

Ms. Linda Murphy
Director, Office of Ecosystem Protection
U.S. Environmental Protection Agency New England
P.O. Box 8127
Boston, MA 02114

August 21, 2009

Mr. Glenn Haas
Director, Division of Watershed Management
Department of Environmental Protection
One Winter Street
Boston, MA 02108

**RE: Massachusetts Water Resources Authority NPDES Permit Number MA0103284 – MWRA
Annual Infiltration and Inflow (I/I) Reduction Report for Fiscal Year 2009**

Dear Ms. Murphy and Mr. Haas:

In compliance with the requirements of MWRA's NPDES Permit MA0103284 - Part I, Item 18.bb (ii) "Infiltration/Inflow" (page 28 of 32), the Authority submits this cover letter and the six Attachments listed below that together comprise the MWRA Annual Infiltration and Inflow (I/I) Reduction Report for Fiscal Year 2009.

Attachment 1 – Overview of MWRA Regional I/I Reduction Plan
Attachment 2 – MWRA Regional I/I Reduction Plan - FY09 Progress Update and Detailed
Implementation Schedule for FY10 Activities
Attachment 3 – MWRA Actions Taken to Reduce I/I During FY09
Attachment 4 – Status Update on MWRA's I/I Local Financial Assistance Program
Attachment 5 – I/I Reduction Status Update for Member Communities
Attachment 6 – CY08 Community Wastewater Flow Data

Should you require additional information, please contact Carl H. Leone, Senior Program Manager, Community Support Program at (617) 788-4356.

Sincerely,

Michael J. Hornbrook
Chief Operating Officer

cc: DEP-Regulatory Branch, Boston
DEP - SERO
DEP – NERO

Richard Chretien, DEP, Boston
Grace Bigornia-Vitale, MWRA, NPDES Coordinator
Carl H. Leone, MWRA, Community Support Program

ATTACHMENT 1
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY09
Reporting Period – July 2008 Through June 2009

OVERVIEW OF MWRA REGIONAL I/I REDUCTION PLAN

The MWRA Board of Directors approved the Regional Infiltration/Inflow (I/I) Reduction Plan on May 23, 2001 and authorized staff to submit the Plan to EPA and DEP as required under MWRA's NPDES Permit. The plan was submitted to EPA and DEP in June 2001 and DEP approved the plan in a letter dated November 19, 2002. A full copy of the Regional I/I Reduction Plan (dated September 2002) was included as Attachment 2 to the August 29, 2003 MWRA Annual I/I Reduction Report for FY03.

The Regional I/I Reduction Plan combines recommendations from the I/I Task Force Report (March 2001) with ongoing MWRA I/I reduction initiatives. The updated plan replaces the Authority's 1990 I/I Reduction Policy. Implementation of the Regional I/I Reduction Plan focuses on the cooperative efforts of member communities, DEP, EPA and MWRA to develop and implement I/I reduction and sewer system rehabilitation projects.

Under the plan, MWRA has full legal and fiscal responsibility for implementation of operation, maintenance, and I/I reduction programs for the MWRA-owned interceptor system. Each member community retains full legal and fiscal responsibility for implementation of operation, maintenance and I/I reduction programs for community-owned sewers. MWRA will provide technical and financial assistance to member communities and work cooperatively with DEP, EPA and other stakeholders to help solve local and regional sewer problems. MWRA's Regional I/I Reduction Plan is organized into five major goals:

1. MWRA will continue its current operation and maintenance program for the MWRA-owned interceptor system leading to the identification, prioritization and rehabilitation of structural and I/I problems.
2. MWRA will work cooperatively with member communities, DEP and EPA to eliminate sewer system backups into homes and other buildings and to minimize health and environmental impacts of SSOs related to I/I.
3. MWRA will work cooperatively with member communities, DEP and EPA to reduce I/I in the regional collection system with emphasis on the following: (1) inflow reduction in areas tributary to sewer backups and SSOs, (2) private source inflow reduction, (3) infiltration that may impact groundwater or surface water resources, and (4) excessive infiltration as defined in DEP regulations or guidance documents.
4. MWRA will work cooperatively with member communities, DEP and EPA to expand existing efforts to educate and involve the public regarding regional sewer backup, SSO and I/I reduction issues.
5. MWRA will provide technical assistance and work cooperatively with member communities, DEP and EPA regarding guidance on local operation and maintenance and capital improvement programs intended to provide a reasonable level of sewer service to local sewer users/ratepayers.

ATTACHMENT 2
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY09
Reporting Period – July 2008 Through June 2009

**MWRA REGIONAL I/I REDUCTION PLAN -
FY09 PROGRESS UPDATE AND DETAILED
IMPLEMENTATION SCHEDULE FOR FY10 ACTIVITIES**

This document provides a progress update for FY09 accomplishments and a description of the activities to be accomplished during FY10 for each of the I/I reduction strategies in the MWRA Regional I/I Reduction Plan. The update appears in bold type directly below each I/I reduction strategy. This document is intended to satisfy condition 5 of DEP's November 19, 2002 letter approving the MWRA Regional I/I Reduction Plan.

Goal 1 under MWRA's Regional I/I Reduction Plan is:

MWRA will continue its current operation and maintenance program for the MWRA-owned interceptor system leading to the identification, prioritization, and rehabilitation of structural and I/I problems.

Strategy A: Utilize MWRA's internal TV inspection equipment that currently includes one fully outfitted internal TV inspection vehicles equipped with 6000 feet of multi-conductor cable. MWRA also utilizes an OZ-camera that has a 200X zoom capability. Annual inspection schedules are outlined in MWRA's Collection System O&M Manual. This strategy has an ongoing schedule that has been initiated.

Strategy B: Utilize MWRA's sonar camera to inspect siphons and force mains. Annual inspection schedules are outlined in MWRA's Collection System O&M Manual. This strategy has an ongoing schedule that has been initiated.

Strategy C: Physical inspection of collection system manholes and structures by Operations Division field crews. Annual inspection schedules are outlined in MWRA's Collection System O&M Manual. This strategy has an ongoing schedule that has been initiated.

During FY09, MWRA properly operated and maintained the MWRA-owned interceptor system. Annual performance targets and ongoing accomplishments are tracked as part of the Authority's MAXIMO maintenance database and are reported monthly to MWRA senior management. Specific activities undertaken by MWRA for FY09 are detailed in Attachment 3. Additional information on MWRA's FY09 maintenance activities is provided under separate submittal - NPDES Part I.18.g Annual Maintenance Status Sheets. During FY09, new sonar inspection equipment was purchase by MWRA.

During FY10, MWRA will continue to properly operate and maintain the MWRA-owned interceptor system.

Goal 2 under MWRA's Regional I/I Reduction Plan is:

MWRA will work cooperatively with member communities, DEP, and EPA to eliminate sewer system backups into homes and other buildings and to minimize health and environmental impacts of SSOs related to I/I.

Strategy A: MWRA will provide technical assistance to DEP to develop a uniform format for use by communities for reporting wastewater backup and sewer system overflow information. A representative group of communities should be consulted for review. MWRA will provide technical assistance to DEP to develop a system to record the information reported by communities into a usable database format. This database may have the capability to be linked to GIS mapping and the information may be made available to communities, MWRA, DEP, EPA, watershed groups, the general public, etc. upon appropriate request. This strategy has an ongoing schedule that should be initiated in the short-term. Completion of this strategy requires a significant resource commitment by DEP. Collection and recording of sewer backup and SSO information from member community sewer systems is the responsibility of DEP. DEP will be responsible for management of collection and distribution of these records. (Cross-reference this strategy to the I/I Task Force Report recommendations 4.1 Strategy A-2 and 5.2 Strategy B-2)

Work by MWRA under this Strategy is complete.

During spring 2001 MWRA provided DEP a draft SSO reporting/record keeping electronic database format that was developed by Malcolm-Pirnie, Inc. under contract to MWRA. This work was completed by MWRA as technical assistance to DEP. A follow-up letter dated June 20, 2001 requested DEP identify the format for finalizing the SSO reporting/record keeping electronic database.

During FY04, DEP (in conjunction with staff in the Massachusetts Information Technology Division), developed a new format SSO electronic database package. This project was part of statewide efforts to upgrade computerized resources and electronic access. The new system was demonstrated at an April 8, 2004 DEP/MWRA joint community workshop. Development/implementation by DEP was expected to continue in through FY05. Follow-up by DEP on roll-out of the SSO reporting/record keeping electronic database is pending.

Strategy B: Once a central information database is established (see Strategy A), MWRA will periodically delineate areas which may be "at risk" for backups and SSOs that may be impacted by the MWRA-owned collection system. MWRA will evaluate potential improvements to the MWRA-owned collection system that may reduce the risk of sewer backups and SSOs. This strategy should be completed in the mid to long-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 4.3 Strategy C-2 and 5.5 Strategy E-2)

Work by MWRA under this Strategy is complete.

MWRA utilizes DEP's Sanitary Sewer Overflow/ Bypass/Backup Notification Form to report SSOs from MWRA's collection system.

MWRA does not have SSOs related to dry weather sewer system capacity issues. MWRA does not have SSOs related to wet weather sewer capacity issues for rainfall events at or below the MA DEP recommended design storm having a one year recurrence interval and a duration of six hours (see MA DEP's Guidelines for Performing I/I Analyses and Sewer System Evaluation Surveys – Revised January 1993). The one-year, six-hour storm produces approximately 1.72 inches of rainfall in the Boston area. During extreme storm events that exceed the MA DEP recommended design storm, I/I entering the upstream community-owned collection systems may cause an occasional SSO in the MWRA regional interceptor system.

During FY09, MWRA continued its ongoing priority program to clean and inspect all inverted siphons in the MWRA-owned collection system. This program is intended to minimize potential SSOs upstream of siphons and reduce the risk of hydraulic limitations and/or blockage from debris buildup in siphon barrels. The cleaning and inspection program will continue in FY10.

Strategy C: Once a central information database is established (see Strategy A) and member communities have delineated areas which may be “at risk” for backups and SSOs, MWRA - jointly with DEP - will provide technical assistance to member communities to evaluate potential improvements to local infrastructure that may reduce the risk of sewer backups and SSOs. MWRA will assist communities to determine if impacts from the regional collection system are an issue. The schedule for this strategy is dependent on prior actions by DEP and member communities. (Cross-reference this strategy to the I/I Task Force Report recommendations 4.3 Strategy C-1 and 5.5 Strategy E-1)

MWRA's work on this strategy is on hold awaiting follow-up by DEP on roll-out of the SSO reporting/record keeping electronic database (see Strategy A above). As part of its ongoing program to support member community I/I reduction and sewer system rehabilitation programs, MWRA offers technical assistance to communities to assist in reviewing regional SSO problems.

