PHILADELPHIA WATER DEPARTMENT

Annual CSO Status Report

1998

Chapter 94: Wasteload Management Report

March 31st, 1999

INTRODUCTION

Philadelphia, Pennsylvania is the nation's 5th largest urban center and spans a total land area of 136 square miles. Like many older cities, approximately 83 square miles (60%) of Philadelphia is serviced by combined sewers carrying a mix of domestic and industrial wastewater which is combined with storm water runoff during wet weather. During heavy rains, the quantity of flow may exceed the capacity of the treatment plants and their tributary sewers. The balance of the storm flow is then discharged to the receiving waters, more specifically, the Delaware and Schuylkill Rivers, and the Pennypack, Frankford, Tacony, and Cobbs Creeks.

The diversion of flow is currently controlled by combined sewerage regulating equipment. The regulator chambers divert the dry weather sewage flows to three Water Pollution Control Plants (WPCPs) to receive full secondary treatment prior to discharge to the Delaware river. The three WPCPs, Northeast, Southwest, and Southeast have design capacities of 210, 210, and 120 million gallons per day respectively. These facilities are permitted for instantaneous peaks and maximum daily average flows of 2 and 1.5 times design capacity in order to provide treatment for a portion of the storm flow.

The three WPCP's and their tributary sewer collection systems are regulated by the US. Environmental Protection Agency (US EPA), Pennsylvania Department of Environmental Protection (PA DEP), Delaware River Basin Commission (DRBC), and the Pennsylvania Fish Commission. The environmental legislation is enforced under the guidelines of the Clean Water Act, or more specifically the National Pollutant Discharge Elimination System (NPDES) permits which were renewed for a 5-year period on September 27th, 1993. As a result, the Department has currently undertaken a multi-year, multi-million dollar program to quantify the effects of Combined Sewer Overflows (CSO's) on the surrounding water bodies and to meet the CSO requirements of the NPDES permit.

An additional requirement of this permit and the Chapter 94 Wasteload Management Report, is that an Annual CSO Status Report be submitted to summarize activities completed pursuant to meeting obligation of the permit and the National CSO Control Policy. The Department's documentation of the completion of this task for calendar year 1998 is contained herein.

It is the intent of this report to serve as the documentation of the status of the various projects and other actions initiated by the Department as part of the CSO Compliance Program. These projects are comprised of the Department's ongoing water pollution control projects, initiated to comply with the terms and conditions of the NPDES permit, and projects required to address specific issues identified through the periodic regulatory meetings. For Calendar year 1998, the status of the individual projects are organized and presented within the same framework as the Nine Minimum Control and Long Term CSO Control Plan documents. This structure allows for progress to be readily cross referenced with individual activities which comprise the permit-related milestones (e.g. Nine Minimum Control (NMC) and Long Term Control Plan (LTCP). Summaries of the individual program components are detailed in the sections to follow.

NINE MINIMUM CONTROLS

1.0 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 CSO Regulator Inspection Program

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

Annual summaries of the comprehensive and preventative maintenance activities completed the past year are included in Appendix A.

1.1.1 Customized Regulator Inspection Forms

Start: 8/1/95 End: 12/31/98 Status: In Progress

The PWD initiated development of customized CSO regulator maintenance inspection report forms for each individual regulator chamber. These reports will be used to document the preventative-maintenance performed on a yearly basis, ensure that proper regulator settings are maintained, and that system changes are documented. This project is currently 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, customized regulator inspection reporting field forms and an associated data base entry screen using MSACCESS will be developed. 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 Regulator O & M Program

Start: 9/27/96 End: Status: Ongoing

No changes reported for the existing O & M Program. Annual summaries of the comprehensive and preventative maintenance activities completed the past year are included in Appendix A.

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

1.2.1 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 1998, 25 cubic yards of debris was removed from the grit pockets on November 18, 1998. Throughout the year the underwater divers provided regular reports on the depth of debris in the grit pockets with no excessive accumulation reported.

Extensive repair work to the steel liners in the twin siphon has prevented Operations from scheduling the grit cleanings more frequently. The repair work consists of shutting down one of the siphon tubes at a time for the underwater divers who are removing large sections of steel that had separated from the concrete structure. After the steel has been cleared the contractor will install a fiberglass liner pipe in all sections of the siphon tubes.

1.2.2 WW Pumping Predictive Maintenance Program

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

This program is currently under development and is structured to allow the operating unit to anticipate maintenance needs before they develop into problems. The Predictive Maintenance Committee which is comprised of key Operations Division personnel within the Water Department, is currently developing programs for key facilities in the water conveyance and wastewater collection systems. 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 switch gear at all stations has revealed several loose electrical connections which were corrected on the spot.

1.3 Pump Station Emergency Backup Power

Start: 9/27/1995 End: 12/31/1999 Status: In Progress

This project entails the installation of emergency back-up power generators at 8 pumping stations which presently only have a single electrical source. 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. With the exception of the Hog Island Rd. PS which has been delayed due to a change in design, all emergency backup systems are operational. Several stations have already utilized this backup power source after loosing the primary PECO feeders, thus averting potential station outages and subsequent overflows.

1.4 Sewer Cleaning Contracts

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

Recent sewer cleaning projects have been part of the capital program and are being completed at an expense much greater than would typically be characterized by a NMC. For example, $1.25 million was budgeted for

FY 1999 & FY 2000. In the near term, the sewer cleaning programs are focusing on those required to support LTCP capital project implementation and as such, have been moved to the Long Term Control Plan Projects discussed in Section 10. More specifically for calendar 1998 updates are provided for 10.1.4 Cobbs Creek Low Level Improvements and 10.5.5 RTC - SWMG, CC, LSWS. For calendar 1999, work will continue on 10.5.5 and 10.6.1 Main & Shurs.

1.5 Inflow Prevention Program

Start: 8/1/1995 End: 12/31/1999 Status: In Progress

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.

1.5.1 Tide Gate Inspection 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.

1.5.2 Emergency Overflow Weir Modification

Start: 11/7/1994 End: 7/1/98 Status: In Progress

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.

1.5.2a Emergency Overflow Weir Inflow Assesment

Start: 2/1/1996 End: 2/27/1997 Status: Completed

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 an implementation schedule was developed. $238,000 has been budgeted for this project.

1.5.2b Emergency Overflow Weir Modifications

Start: 2/27/1997 End: 12/31/1999 Status: In-Progress

The implementation status was updated in Table 1.1 to reflect the calendar year 1998 progress detailed in Table 1.2.

Table 1.1 Status tide inflow protection project.

Drainage District	Total # Sites	# Completed
Northeast	20	20
Southwest	7	5
Southeast	6	5
Total	33	30

The following sites were modified during calendar 1998 to have flexible flap gates installed in the emergency overflow weir area:

Table 1.2 Emergency overflow weir gates installed during calendar 1998 as part of tide inflow protection project.

Site ID	NEWPC Sites	Installed
D-12	Bridge St. Se of Garden St.	04/13/98
D-8	Comly St. SE of Milnor St.	04/14/98
F-24	Bridge St. SE of Creek Basin	04/16/98
D-4	Disston St. SE of Wissinoming St.	05/13/98
F-8	Erie Ave. & Hunting Park Ave.	05/14/98
D-6	Levick St. SE of Milnor St.	05/16/98
D-21	Westmoreland St. W of Balfour St.	05/28/98
D-15	Orthodox St. & Delaware Ave.	06/01/98
D-13	Kirkbridge St. & Delaware Ave.	06/02/98
F-11	Paul St. S of Vandyke St.	06/11/98
F-6	Worrel St. E of Frankford Cr.	06/20/98
F-13/14	Duncan St. Under I-95	06/24/98
D-7	Lardner St. SE of Milnor St.	06/24/98
F_25	Ash St. W of Creek Basin	06/25/98
F_25	Ash St. W of Creek Basin	06/25/98
F-23	Bridge St. NW of Creek Basin	07/02/98
F-7	Worrel St. W of Frankford Cr.	07/03/98

Site ID	SWWPC Sites	Installed
S_08	Race St. W of Bonsall St.	11/18/98
S_04	Schuylkill Expressway 600'	11/19/98
S_09	Arch St. W of 23rd St.	12/05/98
S_33	51st St. and Botanic St.	12/10/98

Site ID	SEWPC Sites	Installed

D_47	Fairmount Ave. W of Delaware Ave.	11/05/98
D_39	Susquehanna Ave SE of Beach St.	12/04/98
D_66	Tasker St. E of Delaware Ave.	12/09/98

1.5.3 River Backflow Prevention Project

Start: 8/1/1995 End: 8/1/2000 Status: In Progress

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 which 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.

1.5.3a Cobbs Creek Inflow Assesment

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

1.5.3b Design Inflow Controls

Start: 6/1/1997 End: 12/31/1999 Status: In-Progess

These projects are currently being re-assessed so that they can be better coordinated with the Fairmount Park Commission's National Lands Restoration and Environmental Education (NLREEP) project.

1.5.3c Bid Contract

Start: 1/1/2000 End: 4/1/2000 Status: Planned

1.5.3d Construction of Controls

Start: 4/1/2000 End: 8/1/2000 Status: Planned

2.0 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 which 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.

2.1 Evaluate Real Time Control in LTCP

Start: 2/1/1996 End: 1/27/1997 Status: Completed

See section 10.5 Real Time Control Program

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.

3.0 MODIFY PRETREATMENT PROGRAM

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

3.1 Phase I Implementation

Start: 8/1/1995 End: 2/1/1997 Status: Completed

3.1.1 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.

3.1.2 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.

3.1.3 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.

3.1.4 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.

3.1.5 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.

3.1.6 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.

3.1.7 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.

3.1.8 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 initate an outreach program to those continuous dischargers who have batch pollutant dischargers within a continuous discharge stream.

3.2 Phase II Implementation

Start: 3/1/1997 End: 12/31/1999 Status: In-progress

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.

3.2.1 Report - Performance of Phase I Activities

Start: 3/1/1997 End: 3/31/1997 Status: Completed

Table 3.1 Summarizes the following performance criteria for the SIU's inspected as part of the Phase I NMC Program:

1. # capable – 10 dischargers
2. # willing – 2 dischargers
3. # implementing restrictions – 1 forced to terminate altogether

3.2.2 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 expected 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.

4.0 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 throught 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 LTCP project 10.2 where the stress testing of individual 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.

4.1 POTW Stress Testing

Start: 9/1/1997 End: 8/1/1998 Status: In-Progress

Per the CSO LTCP, project moved to LTCP Implementation section 10.2 WPCP Flow Optimization.

4.2 Prelim Costs - NMC #4 Implementation

Start: 8/1/1995 End: 12/20/1995 Status: Completed

4.3 NE DD Modified Regulator Plan (MRP)

Start: 1/1/1996 End: 7/1/1998 Status: Completed

4.3.1 NE WPCP - 50% MRP

Start: 1/1/1996 End: 6/1/1996 Status: Completed

4.3.2 NE WPCP – Determine Additional Modifications for 100% MRP

Start: 11/4/1996 End: 12/14/1997 Status: Completed

4.3.3 NE WPCP - 100% MRP

Start: 9/1/1996 End: 7/1/1998 Status: Completed

4.4 SW DD Modified Regulator Plan (MRP)

Start: 1/1/1996 End: 7/1/1998 Status: Completed

4.4.1 SW WPCP - 50% MRP

Start: 11/11/1995 End: 6/1/1996 Status: Completed

4.4.2 SW WPCP - Determine Additional Modifications for 100% MRP

Start: 11/4/1996 End: 12/14/1997 Status: Completed

4.4.3 SW WPCP - 100% MRP

Start: 9/1/1996 End: 7/1/1998 Status: Completed

4.5 SE DD Modified Regulator Plan (MRP)

Start: 10/30/1995 End: 7/1/1998 Status: Completed

4.5.1 SE WPCP - 50% MRP

Start: 10/30/1995 End: 6/1/1996 Status: Completed

4.5.2 SE WPCP - Determine Additional Modifications for 100% MRP

Start: 10/30/1995 End: 6/1/1996 Status: Completed

4.5.3 SE WPCP - 100% MRP

Start: 9/1/1996 End: 7/1/1998 Status: Completed

4.6 NMC 4 Implementation Costs (LTCP)

Start: 5/1/1996 End: 9/1/1996 Status: Completed

Reassessed NMC #4 Costs in light of actual increase in cost for WPCP, Pumping, and BRC from actual experience resulting from implementation of MRP. Existing budgets were modified accordingly.

5.0 ELIMINATE 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). Dry weather discharges can occur as a result of numerous site-specific conditions. 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 to the combined sewer system. 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 the following sections.

5.1 CSO Monitoring Network

Start: 8/1/1995 End: 12/31/1999 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 eliminating dry weather overflow, the network is expected to provide valuable data to support the evaluation of further CSO mitigation practices which may result from the watershed management program.

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's
- 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 the enclosed table for site-specific information on the construction status of each remote site.

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
One-Day Test Date -	Date on which the one-day test was performed
7-Day Test -	Current Status (Pass / Fail) of 7-day site acceptance testing
7-Day Test Date -	Date on which the 7-day test was performed
Site Acceptance Date-	Date on which the entire site was accepted

The new network currently collects provisional data from approximately 50 sites currently in service in the Southeast and Southwest districts. The data is expected to remain provisional until the central computer is fully implemented and accepted. Currently, the central computer does not support the range of data query and reporting capabilities necessary to reliably utilize collected data. The total number of locations to be furnished with new hardware will total over 250, pending completion of the construction of site hardware, computer systems integration, and site acceptance. All existing CSO locations included in this total will receive updates to the new equipment with the philosophy of a uniform technology to comprise the entire monitoring system. An entirely new data acquisition and event alarming computer system is undergoing concurrent installation with the new metering equipment and it's status is reported in section 5.1.1 below.

The flow metering additions as well as 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.

5.1.1 Implement Event Notification Systems (ENS) for DWO's & Inflow

Start: 8/1/1995 End: 12/1/1998 Status: In Progress

The implementation of the CSO monitoring network is to include the use of an Event Notification System (ENS) to reduce the response time to abate dry weather discharges and wedged open tide gates. For the

Northeast Drainage District which already has an automated monitoring system, this 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 specialize maintenance activities. The implementation of the ENS is ongoing as the new computer system is implemented and site specifics of new sites are incorporated.

The notification system breaks the sites down into specific algorithms which are dependent on the type of sites monitored. Each type of site will possess certain operating parameters which will indicate dry weather overflows or tidal inflows, controlled by the alarm algorithm implemented by site type. The Philadelphia CSO system has been categorized into the following site "types" which are dependent on the site architecture as well as the types of sensors installed.

1) CSO without a diversion dam and without a tidegate.
   a) Having a transit time flowmeter.
   b) Having only level measurement with no flowmeter.
2) CSO with a diversion dam and with a tidegate.
   a) Having a transit time flowmeter.
   b) Having only level measurements with no flowmeter.
3) Computer controlled regulator and SWO gates.
   a) One SWO gate.
   b) Two SWO gates.
4) Regulator with tidegate, dam, and no overflow window.
   a) Having a transit time flowmeter.
   b) Having only level measurements with no flowmeter.
5) Regulator with tidegate, dam, and overflow window.
   a) Having a transit time flowmeter.
   b) Having only level measurements with no flowmeter.

To minimize the impact of wet weather on the accurate alarming and reporting of dry weather events, These algorithms, when implemented, will allow for fully automated reporting of dry weather events if and when they occur. A methodology to distinguish between wet weather and dry weather discharges, those due to storms and those due to other causes, has been developed to minimize improper reporting. This strategy involves the city's extensive rain gauge network and monitoring points to determine when the beginning and ending of storm events occurs.

Table 5.1 Site Status Report for CSO Monitoring Network

Site	Site Location	Plat	Aerial (A) or Underground (U) Service	PECO Service	BELL Service	Date of One Day Test	One Day Test P/F	Date of Seven Day Test	Seven Day Test P/F	Site Acceptance Date
C-01	City Line Ave. & 73rd St.	32		Y	Y	3/25/97	P	8/15/97	P	9/12/97
C-02	City Line Ave 100' S. Of Creek	32		Y	Y	2/18/97	P	8/15/97	P	9/12/97
C-04	Malvern Ave. & 68th St.	32	A	Y	Y	3/26/97	P	8/15/97	P	9/12/97
C-04A	Mavern Ave. NW of 68th St.	32		Y	Y	3/26/97	P	8/15/97	P	9/12/97
C-05	Lebanon Ave. SW of 73rd St.	32		D	D	3/25/97	P			
C-06	Lebanon Ave. & 68th St.	32	A	Y	Y	4/11/97	P	8/15/97	P	9/12/97
C-07	Landsdowne Ave. & 69th St.	32	A	Y	Y	4/23/97	P	8/15/97	P	12/14/98
C-09	64th St. & Cobbs Cr.	28	U	Y	Y	3/26/97	P	5/10/97	P	8/26/97
C-10	Gross St. & Cobbs Cr.	28	A	Y	Y	2/18/97	P	8/15/97	P	9/12/97
C-11	63rd St. S. Of Market St.	28	A	Y	Y	10/2/96	P	8/15/97	P	12/14/98
C-12	Spruce St. @ Cobbs Cr.	23	U	D	Y	5/13/97	F			
C-13	62nd St. @ Cobbs Cr.	23	U	D	Y	4/11/97	P			
C-14	Baltimore Ave. & Cobbs Cr.	23	A	Y	Y	3/26/97	P	8/15/97	P	9/12/97
C-15	59th St. & Cobbs Cr. Parkway	18	U	D	Y	4/10/97	P			
C-16	Thomas Ave. & Cobb Cr.	18	U	D	Y	4/10/97	P			
C-17	Beaumont St. & Cobbs Cr.	18	U	D	Y	5/13/97	F			
C-18	60th St. @ Cobbs Cr. Parkway	18	A	Y	Y	10/26/98	P	11/5/98	P	1/7/99
C-19	Mount Moriah Cemetery & 62nd St.	18	A	D	Y	4/10/97	P			
C-20	65th St. & Cobbs Cr. Parkway	18		Y	Y	4/2/97	P			
C-21	68th St. & Cobbs Cr. Parkway	13	A	Y	Y	4/2/97	P	8/15/97	P	9/12/97

Site	Site Location	Plat	Aerial (A) or Underground (U) Service	PECO Service	BELL Service	Date of One Day Test	One Day Test P/F	Date of Seven Day Test	Seven Day Test P/F	Site Acceptance Date
C-22	70th St. & Cobbs Cr. Parkway	13	LP-240V	D	Y	4/10/97	P			
C-23	Upland St. Cobbs. Cr. Parkway	13	U	Y	Y	4/2/97	P	8/15/97	P	9/12/97
C-24	Greenway Ave. & Cobbs Cr. Parkway	13	A	Y	Y	4/2/97	P	8/15/97	P	9/12/97
C-26	Saybrook Ave. & Island Ave.	13	A	Y	Y	4/29/97	P	4/24/98	P	8/20/98
C-28A	Grays Ave. & Island Ave.	13	EXIST	Y		5/13/97	P	4/24/98	P	8/20/98
C-29	Claymount St. & Grays Ave.	8	A	Y	Y	4/10/97	P	4/24/98	P	8/20/98
C-30	77th St. W. Of Elmwood Ave.	8	U	Y	Y	4/10/97	P	8/15/97	P	9/12/97
C-31	Cobbs Cr. Park S. of City Line Ave.	27	A	Y	Y	2/18/97	P	3/10/97	P	8/26/97
C-32	Cobbs Creek Park & 77th St.	27	A	Y	Y	2/18/97	P	3/10/97	P	8/26/97
C-33	S. Of Brockton Rd. & Farrington Rd.	27	A	Y	Y	3/25/97	P	9/18/98	P	12/14/98
C-34	Woodcrest Ave & Morris Park	32	A	Y	Y	2/25/97	P	8/15/97	P	9/12/97
C-35	Morris Park W. Of 72nd St. & Sherwood	32	A	Y	Y	2/18/97	P	8/15/97	P	9/12/97
C-36	69th St. & Woodbine Ave. S. Of brentwoo	32	A	Y	Y	2/18/97	P	8/15/97	P	9/12/97
C-37	Cobbs Cr. Park S. Of 67th St. & Callowhill	27	A	Y	Y	2/18/97	P	3/10/97	P	12/14/98
D-02	Cottman St.-S.E. of Milnor St.	73	EX	Y	Y					
D-03	Princeton Ave. SE of Milnor St.	73		Y	Y					
D-04	Disston St. SE of Wisinoming St.	73			Y					
D-05	Magee St. SE of Milnor St.	73		Y	Y					
D-06	Levick St. SE of Milnor St.	65	A		Y					
D-07	Lardner St. SE of Milnor St.	65		Y	Y					
D-08	Comly St. SE of Milnor St.	65	A		Y					
D-09	Dark Run La & Milnor St.	65		Y	Y					
D-11	Sanger St. SE of Milnor St.	65		Y	Y					

