic Association
Friends of the Manayunk Canal
Fairmount Rowing Association
Friends of the Poquessing Creek
Fairmount Water Works Interpretive Center
School District of Philadelphia
Delaware Estuary Program
PA Horticultural Society
Friends of Tacony Creek Park
Greenspace Alliance
PhilaPride
Wawa Inc.
Delaware Valley Regional Planning Commission
AAA Mid-Atlantic
Academy of Natural Sciences
Friends of Pennypack Creek
Riverkeeper Network
Clean Water Action

Turner Construction
PA Gasoline Retailers & Allied Trades
Greater Phila. Chamber of Commerce
TruGreen-Chemlawn
Riverway Environmental Education Association
Cobbs Creek Community Environmental Education Center
Public Works Studio
Manayunk Development Corp.

The following projects were completed or initiated by the Water Department and its CAC in 1999:

- The watershed educational video, "Stormy Weather," has been distributed to over 300 public, private, and neighborhood organizations, in addition to Philadelphia schools. The city's cable channel is showing the video twice a day, and the CAC had begun contacting WHYY to encourage their use of the video.
- The development of a Teacher's Resource Guide had begun. The guide will be a tool for teachers working on water-related issues. The CAC distributed a survey to 1,250 organizations to determine the breath of existing education resources.
- A Children's Activity Book was developed which features fun-oriented educational pieces (puzzles, games, find the hidden species, etc.) which focus on the urban water use cycle, indigent species, and watershed "addresses." Approximately 50,000 of the books have been printed and are being distributed to schools, environmental education organizations, environmental camps and special events. A special Manayunk Canal supplement was inserted into 5,000 of the brochures. Other watershed inserts may follow.
- Development began on a workshop and training program designed for the city's Department of L&I inspectors and construction site operators and developers aimed to teach BMPs for stormwater management. The Water Department and CAC are researching appropriate BMPs with the kick-off workshop planned for 2000.
- The CAC participated in the "Upstream/Downstream: Connecting Land and Water" Conference hosted by the City Parks Association of Philadelphia on March 26 and 27, 1999.
- The CAC participated in the Delaware Estuary Watershed Action Project. The CAC worked with the School District of Phila. to provide watershed education in the form of presentations and treatment plant tours to eight Phila. high schools. The training program culminated in an inlet stenciling program conducted by the students in April 1999.
- The CAC submitted a grant application to the Pennsylvania Coastal Zone Management Program for a project titled, "The Philadelphia Stormdrain Stenciling Initiative." The CAC was awarded a grant for the project and much of 1999 was dedicated to the planning and implementation of the project. The project encompasses tow major components: development and implementation of a stormwater runoff pollution prevention education/advertising campaign and development and implementation of a stormdrain stenciling program in the five Philadelphia watersheds which drain directly to the Coastal Zone. Working with both the Phila. School District and the Archdiocese of Phila., the CAC coordinated a stormwater pollution prevention drawing contest for grades K-12. Art teachers were sent a packet which included contest directions and background information on stormwater runoff pollution and its prevention. The winning drawings that are selected through a judging process will be used to produce several items, including: a calendar which will be given to every student who submits an entry, a poster which will be distributed for display in schools, city agencies, and businesses; and print advertisements which will be placed in SEPTA vehicles, community newspapers, and organizational newsletters. In addition, working with the watershed organizations located in the five targeted Phila. watersheds (Lower Schuylkill, Delaware Direct, Tacony/Frankford, Poquessing and the Pennypack – watersheds which drain directly to the Coastal Zone), a massive stormdrain stenciling program will take place. The goal of this initiative is the stenciling of 5,000 (approximately 1,000 per watershed) stormdrains over a one month period of time in April 2000. In addition to the stenciling, volunteers will be distributing educational doorhangers to the houses/apartments in stenciled neighborhoods and there will be educational print advertisements placed in targeted community newspapers.

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 endeavors. The department will continue with this focus in 2000 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 are prime for this kind of public/private effort to protect stream 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 any 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 1999 as required in the NPDES Permit. The table has been reorganized to present overflows by the specific receiving water into which the CSO's from a given interceptor system discharge. The column headings are presented in the same format found in the System Hydraulic Characterization (SHC) and NMC Documentation.

1.9.1 Annual CSO Statistics (1999)

The estimated average annual frequency and volume statistics for calendar year 1999 are presented in the following Table.

COBBS CREEK 1999 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 - 72	19	1481	1572	49%	50%	0	345
Cobbs Creek Low Level	9	12	0 - 61	18	126	133	73%	74%	0	199

DELAWARE RIVER 1999 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	5 - 56	24	1106	1207	57%	58%	10	219
Somerset	8	9	20 - 70	42	3977	4379	47%	49%	54	313
Lower Delaware Low Level	27	27	74 - 136	102	3228	3477	58%	59%	9	329
Oregon	5	6	34 - 55	43	1431	1496	38%	39%	107	200
Lower Frankford Low Level	5	6	17 - 62	35	1308	1399	44%	46%	48	248

PENNYPACK CREEK 1999 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	14 - 51	26	99	108	65%	67%	32	188

SCHUYLKILL RIVER 1999 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	0 - 86	28	1447	1554	57%	58%	0	462
Central Schuylkill West Side	10	10	0 - 68	37	745	811	48%	50%	0	338
Lower Schuylkill East Side	7	9	5 - 67	40	873	947	52%	54%	13	312
Lower Schuylkill West Side	4	4	8 - 65	45	1214	1389	21%	23%	19	239
Southwest Main Gravity	2	2	5 - 62	34	2208	2400	62%	64%	8	259

TACONY CREEK 1999 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	2 - 71	35	4658	5049	39%	40%	4	344
Upper Frankford Low Level	12	12	9 - 65	34	456	496	57%	59%	21	273

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, Cobbs Creek Cut-off, and Lower Schuylkill West Side	$1,750,000
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 City-wide basis.

2.1 I / I Reduction Projects

Start: 9/1/1998 End: 6/30/2002 Status: In-Progress

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 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: The CSO program staff is currently putting in place tools to facilitate a prioritization of inflow sources. In 1998 and 1999, a tabular inflow database was created that included every sewer creek crossing in the city of Philadelphia (hydraulic characterization, location, etc). This database will be linked with the digitized drainage maps to create graphical displays in the. This information will then be used to develop and implement an inflow source inspection plan during calendar 2000 which will define and prioritize I/I remediation projects.

A Request for Proposal for temporary flow monitoring services was developed and was bid in mid-April of 1999. A contract was awarded to Utility Pipeline Services (UPS) to install 15 temporary flow meters, provide routine maintenance, download data, and train existing PWD instrumentation crews in proper flow monitoring techniques. The new meters, as well as the Departments stock of flow monitors were deployed at various locations throughout the city to support the LTCP projects including the quantification of Rainfall Dependent Inflow and Infiltration. Eleven of the fifteen flow monitors were installed in our first main target area of Northeast Philadelphia. The other four meters were used to target specific project sites. The meters were installed during the first week of August 1999, and have been collecting data since that time. The meters are scheduled for redeployment in the Northwest Philadelphia area some time in March or April of

2000. The data collected to date is used to assist in the targeting and prioritization of future projects to reduce the impact of inflow and infiltration on Philadelphia's collector system.

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 2-2 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

Additional model analyses will be performed in calendar year 2000 to quantify tidal inflow frequency and volume reductions in all three of PWD's drainage districts due to installation of emergency overflow weir gates.

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: In calendar 1999 CSO Program staff provided assistance in planning and design of the Real Time Control Center, including developing space, physical feature and equipment requirements as appropriate for the initial phase of the Center's operation. Design work has been largely completed for the new building to be constructed at Fox St. Headquarters. The project is currently in the final stages of design, and PWD's Design Branch estimates that the design will be ready for a final review and comment by April 30, 2000 and will go to Projects Control by the end of May, 2000. Once the project goes to Projects Control, it will take approximately 4 months from that time for construction to begin. The estimated capital cost for establishing an RTC center is $350,000. The cost of the entire building addition is expected to exceed $1,000,000.

2.2.1 RTC - SWMG, CC, LSWS

Start: 7/1/1998 **End: 12/1/2004** 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, including the gate chamber above the SWMG Triple Barrel sewer at 70th & Dicks St.; replacing the 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.

During calendar year 1999, PWD received proposals to develop RTC algorithms from three RTC specialty firms. A contract was awarded the RTC contract to Reid Crowther Consulting, Inc. The project is scheduled over a two-year timeframe, with the first year being from March 1, 1999 – December 31, 1999 and the second year from January 1, 2000 – October 5, 2000.

During the first year, Reid Crowther 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, an RTC objective function was identified. Site visits were made to two cities that already have RTC implemented. The project team visited automated monitoring and control centers and automated field facilities in Milwaukee and Seattle in order to assess RTC system's employed by other municipalities. 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.

In the second year of the RTC project, the focus of the project will be to develop a Decision Support System (DSS) to 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. Tasks to be taken on in the next year include the release of the EXTRAN DLL component of SewerCAT to the public domain, interviewing the key stakeholders in the RTC project to determine initial requirements of the DSS, taking inventory of currently available data and systems being used by PWD, the gathering of functional requirements of the DSS, preparation of technical requirements of the DSS, and the development of a prototype system. Once the prototype has been developed, system interfaces for the DSS will be designed and finally, the scope, schedule and budgetary estimates will be developed for full implementation of the modules making up the DSS.

2.3 WPCP Flow Optimization (Stress Testing)

Start: 1/1/1998 End: 10/1/2000 Status: In-Progress

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

The plant stress testing project will establish:

- 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 will allow 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 will be provided in the stress testing summary report that will be developed for each WPCP. The identification of WPCP specific Capital Improvement Projects (CIP) will also be provided as part of the summary reports. The prioritization of the CIPs and the budgeting, appropriation of monies, scheduling and

actual implementation of the CIPs will be accomplished within the context of the overall watershed approach to CSO abatement defined in this LTCP.

PWD will develop an initial five-year optimization/CIP program for the WPCPs, with specific projects identified from stress testing results to be implemented during the upcoming permit cycle. The ultimate decision on project prioritization will be based on a cost benefit ratio vs. other CSO prioritization projects as discussed in this section.

2.3.1 Develop Work Scope for Each Plant

Start: 2/1/1996 End: 3/31/1998 Status: Completed

A Request for Proposals (RFP) was completed on March 31st, 1998. The $334,180 contract was awarded to CH2M Hill on 9/25/1998 and the project was initiated in January of 1999.

2.3.2 Conduct Stress Tests at Each WPCP

Start: 1/19/1999 End: 10/1/2000 Status: In-Progress

Status: Sections 10.2.2 NE WPCP Stress Testing, 10.2.3 SE WPCP Stress Testing, and 10.2.4 SW WPCP Stress Testing from the 1997 Annual CSO status were deleted since the stress testing project will proceed in parallel for all three facilities. The general work scope that was completed during calendar 1999 is comprised of the following major tasks:

Historical data was provided to the consultant from July 1995 to July 1998 to provide an understanding of the facilities' normal flow rates, loading variations, operating capabilities and characteristics.

The **Operations review** was conducted on January 19-21, 1999, during which PWD staff from each facility was interviewed by CH2M-Hill personnel regarding operational issues, successes, concerns of the total facility, and individual processes. A meeting was held on January 22, 1999 in order to present the information to all PWD personnel involved and to initiate discussions to refine the scopes of the long and short term testing tasks.

Subsequent to the identification of critical operational areas of the facilities during the operations review, the **Short-term stress-testing** plan was developed, and finalized in March 1999. The short term tests were conducted from May 11, 1999 to September 23, 1999. The short-term plan consisted of testing the primary clarifiers tanks and the secondary clarifiers at various flow rates and loadings and measure the operational impacts of the variations. This stage of the project also includes establishing clarifier flow patterns by conducting flow-distribution tests to determine if flow imbalances exist throughout the tanks that may impact process performance. PWD laboratory personnel analyzed hundreds of samples collected during these various 8 and 15-hour tests which was critical to the success of these tests.

The **Long-term stress testing** encompassed the collection of certain data during a four-month period on a 10-minute basis to determine the changes that the plant undergoes during normal operating conditions. The long term testing was started on March 1 and continued until June 30, 1999. A mid-term meeting was conducted in mid-April to formally present and discuss the data collected to date from the long term testing. Additional long term testing data was collected at the Southwest WPC Plant from October 1999 to January 2000.

The **Hydraulic Throughput Capacity** of each liquid process was determined using a calibrated hydraulic model. The actual elevations of numerous facility process points were recorded for use in determining these actual hydraulic capacities. The PWD survey crew performed the actual elevation measurements needed to accomplish this task. This work is needed to determine if hydraulic flow restrictions exist within each facility

that may impact process performance. This information in conjunction with treatment capacity process data will be vital when evaluating if capital improvements are needed to any of the facilities to provide additional treatment.

The **Draft Final Report** on the Stress Test program for each of PWD's wastewater treatment plants will be submitted by CH2MHill to the PWD in January 2000. The report will provide analyses for each plant, of hydraulic and treatment throughput capacities for each plant process, the capacity limiting factors, and the potential operating modifications or capital projects whose purpose would be to increase plant throughput.

A meeting is scheduled for the end of March 2000 to review the report. Particular attention will given to prioritizing recommended upgrades or modifications into optimization options which might be considered for immediate implementation, or projects which provide increased capacity but at substantial costs.

2.4 Specialized Sewer Cleaning Projects

$1.35 million was budgeted for specialize, large-scale sewer cleaning contracts to be implemented in FY 1999 & FY 2000. The recent sewer cleaning programs are focusing on those required to support LTCP capital project implementation and as such, are discussed in detail in the sections describing programs taking place in each respective watershed. More specifically, calendar 1999 projects were conducted in the Cobbs Creek Low Level Interceptor and the Main Intercepting Sewer. For calendar 2000, work will continue on both of those projects. In addition, cleaning will begin to work on the following prioritized list of sewers.

1) Richmond Street Sewer from Cumberland to Dyott Streets.
2) Cumberland Trunk Sewer from Aramingo Avenue and Huntingdon Street to Cumberland Street and Delaware River.
3) Island Avenue / 80th Street sewer from 75th and Wheeler Streets to SWWPCP.
4) Lower Schuylkill West Side Interceptor:
   a. Between 58th Street and Passyunk Avenue
   b. On Botanic Avenue from 49th to 51st Streets
5) Upper Schuylkill East Side Interceptor Sewer between Domino Lane (just upstream of the Flat Rock Syphon) to Ridge Avenue at a junction chamber located just east of Wissahickon Creek.
6) Christian Street Trunk Sewer starting at Intercepting Chamber S-25 at Schuylkill Avenue approximately 270 feet upstream.
7) The north Twin Trunk on Front Street starting at the Intercepting Chamber D-54 (Front Street south of Chestnut Street) and extending approximately 700 feet upstream on Walnut Street just west of Hancock Street.
8) The north Twin Trunk on Former Lardner Street starting at the Intercepting Chamber D-07 (Lardner Street southeast of Milnor Street) and extending approximately 650 feet upstream just southeast of Tacony Street.
9) Southwest Main Gravity Interceptor Sewer starting at the Intercepting Chamber S-27 (43rd and Locust Streets) and extending approximately 850 feet on 44th Street just south of Spruce Street.
10) Southwest Main Gravity Interceptor Sewer starting north of Larchwood Avenue and extending through Chester Avenue (just west of Intercepting Chamber S-28) and ending at Kingsessing Avenue.