Strategy D: For the MWRA-owned interceptor system, MWRA will review and analyze the health and environmental impacts of existing SSO sites. SSO sites will be prioritized based on the frequency and duration of activations and the resulting health and environmental impacts, including: potential for human contact, impact to water supply, impact to shellfish beds or other economic resources, impact to animal or aquatic habitat, etc. This strategy will be completed in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 5.3 Strategy C-1)

Work by MWRA under this Strategy is complete.

As previously noted, MWRA does not have SSOs related to dry weather sewer system capacity issues. MWRA also does not have SSOs related to wet weather sewer capacity issues for rainfall events at or below the MA DEP recommended design storm having a one year recurrence interval and a duration of six hours (see MA DEP's Guidelines for Performing I/I Analyses and Sewer System Evaluation Surveys – Revised January 1993). Since prior SSOs have been eliminated for sewer capacity issues at or below the collection system design standard, additional work under this strategy is not necessary.

Strategy E: Utilizing the priority ranking to be completed in Strategy D above, as well as system hydraulic analyses, MWRA (for the MWRA-owned interceptor system) - in conjunction with DEP and EPA - will evaluate the potential to eliminate each overflow. Appropriate I/I reduction and/or relief sewer projects that may eliminate (or minimize) SSOs from MWRA-owned interceptors will be evaluated. This strategy will be initiated in the short to mid-term; however, implementation of projects developed from the evaluation may span beyond the long-term time frame as defined within the Regional I/I Reduction Plan. (Cross-reference this strategy to the I/I Task Force Report recommendation 5.3 Strategy C-2)

Work by MWRA under this Strategy is complete.

As previously noted, MWRA does not have SSOs related to dry weather sewer system capacity issues. MWRA also does not have SSOs related to wet weather sewer capacity issues for rainfall events at or below the MA DEP recommended design storm having a one year recurrence interval and a duration of six hours (see MA DEP's Guidelines for Performing I/I Analyses and Sewer System Evaluation Surveys – Revised January 1993). Since prior SSOs have been eliminated for sewer capacity issues at or below the collection system design standard, additional work under this strategy is not necessary.

During FY09, MWRA continued work on projects in the MWRA Capital Improvement Program, as summarized in Attachment 3.

During FY09, MWRA continued to coordinate with member communities to reduce I/I from local collection systems to help to minimize SSOs that may occur during extreme storm events. Detail is provided in Attachment 4.

Strategy F: For those overflows that are unlikely to be eliminated in the short to mid-term (based on the evaluation from Strategy E, above), MWRA (for the MWRA-owned interceptor system) will consider developing interim measures to relocate or otherwise mitigate the impact of existing overflows on human and natural resources. The priority ranking (from Strategy D, above) will be utilized in development of interim mitigation measures. This strategy has an ongoing schedule that should be initiated in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 5.3 Strategy C-3)

As previously noted, MWRA does not have SSOs related to dry weather sewer system capacity issues. MWRA also does not have SSOs related to wet weather sewer capacity issues for rainfall events at or below the MA DEP recommended design storm having a one year recurrence interval and a duration of six hours (see MA DEP's Guidelines for Performing I/I Analyses and Sewer System Evaluation Surveys – Revised January 1993). The one-year, six-hour storm produces approximately 1.72 inches of rainfall in the Boston area.

During FY09, MWRA continued its ongoing priority program to clean and inspect all inverted siphons in the MWRA-owned collection system. This program is intended to minimize potential SSOs upstream of siphons and reduce the risk of hydraulic limitations and/or blockage from debris buildup in siphon barrels. The cleaning and inspection program will continue in FY10.

During extreme storm events that exceed the MA DEP recommended design storm, I/I entering the upstream community-owned collection systems may cause an occasional SSO in the MWRA regional interceptor system. The bullets below provide an update on I/I reduction and/or sewer projects that may eliminate (or minimize) SSOs related to extreme rainfall events and interim measures to relocate or otherwise mitigate the impact of SSOs related to extreme rainfall events.

- **Continued coordination with member communities to reduce I/I from local collection systems will help to minimize SSOs that may occur during extreme storm events. For MWRA's FY10 Capital Improvement Program, an additional \$40 million in 45% grants and 55% interest-free loans was added to the I/I Local Financial Assistance Program to help fund community I/I reduction projects.**
- **Ongoing CSO projects in Cambridge and Somerville tributary to the Alewife Brook Conduit and the North Metropolitan Relief Sewer may reduce downstream SSOs that may occur during extreme storm events.**
- **In August 2007, MWRA developed a hydraulic analysis report of major interceptor sewers in the Melrose, Stoneham and Wakefield areas. Preceding extreme storm events, MWRA currently stages a temporary sewer plug/pump operation to divert high flow away from a potential SSO site. If activated during extreme storm conditions, this temporary pumping will minimize the potential impacts. During FY09, MWRA designed a small sewer extension project in Melrose that will minimize the need for the interim operation to mitigate the SSO potential in this location. The project is scheduled for construction in FY10.**
- **If activated during an extreme rainfall event, MWRA's emergency directed discharge (via two gate valves) to the Stony Brook Conduit in Boston/Roslindale is intended to minimize potential SSO impacts within this local low lying area.**
- **MWRA's Capital Improvement Plan includes a long-term Randolph Extension Sewer Relief Study to identify and evaluate potential system improvements.**

Strategy G: MWRA will assist DEP, member communities, and other regional stakeholders to inform local plumbing inspectors of the regional priority of eliminating sewer system backups. Plumbing inspectors will be requested to work more closely with local DPW staff to identify sewer system backup problem areas and locations where backflow prevention devices may be required. MWRA expects to meet this strategy by distributing a letter to the plumbing inspector in each member community that discusses sewer backups, potential public health impacts, backflow prevention, and coordination with the local DPW to identify problem areas. This strategy will be completed in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 4.2 Strategy B-4)

Work by MWRA under this Strategy is complete.

On September 26, 2005, MWRA distributed an informational package on Sewer Backups and Sanitary Sewer Overflows to all service area community plumbing inspectors, Health Departments (Boards of Health), DPW Directors, Engineering Departments, and collection system operators. The package included information from fourteen separate sources and provided many web links for additional information. On September 29, 2005, MWRA sent a copy of the informational package to EPA, DEP, all MWRA water-only member communities, and local watershed associations.

Goal 3 under MWRA's Regional I/I Reduction Plan is:

MWRA will work cooperatively with member communities, DEP, and EPA to reduce I/I in the regional collection system with emphasis on the following: (1) inflow reduction in areas tributary to sewer backups and SSOs, (2) private source inflow reduction, (3) infiltration that may impact groundwater or surface water resources, and (4) excessive infiltration as defined in DEP regulations or guidance documents.

Strategy A: MWRA will continue to analyze available MWRA wastewater metering data to estimate community infiltration and inflow rates. MWRA will provide this information along with technical assistance to help interpret the information to member communities. This strategy has an ongoing schedule that has been initiated. (Cross-reference this strategy to the I/I Task Force Report recommendations 6.1 Strategy A-1, and 7.1 Strategy A-1).

During FY09, MWRA continued to estimate community infiltration and inflow rates on a bimonthly basis. Community wastewater flow data for CY08 is included as Attachment 6. These flow data tables are available to all users on MWRA's web site. Community wastewater flow rate basis data is distributed to member communities throughout the year on a bimonthly basis.

During FY10, MWRA will continue to estimate community infiltration and inflow rates on a bimonthly basis and make this information available to MWRA member communities. MWRA will provide the information to EPA and DEP as part of the annual summary report on actions taken to reduce I/I (submitted annually by September 1 per the NPDES Permit).

Strategy B: MWRA, in cooperation with member communities, will evaluate the feasibility of developing and operating an expanded emergency notification system (ENS). Currently, the MWRA remotely monitors wastewater flow at key locations within the regional collection system before and during wet weather events. Interested communities are notified when sewer system depths reach critical levels. The Authority and member communities use this information to forecast problem areas, predict potential sewer system overflows and deploy work crews. The MWRA's wastewater metering system will be upgraded over the next few years. This upgrade may impact the ENS. MWRA is also investigating, over the next three to five years, the benefits of adding SCADA-type meters at some key locations in the collection system. After completion of the two ongoing projects, MWRA will evaluate whether an ENS system can be used efficiently to provide information at the local level. This strategy will be completed in the long-term or more extended time frame subject to the schedule of the ongoing projects noted above. (Cross-reference this strategy to the I/I Task Force Report recommendation 5.4 Strategy D-1)

Work by MWRA under this Strategy is complete.

MWRA's Wastewater Meter Replacement project was completed in FY06. The system continues to be used to monitor wastewater flow at key locations within the regional collection system before and during wet weather events. Interested communities are notified when sewer system depths reach critical levels.

Strategy C: MWRA will provide technical assistance to member communities to establish written infiltration and inflow identification and removal programs as outlined in the I/I Task Force Report. This strategy has an ongoing schedule that will be initiated in the short to mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 6.1 Strategy A-1, and 7.1 Strategy A-1)

During FY09, MWRA staff continued to meet with community representatives to provide technical assistance and discuss local programs. Communities are often interested in progress reports on what specific actions other communities are pursuing. All member sewer communities are actively participating in MWRA's I/I Local Financial Assistance Program (see Attachment 4). Community I/I reduction programs are generally being conducted by local engineering consultants under contract to the communities. These projects generally utilize standards established in DEP's January 1993 I/I Guidelines. Additional outreach to community representatives and other stakeholders was made in informational meetings where the MWRA's I/I reduction Program was updated. A joint meeting of the MWRA Advisory Board, the Wastewater Advisory Committee, and the Water Supply Citizens Advisory Committee was held on November 6, 2008. A program update briefing was provided at a meeting with the MWRA Advisory Board on February 19, 2009. This work will continue in FY10.

Strategy D: MWRA will provide technical assistance to member communities that seek to emphasize infiltration removal that may impact groundwater and surface water resource areas. MWRA will provide GIS mapping information to member communities that identifies water resource areas, provides an overlay of local and regional sewers, and delineates watersheds. The I/I Task Force Report recommends communities target areas where infiltration reduction will provide the most meaningful benefit for aquifer recharge, stream flow, wetlands and water levels in lakes and ponds. The Task Force also recommends communities coordinate their infiltration reduction efforts with appropriate EOEAs Watershed Teams, local watershed groups and the local conservation commission. Distribution of MWRA mapping information is intended to assist member communities in fulfilling this I/I Task Force recommendation. This strategy has an ongoing schedule that will be initiated in the short to mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 7.1 Strategy A-5)

Work by MWRA under this Strategy is complete. Additional community technical assistance is provided upon request as noted under Strategy C, above.