Site	Site Location	Plat	Aerial (A) or Underground (U) Service	PECO Service	BELL Service	Date of One Day Test	One Day Test P/F	Date of Seven Day Test	Seven Day Test P/F	Site Acceptance Date
D-12	Bridge St. SE of Garden St.	56	A		Y					
D-13	Kirkbride St. & Delaware Ave.	56	A		Y					
D-15	Orthodox St. & Delaware Ave.	56		Y	Y					
D-17	Castor Ave. & Balfour St.	50	A		Y					
D-18	Venango St. W. of Casper St.	50	A		Y					
D-19	Tioga St. W. of Casper St.	50	A		Y					
D-20	Ontario St. W. of Casper St.	50	A		Y					
D-21	Westmoreland St. W. of Balfour St.	49	A		Y					
D-22	Allegheny Ave. SE of Bath St.	43			Y					
D-24	Cambria St. E of Melvale St.	43	U		Y					
D-25	Somerset St. E. of Richmond St.	43	A	Y	Y					
D-37	Cumberland St. & Richmond St.	43	A	Y	Y	1/30/97	P	3/10/97	P	8/26/97
D-38	Dyott St. & Delaware Ave.		A	Y	Y	1/23/97	P	8/15/97	P	9/12/97
D-39	Susquehanna Ave. E. Of Beach St.	37	A	Y	Y	1/30/97	P	3/10/97	P	8/26/97
D-40	Berks St. E. Of Beach St.	37	A	Y	Y	1/30/97	P	4/25/97	P	8/26/97
D-41	Palmer St. E. Of Beach St.	37	A	Y	Y	1/23/97	P	3/10/97	P	8/26/97
D-42	Columbia Ave. E. Of Beach St.	37	U	D	D	1/30/97	P			
D-43	Marlborough St. & Delaware Ave.		U	D	D	1/30/97	PAR			
D-44	Shackamaxon St. E of Delaware Ave.	36	A	Y	Y	1/30/97	PAR	3/10/97	PAR	8/26/97
D-45	Laurel St. & Delaware Ave.	36	A	Y	Y	1/30/97	PAR	3/10/97	PAR	8/26/97
D-46	Penn St. & Delaware Ave.	36	A	Y	Y	1/23/97	P	3/10/97	P	8/26/97
D-47	Fairmount Ave. W. Of Delaware Ave.	36	A	Y	Y	1/30/97	P	3/10/97	P	8/26/97
D-48	Willow St. W. Of Delaware Ave.	36	A	Y	Y	1/30/97	P	3/10/97	P	8/26/97

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D-49	Callowhill St. & Delaware Ave.	31	A		Y	1/30/97	P	11/5/98	F	
D-50	Delaware Ave. N. Of Vine St.	31	A		Y	1/29/97	P	11/5/98	P	1/7/99
D-51	Race St. W. Of Delaware Ave.	31	A	Y	Y	1/29/97	P	9/18/98	P	12/14/98
D-52	Delaware Ave. & Arch St. (Inside I-95 fe)	31	U	D	D	1/29/97	P			
D-53	Market St. & Front St.	31	U	Y	Y	1/29/97	P	3/10/97	P	8/26/97
D-54	Front St. S. Of Chestnut St.	31	U	D	D	1/29/97	P			
D-58	South St. & Delaware Ave.	26	U	Y	D	4/3/97	P			
D-61	Catherine St. E. Of Swanson St.	26	A	Y	Y	1/29/97	P	4/24/98	P	8/20/98
D-62	Queen St. E. Of Swanson St.	26	A	Y	Y	1/29/97	PAR	8/15/97	PAR	9/12/97
D-63	Christian St. W. Of Delaware Ave.	26	A	Y	Y	1/27/97	P	3/10/97	P	8/26/97
D-64	Washington Ave. E of Delaware Ave.	26	U	Y	Y	1/27/97	PAR	3/10/97	PAR	8/26/97
D-65	Reed St. E of Delaware Ave.	21	A	Y	D	1/27/97	P			
D-66	Tasker St. E. Of Delaware Ave.	21	A	Y	Y	1/27/97	P	3/10/97	P	8/26/97
D-67	Moore St. E. Of Delaware Ave.	21	U	D	D	1/27/97	P			
D-68	Snyder Ave. & Delaware Ave.	22	A	Y	Y	1/23/97	P	3/10/97	P	8/26/97
D-69	Delaware Ave. N of Porter St.	22	U	D	Y	1/23/97	P			
D-70	Oregon Ave. & Delaware Ave.	17	U	D	D	1/27/97	P			
D-71	Bigler St. & Delaware Ave.	17	A	Y	D	1/27/97	P			
D-72	Packer Ave. E. Of Delaware Ave.	17	A	Y	D	1/27/97	P			
D-73	Pattison Ave. & Swanson St.	11	A	Y	Y	4/29/97	F			
F-03	Castor Ave & Unity St.	63	A		Y					
F-04	Wingohocking St. E. of Adams Ave.	63	A		Y					
F-05	Bristol St. W. of Adams Ave.	63	A		Y					

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F-06	Worrel St. E of Frankford Cr.	55	A		Y					
F-07	Worrel St. W. of Frankford Cr.	55	A		Y					
F-08	Erie Ave. & Hunting Park Ave.	55	A		Y					
F-09	Frankford Ave N. of Frankford Cr.	55	A		Y					
F-10	Frankford Ave. S. of Frankford Cr.	55	A		Y					
F-12	Sepviva St. N. of Butler St.	55	A		Y					
F-13	Duncan St. Under I-95	56			Y					
F-14	Bristol St. in Cemetery	56			Y					
F-21	Wakeling St. NW of Creek Basin	56			Y					
F-23	Bridge St. NW of Creek Basin		A		Y					
F-24	Bridge St. SE of Creek Basin	56	A		Y					
F-25	Ash St. W. of Creek Basin	56	EX	Y	Y					
F-I-1	Gaul St. & Lebfevre (Future H-19)	56			Y					
H-01	Southwest WPCP	5	EXIST	Y	Y					
H-02	Southeast WPCP (RG-12)	16	EXIST	Y	Y					
H-03	Northeast WPCP (W / RG-14)	50	EXIST	Y	Y					
H-04	Jnc. of UDLL & Pennypack Interceptors (W / DI-1)	83		Y	Y	4/24/98	P	11/5/98	P	1/7/99
H-05	Jnc. of Pennypack & Sandy Run Interceptors	91		D	D					
H-06	Jnc. of Pennypack & Wooden Bridge Run Ints.	91		D	D					
H-07	Jnc. of UDLL & LFC Interceptors	56		Y	Y					
H-08	Jnc. Cresheim Valley Int. & Wissahickon Int.	67								
H-09	Jnc. of Poquessing & Byberry Interceptors	102		Y	Y	4/24/98	P	4/24/98	P	8/20/98
H-10	Jnc. of Pauls's Run & Pennypack Int.	104		D	D					

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H-11	Jnc. of Wissahickon Valley Int. & CSES Int.	52		D	D					
H-12	Oregon Ave. Interceptor	16	A	Y	Y	4/24/98	P	11/5/98	P	1/7/99
H-13	Passyunk Ave. Overflow @ 16th St. & Snyder	20	A	Y	Y	10/2/96	P	3/10/97	P	8/26/97
H-15	Central Schuylkill Siphon @ South Shaft	25	EXIST	D	Y					
H-16	24th St. & Indiana (OC4)	47	A		Y					
H-17	SWMG at 43rd St. & Woodland	24		GC?	Y	5/14/97	P	11/5/98	F	
H-18	Jnc. of CCHL & SWMG Interceptor	19	A	Y	Y					
H-20	Dispersion Chamber at 70th St. & Dicks	13	A	Y	Y	4/23/97	P	5/10/97	P	8/26/97
H-21	Main Relief Sewer @ 23rd St. & Parrish	35	A	Y	Y	5/1/97	P	4/24/98	P	12/14/98
MA-2	Pine Rd.		EXIST	Y	Y	8/6/96	P	11/5/98	P	1/7/99
MB-1	Bucks County Pump Station		EXIST	Y	Y	8/1/96	P	4/25/97	P	2/10/98
MBE-2	Bensalem Shopping CTR Dunksferry)	115	EXIST	Y	Y	8/6/96	P	8/8/96	F	
MBE-3	Elmwood Apartments (Byberry)	118		D	D	8/6/96	P			
MBE-5	Grant & James	102	EXIST	Y	Y	5/3/96	P	7/31/96	F	
MBE-6	Gravel Pike	111	EXIST	Y	Y	8/6/96	P	4/24/98	P	8/20/98
MBE-7	Townsend Rd.		EXIST	Y	Y	8/7/96	P	8/15/97	P	11/26/97
MC-1	Bouvier		EXIST	Y	Y	5/1/96	P	7/31/96	P	11/13/97
MC-2	Cheltenham		EXIST	Y	Y	4/25/97	P	5/7/97	P	11/13/97
MC-3	Fillmore & Shlmire		EXIST	Y	Y	8/2/96	P	8/8/96	P	11/26/97
ML-1	51st. St & City Line Ave.		EXIST	Y	Y	9/6/96	P	8/15/97	P	2/10/98
ML-3	63rd. St. & City Line Ave.		EXIST	Y	Y	9/6/96	P	4/24/98	P	12/14/98
ML-4	66th St. & City Line Ave.		EXIST	Y	Y	waved	P	4/24/98	P	8/20/98
ML-5	73rd St. & City Line Ave.		EXIST	Y	Y	9/6/96	P	4/24/98	P	8/20/98

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ML-6	Conshohocken		EXIST	Y	Y	4/11/96	P	7/31/96	P	11/13/97
ML-7	Presidential & City Line Ave.		EXIST	Y	Y	8/6/96	P	8/15/97	P	11/13/97
MLM-1	Philmont		EXIST	Y	Y	5/1/96	P	7/31/96	P	11/13/97
MLM-2	Welsh Rd. Pump House		EXIST	Y	Y	8/2/96	P	8/8/96	P	2/10/98
MS-2	Northwestern	94	EXIST	Y	Y	4/12/96	P	7/31/96	P	11/13/97
MS-3	Stenton & Erdenheim		EXIST	Y	Y	4/11/96	P	7/31/96	P	11/13/97
MS-6	Stenton & Woodbrook		EXIST	Y	Y	4/12/96	P	4/24/98	P	8/20/98
MSH-1	Trevose Rd.		EXIST	Y	Y	4/4/96	P	11/5/98	P	1/7/99
MUD-1	Upper Darby	18	EXIST	Y	Y	4/4/96	P	11/5/98	P	1/7/99
P-01	Frankford Ave. & Ashburner St.	92	A		Y					
P-02	Frankford Ave. & Holmesburg Ave.	91			Y					
P-03	Torresdale Ae. NW of Pennypack Cr.	83	A		Y					
P-04	Cottage Ave. & Holmesburg Ave.	82	A		Y					
P-05	Holmesburg Ave SE of Hegerman St.	83	A		Y					
PS-01	Bank St. & Elbow La.	31	EXIST	Y	Y	10/27/97	P	11/5/98	P	1/7/99
PS-02	Belfry Dr. & Steeple Dr.	75	EXIST	Y	??	10/28/97	P	11/5/98	P	1/7/99
PS-03	Central Schuylkill PS	24	EXIST	Y	Y					
PS-04	Ford Rd. accross from W. Park Hospital	46	EXIST	Y	Y	10/27/97	P	11/5/98	P	1/7/99
PS-05	Inside Old Fort Mifflin	2	EXIST	Y	Y					
PS-06	Hog Island Rd. E. of Airport Control Towe	2	EXIST	Y	Y	10/27/97	P	11/5/98	P	1/7/99
PS-07	Linden Ave. & Milnor St.	92	EXIST	Y	Y	10/28/97	P	11/5/98	P	1/7/99
PS-08	Lockart St. & Lockart La # DR RW	116	EXIST	Y	Y	10/28/97	P	11/5/98	P	1/7/99
PS-09	Milnor St. bet. Grant Ave. & Eden St.	93	EXIST	Y	Y	10/28/97	P	11/5/98	P	1/7/99

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PS-10	Fairmount Park @ Neil Dr. & Falls Rd.	46	EXIST	Y	Y	10/27/97	P	11/5/98	P	1/7/99
PS-11	Police Academy Grounds 8501 State Rd.	83	EXIST	Y	Y					
PS-12	Philmount Shopping Center Grounds @ Re	116	EXIST	Y	Y	10/28/97	P	11/5/98	F	
PS-13	42nd St. @ 43rd. St.	24	EXIST	Y	Y	10/27/97	P	11/5/98	P	1/7/99
PS-14	Broad St. @ Roosevelt Blvd. underpass	62	EXIST	Y	Y	10/28/97	P	11/5/98	P	1/7/99
PS-15	Mingo Creek: Schuylkill River @ Platt Br.	3	EXIST	Y	Y	10/27/97	P	11/5/98	F	
PS-16	26th & Vare Ave. @ underpass	2	EXIST	Y	Y	10/27/97	P	11/5/98	P	1/7/99
PS-17	10th & Vine		EXIST	Y						
PS-18	22nd & Vine		EXIST	Y						
R-06	56th St. & Webster St.	23			Y?	5/13/97	P	4/24/98	P	8/20/98
R-07	16th St. & Clearfield St.	47	A		Y					
R-12	Pennsylvania Ave. & Fairmount Ave.	35	LP			4/30/97	P	11/5/98	F	
R-13	Levick St. & Everett Ave.	81	A		Y					
R-14	Oakland St. & Benner St.	72	A		Y					
R-15	Nedro Ave. & 7th St.	70	A		Y					
R-16	Oregon Relief: Diversion Chamber	17								
R-17	Oregon Relief: Tide Gate Chamber	17								
R-18	Frankford High Level Relief Sewer	63	A		Y					
R-24	Arch St. & Cobbs Creek			Y	Y	5/1/97	P	4/24/98	P	8/20/98
RG-01	Atlantic - Essington Ave. bet. 63rd & 67th St.		EXIST	Y	Y	3/6/98	F			
RG-02	Catherine-66th St. & Catherine St.		EXIST	Y	Y					
RG-03	Farrell - Castor Ave. & Fox Chase Rd.		EXIST	Y	Y					
RG-04	Baxter-9001 State Rd.		EXIST	Y	Y					

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RG-05	Furness-3rd St. & Mifflin St.		EXIST	Y	Y					
RG-06	St. Josephs 54th St. & City Line Ave.		EXIST	Y	Y					
RG-07	Harrowgate - "G" St. & Ramona		EXIST	Y	Y					
RG-08	Heintz - 5500 N. Water St.		EXIST	Y	Y					
RG-09	Heston - 54th St. & Lancaster Ave.		EXIST	Y	Y					
RG-10	Medical Mission - 8400 Pine Rd.		EXIST	Y	Y					
RG-11	Naval Supply - 700 Robbins Ave.		EXIST	Y	Y					
RG-12	Southeast WPCP -25 N. Pattison Ave.		EXIST	Y	Y					
RG-13	Northeast H.S. - Frankford & Hunting Park Aves.		EXIST	Y	Y					
RG-14	Northeast WPCP-3900 Richmond St.		EXIST	Y	Y					
RG-15	Penn Treaty - Mongomery Ave. & Thompson St.		EXIST	Y	Y					
RG-16	9th Police District - 20th St. & Penna. Avw.		EXIST	Y	Y					
RG-17	Septa Depot - Comly St. & Penn Ave.		EXIST	Y	Y					
RG-18	Queen Lane -3500 N. Fox St. PTB Building		EXIST	Y	Y					
RG-19	Emlen - Chew St. & Upsal St.		EXIST	Y	Y					
RG-20	Shallcross-Knights Rd. & Woodhaven Ave.		EXIST	Y	Y					
RG-21	Shawmont - Shawmont Ave. & Ridge Ave.		EXIST	Y	Y					
RG-22	Callowhill-67th & Callowhill St.		EXIST	Y	Y					
RG-23	Southwest WPCP-8200 Enterprise Ave.		EXIST	Y						
S-01	Mantua Ave. & West River Dr.	35	U	D	D					
S-02	Haverford Ave. & West River Dr.	35	U	D	D					
S-03	Spring Garden St. W. Of Schuylkill Exp.	35	UP	D	D					
S-04	Powelton Ave. W. Of Schuylkill Express	30	NO WAY	D	D					

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S-05	24th St. 155' S. Of Park Towne Place	30	240V-1P	D	D	2/6/97	P			
S-06	24th St. 350' S. Of Park Towne Place	30	240V-1P	D	D	2/6/97	P			
S-07	24th St. E. Of Schuylkill R. (Vine St.)	30	240V-1P	D	D	2/6/97	P			
S-08	Race St. & Bonsall St.		A	Y	Y	2/6/97	P	3/10/97	P	8/26/97
S-09	Arch St. W. Of 23rd St.	30	A	Y	Y	2/6/97	PAR	3/10/97	PAR	8/26/97
S-10	Market St. 25' E of 24th St.	30	U	D	Y	2/6/97	P			
S-11	Market St. (In PRR Baggage Room)	30	EXIST	Y	Y	2/10/97	P	3/10/97	P	8/26/97
S-12	24th St. N. Of Chestnut St. Bridge	30		D	D	2/6/97	P			
S-12A	24th St. Under Chestnut St. Bridge	30		D	D	2/6/97	P			
S-13	Samson St. W. Of 24th St.	30	U	D	D	2/10/97	P			
S-14	Schuylkill Expressway Under Walnut St.	30		D	D					
S-15	Walnut St. W. Of 24th St.	30	A	D	D	2/6/97	P			
S-16	Locust St. & 25th St.	30	U	D	Y?	2/6/97	PAR			
S-17	Spruce St. & 25th St.	25	U	D	D	2/6/97	P			
S-18	Pine St. W. Of Taney St.	25	U	D	Y	2/7/97	P			
S-19	Lombard St. W. Of 27th St.	25	U	D	Y					
S-20	440'NNW of South St. (Behind Penn St.)	25		D	Y					
S-21	South St. E. Of 27th St.	25	A	Y	Y	2/7/97	P	4/25/97	P	8/26/97
S-22	660'S. Of South St. E. Of Penn Field	25	A	D	Y	2/10/97	P			
S-23	Schuylkill Ave. & Bainbridge St.	25	A	Y	Y	2/23/97	P	3/10/97	P	8/26/97
S-24	1060' S of South St. E. Of Penn Field	25	U	D	Y	4/3/97	P			
S-25	Shuylkill Ave. & Christian St.	25	A	Y	Y	2/7/97	P	3/10/97	P	8/26/97
S-26	Ellsworth St. E. Of Schylkill R.	25	A	Y	Y	10/26/98	P	11/5/98	P	1/7/99

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S-27	43rd St. & Locust St.	29	A	D	Y	5/14/97	F			
S-28	Chester Ave. W of 43rd St.	29	A	Y	Y	2/10/97	PAR	4/25/97	F	
S-30	46th St. & Paschall Ave.	24	A	Y	Y	4/30/97	P	4/24/98	P	8/20/98
S-31	Reed St. & Schuylkill Ave.	24		Y	Y	2/7/97	P	8/15/97	P	9/12/97
S-32	49th St. S. Of Botanic St.	19	A	Y	Y	4/30/97	F			
S-33	51st St. & Botanic St.	19	A	Y	Y	4/30/97	P	4/24/98	P	8/20/98
S-34	52nd St. & Paschall Ave.	19	A	Y	Y	10/26/98	P	11/5/98	P	1/7/99
S-35	35th St. & Mifflin St.	19	A	Y	Y	2/7/97	P	4/9/98	P	4/17/98
S-36	36th St. & Mifflin St.	19	A	Y	Y	2/7/97	P	4/9/98	P	4/17/98
S-36A	34th St. & Mifflin St.	19	A	Y	Y	2/7/97	P	4/25/97	F	
S-37	Vare Ave. & Jackson St.	20	A	D	Y	4/7/97	P			
S-38	56th St. E. Of P&R RR	19	A	Y	Y	4/30/97	F			
S-39	57th St. & Grays Ave.	19	A	Y	Y	4/4/97	P	8/15/97	P	9/12/97
S-40	59th St. & Grays Ave.	19	A	Y	Y	4/11/97	P	4/24/98	P	8/20/98
S-42	Pasyunk Ave. & 29th St.	15	U	Y	Y	4/3/97	P	4/24/98	P	8/20/98
S-42A	Passyunk Ave. & 28th St.	15	A	Y	Y	2/10/97	P	8/15/97	P	9/12/97
S-43	64th St. & Buist Ave.	14	A	Y	Y	4/3/97	P	8/8/97	P	12/14/98
S-44	26th St. 700'N off Hartranft St.	15	A	Y	Y	4/11/97	P	4/24/98	P	8/20/98
S-45	67th St. E of P&R RR	14	A	Y	Y	5/2/97	F			
S-46	Penrose Ave. & 26th St.	10	A	Y	Y	2/10/97	P	3/10/97	P	8/26/97
S-47	69th St. & Buist Ave.	13	A		Y	4/29/97	P	4/24/98	F	
S-50	43rd St. E. of Woodland Ave.	24	EXIST	Y	Y	5/14/97	P	4/24/98	F	
S-51	42nd St. SE of Woodland Ave.	24	A		Y?	5/14/97	P	4/24/98	P	12/14/98

Site	Site Location	Plat	Aerial (A) or Underground (U) Service	PECO Service	BELL Service	Date of One Day Test	One Day Test P/F	Date of Seven Day Test	Seven Day Test P/F	Site Acceptance Date
SYP-2	Garden & Reynolds (H-14)	64	A		Y					
T-01	Williams Ave. SE of Sedgwick St.		A		Y					
T-03	Champlost Ave. W of Tacony Cr.	79	A		Y					
T-04	Rising Sun Ave. E. of Tacony Cr.	71	A	Y	Y	4/24/98	P	4/24/98	P	8/20/98
T-05	Rising Sun Ave. W of Tacony Cr.	71	A		Y					
T-06	Bingham St. E. Of Tacony Cr.	71	A		Y					
T-07	Tabor Rd. W. of Tacony Cr.	71			Y					
T-08	Ashdale St W. of Tacony Cr/	71	A		Y					
T-09	Roosevelt Blvd. W. of Tacony Cr.	71			Y					
T-10	Roosevelt Blvd. E of Tacony Cr.	71			Y					
T-11	Ruscomb St. E. of Tacony Cr.	63	A		Y					
T-12	Whitaker Ave. E. of Tacony Cr.	63		Y	Y	10/26/98	P	11/5/98	P	1/7/99
T-13	Whitaker Ave. W of Tacony Cr.	63			Y					
T-14	I St. & Ramona St.	63	A		Y					
T-15	J St. & Juniata Park	63	A		Y					

5.2 Characterization of 3 New CSO Sites Identified in the SIAC

Start: 3/27/1995 End: 4/1/1996 Status: Completed

The System Inventory and Characterization (SIAC) identified three (3) sites which currently are not included in the NPDES permits. These sites are inspected on a regular basis and their potential for dry weather overflow has been minimized A plan of action for eliminating these discharges was developed as part of the LTCP. The annual status for the projects listed below in section 5.2.1 Main & Shurs (R_20) and 5.2.3 32nd & Thompson (R_19) will be moved to Section 10 Long Term CSO Control Plan in future reports to address their scheduling and progress consistent with the LTCP submitted on 1/27/97.