2.5 Solids / Floatables Control Pilot Program

Start: 3/1/1996 End: 12/5/2003 Status: In-Progress

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

Description: This project involves the reduction in floatables 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.

Pilot Netting Facility Operational Summary: A pilot netting facility at the T-4 outfall has been collecting debris from CSO's since April of 1997. Since the installation of the netting device, 50 nets have been replaced (25 visits) with an approximate total of 3100 pounds of captured debris. Statistics show that the nets are replaced approximately every 42 days with debris disposal averaging 62 pounds per net (drained weight) or 2.90 pounds of debris per day. 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 CSO's.

Skimming Vessel Status: In 1999, the Department investigated the institutional arrangements for procuring and operating a floatable skimming vessel. During this period, members of the Department met with United Marine International, Inc., in order to obtain information on skimming vessels, operating procedures, maintenance, and various institutions that are currently operating similar vessels. In addition, the Department along with the Philadelphia Marine Police Unit investigated and surveyed the Schuylkill River from Fairmount Dam to its confluence with the Delaware River (approximately 8.1 river miles) to identify and document problematic areas of trash accumulation and deposition. After completing the initial meeting with United Marine, it was determined that a skimming vessel would cost upwards of $400,000 alone, not including any of the facility development for debris offloading and land-based handling. During calendar 2000, PWD will begin work on an operational plan for the skimming vessel. This plan will be based on the results of additional field data collection which will better define the relative quantities and transport dynamics of floating debris on the Delaware and Schuylkill rivers.

Small Vessel Reconnaissance Project: An RFP will be written in February 2000 for acquiring a small skimming vessel with the minimum specifications: 17 foot aluminum boat. The bid will be awarded by the end of March and the boat delivery should occur by the end of April 2000. The small vessel will be retrofitted with seining nets to support pilot scale trash skimming operations above and below the Fairmount Dam.

The small boat will be used to investigate docking and dry docking locations for a larger floatables skimming vessel to be operated on the Lower Schuylkill River and the Delaware River. The Department will continue to explore additional funding sources, which will be necessary in order to completely fund a full scale skimming operation. In calendar 1999, PWD met with the Academy of Natural Sciences and the Schuylkill river Development Council to explore funding opportunities. In calendar 2000, PWD will collect information on the New York City and Baltimore Inner Harbor projects to support the development of an operational plan for the skimming vessel. At least one grant proposal will be submitted to request additional funding for the project.

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 possibly additional CSO controls, that will result in further improvements in water quality and, ultimately, the attainment of water quality standards. The need for this watershed initiative is rooted in the fact that insufficient physical, chemical and biological information currently exists on the nature and causes of water quality impairments, sources of pollution, and appropriate remedial measures. 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
Cobbs/Darby Creeks	38	3
Delaware/Schuylkill Rivers (tidal)	100	30
Pennypack Creek	5	130
Poquessing Creek	0	141
Schuylkill River (non-tidal)	3	32
Tacony/Frankford Creeks	32	35
Wissahickon	0	63

3.3 Overview of Watershed Management Planning Work Scope

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 included in most watershed planning programs. It is provided here for purposes of defining the PWD's proposed program in the following pages:

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
- Development of *Watershed Management Plan*

Step 3 Watershed Plan Implementation

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

The scope and importance of each task will vary among watersheds as a result of site-specific factors such as the environmental features of the watershed, regulatory factors such as the need to revise permits or complete TMDLs for the watershed, available funding, extent of previous work, land use and size of the watershed, the nature of businesses and industry, the level of involvement and resources of other stakeholders, and numerous other factors. The study area watersheds have a diverse range of planning needs that range from those of the Delaware, that has a long-standing river basin commission and has been the focus of major monitoring and modeling studies, to those of the Tacony Creek watershed, for which very little data and analysis are available. The actual scope of each task will be developed and described in a work plan or similar document by each stakeholder group at the commencement of watershed planning activities.

The purpose of the Step 1 Reconnaissance Survey is to review existing information, gain a good, non-quantitative understanding of the physical, chemical and biological conditions of the water bodies, understand the character of the watershed land uses that will drive wet weather water quality conditions, and build a common understanding of these factors among all stakeholders. From this understanding more detailed monitoring, modeling, mapping, and analytical work , which is more time consuming and expensive, can be better scoped and scheduled to meet the specific needs of the watershed. A key goal of this preliminary assessment is to define the particular pollutant parameters that are key to attainment of WQS and to define cost-effective baseline and Step 2 water quality and flow monitoring programs to supply information needed to determine attainment and develop an effective management plan.

At the beginning of each watershed program, a preliminary assessment must be performed of the conditions in each of the water body segments, supported either by direct observations or computer model simulations of current water quality conditions in each segment. Comparisons must be made to numeric and narrative limits relative to the water quality criteria appropriate for protection of both the present uses and those designated in the Commonwealth's regulations. In cases of non-attainment of criteria, it is necessary to determine if the non-attainment is related to dry weather conditions, wet weather conditions, or both. For all

of the water bodies, except for the Delaware and tidal Schuylkill Rivers, the PWD will assist with the technical elements of these initial assessments. This assessment is confirmed with current, more detailed information during the Step 2 assessment. The goal will be to develop a matrix that could be used to describe the adequacy of existing data and the attainment of water quality standards for both wet and dry periods. Completion of this matrix for each major segment of each waterbody also would help define the baseline and wet weather monitoring programs that are required to determine attainment and measure improvement in water bodies. The overall purpose of Task 2 is to put in place the information, science and technology needed to make good decisions on pollution control actions and priorities.

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: In-Progress

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 estimated completion date for the remaining minor manhole repair work is April of 2000.

1.2 Cobbs Creek Low Level (CCLL) Improvements

Start: 4/2/1998 End: 6/30/2000 Status: In-Progress

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: This project stems from the specialized sewer cleaning contract put into place by the Department for cleaning the large interceptor and trunk sewer network for which the department does not own equipment capable of cleaning. A budget of $250,000 was allocated for sewer cleaning for FY99 and a budget of $1,100,000 was allocated for FY2000. 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 be cleaned as a part of this project:

The contract contains multiple sewer reaches to be cleaned including several others in the CSO LTCP. Mobile Dredging and Pumping, Inc., of West Chester, PA, won the sewer cleaning contract bid and a "Go Ahead" letter was sent to Mobile on June 30, 1999. The disposal of debris from these sewers will be 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 is anticipated to start in early May 2000. A good portion of the CCLL Interceptor falls under the Island Avenue Trolley track. Currently, negotiations with Septa are being conducted in order to coordinate a third shift (11:00 PM – 6:00 AM) work schedule where the trolley traffic will have to be shut down. Due to the time involved in the process of developing the contract specifications, contract bidding, low bidder selection and contract inititiation, the expected completed date for this project is expected to coincide with the end of the fiscal year in June 2000.

River Backflow Prevention Project

Monitoring in the Northeast Drainage District has shown that, it is possible for regulators located at elevations above the peak tidal stages to be subjected to backflow from the smaller streams during wet weather. In order to protect these regulators from inflow that may result from high creek flows, a program was initiated to install tide gates or other backflow prevention structures at these regulators. A plan is currently in the design phase to install 6 backflow preventers at low lying sites on the Cobbs Creek Low Level Interceptor. It is projected that the installation of additional diversion dams as part of 2.0 Maximize In-System Storage will eliminate this occurrence at the other non-tidal CSO's.

2.0 Watershed Management Planning

The following sections describe the progress that has been made in advancing the Darby-Cobbs Watershed Initiative. During 1999,

2.1 Preliminary Reconnaissance Survey

The Darby and Cobbs Creeks Watershed includes parts of Chester, Delaware, Montgomery, and Philadelphia Counties and covers 77 square miles. The watershed discharges to the Delaware River through the wetlands of Tinicum Wildlife Refuge. The Cobbs Creek Watershed and Tinicum Wildlife Refuge are sub-watersheds of the Darby Creek. Cobbs Creek and its tributaries drain the eastern portion of the watershed and comprise about 29 percent of the watershed. The Tinicum Wildlife Refuge drains the southern-most portion of the watershed, which accounts for 19 percent of the total watershed area. The watershed discharges to the Delaware River through the wetlands of Tinicum Wildlife Refuge. The watershed is highly urbanized in the lower reaches with mixed land uses, although mostly urban, in the upper reaches. Approximately 500,000 people live within the drainage area of the Darby and Cobbs Creeks, based on 1990 census data, yielding a population density of almost 10 persons/acre. In addition to CSO discharges to Cobbs Creek from the City of Philadelphia, both watersheds receive a number of point and non-point source discharges that likely impact water quality.

During calendar 1999 the partnership structure of the Darby-Cobbs watershed initiative was largely put into place and the Preliminary Reconnaissance Survey largely completed. A general partnership, steering committee, technical committee, and a public participation committee now meet on a regular basis to discuss the integration of numerous Federal, State, and local programs into a more comprehensive watershed management plan. 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. Work was completed developing 3 technical memorandum which provide a preliminary characterization of the Darby-Cobbs Watershed:

TM#1 - Historical Water Quality for The Darby and Cobbs Creeks Watershed
TM#2 - Analysis of 1999 Monitoring Data for The Darby and Cobbs Creeks Watershed
TM#3 – A screening Level Contaminant Loading Assessment for the Darby and Cobbs Creek Watershed

Drafts of TM #1 and 2 were completed in 1999. It is expected that these memoranda will be distributed to the Darby-Cobbs watershed partnership in March 2000 and TM# 3 made available shortly thereafter.

2.2 Ecological Assessment and Restoration

The City's Fairmout Park Commission completed a Natural Lands Restoration Master Plan for the portion of Fairmount park adjacent to Cobbs Creek as it passes through the City. In completing the master plan, the City has compiled an extensive inventory and assessment of local fauna, vegetation, and aquatic ecology. From this assessment, the Natural Lands Restoration and Environmental Education Program (NLREEP) has defined 68 high priority projects that cover 124 acres of park land. Generally, the following types of projects will be implemented - wetland creation and enhancement, control of invasive plant species, forest planting, stream bank stabilization, dam removal, and stream channel modification to reduce erosion. [1]

2.3 Public Involvement and Education

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 the Darby-Cobbs creeks. Permit holders, participating agencies, and community-based organizations are constructing this framework upon regulatory and voluntary activities. To this end, the Partnership itself is a public participation mechanism, and

[1] Fairmount Park System – Natural Lands Master Plan. Volumes 1,2,3, Fairmount Park Commission, 1999.

acts as a forum for participating members to work together to develop a watershed strategy that meets state and federal regulatory requirements but that also 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 (DEP), Cobbs Creek Community Environmental Education Center, 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.

During 1999, the Public Participation Committee developed and published a Q&A brochure titled, "Darby-Cobbs Watershed Partnership" to publicize its existence and raise the level of awareness in the community about watershed issues, and provide information on the public and private agencies and organizations that are currently seeking to identify and address the sources of water quality impairment. This brochure was distributed to the various partners to disseminate in their respective communities.

The Public Participation Committee also formed an Education subcommittee to work with services learning programs in the municipal school districts and to identify existing educational resources and/or to suggestion the creation of resources that currently do not exist. This subcommittee, in conjunction with the larger committee, also sought to identify "action items," i.e., concrete projects that could be worked on and completed in the near future. Following a brainstorming session, a list of 25 potential projects was identified. The committee then voted on the various projects to create a "top ten" list to address. These ten projects include, in the order of their ranking of importance:

1. Produce a "watershed status report" based on initial technical committee reports.
2. Conduct a resident survey of issues and awareness.
3. Hold an educational symposium.
4. Develop a watershed awareness video and PSAs.
5. Develop other educational/promotional materials.
6. Provide targeted materials/workshops for the municipal audience; perhaps something around Stormwater Phase II regulations; BMPs, stormwater ordinances, etc.
7. Develop a watershed website.
8. Collect or create educational materials for municipal officials regarding watershed management, and tools to improve watershed stewardship.
9. Create or provide access to teacher training opportunities.
10. Facilitate service-learning projects.

Project teams will be created for each of these projects in calendar year 2000.

Lastly, the City broke ground for the Cobbs Creek Community Environmental Education Center at the close of 1999. This project will create a significant community resource for Philadelphia providing a linkage between the communities and their it's nearby water environment

3.0 Annual CSO Statistics

COBBS CREEK 1999 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 72	19	1481	1572	49%	50%	0	345
Cobbs Creek Low Level	9	12	0 61	18	126	133	73%	74%	0	199

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: Completed

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 appear to be 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 3.0 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: Hydrologic and hydraulic model analyses of this project were refined in calendar year 1999, and model calibration at several locations in the Tacony Interceptor System were performed in support of the Rock Run Relief inflatable dam project. Model calibration was performed using existing level monitors in the Tacony System and additional flow and level monitors were installed to support further calibration and verification in calendar 2000. The inflatable dam control logic and drain-down controls will be developed in the calendar year 2000 using SWMM models of the Tacony System. Results of these analyses will be documented in a design memorandum for the Rock Run Relief Project.

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 15 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. An average annual reduction in CSO volume of 750 MG/year, from 2,500 to 1,750 MG/year, is achieved at the T_14 outfall through use of the available in-system storage volume. This represents 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, an area where golfing and other recreational activities may occur. Since this project modifies an existing structure (the T_14 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 siting, design, and construction of a new storage structure).

Status: Hydrologic and hydraulic model analyses of this project were refined in calendar year 1999, and model calibration at several locations in the Tacony Interceptor System were performed in support of the T_14 inflatable dam project. Model calibration was performed using existing level monitors in the Tacony System and additional flow and level monitors were installed to support further calibration and verification in calendar 2000. The inflatable dam control logic and drain-down controls will be developed in the calendar year 2000 using SWMM models of the Tacony System. Results of these analyses will be documented in a design memorandum for the T_14 Project.

2.0 Watershed Management Planning

2.1 Preliminary Reconnaissance Survey

The preliminary Reconnaissance Survey for the Tacony-Frankford Watershed will be initiated in 2000.