During FY05, MWRA completed a major upgrade to its electronic sewer database and GIS mapping system. Also during FY05, MWRA completed coordination with local communities to more accurately map connection points of local sewers to the MWRA interceptor system and GPS located all wastewater meter sites located in community-owned sewers. MWRA's new mapping information was rolled-out in FY06. Two community based projects were undertaken to help member communities fully benefit from MWRA GIS mapping upgrades.

In March 2006, a project to develop GIS partnership agreements with member communities was initiated. Based on the initial work, many of MWRA's member communities have agreed to GIS partner with MWRA and have signed nondisclosure agreements that detail security protocols necessary to safeguard the data.

In July 2006, a second GIS mapping project was completed. MWRA provide GIS maps with detailed water resource information overlaid with the local sewer system to each MWRA member sewer community. In addition, land use mapping was also distributed to the communities. The distribution of this mapping information fulfills MWRA's work under Strategy D.

Strategy E: MWRA, in coordination with the MWRA Advisory Board, will continue to fund the I/I Local Financial Assistance Program to provide grants and loans to member sewer communities to fund local I/I reduction projects. Through September 2002, MWRA has authorized a total budget of \$140.75 million to fund this program. Financial assistance is provided through 45 percent grants and 55 percent interest-free loans for eligible projects. The MWRA Board of Directors has approved the program through FY2010. The I/I Local Financial Assistance Program is fully detailed in the "Program Guidelines" document available from the MWRA Community Support Program. This strategy has an ongoing schedule that has been initiated. (Cross-reference this strategy to the I/I Task Force Report recommendation 10.2 Strategy B-1)

In June 2004, the MWRA Board of Directors approved an additional \$40 million (\$18 million in grants and \$22 million in interest-free loans) to increase the total I/I Local Financial Assistance Program budget to \$180.75 million and extended program distribution through FY13. The additional \$40 million (phase 5) in financial assistance funds became available to the communities in FY05.

In June 2006, the MWRA Board of Directors approved an additional \$40 million (\$18 million in grants and \$22 million in interest-free loans) to increase the total I/I Local Financial Assistance Program budget to \$220.75 million and extended program distributions through FY15. The additional \$40 million (phase 6) in financial assistance funds became available to the communities in FY07.

In June 2009, the MWRA Board of Directors approved an additional \$40 million (\$18 million in grants and \$22 million in interest-free loans) to increase the total I/I Local Financial Assistance Program budget to \$260.75 million and extended program distributions through FY18. The additional \$40 million (phase 7) in financial assistance funds became available to the communities in FY10.

During FY09, MWRA continued to provide grants and loans to member sewer communities to fund local I/I reduction and sewer system rehabilitation projects. A total of \$11.4 million was distributed during FY09. Since program inception in May 1993, \$181 million has been distributed to fund 367 local projects. The program Guidelines, Financial Assistance Application, and summary of available funds by community are posted on MWRA's web site (www.mwra.com). A detailed status update on MWRA's I/I Local Financial Assistance Program is included as Attachment 4.

During FY10, MWRA will continue to distribute funds and assist communities in the management of projects under the I/I Local Financial Assistance Program. MWRA's remaining financial assistance funds are authorized for distribution through FY18.

Strategy F: MWRA, in coordination with the MWRA Advisory Board, will continue to provide emergency assistance to member communities for sewer services on local collection systems that are routinely performed by MWRA staff for the MWRA-owned interceptor system. Examples of past community assistance provided by MWRA staff include: emergency response assistance, bypass pumping, internal TV inspection, sewer cleaning, flow metering, engineering technical assistance, etc. This strategy has an ongoing schedule that has been initiated. (Cross-reference this strategy to the I/I Task Force Report recommendations 9.6 Strategy F-2, and 10.2 Strategy B-2)

During FY09, MWRA continued to provide emergency assistance to member communities, as requested. These efforts included internal TV inspection of 4.4 miles of local sewers and cleaning of about one mile of local sewers, as well as, other emergency assistance. During FY10, MWRA will continue to provide emergency assistance to member communities.

Goal 4 under MWRA's Regional I/I Reduction Plan is:

MWRA will work cooperatively with member communities, DEP, and EPA to expand existing efforts to educate and involve the public regarding regional sewer backup, SSO, and I/I reduction issues.

Strategy A: MWRA will act as a "clearinghouse" to collect and distribute information on I/I and SSO issues. Other groups, agencies, associations, community representatives, and local citizens wishing to disseminate information on I/I and SSO issues within the region can provide a copy to MWRA that will be copied and distributed. MWRA staff will maintain a database of contacts with Federal, State and community officials, as well as, local associations and individuals that wish to stay informed on I/I and SSO issues. Summary mailings will be made periodically. MWRA, in coordination with the MWRA Advisory Board, will also act as a clearinghouse to inform regional stakeholders about the progress of efforts to increase state and federal funding for I/I reduction and SSO projects. Regional stakeholders will be advised on the most appropriate time to provide input and lobbying efforts. This strategy has an ongoing schedule that will be initiated in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 8.1 Strategy A-1, 10.4 Strategy C-5, and 10.4 Strategy D-2)

During FY09, MWRA distributed technical information to member community Public Works Directors and local wastewater/water system operators, including:

- 1. February 13, 2009 I/I Local Financial Assistance Program Funding Update.**
- 2. February 27, 2009 announcement letter on water conservation educational materials and low-flow device retrofit kits available from MWRA at no cost to member communities and local customers.**
- 3. June 10, 2009 announcement e-mail on DEP's Annual Water Conservation Grant Program.**
- 4. July 10, 2009 announcement letter on Phase 7 funding allocations under the I/I Local Financial Assistance Program.**

During FY10, MWRA will continue to distribute information on I/I and SSO issues, as appropriate.

Strategy B: MWRA will develop and distribute a summary of previous information/technology distributions regarding I/I reduction and SSOs. The summary will be organized by topic and distributed to all regional stakeholders in MWRA's database of contacts. This summary can be used as a tool to help reference previously distributed information. This strategy will be completed in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 8.1 Strategy A-2)

Work by MWRA under this Strategy is complete.

On August 8, 2007, MWRA distributed a Technical Transfer Summary package that included lists of previously distributed information under five separate topic headings: (1) Reports, Handbooks, and Guidelines; (2) Sewer Back-ups, SSOs, and Flooding; (3) Public Source I/I Reduction; (4) Private Source I/I Reduction; and (5) Brochures and Bill Stuffers. Additional information/technology distributions will continue under Strategy A, above.

Strategy C: MWRA, jointly with DEP (and possibly other regional organizations), will organize periodic demonstration projects and/or workshops to bring together regulators, community representatives, vendors, environmental groups, consultants, contractors, etc. Workshops may cover topics such as: new or revised regulations, I/I reduction technologies, updates/progress on Task Force Report recommendations, etc. MWRA and DEP conducted a joint workshop on private source inflow reduction during November 2001. Lessons learned from this workshop will help shape future efforts under this strategy. Completion of this strategy requires a significant resource commitment by DEP. This strategy has an ongoing schedule that will be initiated in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 8.1 Strategy A-3 and 8.2 Strategy B-6)

During FY09, DEP and MWRA had no discussions on organizing additional joint workshops. During FY10, MWRA will continue to work cooperatively with DEP on this strategy.

Strategy D: MWRA will develop a summary of available public education material such as local/regional billing inserts, Water Environment Federation (WEF) brochures, "How-To" pamphlets, etc. The summary will provide information on where to obtain the material. A listing of available public education materials will be posted on the MWRA Internet site. MWRA will also make copies of public education material available to communities and local associations. MWRA will pilot this strategy by distributing to member communities sample copies of the "Fat-Free Sewers" brochure developed cooperatively by the Water Environment Federation (WEF) and EPA. MWRA will recommend use of the brochures for public education. This strategy has an ongoing schedule that will be initiated in the short-term. (Cross-reference this strategy to the I/I Task Force Report recommendations 8.2 Strategy B-1, and 8.2 Strategy B-4)

MWRA distributed the Fat-Free Sewers brochure to wastewater system operators in July 2003.

In conjunction with the Technical Transfer Summary package distributed on August 8, 2007 (see Strategy B, above), MWRA included a separate topic heading for “Brochures and Bill Stuffers” that can be used by local communities as educational materials.

Strategy E: Depending on the outcome of the summary of available information being developed under Strategy D, MWRA (jointly with DEP, and possibly other regional organizations) may develop informational materials that will educate the public on I/I and SSO issues. This effort may include “how-to” pamphlets that detail a step-by-step process for disconnecting private inflow sources or similar information. The development of new materials under this strategy will be targeted to fill gaps that are not covered by existing/available public education material. This strategy will be completed in the mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 8.2 Strategy B-2)

Work by MWRA under this Strategy is complete.

As part of the Technical Transfer Summary package distributed on August 8, 2007 (see Strategy B, above), MWRA included a separate topic heading specifically for “Brochures and Bill Stuffers” that can be used by local communities as educational materials. There are sufficient example brochures available so that no additional work is needed under this strategy. Communities actively involved with private inflow removal programs have generally been using available sample brochures and other public education materials to develop public education information related to their specific project. Information already available via local engineering consultants is also utilized.

Strategy F: Upon request from member communities, MWRA will assist member communities in providing a link from the local DPW or community Internet site to the MWRA Internet site. The possibility of a link or reference to other regional bodies that are involved in sewer system issues (such as DEP, EPA, New England Water Environment Association, New England Interstate Water Pollution Control Commission, watershed associations, etc) will also be investigated. This strategy will be completed in the mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 8.2 Strategy B-3)

Work by MWRA under this Strategy is complete.

Local communities, state agencies, regional associations, etc. all maintain their own web pages with numerous information links. MWRA’s web site contains links to the communities’ web sites and links to other organizations. Based on current broad use of the web, additional work under this strategy is not needed. During FY08, MWRA continued to revise and upgraded its web site mwra.com.

Strategy G: MWRA will integrate information on I/I and SSO issues into existing MWRA school education materials. MWRA’s School Education staff will identify what types of materials are appropriate for their programs. This strategy has an ongoing schedule that will be initiated in the mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 8.3 Strategy C-1)

Work by MWRA under this Strategy is complete.