5.2.1 Main & Shurs (R-20)

Start: End: Status: Moved to LTCP (Section 10)

This site was added to the Flow Control Unit O & M schedules and the associated inspection data required by NPDES permits had been incorporated into monthly and annual reports (See Appendix A). Dry weather monitoring data and inspections continue to indicate no incidences of dry weather discharge excepting that attributed to illicit connection in the stormwater conduit leading to the point source. Resolution of Illicit connections in stormwater conduit has already been incorporated into the Illicit Connection Abatement Program. A project to eliminate this overflow structure was incorporated into the Long Term CSO Control Plan discussed in Section 10.

5.2.2 State Rd. & Grant Ave. (R_26)

Start: 3/27/1995 End: 3/27/1996 Status: Completed

As part of the System Inventory and Characterization, this site was discovered to have the ability to discharge combined sewage to the Poquessing Creek. Review of monitoring data collected from the period from 4/19/95 to present has not observed any incidences of dry weather overflow. Normal sanitary flow levels in the conduit are typically unaffected by storm flow. The site is continually monitored and no evidence of DWO had been observed.

In 1997 a backflow gate was installed to prevent the stormwater conduit from contributing flow to the combined sewer system. Monitoring is ongoing and a review of the available monitoring data shows that there were no wet or dry weather discharges from this site in 1997.

5.2.3 32nd & Thompson St. (R_19)

Start: End: Status: Moved to LTCP (Section 10)

This site was identified in the SIAC as an overflow not currently included in the NPDES, but as having the ability to discharge combined sewage into the Schuylkill River. The site has been added to the routine regulator inspection program and incidences of dry weather overflow would be reported in normal order as part of the monthly CSO status report. Annual summaries of these inspections are included in Appendix A. A project to reconstruct of this sewer to abate the grit accumulation was incorporated into the Long Term CSO Control Plan discussed in Section 10.

5.3 WTP Residuals Management

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

In the past, aperiodic 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 evaluate the effectiveness of the operational changes using the information available from the new monitoring system expected to become available this year.

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 7 times in 1998 on the following dates:

Date	Cu. Yards Removed
01/16/98	83.2
03/24/98	0.5
04/03/98	4.0
06/02/98	33.6
07/28/98	n/a
09/03/98	116.8
11/06/98	46.6

6.0 SOLIDS & 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. 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.

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. Table 6.1 documents the quantity of material removed from the facility since it's installation.

Table 6.1 T_4 Rising Sun Ave. Pilot Netting Facility Performance

Date Replaced	Drained weight 2 bags
04/24/97	110
05/08/97	150
06/06/97	200
07/18/97	200
08/19/97	150
10/02/97	75
11/19/97	75
12/27/97	90
03/06/98	100
07/08/98	125
08/13/98	150
09/04/98	150
11/18/98	150
Total	1725

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 1996:

D_2 Cottman Ave - Retrieved screen from River Channel, repaired headwall, and reinstalled 6" x 6" screen.
D_5 Magee Ave. - Remove, straightened, and reinstalled 4 screens
D_6 Levick St. - Fabricate and install new screen w/ 6" x 6" openings
D_7 Lardner St. - Remove straighten and reinstall 4 screens
D_46 Removed damaged screen and installed new screen w/ 6" x 6" openings
D_25 Somerset St. - Retrieved and reinstalled debris grill w/ 6" x 6" opening
D_37 Clean, straighten and reinstalled debris grill w/ 6" x 6" openings

Construction of new debris grills was completed at the following sites during calendar year 1997:

3/20/97 D-04. - Fabricated and install new screen w/ 6" x 6" openings
9/16/97 F_04 - Fabricated and install new screen w/ 6" x 6" openings
9/17/97 T_15 - Fabricated and install new screen w/ 6" x 6" openings
4/7/97 T_04 – Fabricated and install new screen w/ 6" x 6" openings

Construction of new debris grills in 1998 was put on hold until the overflow weir backflow gate program detailed in section 1.5.2 is completed in 2000. Minor repairs to existing gates were performed in 1998 on an as needed basis.

7.0 POLLUTION PREVENTION

Reference Philadelphia NMC Report, 9/27/95 Section 7 pp.1-8

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 litter and stormwater inlets as part of its implementing this minimum control as well as continue to develop the following new programs.

7.1 Bill Stuffers

Bill stuffers are commonly produced by the Department as an educational medium for disseminating information pertaining to billing and environmental issues. Specific bill stuffers will continue to be designed for the CSO, Stormwater, and Watershed Management Programs to address their associated educational issues over time. These bill stuffers reach 500,000 water and wastewater customers.

7.1.1 General Stormwater Education

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

7.1.2 General CSO Education

Start: 2/1/1996 End: 7/1/1997 Status: Completed

7.1.3 House Hazard Waste Program

Start: 8/1/1995 End: 10/1/1995 Status: Completed

7.1.4 Grass Clippings & Recycling

Start: 3/1/1997 End: 3/27/1997 Status: Completed

7.1.5 In's & Out's of Sewer Inlets

Start: 9/1/1997 End: 10/1/1997 Status: Completed

7.2 Waterwheel Watershed Newsletters

Start: 3/1/1996 End: Status: Ongoing

The Department's watershed newsletters are 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.

7.2.1 Fall Edition 1996

Start: 5/1/1996 End: 10/1/1996 Status: Completed

This newsletter introduced watershed concepts in a general fashion and outlined the Department's responsibilities for CSO compliance.

7.2.2 Spring Edition 1997

Start: 3/1/1997 End: 5/1/1997 Status: Completed

This newsletter promoted the watershed walks discussed in section 10.9.1 as a token of PWD's participation in National Clean-up Rivers Week. Additionally, this newsletter included specific information on PWD'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.

7.2.3 Fall/Winter '97/'98 Issue - contents

Start: 3/1/1997 End: 10/1/1997 Status: Completed

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," showed how separate and combined systems work, how overflows occur, and publicized the upcoming spring dates for the Streets' Department Household Hazardours Waste Collection.

7.2.4 Spring '98 Issue

Start: 10/1/1997 End: 5/1/1999 Status: In-Progress

This edition will highlight the watershed tours hosted by the PWD and its Stormwater Pollution Prevention CAC held during National River Clean Up Week, May 9 - May 16). Walking tours will be featured in Philadelphia's eight watersheds. Tours will point out the relation between the urban sewer/stormwater collection system and the natural watershed. Participants will see CSO and Stormwater outfalls and will learn about how these outfalls affect the quality of water. This edition of the Water Wheel will also address the PWD's CSO Long Term Control Plan and how it is being implemented in specific watersheds. This issue was postponed due to City-wide budgetary and publishing approval process constraints. This newsletter is expected to be published in calendar 1999.

7.3 Comprehensive Education Materials

Start: 1/1/1996 End: Status: Ongoing

The following material were developed during calendar 1997:

- General Information on City's Combined and Separate Sewer Systems
- Maps of CSO locations
- Tips on What Citizens can do

The following material were developed during calendar 1998:

- Watershed Educational Partnerships were formed with Bodine High School, Fairmount Park, Phila. Recreation Dept., Academy of Natural Sciences, and the Schuylkill Center for Environmental Education
- Work progressed on the development of exhibits for the Fairmount Water Works Interpretive Center as well as the restoration of the building itself.

The following tasks are expected to be initiated in calendar 1999:

- CSO Fact sheet materials and CSO Presentation Materials
- Focus Groups for CSO Educational Messages
- Comprehensive History of City's sewer system
- Watershed Educational Partnerships w/Bodine High School, Fairmount Park, Phila. Recreation Dept., Academy of Natural Sciences, and the Schuylkill Center for Environmental Education

7.4 Citizen Advisory Committee (CAC)

Start: 8/1/1995 End: 9/27/1998 Status: Ongoing

The Pennsylvania Environmental Council is currently facilitating the bi-monthly citizen advisory committee meetings held at the Water Department. The council is comprised of the following partners:

Frankford United Neighbors

Schuylkill River Development Corp.
Friends of the Wissahickon
Philadelphia Canoe Club
Collaborations
PMBC
Bridesburg Civic Association
Friends of the Manyunk Canal
Fairmount Rowing Association
Friends of the Poquessing Watershed
Fairmount Water Works
School District of Philadelphia
Delaware Estuary Program
PA Horticultural Society
Friends of Tacony Cr. 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 Philadelphia Chamber of Commerce
TruGreen-Chemlawn
Riverway Environmental Education Association
Cobbs Creek Community Environmental Education Center
Public Works Studio
New Manayunk Corp.

The CAC made progress in the following projects during 1998:

- A Watershed educational video titled "Stormy Weather" was completed. The video targets individual responsibility as a critical success factor in improving stormwater quality by advancing various anti litter messages (e.g. picking up after pets, not using inlets as trash cans, etc.). The video will be distributed on a request basis and specifically to environmental groups, and schools.

- Bodine School Pilot Project – A watershed walk of the Cohocksink urban watershed was completed with this school, during which various Departmental facilities were pointed out and sewage sampled and analyzed to educate students on urban drainage infrastructure and sewage treatment. In addition, classroom presentations to students on the concepts of watershed management

- Watershed Tours were conducted on 9 watersheds including the Poquessing, Pennypack, Tacony, Wissahickon, Cobbs Creeks, and the non-tidal Schuylkill (including Manyunk Canal), as well as the urban watersheds that now comprise the former streams of Dock and Pine Creek. The topics of discussion on the tours included descriptions of the Departments facilities, developmental history behind the facilities and the section of the city, as well as the roles of these facilities in urban pollution control.

The following is a summary of the calendar 1998 and upcoming projects coordinated through the CAC committees which meet on a monthly basis:

The CAC will sponsor the Upstream / Downstream Conference on March 26th and 27th, 1999 to discuss the land / water interface, the hydrologic cycle, and related issues. The conferencewill include 2 sessions, one for developers and landscape architects and a second for the general public. The session for the general public will cover runoff quantity and quality issues, as well as host a watershed tour of the Pine Creek urban watershed.

CAC Government Education Committee

Target audiences - city agencies, local governments, PennDOT, EACs

Goals/Objectives - To get the target audience more aware of how their actions impact water quality and what they can do to prevent pollution (BMPs)
Issues to address - snow removal, trash collection, licensing/permitting

Techniques/Tools - surveys, conferences, tip cards, seminars/workshops, mailings to municipal officials

School/Youth Education Committee

Target Audiences -Schools (Bodine), Recreation Dept., Girl Scouts/Boy Scouts, Churches that run schools, community private schools, charter schools, cluster leaders

Goals/Objectives - Opportunities to experience the rivers (field trips), sense of awareness of where we have come from and where we are going, career opportunities, reach out to adults through kids, get kids involved in planning

Existing Outreach tools - "What's With Water" curriculum, estuary poster for kids, t-shirts, Ms. Drizzle character

Possible Outreach tools/techniques - curriculum, field trips, poster contest, calendar design contest, SEPTA car-card design contest, do seasonal shows on Kid's Corner (WXPN), create a youth advisory board to help develop and implement programs

1999 Projects:
The Watershed Action Project is expected to begin in January of 1999 and be complete in May 1999. The project will center on 8 area high schools for full participation and 3 area high schools for part time participation. The project is funded by the Pennsylvania Coastal Zone Management (CZM) Program in partnership wit the Partnership for the Delaware Estuary. This project will entail in class presentations of urban pollution issues, a storm drain stencil design, implementation of the design on inlets around the school, and a facility tour of a wastewater treatment plant. The project will conclude with an educational trip aboard the Schooner A.J. Meerwald.

Public Education Committee

Target audience - general public

Goals/objectives - reach mass audience - people who live, work, or both in Philadelphia
Existing outreach tools - tip cards, posters, magnets, t-shirts

Possible outreach techniques/tools - using seasonal themes to design programmatic pieces, publicity - launch of documentary video (kick-off press event around Earth Day - April 1998, using footage from video for TV

PSAs and potential distribution though local movie theaters as a trailer, advertising at large public events (Flower Show, Auto Show), having a presence at citywide and community events, watershed tours

1999 Projects: During calendar 1999, the Public education committee has contracted with the Academy of Natural Sciences to develop Watershed Walking Tour Guidebooks. These books are being developed in partnership with the entire CAC. The development began in September of 1998 and they are expected to be completed by 12/31/1999 and will encompass the watersheds defined in the tours described above.

Business Education Committee

Target Audience - landscapers, construction companies, plumbers, auto repair operations, private waste haulers, trade associations

Goals/objectives - litter prevention, reduce soil erosin, reduce improperly disposed of oil and substances

Existing outreach tools - tip cards, magnets, t-shirts, posters

Possible outreach techniques/tools - ads in trade publications, educational brochures for specific constituencies, workshops/presentations, articles in trade and corporate newsletters, EarthMate coupons for landscapers

7.5 News Articles

Start: 5/11/1996 End: Status: Ongoing

Local newspapers have been solicited to cover major aspects of the public involvement program. The goal of which is to develop articles to raise general awareness of watershed based issues including CSO's and their potential impacts on local receiving waters as well as the potential impact within the regional receiving waters. Activities for calendar 1998 included working with Daily News on regular basis to develop a comprehensive watershed article. A preliminary release date has been targeted for the spring / summer of 1999 in order to coincide with the Cobbs Darby watershed planning initiative.

7.6 Public Acceptance / Outreach Programs

Start: 1/1/1996 End: Status: Ongoing

The CAC discussed in section 7.4 represents the major thrust of the Educational outreach programs put into place as part of the NMC program. In order to garner support from a much broader range of stakeholders, the Public Acceptance / Outreach Program will be integrated with the watershed planning effort detailed in Section 10. As part of the reorganization to form the Office of Watersheds, the Department will conduct meetings in order to integrate the various educational requirements of the stormwater, CSO, and source-water protection programs. The City Council Briefings and Media workshops referenced in sections 7.6.1 and 7.6.2 of previous Annual Status reports will implemented at appropriate times as part of advancing the watershed management initiative discussed in Section 10.8.

8.0 PUBLIC NOTIFICATION

Reference Philadelphia NMC Report, 9/27/95 Section 8 pp. 1-3.

As discussed in Section 7 of the above report, the Department has developed and will continue to develop a series of informational brochures and other materials about its CSO discharges and the potential receiving water impacts. The brochures provide contacts for additional information. The brochures, educational materials, and activities discuss potential direct receiving water impacts (such as floatables) and request that the public report these incidences as part of the City's CSO documentation and NMC effectiveness monitoring program. In addition, the PWD has recruited and solicited the support of watershed groups. Through the citizen advisory committee and watershed tours, the Department has enlisted volunteers as the watchdogs of each waterway.

The City's Public Notification Program for 1999 will continue to consist primarily of public education about CSO discharges and their impacts. The City will rely on a general education program to keep the public aware of any potential public health risks and will concentrate its energies and resources on the pollution prevention aspects of CSO remediation through education and the requisite changes in lifestyle. The public information and education program detailed in Section 7 will be used to carry the message of this issue to the public. In other words, the PWD is using materials and watershed tours developed under Section 7.0 to educate the public about the existence of CSOs and what to do if they see an overflow. The Spring 1997 edition of the WaterWheel newsletter contained a map showing the city's CSO outfalls by number. Residents are urged to call the PWD's hotline if they notice an overflow occurring during dry weather. In addition, CSO outfalls are pointed out during the watershed tours hosted by the PWD and its CAC. Future plans include partnering with local schools in the various watersheds to recruit students to be environmental stewards - helping to keep their local watersheds clean, educating their friends and adults, and conducting clean ups and tours. Lastly, it is anticipated that the watershed partnerships formed as the Department implements it's watershed planning initiative will serve to magnify the outreach and educational messages contained in Section 7.0.

9.0 MONITORING & 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 1997 as required in the NPDES Permit and are presented in the same tabular format found in the System Hydraulic Characterization (SHC) and NMC Documentation.

9.1 Annual CSO Statistics (1998)

The estimated average annual frequency and volume statistics for calendar year 1998 are presented in Table 9.1.

Table 9.1 Estimated Annual Combined Sewer Overflow Statistics For 1998

Philadelphia Interceptor System	Number of Point Sources	Number of Structures (1)	Frequency		Overflow Volume (MG)				Average Duration (hrs)
			Range per subsystem	Average per subsystem	Range per Subsystem	Annual CSO Capture (%)			Range per subsystem
Northeast Drainage District									
Lower Frankford Low Level	7	8	39 - 77	60	870 - 1063		-		122 - 149
Upper Frankford Low Level	10	10	26 - 81	56	284 - 348		-		147 - 179
Pennypack	5	5	17 - 70	41	50 - 62		-		117 - 143
Somerset	8	9	44 - 80	66	1468 - 1795		-		225 - 275
Tacony High Level	16	16	7 - 87	53	3505 - 4284		-		181 - 221
Upper Delaware Low Level	13	13	4 - 76	34	822 - 1004		-		63 - 77
Southeast Drainage District									
Lower Delaware Low Level	27	27	18 - 89	57	2117 - 2587		-		128 - 156
Oregon Avenue	6	6	59 - 71	63	332 - 406		-		222 - 272

Table 9.1 (con't.) Estimated Annual Combined Sewer Overflow Statistics For 1998

Philadelphia Interceptor System	Number of Point Sources	Number of Structures (1)	Frequency Range per Subsystem	Frequency Average per Subsystem	Overflow Volume (MG) Range per Subsystem	Overflow Volume (MG) Annual CSO Capture (%)	Average Duration (hrs) Range per Subsystem
Southwest Drainage District							
Central Schuylkill East Side	22 (2)	27	1 - 89	44	718 - 878	-	106 - 130
Central Schuylkill West Side	9	9	1 - 86	48	339 - 415	-	110 - 134
Cobbs Creek High Level	27	31	1 - 92	39	843 - 1031	-	112 - 137
Cobbs Creek Low Level	12	12	1 - 59	26	77 - 94	-	63 - 77
Lower Schuylkill East Side	9	9	14 - 80	60	427 - 522	-	138 - 169
Lower Schuylkill West Side	4	4	22 - 79	56	421 - 515	-	148 - 181
Southwest Main Gravity	3	3	5 - 88	47	2706 - 3307	-	174 - 212

(1) - Number of structures includes overflows from CSO diversion chambers and storm relief diversion chambers within the combined sewer system. In some cases, multiple structures discharge to a common overflow point.
(2) - The Main Relief Sewer is assigned to the Central Schuylkill East Side system as a single overflow point source.