2.2 Ecological Assessment and Restoration

The City's Fairmout Park Commission completed a Natural Lands Restoration Master Plan for the portion of Fairmount Park adjacent to Tacony Creek as it passes through the City. In completing the master plan, the City has compiled an extensive inventory and assessment of local fauna, vegetation, and aquatic ecology. From this assessment, the Natural Lands Restoration and Environmental Education Program (NLREEP) has defined 68 high priority projects that cover 124 acres of park land. Generally, the following types of projects will be implemented - wetland creation and enhancement, control of invasive plant species, forest planting, stream bank stabilization, dam removal, and stream channel modification to reduce erosion. [2]

3.0 Annual CSO Statistics

TACONY CREEK 1999 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	2 – 71	35	4658	5049	39%	40%	4	344
Upper Frankford Low Level	12	12	9 – 65	34	456	496	57%	59%	21	273

[2] Fairmount Park System – Natural Lands Master Plan. Volumes 1,2,3, Fairmount Park Commission, 1999.

Section 5 - Pennypack Watershed

1.0 CSO Capital Improvement Projects

1.1 85% CSO Capture

Start: 2/1/1996 End: 9/7/2004 Status: In-Progress

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: 9/7/2004 Status: In-Progress

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 calendar 2000, PWD staff will finalize 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.

A monitoring subcontractor was retained in the second quarter of 1999 to provide additional monitoring data to support the Pennypack 85% Capture Project and other LTCP projects. This flow survey will provide the necessary data for verification of the SWMM model used to finalize the site plans and regulator modifications necessary to achieve this project's objective. More specifically, the temporary monitoring data will be used to

quantify the effects of rainfall dependant inflow and infiltration (RDI/I) from upstream separate sanitary areas on Pennypack combined sewer capture and overflows. In calendar 2000, modeled RDI/I in upstream sewersheds will be calibrated/verified using this temporary field-monitoring data.

1.1.2 Integrate Water Quality Programs with Storm Flood Relief (WQ & SRF) - Sheffield Ave.

Start: 2/1/1996 End: 6/31/2000 Status: In-Progress

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 was started on September 15, 1998. Because this project also incorporated 4500 feet of water main replacement in addition to the 3600 feet (various sizes) of sewer to be reconstructed, the contractor has indicated an implementation schedule of 500 calendar days, therefore the revised estimated project completion date for the 85% capture project will be November 1, 2000.

Approximately 1000 feet of sewer and most of the water mains were completed in 1998. The new regulator chamber and outfall structure including flexible flap gates for backflow prevention, dam, 24-inch diameter DWO pipe, and interceptor manholes have also been completed. Work remaining to be completed includes bank rehabilitation work at the outfall, and approximately 2600 feet of sewer upstream of the outfall remains to be installed.

The contractor has been working quicker that his original estimation of project completion. During 1999, a significant portion of water main replacement and sewer reconstruction was completed. The majority of the pipe work should be done by March of 2000 with some minor manhole and street work to be completed by June of 2000.

2.0 Annual CSO Statistics

PENNYPACK CREEK 1999 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	14 51	26	99 108	65% - 67%	32 - 188

Section 6 – Delaware River Watershed

1.0 CSO Capital Improvement Projects

1.1 Somerset Interceptor Cleaning

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

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

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 2-2 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

Additional model analyses will be performed in calendar year 2000 to quantify tidal inflow frequency and volume reductions in all three of PWD's drainage districts due to installation of emergency overflow weir gates.

2.0 Watershed Management Planning

In calendar 1999 the CSO sub-committee and the Estuary Model development committees did not meet, but some study reports were issued with CSO-related content. Recent draft reports from the DRBC regarding wet weather impacts and overall monitoring suggest that fecal coliform standards are being met in the main stem estuary in the Philadelphia region. [3] Dissolved oxygen concentrations in the Estuary were shown to be largely unaffected by CSO contributions. [4]

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

3.0 Annual CSO Statistics

DELAWARE RIVER 1999 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	5	-	56	24	1106	-	1207	57%	-	58%	10	-	219
Somerset	8	9	20	-	70	42	3977	-	4379	47%	-	49%	54	-	313
Lower Delaware Low Level	27	27	74	-	136	102	3228	-	3477	58%	-	59%	9	-	329
Oregon	5	6	34	-	55	43	1431	-	1496	38%	-	39%	107	-	200
Lower Frankford Low Level	5	6	17	-	62	35	1308	-	1399	44%	-	46%	48	-	248

Section 7 – Schuylkill River

1.0 CSO Capital Improvement Projects

1.1 RTC – Main Relief Sewer

Start: 8/1/1999 End: 6/15/2004 Status: In-Progress

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: A design memorandum was produced that lists the expected environmental benefits of the Main Relief Project, quantifies the flooding risks associated with the project, and documents the designed 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 Main Relief storage utilization and eliminated adverse affects of the project at other CSO regulators on the Schuylkill River.

Design of the Main Relief Sewer DWO conduit and a new segment of CSES interceptor sewer including a drop structure to eliminate odors was completed in 1999. Construction of the DWO pipe was completed and construction was initiated on the rehabilitation of the CSES interceptor and drop structure. Construction of chambers to store electronic and mechanical equipment associated with the inflatable dam was also begun. Construction of the Main Relief inflatable dam will be completed in calendar year 2000, and the dam should be operation by the close of calendar 2000. Since there is only one supplier of the inflatable dam technology, PWD is seeking to procure the inflatable dams for the Main Relief Sewer in conjunction with the dams for project 10.5.3 RTC Rock Run Relief Sewer and 10.5.4 in order to take advantage of economies of scale.

1.2 Elimination / Consolidation of Outfalls - Main & Shurs

Start: 9/4/1998 End: 12/24/2004 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 1999, a detailed grit profile was completed for three reaches of the Upper Schuylkill Intercepting Sewer: 1. From Domino Lane to Shurs Lane, 2. Shurs Lane to Wissahickon Creek, and 3. From Wissahickon Creek to Nicetown Lane. These inspections showed significant grit deposition. The first two reaches were included in the sewer cleaning contract that was funded in fiscal year 2000 beginning July 1, 1999. The cleaning began on July 9, 1999. As of December 31, 1999, 330.21 tons of debris was removed from 9,210 linear feet of sewer for a total cost of $152,788.90. The sewer cleaning will cease two manholes downstream of Gustine Lake and has an estimated completion date of mid-March.

A temporary monitor was installed in the Main Street and Shurs Lane intercepting chamber in 1999 to collect flow and level data for both the intercepting sewer and the overflow pipe. The data was used to track performance of the various inflow reduction measures employed, as well as to calibrate the computer models of the sewer system. Five additional flow meters will be installed in the interceptor in 2000 to further support the model calibration effort. From the inflow source prioritization performed in LTCP project 10.4 I/I Reduction Programs, some facility inspections were undertaken in 1999 to determine the extent of inflow and infiltration at suspected sites (creek crossings, Flat Rock siphon, manholes, etc.) tributary to the Upper Schuylkill East Side intercepting sewer. Additional facilities targeted for 2000 inspections include the headwall of the Flat Rock Siphon Chamber, the Sump of the Manayunk Canal Siphon Chamber, the Shawmont Avenue Flushing Chamber Lateral, the Nixon and Shawmont Manhole, and the Wissahickon Intake Chamber.

A number of inflow and infiltration investigative and reduction projects are still underway. A database was created with all the geographic locations and the hydraulic information that is necessary to perform inspections of summit and 'dead end' manholes and to confirm the installation of plugs in the sanitary lines of these manholes. Plugging these sanitary lines minimizes the potential for storm flow to enter the sanitary system and subsequently the Main and Shurs regulating chamber. Approximately 60 manholes have been inspected with plug installations occurring at about 20 sites. The remaining 40 plus manholes will be inspected and plugged where necessary by the beginning of May of 2000. Documentation of the critical property connections along Main Street in Manayunk was completed in 1999. Possible dye testing of these connections may take place in 2000 if deemed necessary for the purpose of determining correct connections to the interceptor and storm sewer.

Additional targeted studies will be completed in 2000, which will further reduce inflow into the Main Intercepting sewer. These measures include, dye testing of illicit cross connections, temporary monitor installations in the Wissahickon Intercepting Sewer sewershed (approximately 6 monitors), investigation of the sewer connections of the Upper Roxborough Filters, and disconnection of several storm inlets in the Eva

and Evergreen area which were recently discovered to be connected to the sanitary sewer. These studies should give an accurate measure and/or reduce the quantity of excess flow in the Upper Schuylkill East Side Interceptor and will become part of the prioritized list of inflow reduction programs.

1.3 Elimination / Consolidation of Outfalls - 32nd & Thompson

Start: 4/1/1998 End: 9/15/2003 Status: In-Progress

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 may 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: The design plans for the sewer reconstruction were completed in 1998. The new design allows for an increased grade to be achieved and therefore the reoccurrence of grit deposition is expected to be eliminated. The progression of the contract development is currently being coordinated with CSX and MCI who have track and duct bank facilities that coincide with the sewer alignment. Progress in accounting for the CSX facilities has been made and it is expected that the MCI duct issue will be resolved by the summer of 2000 and the contract bid shortly thereafter.

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 Stokley 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 S_01T from service with 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: 1/8/2004 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 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. The process of obtaining the required easements from the railroad and private property owners has been initiated. The geotechnical investigation required to design the tunnel should be underway in the spring of 2000. The estimated cost for both phases of the 4000 linear foot sewer reconstruction is $16.0 million.

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

Start: 7/1/2001 End: 1/8/2004 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 Annual CSO Statistics

SCHUYLKILL RIVER 1999 CSO Statistics

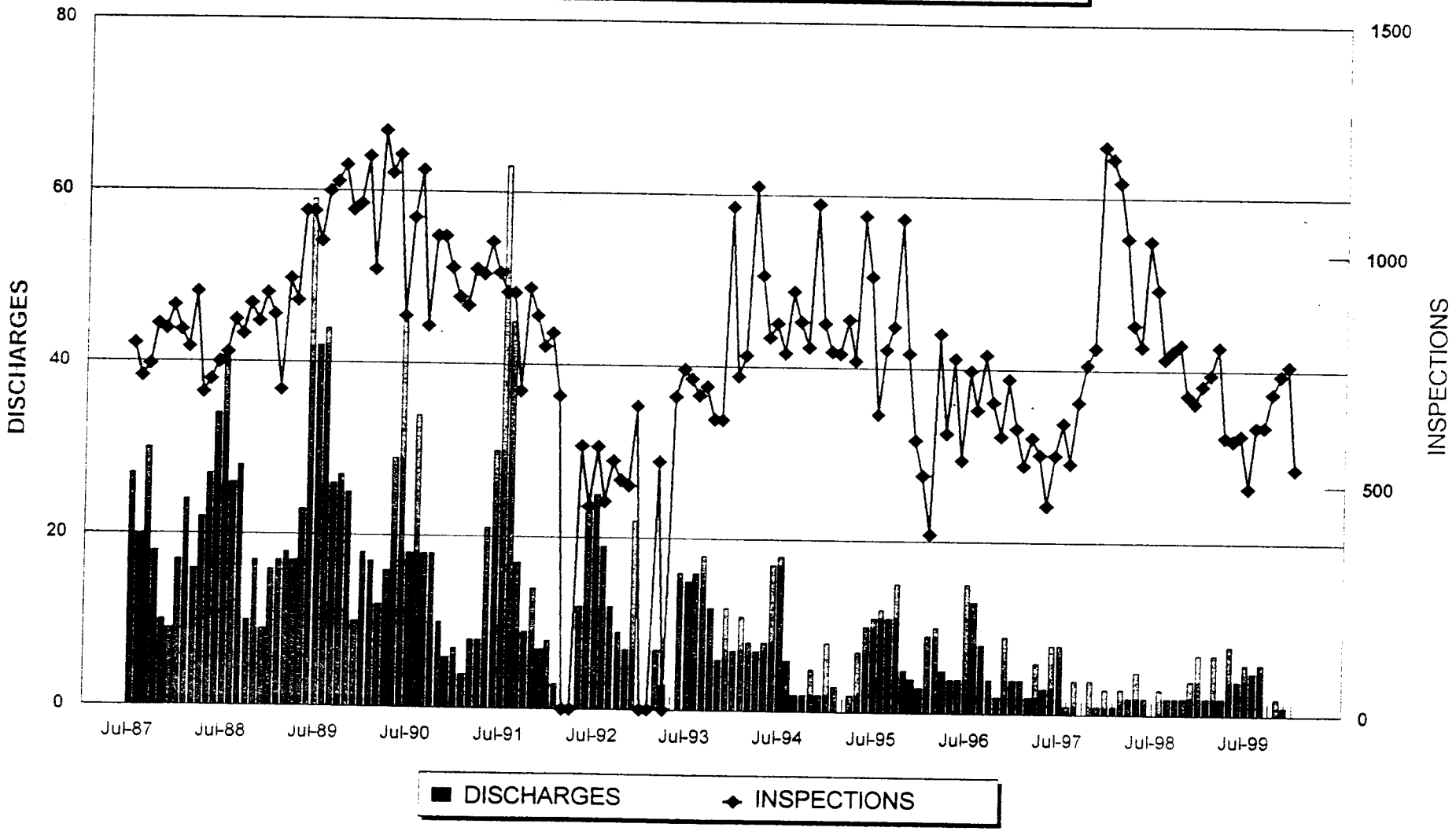
Interceptor	# of point sources	# of structures	Frequency			CSO Volume (MG)		CSO Capture (%)		CSO Duration (hrs)	
			Range per subsystem		Avg per subsystem	Range per subsystem		Range per subsystem		Range per subsystem	
Central Schuylkill East Side	20	26	0	86	28	1447	1554	57%	58%	0	462
Central Schuylkill West Side	10	10	0	68	37	745	811	48%	50%	0	338
Lower Schuylkill East Side	7	9	5	67	40	873	947	52%	54%	13	312
Lower Schuylkill West Side	4	4	8	65	45	1214	1389	21%	23%	19	239
Southwest Main Gravity	2	2	5	62	34	2208	2400	62%	64%	8	259

Section 8 - Watershed Technology Center

During 1999, PWD continued to explore funding opportunities and institutional arrangements pursuant to advancing the concept of a sustainable watershed technology center as described in the CSO LTCP. PWD again submitted a grant project proposal requesting funding under Section 319 of the Clean Water Act to implement a Watershed Technology Center for the Darby Cobbs watershed. The proposal was not funded. Given the extent of the scope and potential function of such a center as described in the CSO LTCP. During the watershed planning studies for each of the above watersheds, PWD has and will continue to supply technical resources towards completing watershed management plans. In addition, the city will implement six environmental education centers over the next 3 years. These centers will greatly expand capabilities to educate Philadelphia residents about the water environment near their neighborhood and serve as vehicles for disseminating watershed management information to a variety of stakeholders.