The focus of MWRA's School Education Program is to provide a general understanding of water and wastewater transport and treatment systems with emphasis on water conservation and environmental awareness issues. Educational materials are designed for students from elementary to high school levels.

Strategy H: Upon request from DEP, MWRA will provide technical assistance to DEP to develop and issue DEP press releases prior to and during extreme wet weather events to notify the public of possible sewer system backups and overflow problems. The I/I Task Force Report recommends DEP develop a standardized format that includes a request that system users minimize non-essential water consumption activities and includes a standardized high sewer flow warning. Completion of this strategy is dependent on DEP actions. This strategy has an ongoing schedule that should be initiated in the short to mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 5.4 Strategy D-2)

During FY09, no assistance from MWRA was requested by MADEP. Any future action under this strategy will be initiated jointly with MADEP.

Strategy I: Upon request from member communities, MWRA will provide technical assistance to communities to provide residents with information on I/I reduction, SSOs and backups using local cable stations or other media outlets. This strategy has an ongoing schedule that will be initiated in the mid to long-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 8.2 Strategy B-7)

During FY09, no assistance from MWRA was requested under this strategy.

Goal 5 under MWRA's Regional I/I Reduction Plan is:

MWRA will provide technical assistance and work cooperatively with member communities, DEP, and EPA regarding guidance on local operation and maintenance and capital improvement programs intended to provide a reasonable level of sewer service to local sewer users/ratepayers.

Strategy A: MWRA will provide all member communities a copy of the I/I Task Force Report (which includes recommendations for sewer system operation and maintenance). MWRA will maintain a supply of I/I Task Force Reports and will provide additional copies to MWRA member communities and regional stakeholders, as requested. This strategy has an ongoing schedule that has been initiated.

Work by MWRA under this Strategy is complete.

MWRA provided all member communities and all interested parties copies of the I/I Task Force Report in April 2001, shortly after the Report was completed. MWRA continues to maintain a supply of I/I Task Force Reports and provides additional copies to MWRA member communities and regional stakeholders, as requested. In July 2003, all member communities were provided a copy of the MWRA Regional I/I Reduction Plan.

Strategy B: MWRA will request member communities provide a copy of their existing local Sewer Use Regulations to MWRA, will review those local Regulations that are submitted, and will make recommendations for improvements. MWRA may utilize a committee representing a cross-section of sewer system stakeholders to assist in accomplishing this strategy. This strategy will be completed in the mid-term. (Cross-reference this strategy to the I/I Task Force Report recommendation 9.1 Strategy A-2)

Work by MWRA under this Strategy is complete.

MWRA's did not proceed with work under this strategy pending issuance of EPA's SSO Rule, including CMOM Regulations, that were likely to impact local sewer use regulations. EPA's draft SSO Rule was not promulgated. During FY04, MADEP distributed a new guideline document – "Optimizing Operation, Maintenance and Rehabilitation of Sanitary Sewer Collection Systems" dated August 2003. This manual was developed by New England Interstate Water Pollution Control Commission (NEIWPCC) under a grant from EPA. It was written by a committee consisting of NEIWPCC member state environmental agencies, EPA, and wastewater consultants. The manual is available at www.neiwpcc.org. Chapter 4 of the manual "Optimizing Legal Authority" includes sections on Sewer Use Ordinances.

Strategy C: MWRA will develop a Member Community Collection System Operation and Maintenance Manual Guidance Document and Overflow Response Plan. This guidance document will be provided to all member communities. This strategy will be completed in the short-term.

Work by MWRA under this Strategy is complete.

A Member Community Collection System Operation and Maintenance Manual Guidance Document and Overflow Response Plan was developed and submitted to EPA and MADEP for review in June 2001. This guidance document was made available to member communities. During FY04, MADEP distributed a new guideline document – "Optimizing Operation, Maintenance and Rehabilitation of Sanitary Sewer Collection Systems" dated August 2003. This manual was developed by New England Interstate Water Pollution Control Commission (NEIWPCC) under a grant from EPA. It was written by a committee consisting of NEIWPCC member state environmental agencies, EPA, and wastewater consultants. The manual is available at www.neiwpcc.org. MWRA provided its collection system O&M manual and the community collection system guidance document to the NEIWPCC committee for review. With the publication of the NEIWPCC manual, further efforts on the Member Community Collection System Operation and Maintenance Manual Guidance Document are not required.

ATTACHMENT 3
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY09
Reporting Period – July 2008 Through June 2009

MWRA ACTIONS TAKEN TO REDUCE I/I DURING FY09

The MWRA Field Operations Department's Technical Inspection program staff have internally inspected approximately 33 miles of Authority-owned interceptors and 4.4 miles of community-owned sewers, internally sonar inspected 18 inverted siphon barrels with new sonar inspection equipment purchased during FY09, and physically inspected 925 sewer manholes and other structures (diversion chambers, siphon headhouses, tide gates, etc.) during FY09. During the internal inspection process, problems such as physical defects, infiltration, sediment, grease deposits, etc. are noted and stored in MWRA's electronic maintenance (MAXIMO) database. Maintenance work is then scheduled based on the identified problems. During FY09, maintenance work included hydraulic/mechanical cleaning of 41 miles of sewer pipelines and 62 siphon barrels, as well as, replacement of 196 manhole frames and covers. Potential structural problems and infiltration sources identified during the inspection process are referred to engineering staff for follow-up review and analysis of cost-effective repairs. In addition, about one mile of community-owned sewer was cleaned under the community assistance program.

The MWRA is undertaking a number of significant capital projects to provide additional hydraulic capacity and rehabilitate portions of Authority-owned interceptors. Updates on these projects are included below:

1. During FY09, MWRA continued rehabilitation of sewer interceptors under the Interceptor Renewal/Asset Protection Program. A \$2 million evaluation/rehabilitation project for the Mystic Valley Sewer (Section 160 - 11,000 feet of deteriorated sewer) in Winchester and Medford was completed in FY09. Evaluation and design of interceptor rehabilitation (interceptor renewal projects – multiple phases) began in FY09. Each of these projects will provide structural repairs for the pipelines and reduce I/I entering the MWRA interceptor system.
2. MWRA's \$87 million East Boston Branch Sewer Relief Project will replace or rehabilitate approximately 25,000 feet of existing sewer in East Boston to provide hydraulic relief and reduce CSO discharges. The project is scheduled for completion in FY11.
3. The first phase of MWRA's West Roxbury Tunnel rehabilitation project, repair/rehabilitation of 1000 feet of Sewer Section 138 and the West Portal Structure, was completed in 2002 at a cost of \$8 million. The second phase of the project is being designed/constructed during FY08 through FY18. An additional \$80 million has been budgeted for design and repair/rehabilitation construction of 12,500 feet of 84-inch tunnel (Sewer Section 137). The existing tunnel has deteriorated due to high levels of hydrogen sulfide and sewer turbulence.
4. Design for the rehabilitation of 2000 feet of sewer (Sections 624) in North Weymouth will commence in FY10.

5. MWRA's \$3 million Siphon Structure Rehabilitation project is scheduled for FY10 through FY18. This project will provide for rehabilitation and access improvements for the highest priority (first phase) portion of the project.
6. MWRA's \$900 million Combine Sewer Overflows (CSO) Program includes a number of projects that will provide for the separation of sanitary sewer and stormwater flows. These projects will reduce stormwater inflow to the collection system. Details of MWRA's CSO Control Plan are reported under the requirements of NPDES Permit – Part I, Item 19. Long-term CSO Control Plan.

ATTACHMENT 4
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY09
Reporting Period – July 2008 Through June 2009

**STATUS UPDATE ON MWRA'S
I/I LOCAL FINANCIAL ASSISTANCE PROGRAM**

Financial Assistance Update

All 43 member sewer communities are participating in MWRA's \$260.75 million Infiltration/Inflow (I/I) Local Financial Assistance (grant/loan) Program. The program began in May 1993 and, through FY09, \$181 million has been distributed to fund local I/I reduction and sewer system rehabilitation projects. The program budget of \$260.75 million includes the most recent addition of \$40 million in new Phase 7 funds approved by the MWRA Board of Directors for distribution beginning in FY10. The table on page 2 provides a summary of funding allocations, distributions, and funds remaining for each MWRA sewer community. Distribution of the remaining \$80 million in funds has been approved through FY18. The table on page 3 provides a summary of funding distributions for each quarterly distribution since inception of the Program.

Program Background

MWRA's I/I Local Financial Assistance Program was initiated to provide funding to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Following recommendations from the MWRA Advisory Board, the MWRA Board of Directors has approved a total program budget of \$260.75 million. The funds have been allocated among the 43 MWRA sewer communities based on respective shares of overall MWRA wholesale sewer charges. Financial assistance for Phases 1 and 2 (total of \$63.75 million) was distributed for approved projects as a 25 percent grant and a 75 percent interest-free loan. The grant/loan split was revised for distribution of the Phase 3, 4, 5, 6, and 7 funds (total of \$197 million) to a 45 percent grant and a 55 percent interest-free loan. The interest-free loan portion is repaid to MWRA over a five-year period beginning one year after the date the funds are distributed.

MWRA funding is provided to a community following execution of a standard agreement that stipulates the project scope, schedule, and loan repayment requirements. Communities are required to provide periodic schedule and expenditure progress reports to MWRA. For planning and design projects, the work products (reports, plans, specifications, and bidding documents) are reviewed and approved by MWRA. During construction, staff perform site visits to document progress.

Program Goals

The I/I Local Financial Assistance Program is a critical component of MWRA's Regional I/I Reduction Plan. Specifically, local sewer system rehabilitation projects are intended to at least offset ongoing collection system deterioration to prevent a net increase in regional I/I. In the long-term, system rehabilitation should result in lower I/I, which will allow for future increases in sanitary (residential, commercial, industrial, and institutional) flow without a net increase in total wastewater flow. A second goal of the program is to assist member communities in implementing effective annual local collection system maintenance programs to assure efficient operation and ongoing repair/replacement of the collection system.

**MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
FUNDING SUMMARY AS OF JULY 2009**

Community	Total Allocations (Phases 1/2/3/4/5/6/7)	Total Distributions (Phases 1/2/3/4/5/6/7)	Percent Distributed	Funds Remaining
Arlington	\$4,893,000	\$4,189,000	86%	\$704,000
Ashland	\$1,126,500	\$930,500	83%	\$196,000
Bedford	\$1,999,600	\$1,110,300	56%	\$889,300
Belmont	\$2,992,100	\$1,974,999	66%	\$1,017,101
Boston	\$74,278,200	\$51,831,601	70%	\$22,446,599
Braintree	\$4,581,000	\$2,483,127	54%	\$2,097,873
Brookline	\$7,400,200	\$4,730,200	64%	\$2,670,000
Burlington	\$2,845,800	\$2,389,800	84%	\$456,000
Cambridge	\$13,547,100	\$9,777,055	72%	\$3,770,045
Canton	\$2,353,900	\$1,645,900	70%	\$708,000
Chelsea	\$3,605,100	\$2,878,100	80%	\$727,000
Dedham	\$3,441,000	\$2,945,000	86%	\$496,000
Everett	\$4,525,500	\$3,141,500	69%	\$1,384,000
Framingham	\$7,015,000	\$4,230,395	60%	\$2,784,605
Hingham	\$885,500	\$589,500	67%	\$296,000
Holbrook	\$920,600	\$496,600	54%	\$424,000
Lexington	\$4,159,300	\$1,533,600	37%	\$2,625,700
Malden	\$6,725,900	\$4,593,900	68%	\$2,132,000
Medford	\$6,914,600	\$4,794,600	69%	\$2,120,000
Melrose	\$3,385,300	\$2,845,300	84%	\$540,000
Milton	\$3,251,500	\$2,779,500	85%	\$472,000
Natick	\$3,194,600	\$1,772,000	55%	\$1,422,600
Needham	\$3,746,600	\$1,478,300	39%	\$2,268,300
Newton	\$11,925,400	\$10,089,400	85%	\$1,836,000
Norwood	\$3,939,400	\$2,904,963	74%	\$1,034,437
Quincy	\$11,125,000	\$9,373,000	84%	\$1,752,000
Randolph	\$3,370,800	\$2,166,900	64%	\$1,203,900
Reading	\$2,520,100	\$1,816,700	72%	\$703,400
Revere	\$5,502,900	\$4,582,900	83%	\$920,000
Somerville	\$8,767,800	\$5,723,790	65%	\$3,044,010
Stoneham	\$2,867,900	\$2,451,900	85%	\$416,000
Stoughton	\$2,696,900	\$1,834,800	68%	\$862,100
Wakefield	\$3,396,900	\$2,545,000	75%	\$851,900
Walpole	\$2,083,000	\$1,759,000	84%	\$324,000
Waltham	\$7,808,400	\$4,762,400	61%	\$3,046,000
Watertown	\$3,653,800	\$1,487,400	41%	\$2,166,400
Wellesley	\$3,275,700	\$1,484,247	45%	\$1,791,453
Westwood	\$1,425,300	\$1,039,300	73%	\$386,000
Weymouth	\$6,505,900	\$4,529,900	70%	\$1,976,000
Wilmington	\$1,388,000	\$968,000	70%	\$420,000
Winchester	\$2,424,000	\$952,300	39%	\$1,471,700
Winthrop	\$1,926,400	\$999,800	52%	\$926,600
Woburn	\$6,358,500	\$4,633,000	73%	\$1,725,500
Totals	\$260,750,000	\$181,245,477	70%	\$79,504,523

MWRA I/I Local Financial Assistance Program - Fiscal Year Breakdown

FY	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	FY Total
FY93	Aug 1992	\$0	Nov 1992	\$0	Feb 1993	\$0	May 1993	\$2,714,883	\$2,714,883
FY94	Aug 1993	\$3,096,468	Nov 1993	\$4,096,133	Feb 1994	\$3,191,032	May 1994	\$251,494	\$10,635,127
FY95	Aug 1994	\$354,126	Nov 1994	\$976,700	Feb 1995	\$1,894,030	May 1995	\$6,489,891	\$9,714,747
FY96	Aug 1995	\$0	Nov 1995	\$504,100	Feb 1996	\$2,921,600	May 1996	\$3,902,426	\$7,328,126
FY97	Aug 1996	\$1,682,061	Nov 1996	\$1,581,266	Feb 1997	\$395,100	May 1997	\$3,530,758	\$7,189,185
FY98	Aug 1997	\$1,066,300	Nov 1997	\$1,157,260	Feb 1998	\$909,350	May 1998	\$2,001,608	\$5,134,518
FY99	Aug 1998	\$1,521,100	Nov 1998	\$2,464,263	Feb 1999	\$1,481,700	May 1999	\$5,758,077	\$11,225,140
FY00	Aug 1999	\$1,315,767	Nov 1999	\$1,847,900	Feb 2000	\$1,679,000	May 2000	\$1,070,100	\$5,912,767
FY01	Aug 2000	\$1,148,400	Nov 2000	\$388,000	Feb 2001	\$1,640,931	May 2001	\$804,800	\$3,982,131
FY02	Aug 2001	\$4,480,735	Nov 2001	\$704,040	Feb 2002	\$1,804,200	May 2002	\$5,002,691	\$11,991,666
FY03	Aug 2002	\$1,962,600	Nov 2002	\$4,461,768	Feb 2003	\$7,955,752	May 2003	\$1,836,600	\$16,216,720
FY04	Aug 2003	\$2,021,940	Nov 2003	\$1,306,200	Feb 2004	\$1,770,760	May 2004	\$3,295,400	\$8,394,300
FY05	Aug 2004	\$2,756,659	Nov 2004	\$6,013,436	Feb 2005	\$4,054,060	May 2005	\$2,636,700	\$15,460,855
FY06	Aug 2005	\$5,377,487	Nov 2005	\$4,589,600	Feb 2006	\$1,519,463	May 2006	\$6,489,676	\$17,976,226
FY07	Aug 2006	\$0	Nov 2006	\$4,947,414	Feb 2007	\$8,789,300	May 2007	\$8,121,023	\$21,857,737
FY08	Aug 2007	\$3,915,500	Nov 2007	\$4,355,750	Feb 2008	\$1,392,400	May 2008	\$4,436,600	\$14,100,250
FY09	Aug 2008	\$4,196,399	Nov 2008	\$352,000	Feb 2009	\$1,990,300	May 2009	\$4,872,400	\$11,411,099
Total		\$34,895,542		\$39,745,830		\$43,388,978		\$63,215,127	\$181,245,477

Type of Local Projects Receiving Funding

Funding has been provided to local communities for eligible I/I reduction projects including planning, design, construction, and engineering services during construction. These projects generally take one to three years to complete. Seventy-three percent of funds distributed to date have financed local construction projects. The table below details funds distributed by project phase for both completed and ongoing projects.

<u>PROJECT PHASE</u>	<u>COMPLETE PROJECTS (\$ millions)</u>	<u>ONGOING PROJECTS (\$ millions)</u>	<u>TOTAL (\$ millions)</u>
Planning/Study:	\$ 24.9	\$ 7.0	\$ 31.9 (18%)
Design:	6.6	1.6	8.2 (4%)
Construction:	102.4	29.2	131.6 (73%)
Eng. Services During Const.:	7.6	1.9	9.5 (5%)
TOTAL	\$141.5 (78%)	\$ 39.7 (22%)	\$ 181.2 (100%)

Program Results

The I/I Local Financial Assistance Program began in May 1993. Through FY09, a total of 367 local I/I reduction and sewer system rehabilitation projects have been funded through the MWRA's grant/loan program. Cumulative results for the program are summarized below.

Results for all projects (FY94 through FY09) for planning/inspection include the following:

- 1087 miles of sewer TV inspected
- 800 miles of sewer flow isolated
- 882 miles of sewer smoke tested
- 29,500 sewer manholes inspected
- 57,500 buildings inspected

Results for all projects (FY94 through FY09) for projects targeting infiltration reduction include the following:

- 36 miles sewer replaced
- 57 miles sewer CIP lined
- 106 miles sewer tested/chemically sealed
- 1,800 sewer spot repairs
- 5,700 service connection repairs
- 4.7 miles underdrains sealed

Results for all projects (FY94 through FY09) for projects targeting inflow reduction include the following:

- 718 catch basins disconnected
- 34 miles of new or replaced storm drains
- 8,800 manholes rehabilitated/sealed
- 1,280 manhole covers replaced or inflow seals installed
- 414 sump pumps redirected
- 5,100 downspouts/area drains disconnected

Estimated I/I Removal

The estimated average daily flow reduction associated with completed local I/I reduction projects that have received MWRA financial Assistance is about 74 mgd. This flow reduction “ballpark” figure is based on the communities’ (or their consultants’) peak I/I reduction estimates. MWRA staff have prorated the peak I/I reduction estimates to develop an estimated annual average I/I reduction. The estimated I/I removals noted here represent groundwater and stormwater that no longer enter the collection system at the point of repair. Regional wastewater flow reductions resulting from specific local I/I reduction projects are difficult to substantiate through end-of-the-collection-system meter data, due to factors noted below:

- Wastewater flows within the collection system vary dramatically due to changes in precipitation. For example, annual average daily flow for MWRA’s system varies up to 80 mgd from year to year. Small flow reductions for individual projects (typically less than one mgd) are dwarfed by regional flow fluctuations.
- Sewer capacity gained by elimination of I/I in one subsystem may, in some cases, allow for other I/I to enter the collection system at a different location, resulting in no net flow reduction at the end of the collection system.
- The consequence of ongoing pumping and interceptor upgrades, as well as combined sewer overflow and system optimization projects, is an increase in the capture and treatment of wastewater flow and the reduction of raw sewage discharges. These increased flows to the Deer Island Treatment Plant offset upstream I/I reductions.

Taking these factors into account, long-term metering records will continue to be analyzed to monitor regional wastewater flow trends. Accounting for annual rainfall fluctuations, the regional wastewater flow trend appears to be modestly declining.

Projects Funded During FY09

Local projects are funded quarterly by MWRA. Funding summaries for the four quarterly funding distributions during FY09 were submitted as part of the report and are available in hard copy from MWRA, including: August 2008 (six communities funded: Belmont, Boston, Newton, Norwood, Stoughton, and Waltham), November 2008 (one community funded: Randolph), February 2009 (two communities funded: Arlington and Newton), and May 2009 (three communities funded: Boston, Melrose, and Milton).

ATTACHMENT 5
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY09
Reporting Period: July 2008 Through June 2009

**I/I REDUCTION STATUS UPDATE FOR MEMBER
COMMUNITIES**

The MWRA is working cooperatively with member communities to develop phased I/I reduction programs throughout the service area. The Authority will encourage continuing community efforts in I/I reduction as detailed in the MWRA Regional I/I Reduction Plan. Many community I/I projects are funded through MWRA's I/I Local Financial Assistance Program. This \$260.75 million grant/loan program was established to provide funding to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Through FY09, MWRA has distributed \$181 million to fund local projects. A detailed update on MWRA's I/I Local Financial Assistance Program is included as Attachment 4 to this report.