10.0 LONG TERM CSO CONTROL PLAN IMPLEMENTATION

The long-term CSO control plan strategy proposes a combination of technology-based and water quality-based programs staged to ultimately achieve water quality standards. After realizing reductions in combined sewage discharges from the Nine Minimum Control Programs, the Department has continued to examine opportunities for further reducing pollutant loads through the use of technology-based controls. The Long Term CSO Control Plan was submitted to PA DEP on January 27, 1997. This section provides updates on the implementation and scheduling of the Long Term CSO Control Plan capital projects and watershed based planning activities.

The focus in meeting the LTCP goals is enhancing the use of the City's existing wastewater collection and treatment facilities to minimize CSO impacts while PWD and the stakeholder group complete the vital watershed planning process. The Nine Minimum Control implementation sought to reduce CSO impacts through low-cost measures that did not require significant engineering studies, major construction projects, and could be implemented within a relatively short time. In contrast, the system enhancement projects proposed in this section and require significant capital expenditures, are innovative, and therefore require significant facility planning, design, and construction time to successfully implement. The following sections detail progress made with respect to each capital project identified in the LTCP.

10.1 Conveyance Improvements

10.1.1 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.

10.1.2 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 $16,000.00 ($35.00 per ton).

10.1.3 Cobbs Creek Low Level (CCLL) Control Project

Start: 6/1/1998 End: 1/10/2000 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 the flow 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. In calendar 1998, approximately 3000 feet of the existing sewer downstream of 60th Street has been restored with a 3-inch thick application of Gunite. In addition, an additional 3000 feet of the sewer has been cleaned in preparation for continued application of the Gunite restoration. Remaining work includes bank rehabilitation at three exposed locations along Cobbs Creek, manhole restoration. Approximately 7000 feet of sewer remains to be gunited, structural repairs of the construction defects at 75th Street and Grays Avenue

10.1.4 Cobbs Creek Low Level (CCLL) Improvements

Start: 4/2/1998 End: 3/30/2000 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 $1,000,000 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. It is expected that the technical specification and bid documents for the calendar 1999 work will be submitted to the Procurement Department and a pre-bid meeting held in late February. The bid opening date is currently scheduled for March 22, 1999. The disposal of debris from these sewers will be handled under the BRC grit / screenings disposal contract with Waste Management, Inc., at a budget of $155,000. Due to the time involved in developing the contract specification to bid multiple sewer reaches not included as part of this project, the expected completion date for this project is expected to coincide with the end of the fiscal year in June 2000.

10.2 WPCP Flow Optimization (Stress Testing)

Start: 1/1/1998 End: 3/1/2000 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.

10.2.1 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 is expected to be initiated in January of 1999.

10.2.2 Conduct Stress Tests at Each WPCP

Start: 1/19/1999 End: 3/1/2000 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 projected to be completed during calendar 1999 is comprised of the following major tasks:

Historical data will be provided to the consultant for the past three years to allow for an understanding of the facilities' normal flow rates, loading variations, operating capabilities and characteristics.

The **Operations review** will be conducted in early January, during which PWD staff from each facility will be interviewed by CH2M-Hill personnel regarding operational issues, successes, concerns of the total facility,

and individual processes. A follow-up meeting will be held 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 will be developed. This plan is scheduled to be completed by February and finalized in March 1999. The short term tests will be conducted from May 1st to August of 1999. The short-term plan consists 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. The assistance of PWD laboratory personnel will be heavily utilized in this task to analyze the hundreds of samples collected during these various 8 and 15-hour tests.

The **Long-term stress testing** encompasses 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 will continue until June 30, 1999. A mid-term meeting will be conducted in mid-April to formally present and discuss the data collected to date from the long term testing.

The **Hydraulic Throughput Capacity** of each liquid process will be determined using a calibrated hydraulic model. The actual elevations of numerous facility process points will be recorded for use in determining these actual hydraulic capacities. The PWD survey crew will accomplish this task. It is anticipated that this work will be performed in May and June 1999. This work will be needed to determine if hydraulic flow restrictions exist within each facility that may impact process performance. This information in conjunction with treatment capacity process information, is expected to be useful when evaluating if capital improvements are needed to any of the facilities to provide additional treatment.

10.3 Pennypack Watershed – 85% Capture

Start: 2/1/1996 End: 11/1/2000 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 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 four of the Pennypack CSO regulators. In addition, the diversion dam height at three PP regulator locations will be raised. Lastly, modifications at five 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 39 MG. This represents a reduction of roughly 70% 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.

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

Start: 2/1/1996 End: 11/1/2000 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.

10.3.2 Regulator Modifications (P1-P4)

Start: 11/18/1998 End: 11/30/1999 Status: In-Progress

The hydrologic and hydraulic computer models developed by the PWD for the CSO Program were applied to develop the preliminary increased dry weather outlet (DWO) pipe diameters and diversion dam heights required to achieve 85% capture. A preliminary site plan for the CSO regulator modifications necessary to achieve 85% capture of combined sewage on an average annual basis in the five Pennypack Creek CSO sewersheds was also completed. Additional monitoring is necessary in order to verify the model predictions of the expected capture. Therefore, a monitoring plan for the Pennypack Interceptor s system was developed and one temporary monitor has been installed to date.

Status: A monitoring subcontractor will be retained in the second quarter of 1999 in order to provide additional monitoring data for this and other LTCP projects. This flow survey should provide the necessary data for calibration of a model used to determine if any changes to the storage and treatment requirements (pipe sizing) are necessary. More specifically, the temporary monitoring will determine the effects of rainfall dependant inflow and infiltration (RDI/I) from upstream separate sanitary areas to confirm the ability to achieve the 85% capture with the proposed modifications to Pennypack CSO regulators. In calendar 1999, modeled RDI/I in upstream sewersheds will be calibrated/verified using field-monitoring data. Design work is expected to proceed concurrently with the monitoring program.

10.4 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 effectively by 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. For example, upon completion of the $6,500,000 CSO monitoring project, PWD will target the Southeast drainage district collector system. Comparisons will be made between the cumulative dry weather flows and the flow at the plant. Temporary monitors will be used to compare flows at intermittent points along the interceptor. Using this method, the infiltration will be narrowed to specific sewer reaches. A sampling program will be developed and implemented to establish relative differences in trunk sewer flow concentrations. Corrective actions, including regulator reconfiguration, will then be evaluated on a pollution-load basis. Other targeted I/I studies being evaluated include: redirection of runoff from the sports complex, redirection of subway pumping, and reduction of I/I impacts at the Main & Shurs (R_20) overflow structure. The estimated costs for I/I reduction projects 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 polluted 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 are currently putting in place tools to facilitate a prioritization of inflow sources. In 1998, a tabular inflow database was created that included every sewer creek crossing in the city of

Philadelphia. This database will be linked with the digitized plats to create graphical displays in ARCVIEW GIS. This information will then be used to develop and implement an inflow source inspection plan during calendar 1999.

A temporary flow monitoring RFP was developed in 1998 and is expected to be bid in mid-April. The successful bidder will provide 10 flow meters and train PWD crews in proper flow monitoring techniques. The new meters, as well as the Department' stock of flow monitors will be deployed at various locations throughout the city to support the LTCP projects including the quantification of Rainfall Dependent Inflow and Infiltration. The data collected from these monitors will also be used to assist in the targeting and prioritization of future projects to reduce the impact of inflow and infiltration on Philadelphia's collector system

CSO program staff also performed analyses of groundwater infiltration (GWI) and streamwater infiltration (SWI) using level monitoring data in the Northeast Drainage District (NEDD). PWD 1998 level monitoring data at 48 CSO regulators in the NEDD was utilized to develop relative differences in GWI and SWI components of dry weather flow among the monitored CSO regulator sewersheds. These differences allow for a prioritization of potentially excessive I/I in the combined sewer areas. In 1999, the analysis of GWI, SWI, and tidal inflow is expected to be expanded to incorporate additional data from the new monitoring network in the Southeast and Southwest Drainage Districts. Temporary flow monitors will be installed in separate sanitary areas to analyze GWI, SWI and rainfall dependant inflow and infiltration (RDI/I) from separate sanitary systems.

Level data was also utilized to estimate the frequency of tidal inflows at CSO regulators in the NEDD. In 1998 and as part of NMC project 1.5.2 Emergency overflow wier modification, tide gates were installed on the emergency overflow weirs to eliminate tidal inflows for a selected group of CSO regulators in the NEDD. Also, a sampling program was completed in 1998 to establish relative differences in trunk sewer flow concentrations. In 1999 this analysis will be compared to pre and post gate installation inflow estimates at these sites to determine the effectiveness of tide gate installation in reducing inflow frequency.

10.5 Real Time Control Program

10.5.1 Establish Real Time Control Center

Start: 4/1/1998 End: 3/30/2000 Status: In-Progress

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

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 1998 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. Electrical and mechanical design work is now in progress and the project is expected to be bid by the end of the fiscal year. 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.

10.5.2 RTC – Main Relief Sewer

Start: 8/1/1999 End: 1/30/2001 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, a set of five large (4' to 11.5') sewers, 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 6.2 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 6.2 MG of storage, a computer-controlled sluice gate is required in the box sewer just above the Main Relief Sewer outfalls to the Schuylkill River. This gate will reduce CSO discharges to the creek by utilizing the relief sewer for in-system storage. This control technology provides an additional margin of protection against dry weather overflows while still maintaining flood protection for upstream communities. The automated gate 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 185 MG/year, from 520 to 335 MG/year, is achieved at the Main Relief Sewer outfalls through use of the available in-system storage volume. This represents a reduction of more than 35% 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: After completing an analysis of various alternatives for realizing the in-system storage in the Main Relief Sewer, an inflatable dam was chosen as the optimal control technology. Hydrologic and hydraulic models of PWD's wastewater collection system were utilized to analyze the reductions in CSO discharge volumes associated with installation of a inflatable dam in the Main Relief Outfall sewer system (Long Term Control Plan RTC Main Relief Sewer Storage {R-7 through R-12}). Several proposed scenarios were developed to optimize utilization of the Main Relief Sewer's in-system storage with varying inflatable dam(s) locations and allowable head. The siting analysis for the dam is nearing completion and it is anticipated that a single inflatable dam will be implemented in the vicinity of storm relief diversion chamber R_12. Due to an expedited implementation schedule associated with the rehabilitation of the Fairmount Water Works, the project was separated into two parallel track projects, one for the intrusive conduit work, and another for the inflatable dam implementation.

Design work is nearing completion for the construction of the new DWO conduit. This conduit to be constructed in rock tunnel, will be used to drain down the Main Relief Sewer into the Central Schuylkill East Side (CSES) Intercepting Sewer. In addition, this contract provides for rehabilitation of a portion of the CSES interceptor that had been subjected to deterioration due to hydrogen sulfide gas. A new drop structure will be built to reduce the generation of this gas associated with a drop manhole along the interceptor. The contract for the DWO pipe is almost complete and the contract will be bid by the end of April. Construction of the new conduit is expected to commence by early May and be completed by the close of calendar 1999. During this construction, design specifications for the control chamber and the procurement of the dam will take place.

The control logic for the inflatable dam's operational protocols and the required control equipment will be documented in a design memorandum expected to be completed by mid-July. An RFP is currently under development to retain a specialty Engineering firm to complete the design work for this project. Since there is only one supplier of the inflatable dam technology, PWD is currently 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.

10.5.3 RTC – Rock Run Relief Sewer (R_15)

Start: 9/4/1998 End: 9/1/2001 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. Currently CSO discharges into Tacony Creek at the Rock Run Relief Sewer outfall (11' by 14' sewer), during periods of moderate or greater rainfall. There exists within this large sewer a potential storage volume of approximately 3.4 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 creek. However, in order to use this 3.4 MG of storage, a computer controlled sluice gate is required in the box sewer just above the Rock Run Relief outfall to the Tacony Creek. This gate will reduce CSO discharges to the creek by utilizing the relief sewer for in-system storage. This control technology provides an additional margin of protection against dry weather overflows while still maintaining flood protection for upstream communities. The automated gate maintains the stored flow in the relief sewer and a new connector sewer drains the stored flow to an existing nearby interceptor. The estimated budget for this job is $490,000.

Environmental Benefits: This project will reduce the discharge of CSO into Tacony Creek, one of the smaller receiving streams. 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: After completing an analysis of various alternatives for realizing the in-system storage in the Rock Run Relief Sewer, an inflatable dam was chosen as the optimal control technology. A flow monitoring plan was developed to calibrate a detailed drainage area model of the tributary sewershed. The monitoring plan will be implemented based upon the availability of monitors from existing PWD stock and the monitoring subcontractor to be contracted for in the second quarter of 1999. The installation of the flow monitoring equipment will take place in May of 1999 and provide the necessary information for the calibration of a

model, the evaluation of extreme flow events, the documentation of CSO reduction, and the development of a design memorandum by the end of 1999.

10.5.4 RTC – Tacony Creek Park (T_14)

Start: 10/16/1998 End: 2/28/2002 Status: In-Progress

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

Description: Currently CSO discharges into the Tacony Creek at the T_14 outfall, a very large (21' by 24') sewer, during periods of moderate or greater rainfall. There exists within this large sewer a volume of approximately 17.6 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 creek. However, in order to use this 17.6 MG of storage, a control structure is required in the sewer just above the outfall to Tacony Creek. Due to the large size of this outfall an inflatable rubber dam is proposed to retain flow within the sewer. This automated dam will reduce CSO discharges to the creek by utilizing the relief sewer for in-system storage. This control technology provides an additional margin of protection against dry weather overflows while still maintaining flood protection for upstream communities. The dam maintains the stored flow in the relief sewer and a new connector sewer drains the stored flow to an existing nearby interceptor. The projected budget for this project is $450,000.

Environmental Benefits: This project will reduce the discharge of CSO into Tacony Creek, one of the smaller receiving streams. An average annual reduction in CSO volume of 750 MG/year, from 2,500 to 1,750 MG/year, will be 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, in 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 a new storage structure).

Status: After completing an analysis of various alternatives for realizing the in-system storage in Tacony Creek Park Sewer, an inflatable dam was chosen as the optimal control technology. A flow monitoring plan was developed to calibrate a detailed drainage area model of the tributary sewershed. The model will be enhanced by CDM to support the design of the dam, controls, and the operating logic. The monitoring plan will be implemented based upon the availability of monitors from existing PWD stock and the monitoring subcontractor to be contracted for in the second quarter of 1999. The installation of the flow monitoring equipment is expected to take place in conjunction with the monitoring for the Rock Run Relief sewer in that both of these systems are on the same interceptor system. The calibrated design model is expected to provide the necessary information for the evaluation of extreme flow events, the documentation of CSO reduction, and the development of a design memorandum.

10.5.5 RTC – SWMG, CC, LSWS

Start: 7/1/1998 End: 12/31/2003 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 inter-connected 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 Gravity sewer at 70th & Dick's St.; replacing the DWO pipe and raising the dam at regulator C_17; cleaning the interceptor and 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 costs for these projects is $1,750,000.

Status: The first phase in project 10.5.5 entails the cleaning of the Lower Schuylkill West Side Interceptor to ensure that capacity is available to convey the additional flow resulting from the automated controls to be implemented in later tasks. The second phase requires a detailed facility planning study of the Southwest Drainage District to develop site specific monitoring and control locations. The third phase will implement the specific gate, monitoring, and controls identified in phase II. In addition, detailed modeling must be conducted in order to develop a complete understanding of the upstream impacts of utilizing in-system storage under real time control of combined flows.

The Lower Schuylkill West Side Interceptor cleaning project started on 1/7/1998 and was completed on 7/2/1998. This interceptor was cleaned from 51st Street and Botanic Avenue to the SWWPCP. The section of this system that runs between 58th Street and Passyunk Avenue will be placed again for bidding in the FY99 sewer cleaning contract. This was mainly due to the fact that this section presented some access problems, which prevented proper cleaning. The 17,600 lineal feet sewer was at a cost of $557,690. The Lower Schuylkill West Side Interceptor is comprised of sewer sections with sizes varying from 21 to 60 inches in diameter. Approximately 452 tons of grit and debris were removed from this interceptor and transported to the SWWPCP for disposal by the BRC under its existing disposal contract with Waste Management Inc. The debris disposal costs were estimated to be $16,000.

During calendar 1998, PWD reviewed the requirements and opportunities for RTC within the Southwest WPCP. Camp Dresser & McKee prepared a technical memorandum documenting appropriate technical and modeling approaches for the Southwest system. After ranking techniques, a recommendation for a preferred technical approach was developed and a required Scope of Services document was prepared for the Southwest system. This Scope of Services was sent to three RTC specialty firms, and proposals are due early in 1999. The two-year scope requires a subcontractor to provide specialized modeling and RTC software development and implementation services including, at a minimum, the following major task elements:

- Develop Sub Contract Work Scope
- Set up RTC model
- Assess hydraulic conditions
- Review current systems & practice
- Identify RTC objective function
- Prepare RTC technology alternatives
- Site visits
- Select technology approach

- Detailed evaluation of RTC
- Present results of RTC analyses
- Finalize RTC Analysis Report
- Prepare technical requirements
- Assist in specifications development
- Prepare RTC implementation plan
- Develop budget estimates
- Develop model-based RTC
- Present results of RTC alternative evaluation
- Finalize RTC/Optimization Report
- Prepare Technical Requirements
- Assist in development of specifications for facilities
- Develop RTC/Optimization Implementation Plan
- Develop budget estimate

It is expected that a contractor will be selected and work begun by the second quarter of 1999.

10.6 Elimination / Consolidation of Outfalls

10.6.1 Main & Shurs

Start: 9/4/1998 End: 12/30/2002 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 1998, a TV inspection of the Main Intercepting Sewer showed that there was a significant accumulation of grit throughout the sewer and the Main and Shurs regulating chamber (R-20). The manhole that provides access to the R-20 chamber needed to be reset in order to get the appropriate machinery inside to clean it for further TV inspection. When cleaned, a significant amount of grit was removed from the chamber. Preliminary inspections from Domino lane to the Wissahickon Creek showed significant grit deposition along this reach of the sewer. During 1999, a detailed grit profile will be completed for three reaches of the Main Intercepting Sewer: 1. from Domino Lane to Shurs Lane, 2. Shurs Lane to Wissahickon Creek, and 3. from Wissahickon Creek to Nicetown Lane. Since preliminary inspections have shown significant grit deposition, the first two reaches have been included in a sewer cleaning contract to be funded in fiscal year 2000 beginning July 1, 1999.

A temporary monitor will be installed in 1999 in order to collect level data for both the intercepting sewer and the overflow pipe. The data will be used to track performance of the various inflow reduction measures

employed, as well as to calibrate the computer models of the sewer system. From the inflow source prioritization performed in LTCP project 10.4 I/I Reduction Programs, facility inspections will be undertaken in 1999 to determine the extent of inflow and infiltration in the at suspected sites (creek crossings, siphons, manholes, etc.) tributary to the Upper Schuylkill East Side intercepting sewer. Specific facilities targeted for 1999 inspections include the headwall of the Manayunk Canal 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 also underway. A database was created with all the geographic locations and the hydraulic information that is necessary to perform inspections of summit 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. Documentation of the critical property connections along Main Street in Manayunk will be completed in 1999.

Additional targeted studies are being considered which can 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, 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 of the excess flow in the Main Interceptor and will become part of the prioritized list of inflow reduction programs.

10.6.2 32nd & Thomspon

Start: 4/1/1998 End: 1/31/2000 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 Conrail and MCI who have track and duct bank facilities which coincide with the sewer alignment. Progress in accounting for the Conrail facilities has been made and it is expected that the MCI duct issue will be resolved in 1999 and the contract bid shortly thereafter.

10.6.3 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)

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

Start: 6/1/1997 End: 6/30/2002 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 estimated cost for both phases of the 4000 linear foot sewer reconstruction is $16.0 million.

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

Start: 7/1/2001 End: 7/30/2003 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.