Appendix A – Flow Control CSO Maintenance Summaries

FLOW CONTROL CSO MAINTENANCE
CSO - INSPECTIONS / DISCHARGES FY88 to Current



DIS/INSP

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

FY1999 BLOCKAGES CLEARED

COLLECTOR	Jul-98	Aug-98	Sep-98	Oct-98	Nov-98	Dec-98	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Totals
UPPER PENNYPACK - 5 UNITS													
BLOCKS CLEARED	2	1	0	0	0	3	0	0	1	0	0	0	7
UPPER DELAWARE LOW LEVEL - 12 UNITS													
BLOCKS CLEARED	3	0	0	4	4	3	2	1	3	3	0	2	25
LOWER FRANKFORD CREEK - 6 UNITS													
BLOCKS CLEARED	6	1	0	0	0	0	2	0	1	0	1	0	11
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
BLOCKS CLEARED	2	0	0	5	1	1	0	4	0	1	0	0	14
FRANKFORD HIGH LEVEL - 14 UNITS													
BLOCKS CLEARED	0	0	0	3	2	5	4	0	3	2	3	3	25
SOMERSET - 9 UNITS													
BLOCKS CLEARED	3	0	0	2	7	5	1	2	2	0	2	0	24
LOWER DELAWARE LOW LEVEL - 32 UNITS													
BLOCKS CLEARED	31	7	1	15	15	29	25	17	17	10	0	5	172
CENTRAL SCHUYLKILL EAST - 18 UNITS													
BLOCKS CLEARED	10	17	17	22	13	5	3	0	0	7	2	2	98
LOWER SCHUYLKILL EAST - 9 UNITS													
BLOCKS CLEARED	7	3	1	1	0	0	3	1	1	11	0	0	28
CENTRAL SCHUYLKILL WEST - 9 UNITS													
BLOCKS CLEARED	3	0	7	9	0	3	0	7	0	2	1	0	32
SOUTHWEST MAIN GRAVITY - 10 UNITS													
BLOCKS CLEARED	15	13	17	24	18	25	14	17	20	2	0	11	176
LOWER SCHUYLKILL WEST - 4 UNITS													
BLOCKS CLEARED	7	2	4	7	0	4	4	4	4	5	0	0	41
COBBS CREEK HIGH LEVEL - 23 UNITS													
BLOCKS CLEARED	13	2	1	8	0	0	2	0	0	0	0	1	27
COBBS CREEK LOW LEVEL - 13 UNITS													
BLOCKS CLEARED	1	0	1	0	0	1	0	0	3	1	0	0	7
RELIEF SEWERS - 27 UNITS													
BLOCKS CLEARED	0	0	0	0	0	0	7	0	0	0	0	0	7
200 CSO UNITS													
TOTALS / MONTH													
TOTAL BLOCKS CLEAR	103	46	49	100	60	84	67	53	55	44	9	24	694
AVER. # of INSP. / BC	8.99	16.85	16.16	8.07	11.62	8.08	10.70	14.00	14.56	13.77	66.44	25.42	17.9

PART 1
DRY WEATHER STATUS REPORT

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

Section 1

JUNE 1999

COLLECTOR	Jul-98	Aug-98	Sep-98	Oct-98	Nov-98	Dec-98	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	21	25	25	17	13	23	17	12	12	11	13	9	198
DISCHARGES	0	0	0	0	0	2	0	0	0	0	0	0	2
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	28	37	44	53	26	33	26	29	28	29	16	35	384
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	30	21	22	26	18	15	14	15	15	13	9	8	206
DISCHARGES	0	0	0	0	0	0	0	0	0	0	1	0	1
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	46	28	39	52	42	26	38	52	26	34	25	16	424
DISCHARGES	0	0	0	0	1	0	0	0	0	0	0	0	1
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	65	49	48	54	42	39	59	49	47	42	27	41	562
DISCHARGES	0	0	0	0	0	0	3	0	3	0	3	3	12
SOMERSET - 9 UNITS													
INSPECTIONS	38	20	28	25	24	22	28	25	25	21	25	16	297
DISCHARGES	0	0	0	0	0	0	0	0	0	0	3	0	3
LOWER DELAWARE LOW LEVEL - 32 UNITS													
INSPECTIONS	160	190	157	144	165	136	128	126	148	146	111	138	1749
DISCHARGES	0	1	1	0	0	1	1	0	0	0	0	0	4
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	101	89	96	96	82	69	109	118	125	88	96	69	1138
DISCHARGES	0	1	0	1	0	0	0	0	0	1	0	0	3
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	52	55	32	28	27	26	45	34	35	33	43	23	433
DISCHARGES	0	1	1	0	0	0	0	0	0	1	0	0	3
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	68	22	41	52	35	40	40	50	60	26	49	38	521
DISCHARGES	0	0	0	0	0	0	0	1	0	0	1	0	2
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	71	59	50	59	56	75	57	54	62	41	70	53	707
DISCHARGES	0	0	0	0	1	0	0	0	1	0	0	0	2
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	42	38	32	49	27	23	37	38	51	29	24	14	404
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
COBBS CREEK HIGH LEVEL - 23 UNITS													
INSPECTIONS	89	61	70	57	42	63	43	42	63	47	23	55	655
DISCHARGES	0	0	0	1	0	0	2	0	0	0	0	1	4
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	60	21	30	27	44	42	28	50	48	9	26	31	416
DISCHARGES	0	0	0	0	0	1	1	0	3	0	0	0	5
RELIEF SEWERS - 27 UNITS													
INSPECTIONS	55	60	78	68	54	47	48	48	56	37	41	64	656
DISCHARGES	0	0	0	0	0	0	0	1	0	0	0	0	1
200 REGULATOR UNITS													
TOTALS / MONTH													Totals
INSPECTIONS	926	775	792	807	697	679	717	742	801	606	598	610	8750
DISCHARGES	0	3	2	2	2	4	7	2	7	2	8	4	43
DISC / 100 INSPECTIONS	0.0	0.4	0.3	0.2	0.3	0.6	1.0	0.3	0.9	0.3	1.3	0.7	0.5

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK										5 UNITS					
TOTAL	21	25	25	17	13	23	17	12	12	11	13	9	198	3.3	9.4
P01	4	4	5	3	2	5	3	2	2	2	2	2	36	3.0	10.1
P02	4	4	5	3	3	3	4	2	2	3	2	2	37	3.1	9.9
P03	5	5	5	5	3	4	4	3	4	2	4	2	46	3.8	7.9
P04	5	5	5	3	3	8	4	3	3	2	3	2	46	3.8	7.9
P05	3	7	5	3	2	3	2	2	1	2	2	1	33	2.8	11.1
UPPER DELAWARE LOW LEVEL										12 UNITS					
TOTAL	28	37	44	53	26	33	26	29	28	29	16	35	384	2.7	11.9
D02	4	7	4	6	2	2	2	3	2	4	1	2	39	3.3	9.4
D03	6	4	5	5	2	4	2	3	3	3	1	3	41	3.4	8.9
D04	4	4	5	5	2	3	2	2	3	2	1	3	36	3.0	10.1
D05	1	2	3	5	2	4	2	2	3	4	1	8	37	3.1	9.9
D06	4	4	4	5	2	4	2	2	2	2	2	3	36	3.0	10.1
D07	2	3	3	6	3	4	3	3	3	3	2	3	38	3.2	9.6
D08	1	3	3	6	3	2	1	2	3	2	2	3	31	2.6	11.8
D09	1	2	3	4	2	2	1	2	2	2	2	2	25	2.1	14.6
D11	1	2	3	3	2	2	3	2	2	2	1	2	25	2.1	14.6
D12	1	2	3	2	2	2	2	4	2	2	1	2	25	2.1	14.6
D13	2	2	4	3	2	2	2	1	1	1	1	2	23	1.9	15.9
D15	1	2	4	3	2	2	4	3	2	2	1	2	28	2.3	13.0
LOWER FRANKFORD CREEK										6 UNITS					
TOTAL	30	21	22	26	18	15	14	15	15	13	9	8	206	2.9	11.4
F13	7	6	5	5	5	3	2	2	3	4	2	2	46	3.8	7.9
F14	6	4	5	5	5	4	2	2	2	2	2	2	41	3.4	8.9
F21	3	2	3	3	2	2	1	2	2	0	1	1	22	1.8	16.6
F23	6	3	3	5	2	2	6	4	4	3	2	1	41	3.4	8.9
F24	5	3	3	4	2	2	2	3	2	3	1	1	31	2.6	11.8
F25	3	3	3	4	2	2	1	2	2	1	1	1	25	2.1	14.6
LOWER FRANKFORD LOW LEVEL										10 UNITS					
TOTAL	46	28	39	52	42	26	38	52	26	34	25	16	424	3.5	9.7
F03	3	2	3	3	2	1	3	5	2	4	1	1	30	2.5	12.2
F04	4	2	3	3	2	1	2	4	2	4	1	1	29	2.4	12.6
F05	3	2	4	3	2	1	2	4	2	4	0	2	29	2.4	12.6
F06	5	3	5	7	7	3	6	5	2	4	4	3	54	4.5	6.8
F07	5	5	6	7	7	3	4	7	4	4	2	1	55	4.6	6.6
F08	5	3	3	5	6	3	5	5	2	1	3	1	42	3.5	8.7
F09	6	3	5	8	7	4	6	7	3	2	5	4	60	5.0	6.1
F10	7	4	4	10	6	4	6	8	5	6	6	1	67	5.6	5.4
F11	3	2	3	2	2	3	2	3	2	1	1	1	25	2.1	14.6
F12	5	2	3	4	1	3	2	4	2	4	2	1	33	2.8	11.1
FRANKFORD HIGH LEVEL										14 UNITS					
TOTAL	65	49	48	54	42	39	59	49	47	42	27	41	562	3.3	9.8
T01	5	4	5	2	2	2	2	4	2	1	4	3	36	3.0	10.1
T03	6	2	4	3	2	2	2	4	10	4	8	5	53	4.4	6.9
T04	6	5	4	5	8	4	5	4	5	4	2	3	55	4.6	6.6
T05	5	2	3	2	4	3	3	4	2	3	3	2	36	3.0	10.1
T06	5	3	3	3	4	2	3	3	4	3	1	2	36	3.0	10.1
T07	5	3	3	6	3	2	3	3	3	2	1	2	36	3.0	10.1
T08	4	3	2	3	2	3	4	2	2	3	1	3	32	2.7	11.4
T09	4	3	4	4	2	2	4	2	2	4	1	2	34	2.8	10.7
T10	4	5	5	6	3	7	14	9	6	5	3	6	73	6.1	5.0
T11	7	5	6	7	4	2	6	3	2	4	1	5	52	4.3	7.0
T12	3	4	2	2	1	2	4	3	2	2	0	2	27	2.3	13.5
T13	2	4	2	3	2	2	3	4	3	2	0	2	29	2.4	12.6
T14	4	3	3	4	3	3	3	2	2	2	0	2	31	2.6	11.8
T15	5	3	2	4	2	3	3	2	2	3	1	2	32	2.7	11.4

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

I/D =INSPECTIONS PER DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL										9 UNITS					
TOTAL	38	20	28	25	24	22	28	25	25	21	25	16	297	2.8	11.2
D17	3	2	3	2	4	2	3	2	3	2	4	2	32	2.7	11.4
D18	3	2	3	3	3	3	3	2	4	2	2	1	31	2.6	11.8
D19	4	2	3	2	4	2	2	3	3	2	3	1	31	2.6	11.8
D20	4	2	4	4	3	3	2	3	4	3	2	1	35	2.9	10.4
D21	3	1	3	2	3	2	4	3	2	3	3	2	31	2.6	11.8
D22	3	1	3	4	3	2	3	3	2	2	3	2	31	2.6	11.8
D23	5	2	3	2	1	3	2	3	2	2	2	1	28	2.3	13.0
D24	6	2	2	2	1	3	4	3	2	3	3	3	34	2.8	10.7
D25	7	6	4	4	2	2	5	3	3	2	3	3	44	3.7	8.3
LOWER DELAWARE LOW LEVEL										32 UNITS					
TOTAL	160	190	157	144	165	136	128	126	148	146	111	138	1749	4.6	7.1
D37	4	6	6	7	9	5	6	7	6	5	4	5	70	5.8	5.2
D38	4	6	4	5	7	6	7	4	4	5	3	6	61	5.1	6.0
D39	4	7	3	4	3	5	2	2	4	3	4	5	46	3.8	7.9
D40	4	5	3	3	3	5	3	3	4	3	2	3	41	3.4	8.9
D41	4	5	3	4	3	5	2	3	3	4	2	4	42	3.5	8.7
D42	5	6	4	5	9	4	6	6	4	4	4	4	61	5.1	6.0
D43	5	6	3	5	3	3	4	3	3	4	4	4	47	3.9	7.8
D44	4	7	6	4	5	6	7	6	6	7	5	4	67	5.6	5.4
D45	9	8	13	11	11	6	8	10	8	5	5	6	100	8.3	3.6
D46	5	5	2	3	3	3	3	3	4	3	3	4	41	3.4	8.9
D47	4	6	2	3	3	2	3	3	4	3	4	5	42	3.5	8.7
D48	3	6	2	3	3	2	6	2	4	5	1	4	41	3.4	8.9
D49	6	6	6	4	5	3	2	3	3	4	5	5	52	4.3	7.0
D50	6	6	7	6	10	3	2	3	3	4	7	4	61	5.1	6.0
D51	5	7	3	3	6	4	2	5	4	3	5	6	53	4.4	6.9
D52	4	5	3	4	4	5	2	5	3	3	3	3	44	3.7	8.3
D53	4	7	3	4	3	3	2	3	2	3	4	4	42	3.5	8.7
D54	4	5	4	4	5	3	2	3	4	4	3	4	45	3.8	8.1
D58	5	6	4	5	5	2	2	2	4	4	4	5	48	4.0	7.6
D61	4	6	5	3	4	3	2	5	3	3	3	3	44	3.7	8.3
D62	4	5	5	4	5	3	2	5	3	3	3	5	47	3.9	7.8
D63	5	4	6	7	9	4	4	3	4	6	2	5	59	4.9	6.2
D64	4	7	7	5	8	5	7	6	5	5	4	6	69	5.8	5.3
D65	5	4	7	2	5	4	3	4	7	7	3	6	57	4.8	6.4
D66	6	4	5	2	4	9	3	4	7	4	2	5	55	4.6	6.6
D67	6	5	4	2	2	3	3	2	3	4	2	2	38	3.2	9.6
D68	4	5	4	7	5	6	9	4	9	10	4	3	70	5.8	5.2
D69	6	5	5	5	3	4	4	4	5	6	2	4	53	4.4	6.9
D70	10	11	11	11	15	10	9	7	10	9	7	5	115	9.6	3.2
D71	4	6	6	3	2	3	3	2	5	4	2	2	42	3.5	8.7
D72	8	6	6	3	2	4	3	2	5	5	3	3	50	4.2	7.3
D73	5	7	5	3	1	3	5	2	5	4	2	4	46	3.8	7.9
TOTAL	388	370	363	371	330	294	310	308	301	296	226	263	3820		
I/D/C	6.4	6.1	6.0	6.1	5.4	4.8	5.1	5.1	4.9	4.9	3.7	4.3			