The Authority has instituted a computer-based questionnaire format for communities to comply with required annual I/I reduction program status reporting. All 43 member sewer communities have submitted the latest I/I status report; reporting information is summarized below.

1. ARLINGTON: North System

Background Information:

- Miles of Sewer: 106
- Sewered Population: 40,812
- Three Year ('06 - '08) Annual Average I/I: 2.78 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Draft Report "Sewer System Investigation Year #3 and Year #1, 2, 3 Area Smoke Testing" dated April 2007. Year #4 Sewer System Investigation Study is ongoing.

Private Source Inflow Removal Program: East End Sewer Study metering identified areas that will require additional study to identify possible sump pump/drain leader connections to the sewer.

I/I Rehabilitation Projects in Design or Construction: The Year #1 Sewer Rehabilitation construction is substantially completed and warranty inspection/retesting was conducted in Spring 2009. The Year #2 Sewer Rehabilitation Design is ongoing with the draft contract documents being submitted to MWRA for review in June 2009. Design of the Sewer & Drain Improvements in the Mystic Bank Area was completed July 2008. Bids for this project were accepted July 31, 2008 with the contract being awarded in August 2008 with completion expected by the Fall 2009.

Reporting Period Activity:

- The Year #3 Sewer System Investigation & Repair Program and Year #1, 2, 3 Area Smoke Testing Draft Report was submitted to MWRA in April 2009. This Report also included the results and recommendations from the Gould Road and Forest Street Sewer Investigations.
- The Year #4 Sewer System Investigation & Repair Program is ongoing with the fieldwork completed Spring 2008.
- In February 2009, funds were distributed for two projects: (1) Design of recommended sewer rehabilitations per Year #3 Investigations Report; (2) Construction of recommended sewer rehabilitations per Year #2 Investigations Report (MWRA Project No. WRA-P6-01-3-656).

MWRA I/I Local Financial Assistance Program: The community has financed fifteen (15) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$4,189,000 allotted through the Program's Phases 1-6.

2. ASHLAND: South System

Background Information:

- Miles of Sewer: 66
- Sewered Population: 10,870
- Three Year ('06 - '08) Annual Average I/I: 0.44 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Investigation/Repair (CY 04/05) - Sub-Basins III / IV
I/I Investigation/Repair (Summary Report): April 2008
I/I Investigation/Repair (Summary Report): July 2009

Private Source Inflow Removal Program: The Town performed 65 sump pump investigations of residential/commercial properties in Sub-Basin III which identified zero sump pumps connected to the sewer system, five sump pumps not connected to the sewer system and eleven properties with yard drains or roof leaders piped into the ground. Sump pump investigation work is now complete in Sub-Basin III. To date, 349 house-to-house inspections have been performed in Sub-Basin III. The Town now plans to conduct a community-wide sump pump investigation of all properties connected to the sanitary sewer.

I/I Rehabilitation Projects in Design or Construction: Smoked tested 7000 LF of sewer main within Sub-Basin III. Completed seven point repairs (by open excavation). Completed I/I Investigation/Repair Summary Report (July 2009) for Sub-Basins I – IV.

Reporting Period Activity: West Union Street Transmission Sewer Replacement to provide additional capacity for proposed development. Jefferson at Ashland Station Development to add 6670 LF of 6-inch force main and 8-inch gravity sewer. Signature Estates II Development to add 800 LF of 8-inch PVC sewer and six sewer connections. Winter Hollow Estates to add 700 LF of 2-inch force main and seven sewer connections.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$930,500 allotted through the Program's Phases 1-6.

3. BEDFORD: North System

Background Information:

- Miles of Sewer: 68
- Sewered Population: 11,216
- Three Year ('06 - '08) Annual Average I/I: 1.79 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: SSES (July 2006) SSES 2008 (Ongoing)

Private Source Inflow Removal Program: No additional inspections were reported this period.

I/I Rehabilitation Projects in Design or Construction: The Heritage Estates Rehabilitations Project (Phase I of 2005 SSES Rehabilitations) was completed October 2008. Work is being conducted in areas where approximately 131,252 gpd of peak infiltration and 2408 gpd of peak inflow was identified. Post-construction flow isolation was completed June 2008. The Phase II Sewer Rehabilitation Design is ongoing. The Town installed six manhole inflow dishes to remove an estimated 4320 gpd of inflow.

Reporting Period Activity: The CY 2008 SSES Report is being completed. The Phase II Sewer Rehabilitation Design, which includes the recommended Sewer rehabilitations from the CY05 SSES Report, is ongoing.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$1,691,600 allotted through the Program's Phases 1-6, the community has \$581,300 remaining in funding assistance.

4. BELMONT: North System

Background Information:

- Miles of Sewer: 78
- Sewered Population: 22,927
- Three Year ('06 - '08) Annual Average I/I: 2.06 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Draft Report on the Comprehensive Flow Monitoring Project was completed September 2007. MWRA comments were issued November 2007. The Draft Sewer System Evaluation Survey Report was completed June 2009.

Private Source Inflow Removal Program: The first contract for connecting private inflow sources to the Town's storm drain system was completed March 2008.

The Town continues to work with potential developers in implementing a program that either removes I/I at rate of 5 to 1 or makes a one time payment to the Town to fund community I/I removal work. The Belmont Uplands project is currently in negotiation.

I/I Rehabilitation Projects in Design or Construction: The contract for connecting private inflow sources to the Town's storm drain system was awarded February 2004 and has been completed. This project removed approximately 1,165,000 gpd of peak daily inflow from the existing sewer.

In Spring 2007, a sewer rehabilitation project commenced. This project included point repairs and relining of 31,000 LF of sewer and drain. It is estimated that 72,131 gpd of infiltration was removed by this project. Contract value is approximately \$1.4M. Project work has been completed.

Reporting Period Activity: In August 2008, MWRA Provided \$682,599 in funding assistance for two projects: (1) Performing a Comprehensive Flow Monitoring Program of the Town sewer system which consisted of the installation of 20 continuous flow meters; (2) Performing a Sewer System Evaluation Survey based upon results of Flow Monitoring Program which will included flow isolation; manhole inspections; smoke testing; dyed water flooding and testing; and building inspections.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$2,556,100 allotted through the Program's Phases 1-6, the community has \$581,101 remaining in funding assistance.

5. BOSTON: North and South Systems

Background Information:

- Miles of Sewer: 858
- Sewered Population: 558,475
- Three Year ('06 - '08) Annual Average I/I: 40.73 mgd
- Massachusetts DEP Administrative Order: None (Cooperative agreement exists)

Latest I/I or SSES Reports: Roxbury Canal Sewer Separation Study; Upper Neponset Valley Sewer Inflow Survey; Granite Avenue I/I Survey; Dorchester High Level Sewer I/I Survey; Lower Dorchester Brook Sewer Study; Longwood Medical Area I/I Survey; West Roxbury Low Level Sewer I/I Study

Private Source Inflow Removal Program: Since 1994, the Downspout Disconnection Program has conducted approximately 38,000 building surveys and 10,500 dye water tests. Approximately 23,000 downspouts have been disconnected. During CY05-CY09, a total of seventy-five (75) large impervious areas were surveyed to identify inflow sources. All seventy-five (75) areas have been dye tested.

I/I Rehabilitation Projects in Design or Construction: BWSC has both completed and is currently working on a wide variety of separation and I/I identification/rehabilitation projects. To date, sixty-nine (69) projects have received funding through the MWRA I/I Local Financial Assistance Program. During FY07-FY09, BWSC completed the following rehabilitation projects: Sewer Rehabilitation in Dorchester/Mattapan/West Roxbury/Brighton, Talbot Avenue High Level Sewer Area Sewer Replacement/Manhole Rehabilitation, South End Sewer Rehabilitation, Marginal Street Sewer Separation, St. Botolph Street Sewer Separation, Maverick Street Sewer Separation, Chester Park Area Sewer Separation, West Side Interceptor Lining and Back Street Sewer Separation.

BWSC entered into an I/I reduction agreement with the Massachusetts DEP in January 1986. As provided in the agreement, BWSC has performed a Phase II SSES on separated sewer areas within the City. BWSC also has an ongoing tide gate/regulator inspection and repair program and performs separation projects on pockets of combined sewers tributary to separated sewer areas.

Boston is one of MWRA's five combined sewer service communities. As part of the MWRA CSO Facilities Upgrade Project, Boston's flows are being evaluated for volume and discharge locations.

Reporting Period Activity: BWSC is required to report to the EPA on I/I reduction measures under their NPDES permit. This reporting requirement coincides with the MWRA's required submittal dates; therefore, please refer to the BWSC NPDES report for a summary of activities during this period.

MWRA I/I Local Financial Assistance Program: The community has financed sixty-nine (69) I/I identification/reduction projects through the Authority's funding assistance program. Of the \$62,946,200 allotted through the Program's Phases 1-6, the community has \$11,114,599 remaining in funding assistance.

6. BRAINTREE: South System

Background Information:

- Miles of Sewer: 133
- Sewered Population: 33,647
- Three Year ('06 - '08) Annual Average I/I: 3.65 mgd
- Massachusetts DEP Administrative Order: No. 546 (Issued April 1, 1985),
ACO-NE-01-1001 (Signed April 26, 2001)

Latest I/I or SSES Report: Flow Isolation / TV Inspection of Allen St. Interceptor (April 2003)

Private Source Inflow Removal Program: Sump pump removal program is ongoing. Ten (10) private source sump pump removal contracts have redirected 295 sump pumps to date. A funding request for an additional sump pump removal contract will be offered during the Town's October 2009 Special Town Meeting. Developer Flow Reduction Program is now 6 to 1 per DEP ACO.

I/I Rehabilitation Projects in Design or Construction: Bestwick Road Infiltration Rehabilitation construction completed (replaced 300 LF of damaged VC sewer pipe with PVC sewer pipe). Water table above sewer line in this area. Mill Lane Infiltration Rehabilitation construction completed (replaced 50 LF of damaged VC sewer pipe with PVC sewer pipe). Sewer Line abuts Monatiquot River. Contract 06-S1: Howie Road Infiltration Rehabilitation (Sub-Areas L2 through L7) construction completed.