10.7 Solids / Floatables Control Pilot Program

Start: 7/1/2001 End: 7/30/2003 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,

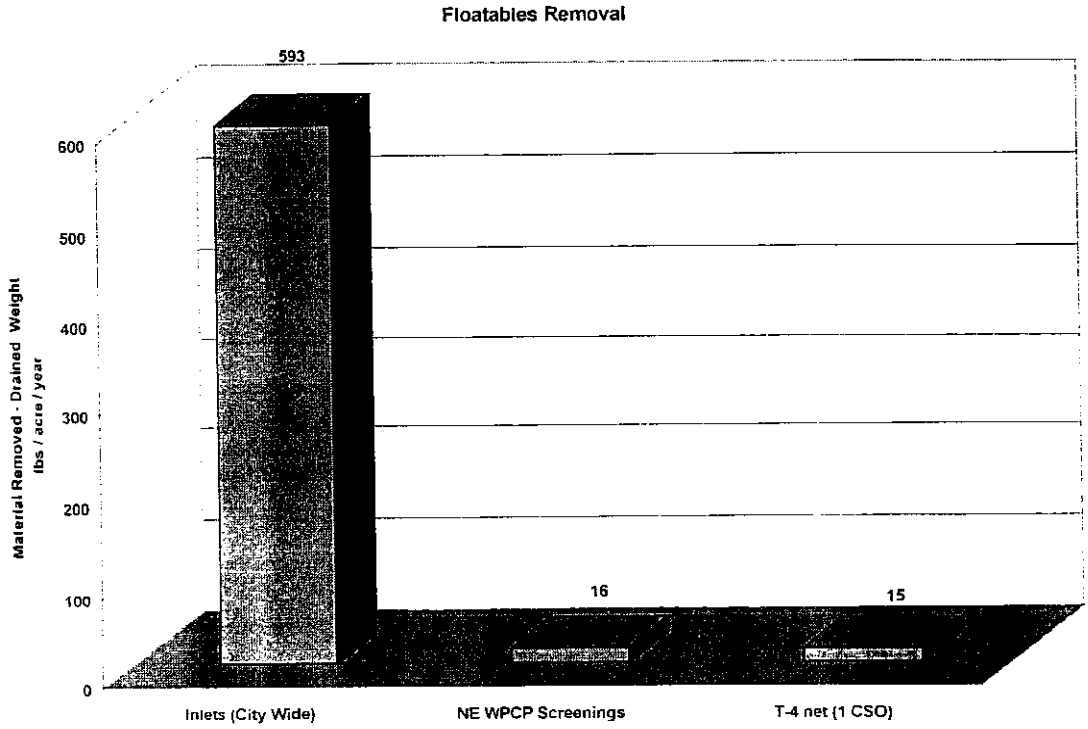
implementation of additional measures will be examined in pilot projects. For example, the outfall at regulator T-4 was recently equipped with a floatables net trap which will capture floatables at this location. This installation will reduce the quantity of discharge at this location as well as provide 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. New York City and Baltimore CSO control programs have deployed a number of vessels of various sizes equipped for removal of floatables. 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 discharges at various locations, increasing the effectiveness of this control measure. In addition, the boat will be a visible control, and will increase the public awareness and education of floatables' impacts.

Status: A pilot netting facility at the T-4 outfall has been collecting debris from CSO's since April of 1997. Since the installation of the netting device, 26 nets have been replaced (13 visits) with a combined total of 1725 pounds of captured debris. Statistics show that the nets are replaced approximately every 44 days with debris disposal averaging 67 pounds per net (drained weight) or 3.02 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 (see figure below), 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.

During 1999 the Department will investigate the institutional arrangements for procuring and operating a floatables skimming vessel. In addition, the Department has been actively collaborating with the Academy of Natural Sciences to explore funding opportunities for establishing an educational vessel on the Schuylkill River. Strategies for implementing a joint use vessel will be explored in 1999 and site visits arranged.



10.8 Watershed Planning

PWD's PHASE III WATERSHED PLANNING INITIATIVE

The uncertainty regarding water quality conditions in the City's tributary creeks & streams dictates that CSO controls beyond technology-based measures implemented during Phases I and II be developed in conjunction with comprehensive watershed planning, that includes the development of TMDLs, wasteload allocations, use-attainability analyses where necessary, and site-specific water quality standards as determined appropriate. The sources, impacts and control of non-CSO pollution sources require a watershed-wide evaluation.

During the last five years there has been national recognition of the need for watershed planning as a basis for water resource management in virtually every sector, from small stormwater management plans for suburban development to comprehensive basin planning for water supply, low flow mitigation and numerous other purposes. In no sector has this need been recognized more clearly than in the area of water quality management, and, particularly in the area of combined sewer overflow control. For CSO planning, this realization is the result of a wide array of factors that uniformly dictate that CSO Long-Term Control Plans be developed in close conjunction with comprehensive watershed planning and analysis.

Overview of Watershed Planning Requirements

This section outlines the elements of the Phase III Watershed Planning Initiative of the City's LTCP. Watershed planning includes various task ranging from monitoring and resources assessment to technology evaluation and public participation. The approach, as applied to each specific watershed is listed on 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

PWD's Anticipated Involvement

Comprehensive watershed planning and management will include a very wide array of skills and resources including water and land use policy, communications, natural sciences, engineering, administration, management, public education, laboratory and analytical services, computer science, mapping and information systems. The PWD realizes that it is beyond the capabilities of any single stakeholder to house and supply all or most of the required elements. Thus, each stakeholder will bring to the process one or more of the capabilities needed by the planning team.

In order to more efficiently target resources and coordinate the watershed initiatives at PWD, the Department is in the process of implementing a reorganization plan. On December 10th, 1998, the Commissioner formed the PWD Office of Watersheds with the following mission: To implement a comprehensive watershed management program, in concert with our regional stakeholders, that minimizes water pollution from all sources in a manner that is based on good science and achieves a sensible balance between rate payer costs and environmental benefit.

The major goals of the new organization will:

- Integrate the Department's Combined Sewer Overflow (CSO), Stormwater (SW), and Source Water Protection (SWP) programs. Implement these programs in a manner which meets regulatory and court-ordered obligations while striving to enhance the health of the region's waterways, the public's perception of its environment and the Department's role in its preservation.

- Develop and implement a watershed-based approach for identifying and addressing water quality concerns, issues, and activities for each of Philadelphia's seven watersheds.

- Foster City and regional partnerships to support watershed program initiatives. Coordinate Departmental activities with environmental organizations, community and watershed groups, regulators, elected officials, other city agencies, and national professional organizations.

- Implement a regulatory affairs initiative which, with support from other Departmental divisions, proactively responds to local, regional, state and federal programs/proposals in the areas of: watershed management, SW, CSO, and SWP regulations and policies, and drinking water quality.

This initiative entails providing staff resources, technology (e.g. computers, GIS, modeling, etc.) and/or funding support for one or more of the various tasks associated with watershed planning, consistent with the Long Term CSO Control Plan, in each of the following planning area watersheds within the PWD service area:

- Wissahickon Creek
- Darby-Cobbs Creek
- Tacony/Frankford Creeks
- Pennypack Creek
- Schuylkill River (non-tidal segment)
- Delaware River and Schuylkill River (tidal segment)
- Poquessing Creek

Progress with respect to each watershed is detailed in the following sections.

10.8.1 Wissahickon Creek Watershed

Start: 5/21/97 End: Status: Ongoing

PWD has been actively participating in the Wissahickon Watershed Partnership (WWP) this past year. Supporting this watershed effort continues to be a major resource effort for PWD. The WWP was first formed in May, 1997 to develop a comprehensive watershed management plan among the many stakeholders and special interest groups involved in the Wissahickon Creek. Over the last couple of years, the WWP has evolved into a cohesive and dynamic organizational structure that holds regular quarterly meetings involving the entire stakeholder membership to identify the issues and develop goals within the watershed. Additionally, the WWP has created various committees, to actually work on completing certain tasks towards meeting these goals. These committees include a Steering Committee, Technical Committee, Education Committee, Regulatory Committee, and a Funding Committee.

The WWP Steering Committee's mission is to provide direction and focus to the WWP including coordinating activities of the Partnership committees and other watershed protection projects to ensure that time and resources are well spent and the issues and concerns of all partners are addressed. PWD is an active member of the WWP Steering Committee. Howard Neukrug and Mike Pickel have represented PWD at various meetings throughout the past year.

The WWP Technical Committee's mission is to develop a common understanding of the technical issues to ensure a timely resolution of technical questions using sound science and decision support, and implementation of innovative management techniques using, whenever possible, expertise and resources within the watershed. PWD personnel that have participated in various Technical Committee meetings include Howard Neukrug, Mike Pickel, Brian Marengo, Laureen Boles, Geoff Brock, Bruce Aptowicz, Chris Crockett, and Cynthia Stavrou.

Additionally, the WWP Technical Committee has formed a few Task Groups. The Data Collection Task Group has been meeting monthly at which PWD has been represented at various times by Geoff Brock, Chris Crockett, and Joe Roman. PWD personnel that attended various Modeling Task Group meetings include Howard Neukrug, Mike Pickel, Brian Marengo, and Bruce Aptowicz. Also, a Flow Monitoring Task Group was formed recently at which Mike Pickel and Cynthia Stavrou attended.

The WWP Education Committee's mission is to identify and implement strategies that support the objectives of the WWP within a lifelong public education context. PWD is represented by Ed Grusheski on this committee.

The WWP Regulatory Committee's mission is to identify and assemble the pertinent regulatory and legislative requirements from the state, counties, and various municipalities within the watershed that can effect the

implementation of the watershed management plan. PWD was represented at the Regulatory Committee meetings by Barry Davis and Mike Pickel over the past year.

Finally, a WWP Funding Committee was formed this year to seek external funding for various watershed management related projects. Howard Neukrug and Mike Pickel represented PWD on this committee as well.

The CSO Program staff has continued to provide GIS map coverages to support the partnership.

10.8.2 Darby-Cobbs Cr. Watershed

Start: 9/18/97 End: Status: Ongoing

PWD has initiated contacts as follows in order to allocate resources to the General and Step 1 activities for the Darby – Cobbs Watershed.

General Activities

- Management and facilitation — Water Resources Associates
- Public Participation and Information — Pennsylvania Environmental Council
- Funding Support — PWD Grant initiatives

Step 1 Preliminary Reconnaissance Survey — Camp Dresser & McKee

- 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

The partnership formation, mapping, and initial data collection tasks were all initiated in calendar 1998. It is expected that the partnership will be expanded, the Step 1 Reconnaissance Survey completed, and the Step 2 Watershed Work Plan and Assessment phase initiated in calendar 1999.

10.8.3 Tacony Frankford Cr. Watershed

Start: TBD End: Ongoing Status: Planned

10.8.4 Pennypack Cr. Watershed

Start: TBD End: Ongoing Status: Planned

10.8.6 Schuylkill River Watershed (Non-tidal)

Start: TBD End: Ongoing Status: Planned

10.8.5 Poquessing Cr. Watershed

Start: TBD End: Ongoing Status: Planned

10.9 Watershed Technology Center

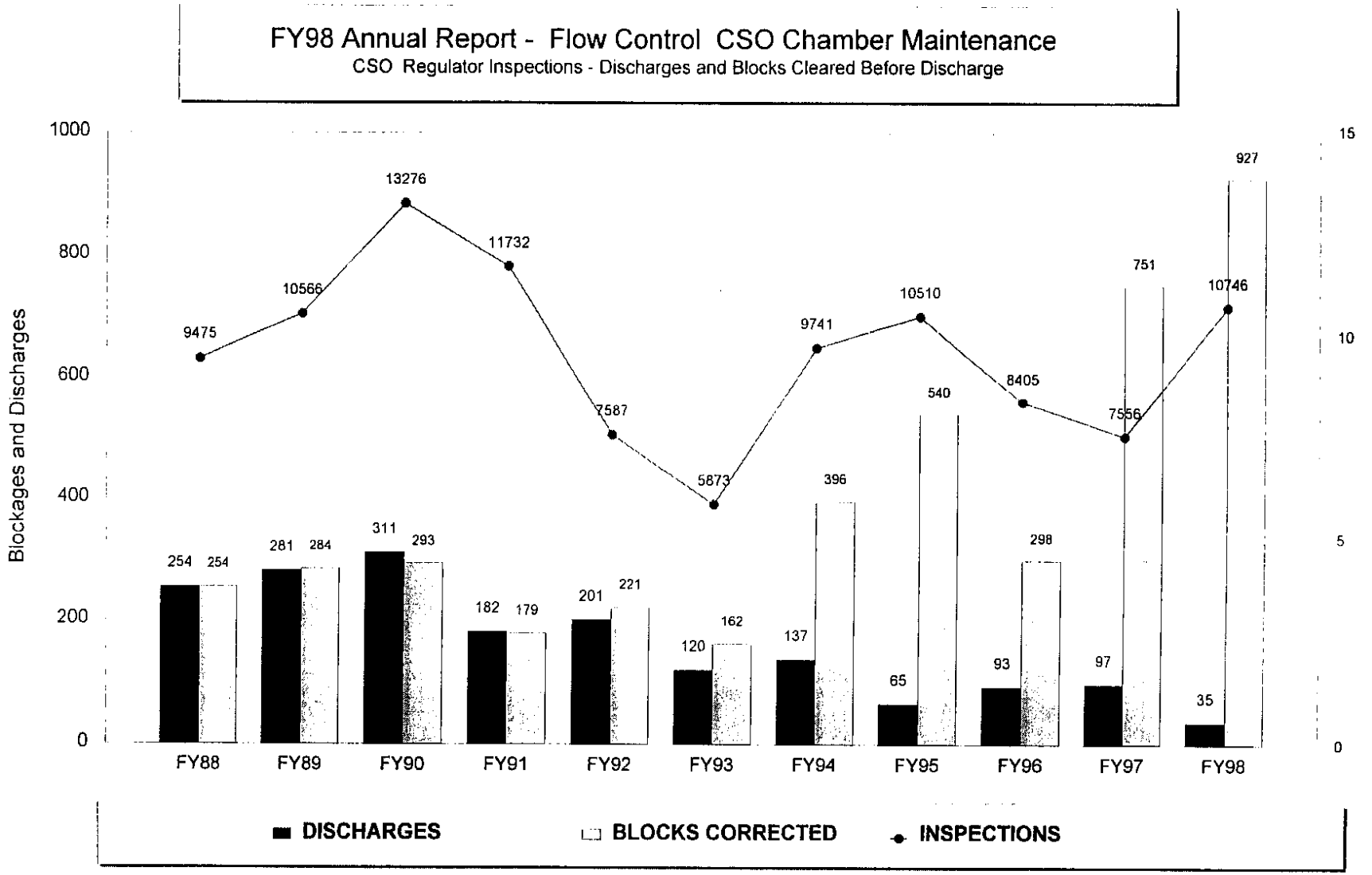
During 1998, PWD managers along with a DEP watershed coordinator visited the Center for Watershed Protection in Maryland in order to begin to evaluate the various institutional models which have been adopted by other watershed centers. In addition, the Department held meetings with various agencies to begin the development of a framework for establishing a watershed technology center. PWD managers met with the Fairmount Park Commission, Delaware County Planning Department, the Delaware River Basin Commission, and the Academy of Natural Sciences.

A grant project proposal to establish a Virtual Watershed Technology Center was submitted pursuant to Section 319 of the Clean Water Act in order to leverage PWD funds to allow for adopting a uniform information management strategy for the stakeholders participating in the 10.8.2 Darby-Cobbs Watershed Initiative. The goal of the proposal was to establish a data product which would integrate the geo-spatial, flow, and water quality data for the watershed for use in several overlapping non-point source management initiatives including but not limited to, Act 167 stormwater management planning, NRCS River Conservation Planning, the Fairmount Park Commission's Natural Lands Restoration and Environmental Education Program, EPA and DEP un-assessed waters and TMDL programs, and PWD's watershed management programs (CSO, SW, and SWP).

The proposal, although not funded, did begin to establish a conceptual framework for achieving the benefits associated with integrated use of watershed planning technology for multiple projects. The Department will seek to expand the number of agencies contributing to the proposal and re-submit for 1999 incremental funding. Also in 1999, the Department will continue to support the production of GIS and other data products to advance the concept the Watershed Technology Center in concert with each of the individual watershed initiatives. In addition, the Department will continue to organize meetings to explore funding opportunities and institutional arrangements with organizations interested in advancing the concept of such a center as defined in the Long Term CSO Control Plan.

Appendix A

Flow Control Unit - CSO Inspection & Maintenance Summaries


FY98 Annual Report - Flow Control CSO Chamber Maintenance
CSO Regulator Inspections - Discharges and Blocks Cleared Before Discharge
Blockages and Discharges
Inspections (thousands)
1000
800
600
400
200
0
15
10
5
0
9475
10566
13276
11732
7587
5873
9741
10510
8405
7556
10746
254 254
281 284
311 293
182 179
201 221
120 162
137 396
65 540
93 298
97 751
35 927
FY88
FY89
FY90
FY91
FY92
FY93
FY94
FY95
FY96
FY97
FY98
DISCHARGES
BLOCKS CORRECTED
INSPECTIONS

PART 1
DRY WEATHER STATUS REPORT

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

Section 1

JANUARY 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	0	0	0	0	0	141
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	0	0	0	0	0	247
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	0	0	0	0	0	146
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	46	28	39	52	42	26	38	0	0	0	0	0	271
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	0	0	0	0	0	356
DISCHARGES	0	0	0	0	0	0	3	0	0	0	0	0	3
SOMERSET - 9 UNITS													
INSPECTIONS	38	20	28	25	24	22	28	0	0	0	0	0	185
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
LOWER DELAWARE LOW LEVEL - 32 UNITS													
INSPECTIONS	160	190	157	144	165	136	128	0	0	0	0	0	1080
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	0	0	0	0	0	642
CHARGES	0	1	0	1	0	0	0	0	0	0	0	0	2
LOWER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	52	55	32	28	27	26	45	0	0	0	0	0	265
DISCHARGES	0	1	1	0	0	0	0	0	0	0	0	0	2
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	68	22	41	52	35	40	40	0	0	0	0	0	298
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	71	59	50	59	56	75	57	0	0	0	0	0	427
DISCHARGES	0	0	0	0	1	0	0	0	0	0	0	0	1
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	42	38	32	49	27	23	37	0	0	0	0	0	248
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	0	0	0	0	0	425
DISCHARGES	0	0	0	1	0	0	2	0	0	0	0	0	3
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	60	21	30	27	44	42	28	0	0	0	0	0	252
DISCHARGES	0	0	0	0	0	1	1	0	0	0	0	0	2
RELIEF SEWERS - 27 UNITS													
INSPECTIONS	55	60	78	68	54	47	48	0	0	0	0	0	410
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
200 REGULATOR UNITS													
TOTALS / MONTH													Totals
INSPECTIONS	926	775	792	807	697	679	717	0	0	0	0	0	5393
CHARGES	0	3	2	2	2	4	7	0	0	0	0	0	20
DISC / 100 INSPECTIONS	0.0	0.4	0.3	0.2	0.3	0.6	1.0						