23	TOTAL DISCHARGES FOR NE & SE DISTRICTS
1.9	AVERAGE DISCHARGES PER MONTH
13.2	AVER. DAYS BEFORE RETURNING TO SITE
5.2	AVER. INSPECTIONS PER DAY PER CREW

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

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL — 9 UNITS													
TOTAL	0	0	0	0	0	0	0	0	0	0	3	0	3
D17											1		1
D18													0
D19											1		1
D20													0
D21													0
D22											1		1
D23													0
D24													0
D25													0
LOWER DELAWARE LOW LEVEL — 32 UNITS													
TOTAL	0	1	1	0	0	1	1	0	0	0	0	0	4
D37													0
D38						1							1
D39													0
D40			1										1
D41													0
D42													0
D43													0
D44													0
D45													0
D46													0
D47							1						1
D48													0
D49													0
D50		1											1
D51													0
D52													0
D53													0
D54													0
D58													0
D61													0
D62													0
D63													0
D64													0
D65													0
D66													0
D67													0
D68													0
D69													0
D70													0
D71													0
D72													0
D73													0
TOTAL	0	1	1	0	1	3	4	0	3	0	7	3	23

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
UP	0	0	0	0	0	1	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	1	0	1
LFLL	0	0	0	0	1	0	0	0	0	0	0	0	1
FHL	0	0	0	0	0	0	1	0	1	0	2	2	6
SLL	0	0	0	0	0	0	0	0	0	0	3	0	3
LDLL	0	1	1	0	0	1	1	0	0	0	0	0	4

CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
TOTAL	101	89	96	98	82	69	109	118	125	88	96	69	1138	5.3	6.2
S05	9	5	7	6	4	4	7	7	9	9	7	5	79	6.6	4.6
S06	8	5	8	5	4	4	6	7	9	9	7	5	77	6.4	4.7
S07	8	8	8	8	9	6	9	8	13	9	9	6	101	8.4	3.6
S08	7	6	8	4	4	4	5	8	10	7	7	5	75	6.3	4.9
S09	7	5	6	5	5	4	8	8	9	7	7	6	77	6.4	4.7
S10	7	6	5	5	4	4	6	8	9	3	5	3	65	5.4	5.6
S12	7	6	7	4	3	5	6	6	6	3	5	3	63	5.3	5.8
S12A	7	6	7	5	4	5	6	6	6	3	6	3	66	5.5	5.5
S13	7	6	6	4	4	4	6	5	5	2	6	4	59	4.9	6.2
S15	8	6	6	9	12	6	8	5	8	2	8	3	81	6.8	4.5
S16	4	4	6	5	3	4	6	8	5	3	4	3	55	4.6	6.6
S17	3	5	4	5	3	3	6	7	6	3	4	5	54	4.5	6.8
S18	3	5	3	6	3	3	5	7	5	9	7	3	59	4.9	6.2
S19	3	4	4	5	5	4	6	6	5	6	3	3	54	4.5	6.8
S21	4	3	3	6	7	3	5	5	5	5	4	3	53	4.4	6.9
S23	3	3	3	5	3	2	4	5	5	2	2	3	40	3.3	9.1
S25	3	3	2	5	3	2	5	4	5	4	3	3	42	3.5	8.7
S26	3	3	3	4	2	2	5	4	5	2	2	3	38	3.2	9.6

LOWER SCHUYLKILL EAST SIDE — 9 UNITS

TOTAL	52	55	32	28	27	26	45	34	35	33	43	23	433	4.0	7.8
S31	7	10	4	7	3	3	7	5	8	5	5	3	67	5.6	5.4
S35	7	8	3	5	3	3	5	4	6	4	5	3	56	4.7	6.5
S36	7	8	3	4	3	3	5	4	6	4	5	3	55	4.6	6.6
S36A	6	6	3	4	3	3	5	3	5	3	4	2	47	3.9	7.8
S37	5	5	3	2	3	3	4	3	1	3	4	2	38	3.2	9.6
S42	5	4	5	1	3	3	7	5	4	4	6	3	50	4.2	7.3
S42A	5	4	4	2	3	3	4	3	3	2	5	3	41	3.4	8.9
S44	5	5	3	2	3	3	4	3	1	3	5	2	39	3.3	9.4
S46	5	5	4	1	3	2	4	4	1	5	4	2	40	3.3	9.1

CENTRAL SCHUYLKILL WEST — 9 UNITS

TOTAL	66	22	41	52	35	40	40	50	60	26	49	36	521	4.8	6.4
S01	7	3	4	6	4	4	6	8	8	3	7	4	64	5.3	5.7
S02	7	3	4	6	4	5	6	7	8	3	7	5	65	5.4	5.6
S03	7	3	4	6	4	4	4	5	9	2	6	5	59	4.9	6.2
S04	8	3	6	7	5	5	6	8	7	5	8	5	73	6.1	5.0
S11	7	2	5	7	3	4	4	5	6	3	6	4	56	4.7	6.5
S14	8	2	5	5	4	4	3	4	6	3	5	4	53	4.4	6.9
S20	8	2	3	5	3	4	3	5	5	3	4	3	48	4.0	7.6
S22	8	2	5	5	4	5	4	4	5	2	3	4	51	4.3	7.2
S24	8	2	5	5	4	5	4	4	6	2	3	4	52	4.3	7.0

SOUTHWEST MAIN GRAVITY — 10 UNITS

TOTAL	71	59	50	59	56	75	57	54	62	41	70	53	707	5.9	7.3
S27	9	4	3	3	3	5	3	4	6	4	5	5	54	4.5	6.8
S28	9	3	4	3	3	5	4	4	4	2	4	5	50	4.2	7.3
S30	5	3	3	2	3	5	4	3	3	1	4	5	41	3.4	8.9
S34	4	3	4	2	3	6	4	3	3	1	4	5	42	3.5	8.7
S39	3	3	3	2	3	5	3	3	3	1	5	4	38	3.2	9.6
S40	4	4	3	2	3	6	4	3	6	2	4	3	44	3.7	8.3
S43	3	3	3	2	2	2	3	2	3	4	5	3	35	2.9	10.4
S47	4	3	5	3	3	2	3	3	3	3	5	3	40	3.3	9.1
S50	17	18	13	22	17	20	15	16	15	13	17	12	195	16.3	1.9
S51	13	15	9	18	16	19	14	13	16	10	17	8	168	14.0	2.2

LOWER SCHUYLKILL WEST SIDE — 4 UNITS

TOTAL	42	38	32	49	27	23	37	36	51	29	24	14	404	8.4	3.7
S32	13	11	8	15	11	7	11	12	15	8	6	4	121	10.1	3.0
S33	11	11	8	15	10	7	11	12	15	7	6	4	117	9.8	3.1
S38	10	8	9	9	3	5	8	8	12	7	7	4	90	7.5	4.1
S45	8	8	7	10	3	4	7	6	9	7	5	2	76	6.3	4.8

COBBS CREEK HIGH LEVEL — 23 UNITS

TOTAL	89	61	70	57	42	63	43	42	63	47	23	55	655	2.4	13.0
C01	5	2	3	2	2	4	2	3	3	3	1	2	32	2.7	11.4
C02	4	2	3	3	2	3	2	2	3	3	1	2	30	2.5	12.2
C04	4	2	3	2	2	3	2	2	2	3	1	2	28	2.3	13.0
C04A	3	2	3	2	2	3	2	2	2	2	1	2	26	2.2	14.0
C05	4	2	3	2	2	3	2	2	2	1	1	2	26	2.2	14.0
C06	4	2	3	2	2	3	2	2	2	1	1	2	26	2.2	14.0
C07	3	3	3	2	2	3	2	1	2	1	1	2	25	2.1	14.6
C09	3	3	3	4	2	3	2	1	2	1	1	2	27	2.3	13.5
C10	4	3	3	5	1	3	2	1	2	1	1	2	28	2.3	13.0
C11	3	4	3	2	1	3	2	1	2	1	1	1	24	2.0	15.2
C12	3	2	3	2	1	3	2	2	2	1	1	1	23	1.9	15.9
C13	3	2	3	1	1	3	2	2	2	1	1	1	22	1.8	16.6
C14	4	4	3	2	2	3	1	2	4	2	1	4	32	2.7	11.4
C15	3	3	3	2	2	3	1	1	4	2	1	4	29	2.4	12.6
C16	3	3	3	2	2	3	2	1	4	2	1	4	30	2.5	12.2
C17	3	2	3	2	2	3	1	2	4	2	1	4	29	2.4	12.6
C31	6	3	4	3	2	2	2	2	3	3	1	4	35	2.9	10.4
C32	4	3	2	2	2	1	2	2	3	3	1	2	27	2.3	13.5
C33	5	3	3	3	2	2	2	2	3	3	1	4	33	2.8	11.1
C34	5	3	3	3	2	2	2	2	3	3	1	2	31	2.6	11.8
C35	4	3	3	3	2	3	2	2	3	3	1	2	31	2.6	11.8
C36	5	2	4	3	2	2	2	2	3	2	1	2	30	2.5	12.2
C37	4	3	3	3	2	2	2	3	3	3	1	2	31	2.6	11.8

COBBS CREEK LOW LEVEL — 13 UNITS

TOTAL	60	21	30	27	44	42	28	50	48	9	26	31	416	2.7	12.6
C18	5	1	3	2	2	3	2	3	3	2	1	5	32	2.7	11.4
C19	7	4	3	5	8	4	4	8	6	2	4	3	58	4.8	6.3
C20	5	1	2	3	2	3	4	3	6	1	2	2	34	2.8	10.7
C21	5	1	2	2	2	3	2	3	4	0	2	3	29	2.4	12.6
C22	3	1	2	2	2	3	1	2	3	0	2	2	23	1.9	15.9
C23	6	1	2	1	2	3	1	3	3	0	2	2	26	2.2	14.0
C24	5	4	3	4	8	4	3	7	5	1	4	2	50	4.2	7.3
C25	4	1	3	1	2	3	1	3	3	0	2	2	25	2.1	14.6
C26	4	2	2	1	2	3	1	3	2	1	1	2	24	2.0	15.2
C27	4	2	2	1	2	3	1	3	4	1	2	2	27	2.3	13.5
C28A	5	1	2	3	8	4	5	8	5	1	1	3	46	3.8	7.9
C29	4	1	2	1	2	3	1	2	2	0	1	2	21	1.8	17.4
C30	3	1	2	1	2	3	2	2	2	0	2	1	21	1.8	17.4
TOTAL	483	345	351	368	313	338	359	386	444	273	331	283	4274		
I/D/C	5.3	3.8	3.8	4.0	3.4	3.7	3.9	4.2	4.9	3.0	3.6	3.1			

19 TOTAL DISCHARGES IN SW DISTRICT

1.6 AVERAGE DISCHARGES PER MONTH

10.3 AVER. DAYS BEFORE RETURNING TO SITE

3.9 AVER. INSPECTIONS PER DAY PER CREW

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

CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
TOTAL	0	1	0	1	0	0	0	0	0	1	0	0	3
S05		1		1									2
S06													0
S07													0
S08													0
S09													0
S10													0
S12													0
S12A													0
S13													0
S15													0
S16													0
S17													0
S18										1			1
S19													0
S21													0
S23													0
S25													0
S26													0

LOWER SCHUYLKILL EAST SIDE — 9 UNITS

TOTAL	0	1	1	0	0	0	0	0	0	1	0	0	3
S31		1	1										2
S35													0
S36													0
S36A													0
S37													0
S42													0
S42A													0
S44													0
S46										1			1

CENTRAL SCHUYLKILL WEST — 9 UNITS

TOTAL	0	0	0	0	0	0	0	1	0	0	1	0	2
S01								1			1		2
S02													0
S03													0
S04													0
S11													0
S14													0
S20													0
S22													0
S24													0

SOUTHWEST MAIN GRAVITY — 10 UNITS

TOTAL	0	0	0	0	1	0	0	0	1	0	0	0	2
S27													0
S28													0
S30													0
S34													0
S39													0
S40													0
S43													0
S47													0
S50					1				1				2
S51													0

LOWER SCHUYLKILL WEST SIDE — 4 UNITS

TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
S32													0
S33													0
S38													0
S45													0

COBBS CREEK HIGH LEVEL — 23 UNITS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
TOTAL	0	0	0	1	0	0	2	0	0	0	0	1	4
C01													0
C02													0
C04													0
C04A													0
C05													0
C06													0
C07							1						1
C09				1			1					1	3
C10													0
C11													0
C12													0
C13													0
C14													0
C15													0
C16													0
C17													0
C31													0
C32													0
C33													0
C34													0
C35													0
C36													0
C37													0

COBBS CREEK LOW LEVEL — 13 UNITS

TOTAL	0	0	0	0	0	1	1	0	3	0	0	0	5
C18													0
C19						1							1
C20							1		3				4
C21													0
C22													0
C23													0
C24													0
C25													0
C26													0
C27													0
C28A													0
C29													0
C30													0
TOTAL	0	2	1	2	1	1	3	1	4	2	1	1	19

NO OF UNITS IN DISTRICT BLOCKED

CSE	0	1	0	1	0	0	0	0	0	1	0	0	3
LSE	0	1	1	0	0	0	0	0	0	1	0	0	3
CSW	0	0	0	0	0	0	0	1	0	0	1	0	2
SWG	0	0	0	0	1	0	0	0	1	0	0	0	2
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	0	0	0	1	0	0	2	0	0	0	0	1	4
CCLL	0	0	0	0	0	1	1	0	1	0	0	0	3