Reporting Period Activity: Jefferson Street Pump Station Rehabilitation completed. Lenox Farms Subdivision (41 buildings) completed.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$3,861,000 allotted through the Program's Phases 1-6, the community has \$1,377,873 remaining in funding assistance.

7. BROOKLINE: North and South Systems

Background Information:

- Miles of Sewer: 111
- Sewered Population: 55,479
- Three Year ('06 - '08) Annual Average I/I: 5.85 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Phase II I/I Investigation (April 2002)

Private Source Inflow Removal Program: Town is in the process of developing a Private Flow Source Identification and Removal Program. A 4:1 Flow Reduction is enforced for large residential and commercial projects.

I/I Rehabilitation Projects in Design or Construction:

- The design of Sewer Rehabilitation Project #6 (Contract PW/09-12) was completed November 2008. A contract was awarded March 2009. The completed rehabilitation consisted of 7760 LF of inversion lining of 8 to 18-inch sewers and point repairs to 200 LF of various size sewers.
- Lower Beacon Street Sewer Separation Phase I was awarded November 2008. Construction is 30% complete for the installation of 7000 LF of 12 to 18-inch storm drain, 35 manholes and 10 catch basins.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$6,268,200 allotted through the Program's Phases 1-6, the community has \$1,538,000 remaining in funding assistance.

8. BURLINGTON: North System

Background Information:

- Miles of Sewer: 115
- Sewered Population: 23,276
- Three Year ('06 - '08) Annual Average I/I: 1.89 mgd
- Massachusetts DEP Administrative Order: ACO-NE-01-1004 (7/25/01)

Latest I/I or SSES Report: Easement Pipeline Investigation Report (May 2008)
Phase 4 Sewer System Rehabilitation Program Investigations
(September 2008)

Private Source Inflow Removal Program: Sump pump removal program is ongoing. Sump pumps are removed once found.

I/I Rehabilitation Projects in Design or Construction: Bids were received November 2007 for the Phase 3 Sewer System Rehabilitation Project. Contract has been awarded to National Water Main Cleaning Company. Project work consisted of short liners, joint testing & sealing and manhole lining was completed January 2009.

Concurrently, Nordblom and VHB had begun their own rehabilitation program in efforts to obtain sewer allocation for their large forecasted project. Their program finished at the same time as the Town's. Collectively, the estimated removal of I/I is 0.486 average mgd and was approved by the DEP in March 2009. The I/I removal for both projects was estimated by SEA Consultants.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$2,389,800 allotted through the Program's Phases 1-6.

9. CAMBRIDGE: North System

Background Information:

- Miles of Sewer: 148
- Sewered Population: 100,035
- Three Year ('06 - '08) Annual Average I/I: 10.00 mgd
- Massachusetts DEP Administrative Order: NE-96-1004

Latest I/I or SSES Report: Phase II: Analysis and Fast Track Design of I/I Rehabilitation
Projects (April 2004)

Private Source Inflow Removal Program:

- Building inspection work completed in the previous year also included Prentiss Street, Roseland Street, Newport Road, Forest Street, Frost Street, and portions of Oxford Street in the Agassiz area.

- Building inspection work completed in the current period included Whittemore Avenue, Madison Street, Columbus Avenue, Harrison Avenue, Kimball Street, Kassul Park, Seagrave Road and Magoun Street in the CAM 002/400 area.
- Building inspection work has started on Western Avenue for the Western Avenue/Riverside project.

I/I Rehabilitation Projects in Design or Construction: The City continues implementation of its Stormwater Management Program. DPW continues to require developers to handle as much stormwater as possible on-site using dry wells and other storm water retention/detention devices (also see Reporting Period Activity below).

Reporting Period Activity: Below is a list of ongoing I/I related projects:

Broadway Stormwater Management System (CAM 011) Phase VI and Contract 3D. This project involves the installation of 680 LF of 15 to 36-inch storm drain on Elley Street that will allow the connection of the Agassiz system (streets) into the separated mid-Cambridge system. A stormwater detention tank will be installed along with a number of storm drain manholes, catch basins and two diversion structures. A pump station has already been installed. The detention tank will retain stormwater runoff from Cambridge Street and Broadway. At the end of the storm event, the pump station will pump the runoff from the detention tank to the Broadway system. The project is expected to be completed by the end of CY09.

Common Manhole Removal Contract No. 6. This project will separate 13 common manholes in the area of Griswold Street, Sunset Road, Loomis Street, South Normandy Avenue, Normandy Avenue and Normandy Terrace area. The project has been added via Change Order to the City's existing Remedial Repair Contract. Three common manholes have been separated to date. Construction is expected to be completed by September 2009.

Common Manhole Removal Contract No 4A. This project originally included the separation of 8 common manholes along the south side of Massachusetts Avenue in Central Square. The scope of work was increased by including the separation of 14 common manholes along the north side of Massachusetts Avenue that were originally part of the Bishop Allen Stormwater Management Project. This project has been bid and awarded. Construction began August 2008 with completion scheduled for September 2009. To date, the contractor has separated 23 common manholes.

Bishop Allen Stormwater Management Project: CAM017 Phase III. This project includes the construction of a stormwater pumping station that will divert stormwater from the MWRA sewer system to the Charles River through the recently constructed south Massachusetts Avenue storm drain. The project is designed and on hold pending resolution of issues related to easements and permits. The separation of 14 common manholes, originally included as part of this project, was added to the Common Manhole Removal Contract 4A.

Agassiz Area, Upper Oxford Street Side Streets – Sewer Separation and Stormwater Management. The purpose of this project is to investigate and design stormwater solutions for five side streets in the upper Oxford Street drainage area, including Forest Street, Frost Street,

Prentiss Street, Roseland Street and Newport Road. It will address illicit connections, common manholes, design of new stormwater lines, converting existing combined lines into separate sewer lines and surface improvements. The engineering contract has been awarded and design work is completed. The City is in the process of preparing bid documents for the first phase of the project on Prentiss St (Contract #3F). It is expected that this Contract will be bid in late Summer 2009 and awarded by Fall 2009.

CAM 002/400 Whittemore Area - The City's contractor is preparing designs to separate 12 common manholes in the CAM 002/400 area. It is expected that the project design will be completed by December 2009 and a contract will go out for bid by January 2010.

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. Of the \$11,347,100 allotted through the Program's Phases 1-6, the community has \$1,570,045 remaining in funding assistance.

10. CANTON: South System

Background Information:

- Miles of Sewer: 62
- Sewered Population: 14,021
- Three Year ('06 - '08) Annual Average I/I: 1.58 mgd
- Massachusetts DEP Administrative Order: No. 537 (Issued April 3, 1984)

Latest I/I or SSES Report: Comprehensive Water Resources Management Plan (On-going)

Private Source Inflow Removal Program: No additional inspections were reported during this period. Town has established an I/I Mitigation Fee for all new connections. Fee is paid based upon DEP flow rates at a 4 to 1 ratio.

I/I Rehabilitation Projects in Design or Construction: Green Lodge Interceptor Replacement design complete. Contract Documents have been submitted for State SRF Funding. Project to be bid Fall/Winter 2009. Flow monitoring of Subsystems 7/9/12/14/16/18/19/24 completed. Design for Subsystem 24 (York Brook / Linden Glen Area) rehabilitation (cleaning/testing/sealing of 7000 LF of sewer and rehabilitation of 18 manholes) ongoing. Phase IV I/I Rehabilitation Project (Contract 2007-1S) completed Spring 2008. Project work included cleaning/testing/sealing approximately 30,000 LF of sewer and 30 manholes within Subsystems 1-5 / 11. Phase III-A I/I Rehabilitation Project (Contract 2006-1S) completed September 2007. Project work included cleaning/testing/sealing approximately 14,600 LF of sewer, replacing approximately 300 LF of existing main, rehabilitating 65 manholes and installing 40 watertight covers within Subsystem 14.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$2,013,900 allotted through the Program's Phases 1-6, the community has \$368,000 remaining in funding assistance.

11. CHELSEA: North System

Background Information:

- Miles of Sewer: 41
- Sewered Population: 32,518
- Three Year ('06 - '08) Annual Average I/I: 1.87 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Inflow Evaluation for area tributary to CSO CHE-007 (March 2003)

Private Source Inflow Removal Program: Private inflow source identification is complete for CHE-007 tributary areas. The City is in the process of implementing a developer-funded sewer bank for I/I removal improvements. The program is expected to be at a 1 to 1 ratio.

I/I Rehabilitation Projects in Design or Construction:

- Construction of the Spruce Street Roadway & Utility Project continues to be delayed by third parties. It is unknown at this time when construction on the project will resume.
- Construction of the Crescent Avenue Infrastructure Reconstruction Project (BETA Group) is ongoing and is anticipated to be completed early Spring 2010.
- Construction of the Locke Street Sewer Replacement project, which involved the replacement of 300 LF of 24-inch VC pipe with 24-inch PVC, is complete.
- Design of the Jefferson Avenue Utility Improvement project is complete; bids are due August 2009; construction is planned for the 2009 construction season.
- Design of the Washington Ave Utility & Infrastructure Improvements project is ongoing; design is anticipated to be complete early 2010.
- Design of the Crescent Urban Renewal Area Utility Improvements has been delayed in conjunction with associated third-party re-development; it is unknown at this time when the project will start and when it will be completed.

- Construction of a portion of the Carter Street Sewer Replacement project is ongoing and is anticipated to be completed Summer 2009. The portion of the project currently underway includes replacement and realignment of the existing sewer on Fourth Street to eliminate sanitary sewer overflows at Carter Street, as well as rerouting a catch basin from the sanitary sewer to the existing drain. Construction of the remaining portion of the project is on hold due to funding.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed nine (9) I/I reduction projects through the Authority's funding assistance program. Of the \$3,005,100 allotted through the Program's Phases 1-6, the community has \$127,000 remaining in funding assistance.

12. DEDHAM: South System

Background Information:

- Miles of Sewer: 89
- Sewered Population: 21,505
- Three Year ('06 - '08) Annual Average I/I: 2.73 mgd
- Massachusetts DEP Administrative Order: No. 547 (Issued October 1, 1985).

Latest I/I or SSES Report: Internal TV Inspection of Sewers (Letter Report - June 2004)

Private Source Inflow Removal Program: The Town adopted a sewer system enterprise fund at the May 2009 Town Meeting.