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
NORTH RUN UPPER PENNYPACK												5 UNITS			
TOTAL	21	25	25	17	13	23	17	0	0	0	0	0	141	4.0	7.6
P01	4	4	5	3	2	5	3						26	3.7	8.2
[illegible]	4	4	5	3	3	3	4						26	3.7	8.2
P03	5	5	5	5	3	4	4						31	4.4	6.9
P04	5	5	5	3	3	8	4						33	4.7	6.4
P05	3	7	5	3	2	3	2						25	3.6	8.5
UPPER DELAWARE LOW LEVEL												12 UNITS			
TOTAL	28	37	44	53	26	33	26	0	0	0	0	0	247	2.9	10.9
D02	4	7	4	6	2	2	2						27	3.9	7.9
D03	6	4	5	5	2	4	2						28	4.0	7.6
D04	4	4	5	5	2	3	2						25	3.6	8.5
D05	1	2	3	5	2	4	2						19	2.7	11.2
D06	4	4	4	5	2	4	2						25	3.6	8.5
D07	2	3	3	6	3	4	3						24	3.4	8.9
D08	1	3	3	6	3	2	1						19	2.7	11.2
D09	1	2	3	4	2	2	1						15	2.1	14.2
D11	1	2	3	3	2	2	3						16	2.3	13.3
D12	1	2	3	2	2	2	2						14	2.0	15.2
D13	2	2	4	3	2	2	2						17	2.4	12.5
D15	1	2	4	3	2	2	4						18	2.6	11.8
LOWER FRANKFORD CREEK												6 UNITS			
TOTAL	30	21	22	26	18	15	14	0	0	0	0	0	146	3.5	9.4
F13	7	6	5	5	5	3	2						33	4.7	6.4
F14	6	4	5	5	5	4	2						31	4.4	6.9
F21	3	2	3	3	2	2	1						16	2.3	13.3
F23	6	3	3	5	2	2	6						27	3.9	7.9
F24	5	3	3	4	2	2	2						21	3.0	10.1
F25	3	3	3	4	2	2	1						18	2.6	11.8
LOWER FRANKFORD LOW LEVEL												10 UNITS			
TAL	46	28	39	52	42	26	38	0	0	0	0	0	271	3.9	9.0
[illegible]	3	2	3	3	2	1	3						17	2.4	12.5
F04	4	2	3	3	2	1	2						17	2.4	12.5
F05	3	2	4	3	2	1	2						17	2.4	12.5
F06	5	3	5	7	7	3	6						36	5.1	5.9
F07	5	5	6	7	7	3	4						37	5.3	5.8
F08	5	3	3	5	6	3	5						30	4.3	7.1
F09	6	3	5	8	7	4	6						39	5.6	5.5
F10	7	4	4	10	6	4	6						41	5.9	5.2
F11	3	2	3	2	2	3	2						17	2.4	12.5
F12	5	2	3	4	1	3	2						20	2.9	10.6
FRANKFORD HIGH LEVEL												14 UNITS			
TOTAL	65	49	48	54	42	39	59	0	0	0	0	0	356	3.6	9.0
T01	5	4	5	2	2	2	2						22	3.1	9.7
T03	6	2	4	3	2	2	2						21	3.0	10.1
T04	6	5	4	5	8	4	5						37	5.3	5.8
T05	5	2	3	2	4	3	3						22	3.1	9.7
T06	5	3	3	3	4	2	3						23	3.3	9.3
T07	5	3	3	6	3	2	3						25	3.6	8.5
T08	4	3	2	3	2	3	4						21	3.0	10.1
T09	4	3	4	4	2	2	4						23	3.3	9.3
T10	4	5	5	6	3	7	14						44	6.3	4.8
T11	7	5	6	7	4	2	6						37	5.3	5.8
T12	3	4	2	2	1	2	4						18	2.6	11.8
T13	2	4	2	3	2	2	3						18	2.6	11.8
T14	4	3	3	4	3	3	3						23	3.3	9.3
T15	5	3	2	4	2	3	3						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	38	20	28	25	24	22	28	0	0	0	0	0	185	2.9	10.8
D17	3	2	3	2	4	2	3						19	2.7	11.2
D18	3	2	3	3	3	3	3						20	2.9	10.6
D19	4	2	3	2	4	2	2						19	2.7	11.2
D20	4	2	4	4	3	3	2						22	3.1	9.7
D21	3	1	3	2	3	2	4						18	2.6	11.8
D22	3	1	3	4	3	2	3						19	2.7	11.2
D23	5	2	3	2	1	3	2						18	2.6	11.8
D24	6	2	2	2	1	3	4						20	2.9	10.6
D25	7	6	4	4	2	2	5						30	4.3	7.1
LOWER DELAWARE LOW LEVEL												32 UNITS			
TOTAL	160	190	157	144	165	136	128	0	0	0	0	0	1080	4.8	6.8
D37	4	6	6	7	9	5	6						43	6.1	4.9
D38	4	6	4	5	7	8	7						39	5.6	5.5
D39	4	7	3	4	3	5	2						28	4.0	7.6
D40	4	5	3	3	3	5	3						26	3.7	8.2
D41	4	5	3	4	3	5	2						26	3.7	8.2
D42	5	6	4	5	9	4	6						39	5.6	5.5
D43	5	6	3	5	3	3	4						29	4.1	7.3
D44	4	7	6	4	5	6	7						39	5.6	5.5
D45	9	8	13	11	11	6	8						66	9.4	3.2
D46	5	5	2	3	3	3	3						24	3.4	8.9
D47	4	6	2	3	3	2	3						23	3.3	9.3
D48	3	6	2	3	3	2	6						25	3.6	8.5
D49	6	6	6	4	5	3	2						32	4.6	6.7
D50	6	6	7	6	10	3	2						40	5.7	5.3
D51	5	7	3	3	6	4	2						30	4.3	7.1
D52	4	5	3	4	4	5	2						27	3.9	7.9
D53	4	7	3	4	3	3	2						26	3.7	8.2
D54	4	5	4	4	5	3	2						27	3.9	7.9
D58	5	6	4	5	5	2	2						29	4.1	7.3
D61	4	6	5	3	4	3	2						27	3.9	7.9
D62	4	5	5	4	5	3	2						28	4.0	7.6
D63	5	4	6	7	9	4	4						39	5.6	5.5
D64	4	7	7	5	8	5	7						43	6.1	4.9
D65	5	4	7	2	5	4	3						30	4.3	7.1
D66	6	4	5	2	4	9	3						33	4.7	6.4
D67	6	5	4	2	2	3	3						25	3.6	8.5
D68	4	5	4	7	5	6	9						40	5.7	5.3
D69	6	5	5	5	3	4	4						32	4.6	6.7
D70	10	11	11	11	15	10	9						77	11.0	2.8
D71	4	6	6	3	2	3	3						27	3.9	7.9
D72	8	6	6	3	2	4	3						32	4.6	6.7
D73	5	7	5	3	1	3	5						29	4.1	7.3
TOTAL	388	370	363	371	330	294	310	0	0	0	0	0	2426		
I/D/C	6.4	6.1	6.0	6.1	5.4	4.8	5.1	0.0	0.0	0.0	0.0	0.0			

10 TOTAL DISCHARGES FOR PRIOR YEAR IN NE & SE DISTRICTS

1.4 AVERAGE DISCHARGES PER MONTH

12.0 AVER. DAYS BEFORE RETURNING TO SITE

5.7 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	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	0	0	0
F13													0
F14													0
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	0	0	0	0	3
T01													0
T03													0
T04													0
T05													0
T06													0
T07													0
T08													0
T09													0
T10							3						3
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	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												**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	0	0	0	0	10

	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	0	0	0
LFLL	0	0	0	0	1	0	0	0	0	0	0	0	1
FHL	0	0	0	0	0	0	1	0	0	0	0	0	1
SLL	0	0	0	0	0	0	0	0	0	0	0	0	0
LDLL	0	1	1	0	0	1	1	0	0	0	0	0	4

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
CENTRAL SCHUYLKILL EAST SIDE												**18 UNITS**			
TOTAL	101	89	96	96	82	69	109	0	0	0	0	0	642	5.1	6.4
S05	9	5	7	8	4	4	7						42	6.0	5.1
[illegible]	8	5	8	5	4	4	6						40	5.7	5.3
[illegible]07	8	8	8	8	9	6	9						56	8.0	3.8
S08	7	6	8	4	4	4	5						38	5.4	5.6
S09	7	5	6	5	5	4	8						40	5.7	5.3
S10	7	6	5	5	4	4	6						37	5.3	5.8
S12	7	6	7	4	3	5	6						38	5.4	5.6
S12A	7	6	7	5	4	5	8						40	5.7	5.3
S13	7	6	6	4	4	4	6						37	5.3	5.8
S15	8	6	6	9	12	6	8						55	7.9	3.9
S16	4	4	6	5	3	4	6						32	4.6	6.7
S17	3	5	4	5	3	3	6						29	4.1	7.3
S18	3	5	3	6	3	3	5						28	4.0	7.6
S19	3	4	4	5	5	4	6						31	4.4	6.9
S21	4	3	3	6	7	3	5						31	4.4	6.9
S23	3	3	3	5	3	2	4						23	3.3	9.3
S25	3	3	2	5	3	2	5						23	3.3	9.3
S26	3	3	3	4	2	2	5						22	3.1	9.7
LOWER SCHUYLKILL EAST SIDE												**9 UNITS**			
TOTAL	52	55	32	28	27	26	45	0	0	0	0	0	265	4.2	7.4
S31	7	10	4	7	3	3	7						41	5.9	5.2
S35	7	8	3	5	3	3	5						34	4.9	6.3
S36	7	8	3	4	3	3	5						33	4.7	6.4
S36A	6	6	3	4	3	3	5						30	4.3	7.1
S37	5	5	3	2	3	3	4						25	3.6	8.5
S42	5	4	5	1	3	3	7						28	4.0	7.6
S42A	5	4	4	2	3	3	4						25	3.6	8.5
S44	5	5	3	2	3	3	4						25	3.6	8.5
[illegible]6	5	5	4	1	3	2	4						24	3.4	8.9
CENTRAL SCHUYLKILL WEST												**9 UNITS**			
TOTAL	58	22	41	52	35	40	40	0	0	0	0	0	298	4.7	6.5
S01	7	3	4	6	4	4	6						34	4.9	6.3
S02	7	3	4	6	4	5	6						35	5.0	6.1
S03	7	3	4	6	4	4	4						32	4.6	6.7
S04	8	3	6	7	5	5	6						40	5.7	5.3
S11	7	2	5	7	3	4	4						32	4.6	6.7
S14	8	2	5	5	4	4	3						31	4.4	6.9
S20	8	2	3	5	3	4	3						28	4.0	7.6
S22	8	2	5	5	4	5	4						33	4.7	6.4
S24	8	2	5	5	4	5	4						33	4.7	6.4
SOUTHWEST MAIN GRAVITY												**10 UNITS**			
TOTAL	71	59	50	59	56	75	57	0	0	0	0	0	427	6.1	7.3
S27	9	4	3	3	3	5	3						30	4.3	7.1
S28	9	3	4	3	3	5	4						31	4.4	6.9
S30	5	3	3	2	3	5	4						25	3.6	9.5
S34	4	3	4	2	3	8	4						26	3.7	8.2
S39	3	3	3	2	3	5	3						22	3.1	9.7
S40	4	4	3	2	3	6	4						26	3.7	8.2
S43	3	3	3	2	2	2	3						18	2.6	11.8
S47	4	3	5	3	3	2	3						23	3.3	9.3
S50	17	18	13	22	17	20	15						122	17.4	1.7
S51	13	15	9	18	16	19	14						104	14.9	2.0
LOWER SCHUYLKILL WEST SIDE												**4 UNITS**			
TOTAL	42	38	32	49	27	23	37	0	0	0	0	0	248	8.9	3.6
S32	13	11	8	15	11	7	11						76	10.9	2.8
[illegible]33	11	11	8	15	10	7	11						73	10.4	2.9
[illegible]	10	8	9	9	3	5	8						52	7.4	4.1
S45	8	8	7	10	3	4	7						47	6.7	4.5

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
COBBS CREEK HIGH LEVEL												**23 UNITS**			
TOTAL	89	61	70	57	42	63	43	0	0	0	0	0	425	2.6	11.6
C01	5	2	3	2	2	4	2						20	2.9	10.6
C02	4	2	3	3	2	3	2						19	2.7	11.2
C04	4	2	3	2	2	3	2						18	2.6	11.8
C04A	3	2	3	2	2	3	2						17	2.4	12.5
C05	4	2	3	2	2	3	2						18	2.6	11.8
C06	4	2	3	2	2	3	2						18	2.6	11.8
C07	3	3	3	2	2	3	2						18	2.6	11.8
C09	3	3	3	4	2	3	2						20	2.9	10.6
C10	4	3	3	5	1	3	2						21	3.0	10.1
C11	3	4	3	2	1	3	2						18	2.6	11.8
C12	3	2	3	2	1	3	2						16	2.3	13.3
C13	3	2	3	1	1	3	2						15	2.1	14.2
C14	4	4	3	2	2	3	1						19	2.7	11.2
C15	3	3	3	2	2	3	1						17	2.4	12.5
C16	3	3	3	2	2	3	2						18	2.6	11.8
C17	3	2	3	2	2	3	1						16	2.3	13.3
C31	6	3	4	3	2	2	2						22	3.1	9.7
C32	4	3	2	2	2	1	2						16	2.3	13.3
C33	5	3	3	3	2	2	2						20	2.9	10.6
C34	5	3	3	3	2	2	2						20	2.9	10.6
C35	4	3	3	3	2	3	2						20	2.9	10.6
C36	5	2	4	3	2	2	2						20	2.9	10.6
C37	4	3	3	3	2	2	2						19	2.7	11.2
COBBS CREEK LOW LEVEL												**13 UNITS**			
TOTAL	60	21	30	27	44	42	28	0	0	0	0	0	252	2.8	12.1
C18	5	1	3	2	2	3	2						18	2.6	11.8
C19	7	4	3	5	8	4	4						35	5.0	6.1
C20	5	1	2	3	2	3	4						20	2.9	10.6
C21	5	1	2	2	2	3	2						17	2.4	12.5
C22	3	1	2	2	2	3	1						14	2.0	15.2
C23	6	1	2	1	2	3	1						16	2.3	13.3
C24	5	4	3	4	8	4	3						31	4.4	6.9
C25	4	1	3	1	2	3	1						15	2.1	14.2
C26	4	2	2	1	2	3	1						15	2.1	14.2
C27	4	2	2	1	2	3	1						15	2.1	14.2
C28A	5	1	2	3	8	4	5						28	4.0	7.6
C29	4	1	2	1	2	3	1						14	2.0	15.2
C30	3	1	2	1	2	3	2						14	2.0	15.2
TOTAL	483	345	351	368	313	338	359	0	0	0	0	0	2557		
I/D/C	5.3	3.8	3.8	4.0	3.4	3.7	3.9	0.0	0.0	0.0	0.0	0.0			

10 TOTAL DISCHARGES FOR PRIOR YEAR IN SW DISTRICT

1.4 AVERAGE DISCHARGES PER MONTH

9.4 AVER. DAYS BEFORE RETURNING TO SITE

4.0 AVER. INSPECTIONS PER DAY PER CREW

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

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 UNITS													
TOTAL	0	1	0	1	0	0	0	0	0	0	0	0	2
S05		1		1									2
													0
S07													0
S08													0
S09													0
S10													0
S12													0
S12A													0
S13													0
S15													0
S16													0
S17													0
S18													0
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	0	0	0	2
S31		1	1										2
S35													0
S36													0
S36A													0
S37													0
S42													0
S42A													0
S44													0
													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
SOUTHWEST MAIN GRAVITY 10 UNITS													
TOTAL	0	0	0	0	1	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	0	0	0	0	0	0	0	0	0	0	0	0	0
2													0
3													0
S38													0
S45													0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL 23 UNITS													
TOTAL	0	0	0	1	0	0	2	0	0	0	0	0	3
C01													0
C02													0
C04													0
C04A													0
C05													0
C06													0
C07							1						1
C09				1			1						2
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	0	0	0	0	2
C18													0
C19						1							1
C20							1						1
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	0	0	0	0	0	10

NO OF UNITS IN DISTRICT BLOCKED

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

JANUARY 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						17
	3	2	3	3	2	2	2						17
	3	2	3	3	2	2	2						17
R4	3	2	3	2	2	1	2						15
R5	3	2	3	2	2	1	2						15
R6	3	2	3	2	2	1	2						15
	MAIN RELIEF SEWER							7 UNITS					
R7	3	2	3	3	2	2	2						17
R8	3	2	3	3	2	2	2						17
R9	3	2	3	3	2	2	2						17
R10	3	2	3	3	2	2	2						17
R11	3	2	3	3	2	2	2						17
R11A				1	2	2	2						7
R12	3	2	3	3	2	3	2						18
	WAKLING RELIEF SEWER							2 UNITS					
R13	1	3	3	3	2	2	2						16
R14	1	3	3	3	2	2	2						16
	ROCK RUN STORM FLOOD RELIEF SEWER							1 UNITS					
R15	1	3	3	2	2	1	1						13
	OREGON AVE RELIEF SEWER							2 UNITS					
R16	1	1	3	3	3	2	2						15
R17	1	1	3	3	3	3	2						16
	FRANKFORD HIGH LEVEL RELIEF SEWER							1 UNITS					
R18	1	3	3	3	2	1	2						15
	32ND ST RELIEF SEWER							1 UNITS					
R19	1	3	3	2	2	1	1						13
	MAIN STREET RELIEF SEWER							1 UNITS					
0	1	2	3	2	2	1	1						12
	SOMERSET SYSTEM DIVERSION CHAMBER							1 UNITS					
R21	1	3	3	2	2	1	2						14
	TEMPORARY REGULATOR CHAMBER							2 UNITS					
R22	1	3	3	2	DISCONTINUED: PROBLEM CORRECTED								9
R23	1	5	3	2	2	2	1						16
	ARCH ST RELIEF SEWER							1 UNITS					
R24	3	1	3	2	2	2	2						15
	16TH & SNYDER							1 UNITS					
R25	4	3	3	2	2	2	2						18
	GRANT & STATE RD. RELIEF							1 UNITS					
R26	1	2	3	3	2	3	2						16
TOTAL	55	60	78	68	54	47	48	0	0	0	0	0	410
AVER	2.0	2.2	2.9	2.5	2.0	1.7	1.8	0.0	0.0	0.0	0.0	0.0	2.2

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													0
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	0	0	0	0	0	0
UNITS	0	0	0	0	0	0	0	0	0	0	0	0	

JANUARY 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						11
	SOMERSET GRIT LEVEL												
	3	4	2	4	2	2	1						18
	(H-20) 70th & Dicks												
	3	1	2	2	2	2	2						14
	CCLL CONTROL PIPE @ ISLAND AVE.												
	2	2	3	3	3	2	2						17

JANUARY 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						18
	UPPER DARBY OVERFLOW												
	3	3	3	2	2	3	2						18
	Sandy Run Creek Regulator												
	3	2	10	20	3	21	14						73
	O & ERIE diversion gate												
	0	1	0	0	2	1	0						4

PART 1
DRY WEATHER STATUS REPORT

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

Section 1

JUNE 1998

COLLECTOR	Jul-97	Aug-97	Sep-97	Oct-97	Nov-97	Dec-97	Jan-98	Feb-98	Mar-98	Apr-98	May-98	Jun-98	Totals
UPPER PENNYPACK - 5 UNITS													
INSPECTIONS	23	15	35	24	30	38	28	40	31	19	13	21	317
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	1	1
UPPER DELAWARE LOW LEVEL - 12 UNITS													
INSPECTIONS	60	33	30	44	63	70	79	65	66	64	33	36	643
DISCHARGES	1	0	0	0	0	0	0	0	0	0	0	0	1
LOWER FRANKFORD CREEK - 6 UNITS													
INSPECTIONS	18	6	18	12	24	37	35	32	28	42	29	35	316
DISCHARGES	0	0	0	0	0	0	0	0	1	0	0	0	1
LOWER FRANKFORD LOW LEVEL - 10 UNITS													
INSPECTIONS	21	23	36	26	42	61	58	59	58	70	27	43	524
DISCHARGES	0	1	0	0	0	0	0	1	0	0	0	0	2
FRANKFORD HIGH LEVEL - 14 UNITS													
INSPECTIONS	51	32	47	50	53	84	108	93	79	59	44	49	749
DISCHARGES	2	0	1	0	0	0	2	0	2	1	1	0	9
SOMERSET - 9 UNITS													
INSPECTIONS	29	20	27	26	48	76	59	55	41	33	18	35	467
DISCHARGES	2	0	0	0	0	0	0	0	0	0	0	0	2
LOWER DELAWARE LOW LEVEL - 32 UNITS													
INSPECTIONS	140	99	135	157	146	212	178	165	144	130	119	153	1778
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL SCHUYLKILL EAST - 18 UNITS													
INSPECTIONS	67	85	83	89	88	102	143	101	154	78	104	163	1257
'SCHARGES	0	0	2	0	1	0	0	0	0	0	0	0	3
)WER SCHUYLKILL EAST - 9 UNITS													
INSPECTIONS	21	31	46	21	31	77	41	36	36	43	58	62	503
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL SCHUYLKILL WEST - 9 UNITS													
INSPECTIONS	27	46	43	42	42	34	54	34	49	32	53	58	514
DISCHARGES	0	0	0	0	1	0	0	0	0	0	0	0	1
SOUTHWEST MAIN GRAVITY - 10 UNITS													
INSPECTIONS	30	45	56	50	54	85	92	53	55	63	82	84	749
DISCHARGES	0	0	0	0	1	0	0	0	0	0	0	1	2
LOWER SCHUYLKILL WEST - 4 UNITS													
INSPECTIONS	18	26	28	17	41	55	38	47	29	31	41	53	424
DISCHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
COBBS CREEK HIGH LEVEL - 23 UNITS													
INSPECTIONS	46	26	45	89	50	155	134	191	117	69	57	119	1098
DISCHARGES	2	0	0	0	0	0	0	0	0	1	4	0	7
COBBS CREEK LOW LEVEL - 13 UNITS													
INSPECTIONS	33	26	23	58	17	73	85	87	72	54	60	55	643
DISCHARGES	1	0	0	0	1	1	0	0	0	0	0	0	3
RELIEF SEWERS - 25 UNITS													
INSPECTIONS	50	34	28	56	70	77	78	101	78	62	64	66	764
DISCHARGES	0	0	1	0	0	0	1	0	0	0	1	0	3
199 CSO UNITS TOTALS / MONTH													Totals
INSPECTIONS	634	547	680	761	799	1236	1210	1159	1037	849	802	1032	10746
'ISCHARGES	8	1	4	0	4	1	3	1	3	2	6	2	35
,C / 100 INSPECTIONS	1.3	0.2	0.6	0.0	0.5	0.1	0.2	0.1	0.3	0.2	0.7	0.2	