JUNE 1999 RELIEF SEWER MONTHLY INSPECTION

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER								6 UNITS					
R1	3	2	3	3	2	2	2	2	2	1	2	3	27
R2	3	2	3	3	2	2	2	2	2	1	2	3	27
R3	3	2	3	3	2	2	2	2	2	1	2	3	27
R4	3	2	3	2	2	1	2	3	2	1	2	3	26
R5	3	2	3	2	2	1	2	2	2	1	2	3	25
R6	3	2	3	2	2	1	2	2	2	1	2	3	25
MAIN RELIEF SEWER								7 UNITS					
R7	3	2	3	3	2	2	2	1	2	1	2	4	27
R8	3	2	3	3	2	2	2	1	2	1	2	3	26
R9	3	2	3	3	2	2	2	1	2	1	2	3	26
R10	3	2	3	3	2	2	2	1	2	1	2	3	26
R11	3	2	3	3	2	2	2	2	2	1	2	3	27
R11A				1	2	2	2	2	2	1	2	3	17
R12	3	2	3	3	2	3	2	2	2	1	2	2	27
WAKLING RELIEF SEWER								2 UNITS					
R13	1	3	3	3	2	2	2	2	2	2	1	1	24
R14	1	3	3	3	2	2	2	2	2	2	1	1	24
ROCK RUN STORM FLOOD RELIEF SEWER								1 UNITS					
R15	1	3	3	2	2	1	1	2	2	1	1	2	21
OREGON AVE RELIEF SEWER								2 UNITS					
R16	1	1	3	3	3	2	2	3	4	1	2	3	28
R17	1	1	3	3	3	3	2	3	4	4	2	3	32
FRANKFORD HIGH LEVEL RELIEF SEWER								1 UNITS					
R18	1	3	3	3	2	1	2	1	3	2	1	1	23
32ND ST RELIEF SEWER								1 UNITS					
R19	1	3	3	2	2	1	1	1	2	2	1	1	20
MAIN STREET RELIEF SEWER								1 UNITS					
R20	1	2	3	2	2	1	1	2	2	2	1	2	21
SOMERSET SYSTEM DIVERSION CHAMBER								1 UNITS					
R21	1	3	3	2	2	1	2	1	2	2	1	2	22
TEMPORARY REGULATOR CHAMBER								2 UNITS					
R22	1	3	3	2	DISCONTINUED PROBLEM CORRECTED								9
R23	1	5	3	2	2	2	1	2	2	1	1	2	24
ARCH ST RELIEF SEWER								1 UNITS					
R24	3	1	3	2	2	2	2	2	2	1	1	2	23
16TH & SNYDER								1 UNITS					
R25	4	3	3	2	2	2	2	2	1	1	1	2	25
GRANT & STATE RD. RELIEF								1 UNITS					
R26	1	2	3	3	2	3	2	2	2	3	1	3	27
TOTAL	55	60	78	68	54	47	48	48	56	37	41	64	656
AVER	2.0	2.2	2.9	2.5	2.0	1.7	1.8	1.8	2.1	1.4	1.5	2.4	2.0

RELIEF SEWER MONTHLY DISCHARGE PAGE 7

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER								6 UNITS					
R1													0
R2													0
R3													0
R4									1				1
R5													0
R6													0
MAIN RELIEF SEWER								7 UNITS					
R7													0
R8													0
R9													0
R10													0
R11													0
R11A													0
R12													0
WAKLING RELIEF SEWER								2 UNITS					
R13													0
R14													0
ROCK RUN STORM FLOOD RELIEF SEWER								1 UNITS					
R15													0
OREGON AVE RELIEF SEWER								2 UNITS					
R16													0
R17													0
FRANKFORD HIGH LEVEL RELIEF SEWER								1 UNITS					
R18													0
32ND ST RELIEF SEWER								1 UNITS					
R19													0
MAIN STREET RELIEF SEWER								1 UNITS					
R20													0
SOMERSET SYSTEM DIVERSION CHAMBER								1 UNITS					
R21													0
TEMPORARY REGULATOR CHAMBER								2 UNITS					
R22													0
R23													0
ARCH ST RELIEF SEWER								1 UNITS					
R24													0
16TH & SNYDER								1 UNITS					
R24													0
GRANT & STATE RD. RELIEF								1 UNITS					
R26													0
TOTAL	0	0	0	0	0	0	0	1	0	0	0	0	1
UNITS	0	0	0	0	0	0	0	1	0	0	0	0	

JUNE 1999 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST	1	1	3	2	2	1	1	2	2	2	1	1	19
SOMERSET GRIT LEVEL	3	4	2	4	2	2	1	3	3	2	1	2	29
(H-20) 70th & Dicks	3	1	2	2	2	2	2	3	2	1	1	3	24
CCLL CONTROL PIPE @ ISLAND AVE.	2	2	3	3	3	2	2	3	2	1	2	4	29

JUNE 1999 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
NANDINA ST	2	3	3	4	2	2	2	2	2	2	1	1	26
UPPER DARBY OVERFLOW	3	3	3	2	2	3	2	4	2	1	2	4	31
Sandy Run Creek Regulator	3	2	10	20	3	21	14	4	5	2	2	4	90
O & ERIE diversion gate	0	1	0	0	2	1	0	1	2	2	0	1	10

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

FY2000 BLOCKAGES CLEARED

COLLECTOR	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99	Jan-2000	Feb-2000	Mar-2000	Apr-2000	May-2000	Jun-2000	Totals
UPPER PENNYPACK - 5 UNITS													
BLOCKS CLEARED	3	0	0	0	0	1	0	2	0	0	0	0	6
UPPER DELAWARE LOW LEVEL - 12 UNITS													
BLOCKS CLEARED	7	1	1	0	0	0	0	0	0	0	0	0	9
LOWER FRANKFORD CREEK - 6 UNITS													
BLOCKS CLEARED	0	2	1	1	0	0	0	0	0	0	0	0	4
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
BLOCKS CLEARED	2	1	2	3	0	0	0	0	0	0	0	0	8
FRANKFORD HIGH LEVEL - 14 UNITS													
BLOCKS CLEARED	3	1	2	1	1	0	0	0	0	0	0	0	8
SOMERSET - 9 UNITS													
BLOCKS CLEARED	0	0	1	0	0	0	0	0	0	0	0	0	1
LOWER DELAWARE LOW LEVEL - 32 UNITS													
BLOCKS CLEARED	6	5	12	9	0	0	0	0	0	0	0	0	32
CENTRAL SCHUYLKILL EAST - 18 UNITS													
BLOCKS CLEARED	3	6	0	1	0	0	0	0	0	0	0	0	10
LOWER SCHUYLKILL EAST - 9 UNITS													
BLOCKS CLEARED	0	2	1	1	0	0	0	0	0	0	0	0	4
CENTRAL SCHUYLKILL WEST - 9 UNITS													
BLOCKS CLEARED	0	0	0	2	0	0	0	0	0	0	0	0	2
SOUTHWEST MAIN GRAVITY - 10 UNITS													
BLOCKS CLEARED	9	0	1	13	0	15	0	0	0	0	0	0	38
LOWER SCHUYLKILL WEST - 4 UNITS													
BLOCKS CLEARED	1	0	1	0	0	1	0	0	0	0	0	0	3
COBBS CREEK HIGH LEVEL - 23 UNITS													
BLOCKS CLEARED	0	1	0	1	2	0	0	0	0	0	0	0	4
COBBS CREEK LOW LEVEL - 13 UNITS													
BLOCKS CLEARED	2	0	0	0	0	0	0	0	0	0	0	0	2
RELIEF SEWERS - 27 UNITS													
BLOCKS CLEARED	0	0	0	0	1	0	0	0	0	0	0	0	1
200 CSO UNITS													
TOTALS / MONTH													
TOTAL BLOCKS CLEARE	36	19	22	32	4	17	0	2	0	0	0	0	132
AVER. # of INSP. / BC	13.75	33.05	28.59	21.91	185.25	44.76	n/a	356.50	n/a	n/a	n/a	n/a	97.7

PART 1
DRY WEATHER STATUS REPORT

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

Section 1

JANUARY 2000

COLLECTOR	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99	Jan-2000	Feb-2000	Mar-2000	Apr-2000	May-2000	Jun-2000	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	13	16	17	17	13	16	17	0	0	0	0	0	109
DISCHARGES	1	0	0	0	0	1	0	0	0	0	0	0	2
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	31	37	31	24	49	48	24	0	0	0	0	0	244
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	9	13	14	17	16	18	16	0	0	0	0	0	103
DISCHARGES	0	0	1	0	0	0	0	0	0	0	0	0	1
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	19	28	23	36	46	37	36	0	0	0	0	0	225
DISCHARGES	0	0	1	0	0	0	0	0	0	0	0	0	1
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	24	45	57	61	81	70	46	0	0	0	0	0	384
DISCHARGES	2	2	1	0	1	0	0	0	0	0	0	0	6
SOMERSET - 9 UNITS													
INSPECTIONS	25	28	24	27	26	38	23	0	0	0	0	0	191
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER DELAWARE LOW LEVEL - 33 UNITS													
INSPECTIONS	101	132	116	150	110	145	81	0	0	0	0	0	835
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	79	138	105	116	90	74	73	0	0	0	0	0	675
DISCHARGES	0	2	0	0	0	0	0	0	0	0	0	0	2
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	41	31	26	36	38	43	19	0	0	0	0	0	234
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	20	19	43	35	50	47	39	0	0	0	0	0	253
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	32	36	63	46	42	59	46	0	0	0	0	0	324
DISCHARGES	0	0	1	0	0	0	0	0	0	0	0	0	1
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	26	23	34	24	31	27	19	0	0	0	0	0	184
DISCHARGES	1	0	2	0	0	0	0	0	0	0	0	0	3
COBBS CREEK HIGH LEVEL - 23 UNITS													
INSPECTIONS	26	31	29	45	60	52	39	0	0	0	0	0	282
DISCHARGES	0	1	0	0	0	0	0	0	0	0	0	0	1
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	15	16	17	19	26	36	17	0	0	0	0	0	146
DISCHARGES	2	0	0	0	0	0	0	0	0	0	0	0	2
RELIEF SEWERS - 26 UNITS													
INSPECTIONS	34	35	30	48	63	51	42	0	0	0	0	0	303
DISCHARGES	0	0	0	0	1	0	0	0	0	0	0	0	1
201 REGULATOR UNITS													
TOTALS / MONTH													Totals
INSPECTIONS	495	628	629	701	741	761	537	0	0	0	0	0	4492
DISCHARGES	6	5	6	0	2	1	0	0	0	0	0	0	20
DISC / 100 INSPECTIONS	1.2	0.8	1.0	0.0	0.3	0.1	0.0						0.4

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK												**5 UNITS**			
TOTAL	13	16	17	17	13	16	17	0	0	0	0	0	109	3.1	10.2
P01	2	2	3	3	2	3	3						18	2.6	11.8
P02	2	2	3	3	2	3	2						17	2.4	12.5
P03	3	4	4	3	2	3	4						23	3.3	9.3
P04	5	5	4	4	4	4	5						31	4.4	6.9
P05	1	3	3	4	3	3	3						20	2.9	10.6
UPPER DELAWARE LOW LEVEL												**12 UNITS**			
TOTAL	31	37	31	24	49	48	24	0	0	0	0	0	244	2.9	11.2
D02	3	3	2	2	3	3	3						19	2.7	11.2
D03	3	3	2	3	3	6	6						26	3.7	8.2
D04	3	4	3	3	4	6	2						25	3.6	8.5
D05	13	5	3	2	6	5	3						37	5.3	5.6
D06	1	5	2	2	5	5	1						21	3.0	10.1
D07	1	2	3	1	3	3	1						14	2.0	15.2
D08	1	3	4	1	4	3	1						17	2.4	12.5
D09	1	2	3	1	4	3	2						16	2.3	13.3
D11	1	2	2	1	4	3	2						15	2.1	14.2
D12	1	3	2	3	5	4	2						20	2.9	10.6
D13	1	3	3	2	4	5	0						18	2.6	11.8
D15	2	2	2	3	4	2	1						16	2.3	13.3
LOWER FRANKFORD CREEK												**6 UNITS**			
TOTAL	9	13	14	17	16	18	16	0	0	0	0	0	103	2.5	13.6
F13	2	2	3	3	2	3	2						17	2.4	12.5
F14	2	2	3	3	3	3	2						18	2.6	11.8
F21	1	1	1	3	2	2	1						11	1.6	19.3
F23	2	4	3	3	3	4	5						24	3.4	8.9
F24	1	3	3	3	3	4	5						22	3.1	9.7
F25	1	1	1	2	3	2	1						11	1.6	19.3
LOWER FRANKFORD LOW LEVEL												**10 UNITS**			
TOTAL	19	28	23	36	46	37	36	0	0	0	0	0	225	3.2	10.3
F03	2	4	2	4	3	6	4						25	3.6	8.5
F04	2	4	2	4	6	6	6						30	4.3	7.1
F05	2	4	2	4	6	5	4						27	3.9	7.9
F06	2	4	2	4	6	4	3						25	3.6	8.5
F07	2	3	2	4	6	4	2						23	3.3	9.3
F08	2	2	1	3	5	4	4						21	3.0	10.1
F09	3	2	3	4	5	3	5						25	3.6	8.5
F10	2	1	3	3	5	2	5						21	3.0	10.1
F11	1	2	2	2	1	1	1						10	1.4	21.3
F12	1	2	4	4	3	2	2						18	2.6	11.8
FRANKFORD HIGH LEVEL												**14 UNITS**			
TOTAL	24	45	57	61	81	70	46	0	0	0	0	0	384	3.9	8.7
T01	1	3	4	3	5	5	3						24	3.4	8.9
T03	3	4	6	4	6	5	3						31	4.4	6.9
T04	1	5	9	4	7	7	4						37	5.3	5.6
T05	3	1	2	3	4	4	2						19	2.7	11.2
T06	2	3	2	2	4	4	2						19	2.7	11.2
T07	1	2	2	4	7	4	1						21	3.0	10.1
T08	1	1	1	4	7	6	5						25	3.6	8.5
T09	1	1	1	3	5	4	4						19	2.7	11.2
T10	4	14	10	8	13	9	8						66	9.4	3.2
T11	1	1	8	6	6	6	6						34	4.9	6.3
T12	1	1	4	4	3	5	2						20	2.9	10.6
T13	1	4	4	6	4	5	2						26	3.7	8.2
T14	2	2	2	5	5	3	2						21	3.0	10.1
T15	2	3	2	5	5	3	2						22	3.1	9.7

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

I/D =INSPECTIONS PER DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL												**9 UNITS**			
TOTAL	25	28	24	27	26	38	23	0	0	0	0	0	191	3.0	10.4
D17	3	4	3	3	3	5	4						25	3.6	8.5
D18	3	4	4	3	3	5	4						26	3.7	8.2
D19	2	4	5	3	3	5	4						26	3.7	8.2
D20	2	3	2	3	3	5	4						22	3.1	9.7
D21	2	2	1	2	3	3	1						14	2.0	15.2
D22	3	3	2	2	3	3	2						18	2.6	11.8
D23	3	3	1	2	3	4	1						17	2.4	12.5
D24	4	2	2	3	3	5	1						20	2.9	10.6
D25	3	3	4	6	2	3	2						23	3.3	9.3
LOWER DELAWARE LOW LEVEL												**33 UNITS**			
TOTAL	101	132	116	150	110	145	81	0	0	0	0	0	835	3.6	8.8
D37	4	4	6	5	3	5	4						31	4.4	6.9
D38	4	3	4	5	3	5	4						28	4.0	7.6
D39	2	5	3	5	3	6	5						29	4.1	7.3
D40	2	5	3	5	3	5	4						27	3.9	7.9
D41	4	4	1	5	3	5	4						26	3.7	8.2
D42	2	4	1	4	3	3	2						19	2.7	11.2
D43	2	4	1	4	3	3	2						19	2.7	11.2
D44	5	6	6	6	4	3	1						31	4.4	6.9
D45	4	6	6	5	5	6	5						37	5.3	5.8
D46	3	5	4	5	6	7	4						34	4.9	6.3
D47	3	5	5	5	5	6	5						34	4.9	6.3
D48	3	4	7	7	5	5	4						35	5.0	6.1
D49	3	4	3	2	3	2	1						18	2.6	11.8
D50	5	4	4	4	4	4	2						27	3.9	7.9
D51	2	4	5	5	4	5	1						26	3.7	8.2
D52	3	3	4	5	2	4	1						22	3.1	9.7
D53	2	3	2	5	3	4	1						20	2.9	10.6
D54	2	3	2	5	4	5	1						22	3.1	9.7
D58	2	3	3	5	5	7	1						26	3.7	8.2
D61	2	3	2	5	3	5	2						22	3.1	9.7
D62	2	3	2	5	3	5	2						22	3.1	9.7
D63	2	3	3	5	3	4	6						26	3.7	8.2
D64	2	3	3	5	3	5	5						26	3.7	8.2
D65	2	4	3	5	3	5	2						24	3.4	8.9
D66	5	4	3	6	3	4	2						27	3.9	7.9
D67	4	4	2	6	3	4	2						25	3.6	8.5
D68	4	5	5	5	4	4	1						28	4.0	7.6
D69	4	4	3	2	2	3	1						19	2.7	11.2
D70	5	4	6	2	6	4	2						29	4.1	7.3
D71	3	4	3	2	2	3	1						18	2.6	11.8
D72	3	4	4	3	1	3	1						19	2.7	11.2
D73	3	5	3	2	1	2	1						17	2.4	12.5
D75	3	3	4	5	2	4	1						22	3.1	9.7
TOTAL	222	299	282	332	341	372	243	0	0	0	0	0	2091		
I/D/C	3.6	4.9	4.6	5.5	5.6	6.1	4.0	0.0	0.0	0.0	0.0	0.0			

10 TOTAL DISCHARGES FOR NE & SE DISTRICTS

1.4 AVERAGE DISCHARGES PER MONTH

10.2 AVER DAYS BEFORE RETURNING TO SITE

4.9 AVER INSPECTIONS PER DAY PER CREW

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

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

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

CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
TOTAL	79	138	105	116	90	74	73	0	0	0	0	0	675	5.4	6.0
S05	8	19	8	8	3	5	7						58	8.3	3.7
S06	7	9	7	9	3	5	7						47	6.7	4.5
S07	7	9	8	9	4	6	6						49	7.0	4.3
S08	7	8	9	8	4	5	5						46	6.6	4.6
S09	7	8	9	7	5	4	7						47	6.7	4.5
S10	5	6	5	6	5	5	5						37	5.3	5.8
S12	6	7	6	8	6	5	5						43	6.1	4.9
S12A	6	7	6	8	6	4	5						42	6.0	5.1
S13	6	6	4	6	5	5	3						35	5.0	6.1
S15	5	6	4	7	8	4	5						39	5.6	5.5
S16	3	5	2	7	5	4	5						31	4.4	6.9
S17	2	5	4	6	5	4	5						31	4.4	6.9
S18	5	11	3	6	5	3	2						35	5.0	6.1
S19	1	5	3	4	5	3	2						23	3.3	9.3
S21	1	6	3	5	6	3	1						25	3.6	8.5
S23	1	6	8	4	4	3	1						27	3.9	7.9
S25	1	6	7	4	5	3	1						27	3.9	7.9
S26	1	9	9	4	6	3	1						33	4.7	6.4

LOWER SCHUYLKILL EAST SIDE — 9 UNITS

TOTAL	41	31	26	36	38	43	19	0	0	0	0	0	234	3.7	8.8
S31	6	4	5	6	4	9	3						37	5.3	5.8
S35	6	4	4	4	4	4	2						28	4.0	7.6
S36	6	4	3	4	4	3	1						25	3.6	8.5
S36A	5	3	3	4	4	3	1						23	3.3	9.3
S37	4	3	2	3	3	3	2						20	2.9	10.6
S42	4	4	3	4	5	6	3						29	4.1	7.3
S42A	5	4	2	5	6	7	5						34	4.9	6.3
S44	4	3	2	3	3	3	1						19	2.7	11.2
S46	1	2	2	3	5	5	1						19	2.7	11.2

CENTRAL SCHUYLKILL WEST — 9 UNITS

TOTAL	20	19	43	35	50	47	39	0	0	0	0	0	253	4.0	7.7
S01	2	1	7	3	7	5	4						29	4.1	7.3
S02	2	1	6	2	6	5	4						26	3.7	8.2
S03	2	2	3	2	6	5	3						23	3.3	9.3
S04	3	4	7	3	6	5	3						31	4.4	6.9
S11	3	2	4	2	4	5	3						23	3.3	9.3
S14	2	3	4	4	3	5	4						25	3.6	8.5
S20	2	2	4	5	6	7	6						32	4.6	6.7
S22	2	2	4	7	6	5	6						32	4.6	6.7
S24	2	2	4	7	6	5	6						32	4.6	6.7

SOUTHWEST MAIN GRAVITY — 10 UNITS

TOTAL	32	36	63	46	42	59	46	0	0	0	0	0	324	4.6	9.8
S27	2	3	3	3	4	4	4						23	3.3	9.3
S28	1	3	3	2	4	4	3						20	2.9	10.6
S30	1	1	3	3	2	3	4						17	2.4	12.5
S34	1	1	6	4	2	3	4						21	3.0	10.1
S39	1	1	5	3	2	3	3						18	2.6	11.8
S40	1	2	5	3	2	4	1						18	2.6	11.8
S43	1	1	4	4	2	3	2						17	2.4	12.5
S47	1	1	4	3	2	3	1						15	2.1	14.2
S50	13	15	18	15	15	22	17						115	16.4	1.9
S51	10	8	12	6	7	10	7						60	8.6	3.5

LOWER SCHUYLKILL WEST SIDE — 4 UNITS

TOTAL	26	23	34	24	31	27	19	0	0	0	0	0	184	6.6	4.6
S32	7	5	10	4	9	8	4						47	6.7	4.5
S33	7	6	8	6	8	10	5						50	7.1	4.3
S38	6	6	9	9	8	1	5						44	6.3	4.8
S45	6	6	7	5	6	6	5						43	6.1	4.9

COBBS CREEK HIGH LEVEL — 23 UNITS

TOTAL	26	31	29	45	60	52	39	0	0	0	0	0	282	1.8	18.0
C01	1	1	1	1	3	3	2						12	1.7	17.7
C02	1	1	1	1	2	3	2						11	1.6	19.3
C04	1	1	1	3	3	2	1						12	1.7	17.7
C04A	2	1	1	2	3	2	1						12	1.7	17.7
C05	1	1	1	1	2	2	2						10	1.4	21.3
C06	1	1	1	1	2	2	1						9	1.3	23.6
C07	1	1	1	1	2	2	1						9	1.3	23.6
C09	1	1	1	2	2	1	3						11	1.6	19.3
C10	1	1	1	1	2	3	3						12	1.7	17.7
C11	1	1	1	3	1	3	2						12	1.7	17.7
C12	1	1	1	1	1	2	1						8	1.1	26.6
C13	1	1	1	2	1	2	1						9	1.3	23.6
C14	1	1	1	3	2	3	2						13	1.9	16.4
C15	1	1	2	3	3	2	2						14	2.0	15.2
C16	1	1	2	3	4	3	2						16	2.3	13.3
C17	1	1	2	3	3	3	2						15	2.1	14.2
C31	1	2	1	2	4	2	1						13	1.9	16.4
C32	1	2	1	2	3	2	1						12	1.7	17.7
C33	1	2	1	2	4	2	2						14	2.0	15.2
C34	1	3	3	2	3	2	2						16	2.3	13.3
C35	2	2	1	2	3	2	2						14	2.0	15.2
C36	2	2	1	2	3	2	1						13	1.9	16.4
C37	1	2	2	2	4	2	2						15	2.1	14.2

COBBS CREEK LOW LEVEL — 13 UNITS

TOTAL	15	16	17	19	26	38	17	0	0	0	0	0	146	1.6	19.4
C18	1	1	2	1	2	4	2						13	1.9	16.4
C19	3	1	2	2	2	3	2						15	2.1	14.2
C20	1	1	1	2	2	3	2						12	1.7	17.7
C21	1	1	1	1	2	3	1						10	1.4	21.3
C22	1	1	1	1	2	3	1						10	1.4	21.3
C23	1	1	1	1	2	3	1						10	1.4	21.3
C24	1	2	1	2	3	3	2						14	2.0	15.2
C25	1	1	1	1	3	3	1						11	1.6	19.3
C26	1	1	2	1	2	3	1						11	1.6	19.3
C27	1	1	1	1	2	2	1						9	1.3	23.6
C28A	1	1	2	3	1	3	1						12	1.7	17.7
C29	1	2	1	1	2	1	1						9	1.3	23.6
C30	1	2	1	2	1	2	1						10	1.4	21.3
TOTAL	239	294	317	321	337	338	252	0	0	0	0	0	2098		
I/D/C	2.6	3.2	3.5	3.5	3.7	3.7	2.8	0.0	0.0	0.0	0.0	0.0			

9 TOTAL DISCHARGES IN SW DISTRICT

1.3 AVERAGE DISCHARGES PER MONTH

10.6 AVER. DAYS BEFORE RETURNING TO SITE

3.3 AVER. INSPECTIONS PER DAY PER CREW

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

CENTRAL SCHUYLKILL EAST SIDE — 16 UNITS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
TOTAL	0	2	0	0	0	0	0	0	0	0	0	0	2
S05													0
S06													0
S07		1											1
S08													0
S09													0
S10													0
S12													0
S12A													0
S13													0
S15													0
S16													0
S17													0
S18		1											1
S19													0
S21													0
S23													0
S25													0
S26													0

LOWER SCHUYLKILL EAST SIDE — 9 UNITS

TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
S31													0
S35													0
S36													0
S36A													0
S37													0
S42													0
S42A													0
S44													0
S46													0

CENTRAL SCHUYLKILL WEST — 9 UNITS

TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
S01													0
S02													0
S03													0
S04													0
S11													0
S14													0
S20													0
S22													0
S24													0

TOTAL	0	0	1	0	0	0	0	0	0	0	0	0	1
S27													0
S28													0
S30													0
S34													0
S39													0
S40													0
S43													0
S47													0
S50			1										1
S51													0

LOWER SCHUYLKILL WEST SIDE — 4 UNITS

TOTAL	1	0	2	0	0	0	0	0	0	0	0	0	3
S32													0
S33	1		1										2
S38													0
S45			1										1

COBBS CREEK HIGH LEVEL — 23 UNITS

TOTAL	0	1	0	0	0	0	0	0	0	0	0	0	1
C01													0
C02													0
C04													0
C04A													0
C05													0
C06													0
C07													0
C09													0
C10													0
C11													0
C12													0
C13		1											1
C14													0
C15													0
C16													0
C17													0
C31													0
C32													0
C33													0
C34													0
C35													0
C36													0
C37													0

COBBS CREEK LOW LEVEL — 13 UNITS

TOTAL	2	0	0	0	0	0	0	0	0	0	0	0	2
C18													0
C19	1												1
C20													0
C21													0
C22	1												1
C23													0
C24													0
C25													0
C26													0
C27													0
C28A													0
C29													0
C30													0
TOTAL	3	3	3	0	0	0	0	0	0	0	0	0	9

NO OF UNITS IN DISTRICT BLOCKED

CSE	0	2	0	0	0	0	0	0	0	0	0	0	2
LSE	0	0	0	0	0	0	0	0	0	0	0	0	0
CSW	0	0	0	0	0	0	0	0	0	0	0	0	0
SWG	0	0	1	0	0	0	0	0	0	0	0	0	1
LSW	1	0	2	0	0	0	0	0	0	0	0	0	3
CCHL	0	1	0	0	0	0	0	0	0	0	0	0	1
CCLL	2	0	0	0	0	0	0	0	0	0	0	0	2

JANUARY 2000 RELIEF SEWER MONTHLY INSPECTION

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER								6 UNITS					
R1	1	1	1	1	2	2	2						10
R2	1	1	1	2	2	2	2						11
R3	1	1	1	3	2	2	2						12
R4	1	1	1	1	2	2	2						10
R5	1	1	1	1	2	2	2						10
R6	1	1	1	1	2	2	2						10
MAIN RELIEF SEWER								7 UNITS					
R7	1	1	1	1	2	2	1						9
R8	1	1	1	2	2	2	2						11
R9	1	1	1	2	2	2	2						11
R10	1	1	1	2	2	2	2						11
R11	1	1	1	1	2	2	2						10
R11A	1	1	1	1	2	2	2						10
R12	1	1	1	1	2	1	2						9
WAKLING RELIEF SEWER								2 UNITS					
R13	1	2	1	1	3	2	1						11
R14	1	2	1	1	2	2	1						10
ROCK RUN STORM FLOOD RELIEF SEWER								1 UNITS					
R15	1	3	1	2	3	2	1						13
OREGON AVE RELIEF SEWER								2 UNITS					
R16	3	3	3	1	4	4	2						20
R17	4		3	2	4	4	2						19
FRANKFORD HIGH LEVEL RELIEF SEWER								1 UNITS					
R18	1	1	1	2	3	1	1						10
32ND ST RELIEF SEWER								1 UNITS					
R19	1	1	1	2	4	2	2						13
MAIN STREET RELIEF SEWER								1 UNITS					
R20	1	1	1	3	3	1	1						11
SOMERSET SYSTEM DIVERSION CHAMBER								1 UNITS					
R21	2	2	1	3	3	2	1						14
TEMPORARY REGULATOR CHAMBER								1 UNITS					
R22	1	1											2
R23	2	2	1	3	3	2	1						14
ARCH ST RELIEF SEWER								1 UNITS					
R24	1	1	1	4	2	1	1						11
16TH & SNYDER								1 UNITS					
R25	1	1	1	2	2	1	1						9
GRANT & STATE RD. RELIEF								1 UNITS					
R26	1	2	1	3	1	2	2						12
TOTAL	34	35	30	48	63	51	42	0	0	0	0	0	303
AVER	1.3	1.3	1.1	1.8	2.3	1.9	1.6	0.0	0.0	0.0	0.0	0.0	1.6