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
UPPER PENNYPACK												**5 UNITS**			
TOTAL	23	15	35	24	30	38	28	40	31	19	13	21	317	5.3	5.8
P01	5	3	6	5	6	7	4	8	6	4	3	4	61	5.1	6.0
2	4	3	8	5	6	8	4	8	6	4	3	3	62	5.2	5.9
J3	6	4	7	5	6	7	7	8	7	4	3	4	68	5.7	5.4
P04	5	2	8	5	6	8	7	8	6	4	3	7	69	5.8	5.3
P05	3	3	6	4	6	8	6	8	6	3	1	3	57	4.8	6.4
UPPER DELAWARE LOW LEVEL												**12 UNITS**			
TOTAL	60	33	30	44	63	70	79	65	66	64	33	36	643	4.5	7.1
D02	4	2	3	4	4	7	6	4	7	4	2	2	49	4.1	7.4
D03	5	3	4	6	4	7	7	5	6	5	5	3	60	5.0	6.1
D04	4	6	6	6	8	8	8	8	8	6	5	4	77	6.4	4.7
D05	7	3	1	4	5	7	6	4	8	5	2	2	54	4.5	6.8
D06	8	3	2	4	7	7	8	9	8	5	4	4	69	5.8	5.3
D07	5	4	2	3	5	5	7	5	5	6	2	3	52	4.3	7.0
D08	7	2	2	4	5	5	9	9	6	6	2	2	59	4.9	6.2
D09	3	2	3	3	5	6	5	4	4	5	2	2	44	3.7	8.3
D11	6	2	2	3	5	7	7	4	4	5	3	2	50	4.2	7.3
D12	5	2	1	3	5	3	7	5	5	6	2	4	48	4.0	7.6
D13	3	1	1	2	5	1	3	3	2	5	2	3	31	2.6	11.8
D15	3	3	3	2	5	7	6	5	3	6	2	5	50	4.2	7.3
LOWER FRANKFORD CREEK												**6 UNITS**			
TOTAL	18	6	18	12	24	37	35	32	28	42	29	35	316	4.4	7.1
F13	3	1	4	2	4	7	5	5	4	7	10	6	58	4.8	6.3
F14	3	1	4	2	4	7	6	4	6	7	7	5	56	4.7	6.5
F21	3	1	2	2	4	4	4	3	2	8	3	4	40	3.3	9.1
F23	3	1	4	2	4	7	7	8	6	7	3	8	60	5.0	6.1
F24	3	1	3	2	4	7	7	6	6	7	3	7	56	4.7	6.5
F25	3	1	1	2	4	5	6	6	4	6	3	5	46	3.8	7.9
LOWER FRANKFORD LOW LEVEL												**10 UNITS**			
TOTAL	21	23	36	26	42	61	58	59	58	70	27	43	524	4.4	7.1
3	3	2	1	3	6	8	6	5	7	8	4	3	56	4.7	6.5
J4	3	2	1	3	5	6	6	6	6	8	3	3	52	4.3	7.0
F05	2	1	2	3	4	5	5	4	7	9	2	0	45	3.8	8.1
F06	2	4	5	2	4	5	6	8	7	8	4	8	63	5.3	5.8
F07	2	3	4	2	2	6	6	7	8	7	4	7	58	4.8	6.3
F08	2	3	4	2	5	7	7	6	6	6	3	4	55	4.6	6.6
F09	2	2	6	3	3	8	6	6	6	6	3	5	56	4.7	6.5
F10	2	2	4	3	5	7	6	7	5	6	1	7	55	4.6	6.6
F11	1	2	4	3	3	2	4	5	2	6	1	3	36	3.0	10.1
F12	2	2	5	2	5	6	6	5	4	6	2	3	48	4.0	7.6
FRANKFORD HIGH LEVEL												**14 UNITS**			
TOTAL	51	32	47	50	53	84	108	93	79	59	44	49	749	4.5	6.9
T01	4	3	1	4	5	5	6	5	6	5	3	5	52	4.3	7.0
T03	4	3	4	3	3	6	7	3	5	4	3	4	49	4.1	7.4
T04	5	4	3	4	6	7	7	6	5	4	3	5	59	4.9	6.2
T05	3	1	5	3	3	7	7	5	4	4	3	3	49	4.1	7.4
T06	3	1	4	4	4	7	7	6	5	4	4	5	54	4.5	6.8
T07	4	2	4	3	3	8	7	6	7	4	3	2	53	4.4	6.9
T08	4	1	3	3	4	8	6	7	4	4	3	2	49	4.1	7.4
T09	4	3	3	3	3	6	7	8	4	3	4	2	50	4.2	7.3
T10	2	3	4	3	3	4	8	7	6	4	3	3	50	4.2	7.3
T11	5	3	5	4	3	5	10	9	11	5	4	5	69	5.8	5.3
T12	3	2	3	3	5	6	9	8	7	5	2	4	57	4.8	6.4
T13	4	2	1	5	3	2	12	7	5	4	3	4	52	4.3	7.0
T14	3	2	4	5	5	6	8	8	6	4	4	3	58	4.8	6.3
T15	3	2	3	3	3	7	7	7	4	5	2	2	48	4.0	7.6

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
SOMERSET LOW LEVEL												**9 UNITS**			
TOTAL	29	20	27	26	48	76	59	55	41	33	18	35	467	4.3	7.3
D17	3	1	2	4	5	9	8	6	6	3	2	3	52	4.3	7.0
D18	3	1	2	5	5	4	9	5	3	3	2	3	45	3.8	8.1
D19	3	1	3	3	5	11	7	6	4	4	2	5	54	4.5	6.8
D20	6	3	4	4	5	11	7	8	5	5	4	5	67	5.6	5.4
D21	4	4	4	3	4	10	6	7	5	5	2	5	59	4.9	6.2
D22	3	2	3	1	4	9	6	6	5	3	2	4	48	4.0	7.6
D23	2	2	2	2	6	3	2	4	3	3	1	2	32	2.7	11.4
D24	2	2	3	2	5	8	6	6	4	3	1	3	46	3.8	7.9
D25	3	4	4	2	8	11	8	7	6	4	2	5	64	5.3	5.7
LOWER DELAWARE LOW LEVEL												**32 UNITS**			
TOTAL	140	99	135	157	146	212	178	165	144	130	119	153	1778	4.6	6.7
D37	6	3	6	5	7	10	7	6	7	4	3	5	69	5.8	5.3
D38	6	1	4	4	5	8	8	6	7	3	3	5	60	5.0	6.1
D39	7	2	4	4	5	8	7	5	5	3	3	4	57	4.8	6.4
D40	6	2	4	4	4	8	7	7	6	3	3	4	58	4.8	6.3
D41	6	2	3	5	5	8	6	6	6	3	3	4	57	4.8	6.4
D42	6	2	4	5	2	3	5	2	4	3	4	4	44	3.7	8.3
D43	6	2	4	5	2	3	6	2	4	3	5	4	46	3.8	7.9
D44	6	2	4	6	3	7	7	4	8	3	4	5	59	4.9	6.2
D45	6	2	4	7	6	10	6	6	8	3	4	6	70	5.8	5.2
D46	5	1	5	6	4	9	5	5	6	3	3	5	57	4.8	6.4
D47	4	1	5	6	6	9	6	4	6	3	2	5	57	4.8	6.4
D48	4	2	3	8	5	9	6	3	4	3	3	5	55	4.6	6.6
D49	4	2	5	9	5	6	3	4	3	5	3	6	55	4.6	6.6
D50	4	2	5	6	5	5	3	6	4	4	3	9	56	4.7	6.5
D51	4	3	6	5	3	8	8	15	8	4	4	5	73	6.1	5.0
D52	3	6	7	6	4	5	4	3	2	4	3	6	53	4.4	6.9
D53	4	3	5	4	5	12	7	7	4	5	3	5	64	5.3	5.7
D54	3	4	5	4	5	3	5	5	2	3	3	3	45	3.8	8.1
D58	2	3	4	5	5	2	3	4	3	3	3	3	40	3.3	9.1
D61	2	5	4	5	8	9	7	6	5	4	3	4	62	5.2	5.9
D62	2	4	3	4	5	9	7	5	3	4	3	3	52	4.3	7.0
D63	3	3	4	4	5	8	6	6	5	5	2	4	55	4.6	6.6
D64	3	5	4	4	4	9	6	6	5	5	3	5	59	4.9	6.2
D65	3	4	6	4	3	2	5	4	3	6	4	7	51	4.3	7.2
D66	4	3	4	6	5	8	7	6	5	4	2	4	58	4.8	6.3
D67	4	5	2	4	6	4	5	4	2	5	4	3	48	4.0	7.6
D68	4	4	3	3	5	7	7	6	4	6	5	5	59	4.9	6.2
D69	5	4	2	3	3	3	3	3	3	5	7	5	46	3.8	7.9
D70	6	4	3	4	4	4	3	4	1	5	6	4	48	4.0	7.6
D71	4	4	4	3	4	4	3	5	3	5	7	5	51	4.3	7.2
D72	4	4	4	5	5	3	4	4	3	6	7	6	55	4.6	6.6
D73	4	5	5	4	3	9	6	6	5	5	4	3	59	4.9	6.2
TOTAL	342	228	328	339	406	578	545	509	447	417	283	372	4794		
I/D/C	5.6	3.7	5.4	5.8	6.7	9.5	9.0	8.4	7.3	6.9	4.7	6.1			

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

I/D =INSPECTIONS PER DISCHARGE

16 TOTAL DISCHARGES FOR PRIOR YEAR IN NE & SE DISTRICTS

1.3 AVERAGE DISCHARGES PER MONTH

13.1 AVER DAYS BEFORE RETURNING TO SITE

6.6 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	0	0	0	0	0	0	0	0	0	0	0	1	1
P01													0
2													0
P03													0
P04												1	1
P05													0
UPPER DELAWARE LOW LEVEL										**12 UNITS**			
TOTAL	1	0	0	0	0	0	0	0	0	0	0	0	1
D02													0
D03													0
D04													0
D05													0
D06													0
D07													0
D08													0
D09													0
D11													0
D12	1												1
D13													0
D15													0
LOWER FRANKFORD CREEK										**6 UNITS**			
TOTAL	0	0	0	0	0	0	0	0	1	0	0	0	1
F13													0
F14									1				1
F21													0
F23													0
F24													0
F25													0
LOWER FRANKFORD LOW LEVEL										**10 UNITS**			
TAL	0	1	0	0	0	0	0	1	0	0	0	0	2
F03													0
F04													0
F05													0
F06													0
F07													0
F08													0
F09													0
F10													0
F11		1						1					2
F12													0
FRANKFORD HIGH LEVEL										**14 UNITS**			
TOTAL	2	0	1	0	0	0	2	0	2	1	1	0	9
T01													0
T03													0
T04													0
T05													0
T06													0
T07													0
T08													0
T09												1	1
T10													0
T11	1						1		2	1			5
T12													0
T13	1		1				1						3
T14													0
5													0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SOMERSET LOW LEVEL										**9 UNITS**			
TOTAL	2	0	0	0	0	0	0	0	0	0	0	0	2
D17													0
D18													0
D19													0
D20	1												1
D21	1												1
D22													0
D23													0
D24													0
D25													0
LOWER DELAWARE LOW LEVEL										**32 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
TOTAL	5	1	1	0	0	0	2	1	3	1	1	1	16

	NO OF UNITS IN DISTRICT BLOCKED												TOTAL
UP	0	0	0	0	0	0	0	0	0	0	0	1	1
UDLL	1	0	0	0	0	0	0	0	0	0	0	0	1
LFC	0	0	0	0	0	0	0	0	1	0	0	0	1
LFLL	0	1	0	0	0	0	0	1	0	0	0	0	2
FHL	2	0	1	0	0	0	2	0	1	1	1	0	8
SLL	2	0	0	0	0	0	0	0	0	0	0	0	2
LDLL	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
CENTRAL SCHUYLKILL EAST SIDE — 18 UNITS															
TOTAL	67	85	83	89	88	102	143	101	154	78	104	163	1257	5.8	5.3
S05	5	8	7	6	8	6	9	6	10	5	9	13	92	7.7	4.0
S06	5	8	7	6	6	8	9	6	10	5	8	13	91	7.6	4.0
S07	5	8	6	6	6	6	9	6	9	5	7	13	86	7.2	4.2
S08	5	7	6	5	4	4	8	4	8	5	8	10	74	6.2	4.9
S09	5	6	5	5	6	5	8	5	8	5	8	10	76	6.3	4.8
S10	4	4	5	5	6	4	8	6	9	5	7	9	72	6.0	5.1
S12	4	6	5	5	6	4	8	6	9	4	7	11	75	6.3	4.9
S12A	4	6	4	4	6	4	8	6	9	4	7	11	73	6.1	5.0
S13	4	4	4	4	5	4	7	5	9	4	6	8	64	5.3	5.7
S15	3	4	4	5	5	4	9	5	10	5	8	11	73	6.1	5.0
S16	3	4	4	5	3	3	8	6	9	4	5	10	64	5.3	5.7
S17	3	3	4	5	3	4	6	7	9	5	5	8	62	5.2	5.9
S18	3	2	4	5	4	5	5	6	9	4	4	8	59	4.9	6.2
S19	3	4	4	6	4	4	8	5	8	3	3	6	58	4.8	6.3
S21	3	2	4	5	4	10	9	7	7	5	3	7	66	5.5	5.5
S23	3	2	3	4	4	9	8	5	7	3	3	6	57	4.8	6.4
S25	3	4	4	4	4	10	8	5	7	4	3	5	61	5.1	6.0
S26	2	3	3	4	4	8	8	5	7	3	3	4	54	4.5	6.8
LOWER SCHUYLKILL EAST SIDE — 9 UNITS															
TOTAL	21	31	46	21	31	77	41	36	36	43	58	62	503	4.7	6.6
S31	3	6	6	3	4	10	6	3	4	5	7	10	67	5.6	5.4
S35	4	3	6	2	4	9	6	4	4	5	7	9	63	5.3	5.8
S36	2	2	5	2	4	6	5	4	4	4	7	11	56	4.7	6.5
S36A	2	3	5	2	4	7	5	5	4	4	7	9	57	4.8	6.4
S37	2	3	5	2	3	5	4	3	2	5	6	4	44	3.7	8.3
S42	2	4	5	3	3	12	3	5	4	5	8	5	59	4.9	6.2
S42A	2	4	4	3	3	12	4	5	5	5	3	6	56	4.7	6.5
S44	2	3	5	2	3	6	3	3	4	5	6	4	46	3.8	7.9
S46	2	3	5	2	3	10	5	4	5	5	7	4	55	4.5	5.6
CENTRAL SCHUYLKILL WEST — 9 UNITS															
TOTAL	27	46	43	42	42	34	54	34	49	32	53	58	514	4.8	6.4
S01	3	5	5	5	5	3	5	5	6	3	5	7	57	4.8	6.4
S02	3	5	5	5	5	3	5	5	6	3	5	7	57	4.8	6.4
S03	3	5	5	5	5	3	5	5	5	3	5	6	55	4.6	6.6
S04	3	7	5	6	6	4	8	4	6	3	9	9	70	5.8	5.2
S11	3	5	4	5	5	7	8	3	5	4	6	7	62	5.2	5.9
S14	3	7	4	4	5	4	5	3	4	4	7	7	57	4.8	6.4
S20	3	4	4	4	3	4	6	3	5	4	6	7	53	4.4	6.9
S22	3	4	5	4	4	3	6	3	6	4	5	4	51	4.3	7.2
S24	3	4	6	4	4	3	6	3	6	4	5	4	52	4.3	7.0
SOUTHWEST MAIN GRAVITY — 10 UNITS															
TOTAL	30	45	56	50	54	85	92	53	55	63	82	84	749	6.2	6.1
S27	1	4	5	5	5	10	9	7	5	7	7	7	72	6.0	5.1
S28	1	3	4	5	4	9	9	2	4	4	5	7	57	4.8	6.4
S30	1	3	4	4	3	9	8	2	4	4	5	6	53	4.4	6.9
S34	1	2	4	3	3	8	8	2	4	4	4	5	48	4.0	7.6
S39	2	2	4	3	3	8	10	2	3	6	4	5	52	4.3	7.0
S40	2	3	3	4	3	2	6	2	3	6	10	7	51	4.3	7.2
S43	2	3	3	3	2	8	7	3	3	4	5	4	47	3.9	7.8
S47	1	2	3	3	2	7	8	3	4	4	4	4	45	3.8	8.1
S50	11	15	16	10	15	13	15	16	15	15	20	21	182	15.2	2.0
S51	8	8	10	10	14	11	12	14	10	9	18	18	142	11.8	2.6
LOWER SCHUYLKILL WEST SIDE — 4 UNITS															
TOTAL	18	26	28	17	41	55	38	47	29	31	41	53	424	8.8	3.5
S32	5	6	7	5	10	14	10	10	6	8	11	14	106	8.8	3.4
S33	5	6	8	5	10	14	10	13	8	8	11	13	111	9.3	3.3
S38	4	8	6	5	11	15	11	13	9	8	10	13	113	9.4	3.2
	4	6	7	2	10	12	7	11	6	7	9	13	94	7.8	3.9

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL	AVER	DTR
COBBS CREEK HIGH LEVEL — 23 UNITS															
TOTAL	46	26	45	89	50	155	134	191	117	69	57	119	1098	4.0	7.9
C01	2	2	2	4	2	6	5	7	5	3	3	5	46	3.8	7.9
C02	2	2	2	3	2	6	5	7	4	3	3	5	44	3.7	8.3
C04	2	1	2	3	2	5	5	7	5	2	2	5	41	3.4	8.9
C04A	2	1	2	3	2	5	4	7	5	2	2	5	40	3.3	9.1
C05	2	1	2	3	2	4	4	7	6	2	2	6	41	3.4	8.9
C06	2	1	2	3	2	4	4	7	5	2	2	6	40	3.3	9.1
C07	2	1	3	3	2	4	4	7	5	3	2	6	42	3.5	8.7
C09	2	1	2	3	2	4	4	7	5	2	2	4	38	3.2	9.6
C10	2	1	2	3	2	9	5	8	5	2	2	4	45	3.8	8.1
C11	2	1	1	3	2	8	6	7	7	2	3	4	46	3.8	7.9
C12	2	1	1	3	1	4	4	7	5	2	1	4	35	2.9	10.4
C13	2	1	1	3	2	4	4	6	5	2	1	4	35	2.9	10.4
C14	4	1	1	4	1	8	9	8	5	4	5	5	55	4.6	6.6
C15	2	1	1	4	2	4	6	8	5	4	5	5	47	3.9	7.8
C16	2	1	1	4	2	4	7	7	5	4	5	5	47	3.9	7.8
C17	1	1	1	4	2	4	7	7	5	3	5	5	45	3.8	8.1
C31	2	1	3	5	3	9	8	11	5	4	2	6	59	4.9	6.2
C32	2	1	2	6	2	10	6	11	5	3	3	5	56	4.7	6.5
C33	2	1	3	5	3	11	8	11	5	4	2	6	61	5.1	6.0
C34	2	1	3	5	3	11	8	11	5	4	2	6	61	5.1	6.0
C35	2	2	3	5	3	11	8	11	5	4	1	6	61	5.1	6.0
C36	1	1	3	5	3	10	6	11	5	4	1	6	56	4.7	6.5
C37	2	1	2	5	3	10	7	11	5	4	1	6	57	4.8	6.4
COBBS CREEK LOW LEVEL — 13 UNITS															
TOTAL	33	26	23	58	17	73	85	87	72	54	60	55	643	4.1	7.8
C18	4	2	2	5	1	3	8	10	6	3	7	6	57	4.8	6.4
C19	4	4	3	5	3	5	8	9	6	5	8	6	66	5.5	5.5
C20	2	2	2	4	1	5	6	9	6	4	5	5	51	4.3	7.2
C21	2	2	2	4	1	8	7	6	6	3	5	4	50	4.2	7.3
C22	1	2	2	4	1	4	5	6	6	4	5	4	44	3.7	8.3
C23	2	2	1	4	1	8	6	6	6	4	4	3	47	3.9	7.8
C24	4	2	2	5	2	9	9	9	6	6	7	6	67	5.6	5.4
C25	3	1	1	4	1	3	5	5	6	4	4	3	40	3.3	9.1
C26	3	1	1	5	1	6	7	5	5	4	4	3	45	3.8	8.1
C27	2	2	1	4	1	3	5	5	4	4	4	3	38	3.2	9.6
C28A	4	2	4	8	2	9	7	7	7	7	4	6	67	5.6	5.4
C29	1	2	1	3	1	3	5	5	4	3	2	3	33	2.8	11.1
C30	1	2	1	3	1	7	7	5	4	3	1	3	38	3.2	9.6
TOTAL	242	285	324	366	323	581	587	549	512	370	455	594	5188		
I/D/C	2.7	3.1	3.6	4.0	3.5	6.4	6.4	6.0	5.6	4.1	5.0	6.5			