RELIEF SEWER MONTHLY DISCHARGE

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
THOMAS RUN RELIEF SEWER								6 UNITS					
R1													0
R2													0
R3													0
R4					1								1
R5													0
R6													0
MAIN RELIEF SEWER								7 UNITS					
R7													0
R8													0
R9													0
R10													0
R11													0
R11A													0
R12													0
WAKLING RELIEF SEWER								2 UNITS					
R13													0
R14													0
ROCK RUN STORM FLOOD RELIEF SEWER								1 UNITS					
R15													0
OREGON AVE RELIEF SEWER								2 UNITS					
R16													0
R17													0
FRANKFORD HIGH LEVEL RELIEF SEWER								1 UNITS					
R18													0
32ND ST RELIEF SEWER								1 UNITS					
R19													0
MAIN STREET RELIEF SEWER								1 UNITS					
R20													0
SOMERSET SYSTEM DIVERSION CHAMBER								1 UNITS					
R21													0
TEMPORARY REGULATOR CHAMBER								1 UNITS					
R22													0
R23													0
ARCH ST RELIEF SEWER								1 UNITS					
R24													0
16TH & SNYDER								1 UNITS					
R25													0
GRANT & STATE RD. RELIEF								1 UNITS					
R26													0
TOTAL	0	0	0	0	1	0	0	0	0	0	0	0	1
UNITS	0	0	0	0	1	0	0	0	0	0	0	0	

JANUARY 2000 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CASMIER ST	1	2	1	3	2	1	1						11
SOMERSET GRIT LEVEL	3	3	4	2	0	2	2						16
(H-20) 70th & Dicks	1	1	7	2	2	2	2						17
CCLL CONTROL PIPE @ ISLAND AVE.		5	2	3	3	2	4						19

JANUARY 2000 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
NANDINA ST	1	2	1	1	2	1	1						9
UPPER DARBY OVERFLOW	1	1	2	3	3	3	2						15
Sandy Run Creek Regulator	1	1	2	2	5	3	6						20
O & ERIE diversion gate	1	1	1	0	2	1	1						7

CSO MAINTENANCE REPORT **NORTH DISTRICT** **FOR: 1999**

SITE ID	REG PM DATE	TG PM DATE	NUMBER INSPECTIONS	NUMBER BLOCKS	BLOCKS CORRECTED
	UPPER PENNYPACK				
P01					
P02					
P03					
P04					
P05					
	UPPER DELAWARE LOW LEVEL				
D02					
D03					
D04					
D05		07/16/99			
D06					
D07					
D08					
D09					
D11					
D12					
D13		05/07/99			
D15					
	LOWER FRANKFORD CREEK				
F13					
F14					
F21					
F23		03/04/99			
F24					
F25					
	LOWER FRANKFORD LOW LEVEL				
F03					
F04					
F05					
F06					
F07					
F08					
F09		02/16/99			
F10		07/08/99			
F11		05/10/99			
F12					
	FRANKFORD HIGH LEVEL				
T01					
T03					
T04					
T05					
T06					
T07					
T08					
T09					
T10					
T11					
T12					
T13					
T14					
T15					

SITE ID	REG PM DATE	TG PM DATE	NUMBER INSPECTIONS	NUMBER BLOCKS	BLOCKS CORRECTED
	SOMERSET LOW LEVEL				
D17					
D18					
D19	02/11/99				
D20	02/11/99				
D21					
D22					
D23					
D24					
D25					
	LOWER DELAWARE LOW LEVEL				
D37	07/14/99				
D38					
D39					
D40					
D41	11/09/99				
D42					
D43					
D44	07/23/99				
D45	11/23/99	03/02/99			
D46		12/27/99			
D47					
D48	07/26/99				
D49		02/20/99			
D50					
D51					
D52					
D53					
D54		11/12/99			
D58					
D61					
D62	02/04/99				
D63					
D64	04/07/99	04/19/99			
D65	04/08/99	04/20/99			
D66	04/09/99	04/21/99			
D67	04/22/99	04/29/99			
D68	04/23/99	04/30/99			
D69	02/20/99	05/15/99			
D70	07/23/99	05/16/99			
D71		05/17/99			
D72	02/17/99				
D73					

CSO MAINTENANCE REPORT **SOUTH DISTRICT** **FOR: 1999**

SITE ID	REG PM DATE	TG PM DATE	NUMBER INSPECTIONS	NUMBER BLOCKS	BLOCKS CORRECTED
	CENTRAL SCHUYLKILL EAST SIDE				
S05	04/07/99	09/01/99			
S06	04/08/99				
S07	04/09/99				
S08	09/24/99				
S09	09/13/99				
S10					
S12					
S12A					
S13					
S15	11/17/99				
S16					
S17					
S18	10/15/99				
S19	06/02/99				
S21					
S23					
S25	05/06/99				
S26	11/30/99				
	LOWER SCHUYLKILL EAST SIDE				
S31	11/09/99	09/28/99			
S35					
S36					
S36A					
S37					
S42	10/12/99	04/19/99			
S42A	11/09/99	05/04/99			
S44		05/06/99			
S46	11/16/99	11/16/99			
	CENTRAL SCHUYLKILL WEST				
S01	05/28/99				
S02					
S03					
S04	09/13/99				
S11					
S14	09/13/99				
S20					
S22	10/21/99				
S24	10/12/99				
	SOUTHWEST MAIN GRAVITY				
S27					
S28					
S30					
S34	09/25/99				
S39					
S40					
S43					
S47	06/04/99				
S50	10/08/99	09/30/99			
S51					
	LOWER SCHUYLKILL WEST SIDE				
S32					
S33	11/15/99	04/20/99			
S38	11/15/99	05/17/99			
S45	11/01/99				

SITE ID	REG PM DATE	TG PM DATE	NUMBER INSPECTIONS	NUMBER BLOCKS	BLOCKS CORRECTED
	COBBS CREEK HIGH LEVEL				
C01					
C02					
C04					
C04A					
C05					
C06					
C07					
C09					
C10					
C11					
C12					
C13					
C14					
C15					
C16					
C17					
C31					
C32					
C33					
C34					
C35					
C36					
C37					
	COBBS CREEK LOW LEVEL				
C18					
C19					
C20					
C21					
C22					
C23					
C24					
C25					
C26					
C27					
C28A					
C29					
C30					

Appendix B – Flow Control Pumping Station Maintenance Summaries

FLOW CONTROL UNIT
PUMP STATION YEARLY FLOW REPORT 1999

WASTEWATER PUMP STATIONS	PUMP #1	PUMP #2	PUMP #3	PUMP #4	PUMP #5	PUMP #6	STATION FLOW (MG)
BANK STREET	4.711	3.803					8.514
BELFRY DRIVE	4.006	5.390					9.396
CENTRAL SCHUYLKILL	4,152.498	4,663.673	1,049.373	1,740.292	3,518.104	5,037.943	20,161.883
FORD ROAD	39.241	37.672					76.913
FORT MIFFLIN	0.061	0.049	0.068	0.089			0.158
HOG ISLAND	4.190	4.951					9.141
LINDEN AVENUE	38.642	81.338					119.980
LOCKHART STREET	27.806	28.603					56.409
MILNOR STREET	1.575	2.681	2.876				7.133
NEILL DRIVE	211.496	187.047	181.870				580.414
POLICE ACADEMY	3.221	2.740					5.961
RENNARD STREET	5.196	4.664					9.860
42ND STREET	1,148.642	547.258	862.004				2,557.904
STORMWATER PUMP STATIONS							
BROAD & BOULEVARD	0.000	0.110	13.260	4.093			17.463
MINGO CREEK	69.925	0.000	1,017.454	742.484	1,101.566	539.129	3,470.557
26TH & VARE	0.551	0.820					1.370

CALENDAR YEAR 1999
MUNICIPAL WASTELOAD MANAGEMENT REPORT
FLOW CONTROL - WASTEWATER PUMPING UNIT

OUTLYING PUMPING STATION - CAPACITIES

There are twelve 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 1994 One pump rebuilt in 1998
C.S.P.S. VARIABLE SPEED UNIT CONSTANT SPEED UNIT	 4 2	 29,000 29,000	135,417	128,472	SWWPC	Good, station was fully automated in oct. 1996. One pump rebuilt in 1996 Two pumps rebuilt in 1997 One pump rebuilt in 1998 Two pumps rebuilt in 1999
FORD ROAD	2	900	1,467	148	SWWPC	Excellent, station completely One pump rebuilt in 1997 One pump rebuilt in 1999
HOG ISLAND ROAD	2	500	927	450	SWWPC	Excellent, new facility built in 1989 One pump rebuilt in 1998
LINDEN AVENUE	2	1,400	2,378	179	NEWPC	Good, built in 1967 One pump rebuilt in 1991 One pump rebuilt in 1993
LOCKART STREET	2	600	1,243	148	NEWPC	Good, built in 1967 One pump rebuilt in 1998 One pump rebuilt in 1999
MILNOR STREET	3	300	1,096	479	NEWPC	Good, built in 1947 One pump rebuilt in 1992 One in 1998, one in 1997
NEILL DRIVE	3	1,800	5,568	3,712	SWWPC	Good, completely rehabilitated in 1982 Three pumps rebuilt since 1998
POLICE ACADEMY	2	100	53	22	NEWPC	Good, new pumps, controls and electric gear installed in 1993
RENNARD STREET	2	400	329	49	NEWPC	Good, built in 1968 Two pumps rebuilt in 1999
42ND STREET	3	2,000	5,953	5,953	SWWPC	Good, complete rehab in 1984 One pump rebuilt in 1998 Two pumps rebuilt in 1999

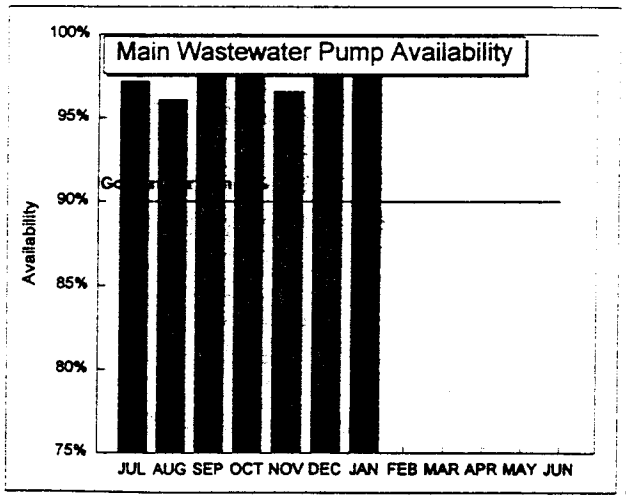
PHILADELPHIA WATER DEPARTMENT

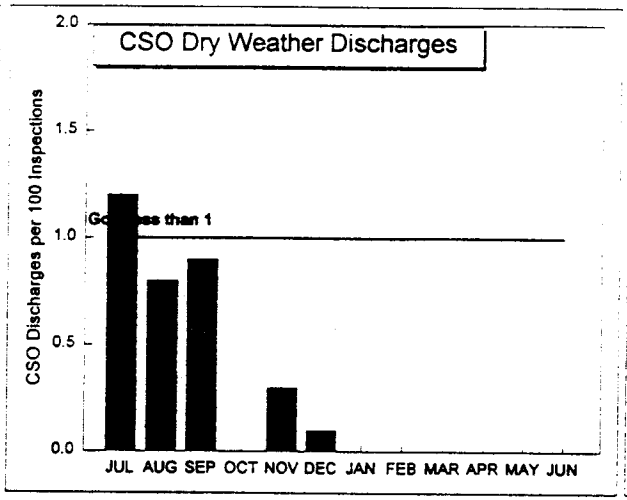
SERVICE LEVEL GOALS AND PERFORMANCE MEASURES

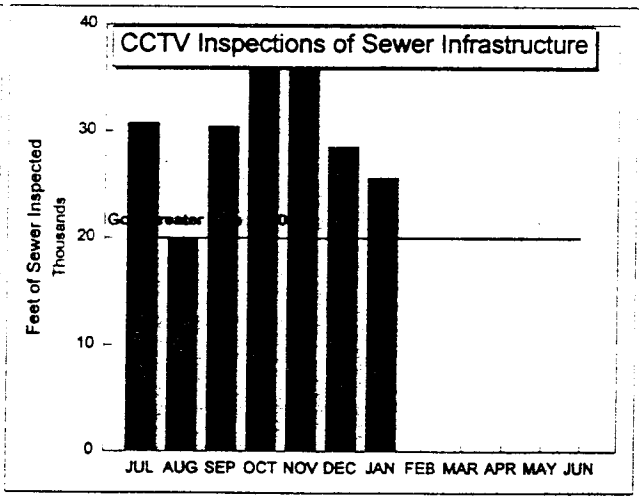
DIVISION: OPERATIONS | BY: GEORGE COLLIER | NO. | RESPONSIBILITY CENTER: COLLECTOR SYSTEM - FLOW CONTROL | NO. | FUND: WATER | DATE PREPARED: FOR : JAN 1999

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	TOTAL OR MTHLY. AVG.
FISCAL YEAR 2000 ACTUAL														
Main Wastewater Pump Availability (goal is 90% or higher)	Percent	97.2%	96.1%	97.7%	97.9%	96.6%	97.9%	98.5%						97.4%
CSO Dry Weather Discharges (goal is less than 1)	CSO Discharges / 100 Inspections	1.2	0.8	0.9	0.0	0.3	0.1	0.0						0.5
CCTV Inspections of Sewer Infrastructure (goal - greater than 20,000 ft)	Feet	30,759	19,859	30,431	35,891	36,822	28,532	25,634						29,704







PHILADELPHIA WATER DEPARTMENT

SERVICE LEVEL GOALS AND PERFORMANCE MEASURES

DIVISION: OPERATIONS | BY: GEORGE COLLIER | NO. | RESPONSIBILITY CENTER: COLLECTOR SYSTEM - FLOW CONTROL | NO. | FUND: WATER | DATE PREPARED: For: June 1999

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	TOTAL OR MTHLY. AVG.
FISCAL YEAR 1999 ACTUAL														
Main Wastewater Pump Availability (goal is 90% or higher)	Percent	91.3%	93.6%	95.6%	95.6%	95.7%	94.9%	95.1%	94.0%	95.2%	94.9%	94.1%	***95.7%***	94.6%
CSO Dry Weather Discharges (goal is less than 1)	CSO Discharges / 100 Inspections	0.0	0.4	0.4	0.2	0.3	0.6	1.0	0.3	0.9	0.3	1.3	***0.7***	0.5
CCTV Inspections of Sewer Infrastructure (goal new program - greater than 10,000 ft)	Feet	28,294	24,353	21,886	20,212	11,827	17,324	12,905	17,812	24,023	30,217	24,440	***32,282***	22,131