16 TOTAL DISCHARGES FOR PRIOR YEAR IN SW DISTRICT

1.3 AVERAGE DISCHARGES PER MONTH

7.2 AVER. DAYS BEFORE RETURNING TO SITE

4.7 AVER. INSPECTIONS PER DAY PER CREW

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

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
CENTRAL SCHUYLKILL EAST SIDE 18 UNITS													
TOTAL	0	0	2	0	1	0	0	0	0	0	0	0	3
S05													0
3													0
S07			1										1
S08			1										1
S09													0
S10													0
S12													0
S12A													0
S13													0
S15													0
S16													0
S17													0
S18													0
S19													0
S21													0
S23													0
S25													0
S26					1								1
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
6													0
CENTRAL SCHUYLKILL WEST 9 UNITS													
TOTAL	0	0	0	0	1	0	0	0	0	0	0	0	1
S01													0
S02													0
S03													0
S04													0
S11					1								1
S14													0
S20													0
S22													0
S24													0
SOUTHWEST MAIN GRAVITY 10 UNITS													
TOTAL	0	0	0	0	1	0	0	0	0	0	0	1	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
2													0
3													0
S38													0
S45													0

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
COBBS CREEK HIGH LEVEL 23 UNITS													
TOTAL	2	0	0	0	0	0	0	0	0	1	4	0	7
C01													0
C02													0
C04													0
C04A													0
C05													0
C06													0
C07	1									1	1		3
C09											1		1
C10													0
C11													0
C12													0
C13													0
C14	1										1		2
C15													0
C16											1		1
C17													0
C31													0
C32													0
C33													0
C34													0
C35													0
C36													0
C37													0
COBBS CREEK LOW LEVEL 13 UNITS													
TOTAL	1	0	0	0	1	1	0	0	0	0	0	0	3
C18													0
C19	1				1								2
C20						1							1
C21													0
C22													0
C23													0
C24													0
C25													0
C26													0
C27													0
C28A													0
C29													0
C30													0
TOTAL	3	0	2	0	4	1	0	0	0	1	4	1	16

	NO OF UNITS IN DISTRICT BLOCKED												
CSE	0	0	2	0	1	0	0	0	0	0	0	0	3
LSE	0	0	0	0	0	0	0	0	0	0	0	0	0
CSW	0	0	0	0	1	0	0	0	0	0	0	0	1
SWG	0	0	0	0	1	0	0	0	0	0	0	1	2
LSW	0	0	0	0	0	0	0	0	0	0	0	0	0
CCHL	2	0	0	0	0	0	0	0	0	1	4	0	7
CCLL	1	0	0	0	1	1	0	0	0	0	0	0	3

JUNE 1998 RELIEF SEWER MONTHLY INSPECTION HISTORY

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	THOMAS RUN RELIEF SEWER							6 UNITS					
R1	2	1	1	2	3	3	3	6	4	3	3	3	34
[illegible]	2	1	1	2	3	3	3	6	3	3	3	3	33
	2	1	1	2	3	3	3	6	3	3	3	3	33
R4	2	1	1	2	3	3	3	6	3	3	2	3	32
R5	2	1	1	2	3	3	3	6	3	3	2	3	32
R6	2	1	1	2	3	3	3	5	3	3	2	3	31
	MAIN RELIEF SEWER							6 UNITS					
R7	2	1	1	2	3	5	4	3	3	3	3	4	34
R8	2	1	1	2	3	3	3	4	3	3	3	4	32
R9	2	1	1	2	3	3	3	4	3	3	3	3	31
R10	2	1	1	2	3	3	3	4	2	3	3	2	29
R11	2	1	1	2	3	3	3	4	3	3	2	3	30
R12	2	1	1	2	3	3	3	4	3	3	3	3	31
	WAKLING RELIEF SEWER							2 UNITS					
R13	2	1	1	3	1	3	4	6	6	2	3	2	34
R14	2	1	1	3	2	3	4	6	5	2	3	3	35
	ROCK RUN STORM FLOOD RELIEF SEWER							1 UNITS					
R15	2	2	1	2	2	4	3	4	6	2	3	2	33
	OREGON AVE RELIEF SEWER							2 UNITS					
R16	2	1	1	2	2	2	3	2	1	2	1	2	21
R17	3	4	4	2	5	3	4	3	1	4	6	3	42
	FRANKFORD HIGH LEVEL RELIEF SEWER							1 UNITS					
R18	1	2	1	2	2	3	3	4	4	1	1	2	26
	32ND ST RELIEF SEWER							1 UNITS					
R19	2	2	1	2	3	4	3	4	3	2	3	2	31
	MAIN STREET RELIEF SEWER							1 UNITS					
R20	2	1	1	2	2	3	3	2	2	2	1	2	23
	SOMERSET SYSTEM DIVERSION CHAMBER							1 UNITS					
	2	3	1	3	3	2	3	2	3	2	3	2	29
	TEMPORARY REGULATOR CHAMBER							2 UNITS					
R22	2	2	1	3	3	2	3	3	2	1	1	2	25
R23	2	1	1	3	4	3	2	1	3	1	1	2	24
	ARCH ST RELIEF SEWER							1 UNITS					
R24	1	1	1	2	3	3	3	2	3	3	3	3	28
	GRANT & STATE RD. RELIEF							1 UNITS					
R26	3	1	1	3	2	4	3	4	3	2	3	2	31
TOTAL	50	34	28	56	70	77	78	101	78	62	64	66	764
AVER	2.0	1.4	1.1	2.2	2.8	3.1	3.1	4.0	3.1	2.5	2.6	2.6	2.5

RELIEF SEWER MONTHLY DISCHARGE HISTORY

PAGE 7

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	THOMAS RUN RELIEF SEWER							6 UNITS					
R1											1		1
R2													0
R3							1						1
R4							1						1
R5													0
R6													0
	MAIN RELIEF SEWER							6 UNITS					
R7													0
R8													0
R9													0
R10													0
R11													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							2 UNITS					
R24													0
	GRANT & STATE RD. RELIEF							1 UNITS					
R26													0
TOTAL	0	0	1	0	0	0	1	0	0	0	1	0	3
UNITS	0	0	1	0	0	0	1	0	0	0	1	0	

JUNE 1998 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	CASMIER ST MAINE & SHURS												
	2	1	1	3	3	1	3	2	1	1	2	2	22
	SOMERSET GRIT LEVEL												
	1	4	4	7	8	3	4	3	6	4	2	5	51
	(H-20) 70th & Dicks												
	-	-	-	-	-	-	-	2	3	3	3		11
	CCLL CONTROL PIPE @ ISLAND AVE												
	-	-	-	-	-	-	-	-	-	-	-	6	6

JUNE 1998 SPECIAL INSPECTIONS

SITE	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	NANDINA ST												
	2	1	1	3	3	4	3	4	3	2	3	2	31
	UPPER DARBY OVERFLOW												
	1	4	2	4	4	2	8	10	4	1	5	4	49
	Sandy Run Creek Regulator												
	-	-	-	-	-	-	-	-	-	5	4	3	12
	O & ERIE diversion gate												
	-	-	-	-	-	-	1	1	0	0	0	2	4

Appendix B

Flow Control Unit - Wastewater Pumping Station Maintenance Summaries

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. Two pumps rebuilt in 1994 One pump rebuilt in 1996 Two pumps rebuilt in 1997 One pump rebuilt in 1998
FORD ROAD	2	900	1,467	148	SWWPC	Excellent, station completely rehabilitated in 1981 Two pumps rebuilt in 1997
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 Two pumps rebuilt in 1998
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 1997
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 One pump rebuilt in 1998 One pump rebuilt in 1999
42ND STREET	3	2,000	5,953	5,953	SWWPC	Good, complete rehab in 1984 One pump rebuilt in 1995 One pump rebuilt in 1998 One pump rebuilt in 1999

FLOW CONTROL UNIT

1998 PUMP STATION YEARLY FLOW REPORT

WASTEWATER PUMP STATIONS	PUMP #1	PUMP #2	PUMP #3	PUMP #4	PUMP #5	PUMP #6	STATION FLOW (MG)
BANK STREET	3.377	3.074					6.452
BELFRY DRIVE	4.468	5.980					10.448
CENTRAL SCHUYLKILL	5,232.667	3,358.551	685.503	1,555.609	5,056.777	4,763.437	20,652.545
FORD ROAD	33.897	37.884					71.782
FORT MIFFLIN	0.032	0.075	0.051	0.027			0.078
HOG ISLAND	4.686	2.213					6.899
LINDEN AVENUE	43.297	68.963					112.260
LOCKHART STREET	28.459	33.125					61.584
MILNOR STREET	0.719	3.130	4.149				7.998
NEILL DRIVE	170.110	213.020	170.020				553.150
POLICE ACADEMY	3.739	4.693					8.431
RENNARD STREET	4.487	5.633					10.120
42ND STREET	1,081.706	576.210	364.094				2,022.009
STORMWATER PUMP STATIONS							
BROAD & BOULEVARD	0.000	0.018	12.879	4.279			17.176
MINGO CREEK	0.000	0.000	13.174	115.865	191.533	464.475	785.047
26TH & VARE	0.436	0.505					0.941

1998 STATION OUTAGES AND DRY WEATHER DISCHARGES

DATE	LOCATION	STATION OUT		DISCHARGE		DURATION	INFLOW	DISCHARGE	REASON
		TIME OUT	TIME IN	START	STOP	HRS	GAL/MIN	TOTAL GAL	
04/05/98	BELFRY DR	01:00 AM	03:00 AM	NONE		0.00			PECO OUTAGE TREE DOWNED POWER LINE
04/21/98	RENNARD	08:40 PM	08:55 PM	NONE		0.00			PECO OUTAGE IN DISTRICT
04/21/98	LOCHART	08:40 PM	08:55 PM	NONE		0.00			PECO OUTAGE IN DISTRICT
04/28/98	FORD RD	09:40 AM	11:40 AM	10:10 AM	11:55 AM	1.75	198.8	20,871	PECO POWER FAILURE IN AREA
05/29/98	FORD RD	10:30 PM	11:00 PM	NONE		0.00			PECO POWER FAILURE IN AREA
05/31/98	BELFRY DR	04:45 PM	07:15 PM	NONE		0.00			PECO OUTAGE TREE DOWNED IN WIND STORM
05/31/98	FORD RD	11:45 PM	11:55 PM	NONE		0.00			PECO POWER FAILURE IN AREA
06/16/98	FORD RD	10:05 PM	10:25 PM	NONE		0.00			PECO POWER FAILURE IN AREA
06/18/98	FORD RD	11:00 PM	01:00 AM	11:15 PM	01:10 AM	1.92	198.8	22,859	A-PHASE DISCONNECT BLOWN, CONSHOCKEN RD.
07/20/98	BELFRY DR	09:45 PM	12:15 AM	NONE		0.00			PECO POWER FAILURE IN AREA
07/21/98	BELFRY DR	09:00 AM	01:55 PM	09:30 AM	02:10 PM	4.67	23.5	6,580	PECO POWER FAILURE IN AREA
09/30/98	CSPS	03:20 AM	05:10 AM	03:20 AM	05:10 AM	1.83	33,333.3	3,666,667	OPERATOR ERROR
12/05/98	LOCKHART	10:15 AM		10:15 AM					
12/07/98			08:10 AM		08:10 AM	45.92	198.8	547,694	CONTROLLER & ALARM MONITOR FAILURE
1998	TOTALS								
1998	AVERAGES								

8-YEAR PUMPING STATION OUTAGE /DISCHARGE HISTORY

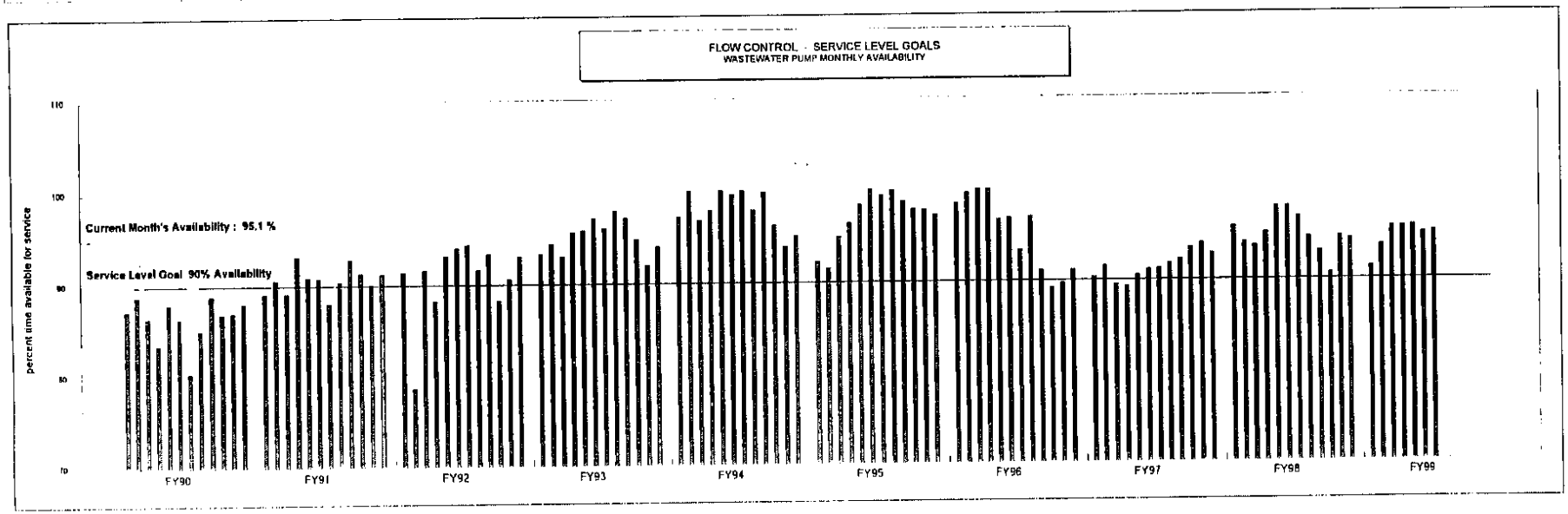
TOTALS	130.12 HRS	61%	PECO OUTAGES
	83.82 HRS	39%	STATION EQUIP PROBLEMS

The project to install emergency standby power generators is nearing completion. As of March 1999 all pumping stations with the exception of Hog Island Rd. now have the emergency generators working. Discharges due to power outages should be eliminated with this new system. The Hog Island generator should be completed by June 1999.

FLOW CONTROL - SERVICE LEVEL GOAL - MAIN PUMP AVAILABILITY HISTORY

FOR : JAN 1999

AVAILABILITY FY91		AVAILABILITY FY92		AVAILABILITY FY93		AVAILABILITY FY94		AVAILABILITY FY95		AVAILABILITY FY96		AVAILABILITY FY97		AVAILABILITY FY98		AVAILABILITY FY99	
JUL90	89.1 %	JUL91	91.4 %	JUL92	93.3 %	JUL93	97.2 %	JUL94	92.2 %	JUL95	98.5 %	JUL96	90.3 %	Jul-97	95.7 %	Jul-98	91.3 %
AUG90	90.6 %	AUG91	78.7 %	AUG92	94.3 %	AUG93	100.0 %	AUG94	91.5 %	AUG95	99.6 %	AUG96	91.5 %	Aug-97	94.0 %	Aug-98	93.6 %
SEP90	89.1 %	SEP91	91.6 %	SEP92	93.0 %	SEP93	96.8 %	SEP94	94.9 %	SEP95	100.0 %	SEP96	89.5 %	Sep-97	93.6 %	Sep-98	95.6 %
OCT90	93.1 %	OCT91	88.2 %	OCT92	95.6 %	OCT93	97.9 %	OCT94	96.4 %	OCT95	100.0 %	OCT96	89.3 %	Oct-97	95.0 %	Oct-98	95.6 %
NOV90	90.9 %	NOV91	93.1 %	NOV92	95.8 %	NOV93	100.0 %	NOV94	98.4 %	NOV95	96.6 %	NOV96	90.5 %	Nov-97	97.9 %	Nov-98	95.7 %
DEC90	90.8 %	DEC91	94.0 %	DEC92	97.1 %	DEC93	99.6 %	DEC94	100.0 %	DEC95	96.8 %	DEC96	91.1 %	Dec-97	97.9 %	Dec-98	94.9 %
JAN91	88.0 %	JAN92	94.3 %	JAN93	96.0 %	JAN94	100.0 %	JAN95	99.4 %	JAN96	93.3 %	JAN97	91.2 %	Jan-98	96.7 %	Jan-99	95.1 %
FEB91	90.4 %	FEB92	91.6 %	FEB93	97.9 %	FEB94	97.9 %	FEB95	99.9 %	FEB96	96.9 %	FEB97	91.7 %	Feb-98	94.5 %	Feb-99	%
MAR91	92.8 %	MAR92	93.3 %	MAR93	97.1 %	MAR94	99.8 %	MAR95	98.7 %	MAR96	91.1 %	MAR97	92.2 %	Mar-98	93.0 %	Mar-99	%
APR91	91.3 %	APR92	88.2 %	APR93	94.8 %	APR94	96.2 %	APR95	97.9 %	APR96	89.2 %	APR97	93.4 %	Apr-98	90.6 %	Apr-99	%
MAY91	90.0 %	MAY92	90.6 %	MAY93	92.0 %	MAY94	93.9 %	MAY95	97.6 %	MAY96	89.7 %	MAY97	93.9 %	May-98	94.6 %	May-99	%
JUN91	91.2 %	JUN92	93.0 %	JUN93	94.0 %	JUN94	95.0 %	JUN95	97.2 %	JUN96	91.1 %	JUN97	92.8 %	Jun-98	94.3 %	Jun-99	%
YEAR AVE	90.6 %	YEAR AVE	90.7 %	YEAR AVE	95.1 %	YEAR AVE	97.9 %	YEAR AVE	97.0 %	YEAR AVE	95.2 %	YEAR AVE	91.5 %	YEAR AVE	94.8 %	YEAR AVE	94.5 %
FY91 AVERAGE TO JAN	90.2 %	FY92 AVERAGE TO JAN:	90.2 %	FY93 AVERAGE TO JAN:	95.0 %	FY94 AVERAGE TO JAN:	98.8 %	FY95 AVERAGE TO JAN:	96.1 %	FY96 AVERAGE TO JAN:	97.8 %	FY97 AVERAGE TO JAN:	90.5 %	FY98 AVERAGE TO JAN.	95.8 %	FY99 AVERAGE TO JAN:	94.5 %
MAX	93.1 %	MAX	94.3 %	MAX	97.9 %	MAX	100 %	MAX	100 %	MAX	100 %	MAX	93.9 %	MAX	97.9 %	MAX	95.7 %
MIN	88.0 %	MIN	78.7 %	MIN	92.0 %	MIN	93.9 %	MIN	91.5 %	MIN	89.2 %	MIN	89.3 %	MIN	90.6 %	MIN	91.3 %



WASTEWATER PUMPING
FY98 OVERHAUL SCHEDULE

REPORT FOR: 07/01/98

OMPLETED 14
ROGRESSING 0

49 AVERAGE NO. OOS DAYS FOR OVERHAUL

START	FINISH	MAIN PUMPING UNITS		STATUS	OOS DAYS
03/01/98	06/30/98	MILNOR	# 1	COMPLETE	121 DAYS
01/14/98	03/09/98	MILNOR	# 2	COMPLETE	54 DAYS
09/30/97	10/10/97	CSPS	# 1	COMPLETE	10 DAYS
05/06/98	05/21/98	NEILL	# 1	COMPLETE	15 DAYS
03/19/98	03/26/98	BANK	# 2	COMPLETE	7 DAYS
02/09/98	02/21/98	BELFRY DR	# 1	COMPLETE	12 DAYS
09/02/97	10/10/97	42ND STREET	# 3	COMPLETE	38 DAYS
03/31/98	04/24/98	LOCKHART	# 2	COMPLETE	24 DAYS
06/10/98	05/21/98	LOCKHART	# 1	COMPLETE	281 DAYS
03/18/98	04/06/98	HOG ISLAND	# 1	COMPLETE	19 DAYS
03/12/98	03/16/98	42ND STREET	# 1	COMPLETE	4 DAYS
02/25/98	03/06/98	CSPS	# 2	COMPLETE	9 DAYS

START	FINISH	AUXILIARY EQUIPMENT	STATUS	OOS DAYS
03/01/98	06/10/98	42ND ST COMMINUTOR	COMPLETE	101 DAYS
04/10/98	06/30/98	CSPS WET WELL FA VENT	COMPLETE	81 DAYS