I/I Rehabilitation Projects in Design or Construction:

The 2008 I/I Infiltration Rehabilitation Project (Contract No. 08-1 / MWRA Project No. WRA-P6-12-3-636) was completed (with the exception of warranty retesting) December 2008. The project had a total contract cost of \$2,484,824 and resulted in elimination of approximately 1.44 MGD of removable infiltration. Project work included 48,356 LF of CITS; 1146 LF of short liners; 21,867 LF of CIPP; and 3252 VF of cementitious manhole lining.

The Town also continued its annual sewer system inspection program. Between April 2009 and June 2009, the Town cleaned and inspected 112,711 LF of sewer main and performed 772 top-side manhole inspections. The Town plans to utilize this data to perform additional rehabilitation on the most cost-effective lines/manholes in the Summer/Fall 2009 utilizing an on-call contract.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed twelve (12) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$2,945,000 allotted through the Program's Phases 1-6.

13. EVERETT: North System

Background Information:

- Miles of Sewer: 57
- Sewered Population: 36,837
- Three Year ('06 - '08) Annual Average I/I: 2.19 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-08-1N006 (July 2008)

Latest I/I or SSES Report: Sanitary Sewer Overflow Abatement Plan (January 2009)

Private Source Inflow Removal Program: No additional inspections were reported during this period.

I/I Rehabilitation Projects in Design or Construction: Replacement of a 10-inch corrugated metal sewer pipe on Behan Street was completed April 2008. The redirection of a catch basin at Broadway and Timothy Street (that was discharging to the sewer) was completed February 2008.

Reporting Period Activity: See above work description.

The completed Sanitary Sewer Overflow Abatement Plan included an assessment of existing condition of sewers in the areas of Behan Street, Beacham Street and Commercial Street. The sewers (approximately 6000 LF) ultimately discharge to the MWRA sewer interceptor near Second Street at Everett Public Connection #EV-013-P.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$3,841,500 allotted through the Program's Phases 1-6, the community has \$700,000 remaining in funding assistance.

14. FRAMINGHAM: South System

Background Information:

- Miles of Sewer: 275
- Sewered Population: 62,946
- Three Year ('06 - '08) Annual Average I/I: 2.69 mgd
- Massachusetts DEP Administrative Order: ACO-NE-07-1N001 (March 8, 2007)

Latest I/I or SSES Report: Town-Wide I/I Study / SSES Phase 1 / CWMP (Under Final Review)
SSES Phase 2 (Under Final Review); SSES Phase III (Ongoing)

Private Source Inflow Removal Program: As part of the SSES Phase 3 (covering Sewer Subareas U / Z), approximately 200 homes and businesses are being targeted for inspection.

As part of the SSES Phase 2 (covering Sewer Subareas W / G), approximately 280 homes and businesses were inspected during Fall 2008. Nine properties were identified with sump pumps discharging to the sanitary sewer. An additional seven properties were identified with potential private inflow sources. These potential sources will be verified through dye testing. Any confirmed sources will need to be removed per the Town's Sump Pump and Illicit Connection Elimination Plan (June 2007; required by DEP's ACO).

The Town is also undertaking a Storm Water Management Study that will provide Town-wide mapping of the sewer and storm water drainage systems. Private inflow sources will be identified and removed as part of rehabilitation contracts within portions of Gregory Road, Water Street, Simpson Drive, Central Street and Concord Street.

As part of the Gregory Road, Water Street and Fenwick Street projects, an I/I study was undertaken to determine if there were tributary sewers with significant I/I issues and identification of private inflow sources. This included basement plumbing inspection of almost 300 homes and businesses. The inspections found only a few structures with sump pumps directly connected to the sewer. These illicit connections will be eliminated per the Town's Sump Pump and Illicit Connection Elimination Plan (June 2007; required by DEP's ACO).

I/I Rehabilitation Projects in Design or Construction: Replacement of approximately 2300 LF of 10 and 12-inch VC and asbestos cement gravity sewer on Central Street with 15-inch PVC sewer began February 2009 and is ongoing. This project was developed in response to a DEP Administrative Consent Order issued in March 2007.

The Cove Avenue Area Sewer Rehabilitation Project included the rehabilitation of approximately 5500 LF of 8 and 10-inch VC gravity sewer pipe with a cured-in-place liner on Cove Avenue, Lake Street, Dow Street, Winthrop Terrace, Nipmuc Terrace and Nipmuc Road. The gravity sewers in the area are approximately 60-90 years of age, have reached the end of their useful life and require frequent maintenance in order to prevent blockages. The structural defects observed in these sewers have the potential to make significant infiltration contributions to the wastewater system during rain events and periods of high groundwater levels. This project was completed July 2009.

The Farm Pond Interceptor Sewer Rehabilitation Project consists of lining approximately 2000 LF of 24 to 36-inch sewer. The existing sewer has experienced severe damage due to hydrogen sulfide corrosion. Design is complete and the project is currently in the bidding phase.

The Sudbury River Interceptor Project consists of lining approximately 4000 LF of 18-inch sewer in a wetland area of the Sudbury River. This project is currently in design and is scheduled to be bid December 2009.

The Prospect Street Sewer Replacement Project includes the replacement of approximately 6050 LF of 6 and 8-inch VC gravity sewer pipe in Prospect Street, Lilian Road and Lilian Road Extension with 8-inch PVC gravity sewer pipe. The gravity sewers in the area are approximately 50-70 years of age, have reached the end of their useful life and require frequent maintenance in order to prevent blockages. Infiltration of the sewers in this area contributes to a sanitary sewer overflow (SSO) on Central Street during periods of heavy flow. Project construction began July 2009.

Reporting Period Activity: The Water Street Sewer Replacement / Gregory Road Relief Sewer Project consists of replacing approximately 10,000 LF of 12 and 15-inch sewer in Water Street with a new 24-inch sewer and installing approximately 2000 LF of 15-inch sewer in Hemenway Road to provide relief to an overburdened interceptor sewer that serves the Gregory Road area. Project design completed March 2007 and advertised for bids April 2007. Construction began June 2007 and was completed November 2008.

The Fenwick Pumping Station and Force Main Replacement Project consists of replacing the existing, outdated Fenwick Pumping Station with a new, higher capacity station and replacing the existing 10-inch force main with a 12-inch force main. The project will replace a pumping station that is beyond its useful life and will resolve pumping station capacity issues that occur during high wet weather flows. Project design completed March 2007 and advertised for bids April 2007. Construction began June 2007 and is currently ongoing.

The Michaud / Cypress / Ransom Road Pumping Station Replacement Project consists of replacing three pump stations that have exceeded their design life. The Ransom Road Pump Station will be replaced with a higher capacity station to address hydraulic issues at the existing station. The force mains of the three pump stations will also be replaced (approximately 1000 LF). A new gravity sewer will be extended from Wood Avenue to the Cypress Pump Station to address operation and maintenance issues with the existing 6-inch sewer. In total, approximately 1000 LF of force main will be installed and 2800 LF of 8-inch gravity sewer will be installed.

The upgrade to the existing Paramount Pumping Station is scheduled for completion November 2009. The upgrade is needed to handle increased flows associated with the expansion of Framingham's Technology Park (in particular, Genzyme's near and long term development).

MWRA I/I Local Financial Assistance Program: The community has financed ten (10) I/I reduction projects through the Authority's funding assistance program. Of the \$6,019,000 allotted through the Program's Phases 1-6, the community has \$1,788,605 remaining in funding assistance.

15. HINGHAM: South System

Background Information:

- Miles of Sewer: 31
- Sewered Population: 6,625
- Three Year ('06 - '08) Annual Average I/I: 0.80 mgd
- Massachusetts DEP Administrative Order: No. 536 (Issued November 15, 1985)

Latest I/I or SSES Report: Comprehensive Wastewater Management Plan (Ongoing);
I/I Investigation (Ongoing); Manhole Inspection (August 2008)

Private Source Inflow Removal Program: The house-to-house sump pump inspection and roof leader disconnection programs continue. Thirty residential sump pump inspections within Bayberry Road/Hawthorne Road/Juniper Street neighborhoods were performed. Lateral camera inspections were undertaken within Bradley Woods area.

I/I Rehabilitation Projects in Design or Construction: The Town has completed inspection of 250 manholes. Manhole inspection summary and recommendation report completed August 2008. The Town will use Developer Flow Reduction Program funds (4 to 1 removal @ \$2.67/gallon) to identify I/I sources in conjunction with the ongoing I/I Investigation and Comprehensive Wastewater Management Study. Main line and lateral camera inspections undertaken within the Bradley Woods area. Main line/manhole rehabilitation performed on Jarvis Avenue/Parker Drive/Bradley Woods Drive.

Reporting Period Activity: Mill Street Pumping Station Rehabilitation completed April 2009. Community sewer extensions were undertaken at the Hingham Shipyard/Miles Road.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$741,500 allotted through the Program's Phases 1-6, the community has \$152,000 remaining in funding assistance.

16. HOLBROOK: South System

Background Information:

- Miles of Sewer: 31
- Sewered Population: 8,453
- Three Year ('06 - '08) Annual Average I/I: 0.37 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-04-1001
(Signed January 7, 2005; Amended July 24, 2007)
(Amended ACO No. 2; Signed May 2008)

Latest I/I or SSES Report: I/I Inspections Report (7/06); DEP ACO Progress Report (6/08)
CWSRF No. 2919 Contract No. 1 (10/09)

Private Source Inflow Removal Program: The State has approved the Town's Sewer Bank Policy. A building inspection program targeted structures in Sub-areas C/E/I/H(7). In total, thirty sump pump were identified with fifteen sump pumps considered suspect and recommended for dye testing. The fifteen suspect sump pumps have been redirected.

I/I Rehabilitation Projects in Design or Construction: Manholes inspections (300 total) were conducted primarily in Sub-areas A/F/G/H(8). TV inspection was conducted on 10,500 LF of sewer in Sub-areas H(7) and H(8). Smoke testing was conducted on 69,500 LF of sewer in Sub-areas B/H(7)/I and a portion of Sub-area A.

Reporting Period Activity: The Town has completed its yearly check of all cross-country sewer manholes. Phases 3/4 properties associated with collection system expansion are now being connected at owner's request. Phases 5/6 of collection system expansion remain on hold.

MWRA I/I Local Financial Assistance Program: The community has financed one (1) I/I reduction project through the Authority's funding assistance program. Of the \$780,600 allotted through the Program's Phases 1-6, the community has \$284,000 remaining in funding assistance.

17. LEXINGTON: North System

Background Information:

- Miles of Sewer: 172
- Sewered Population: 29,055
- Three Year ('06 - '08) Annual Average I/I: 3.26 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Metering, Modeling and Evaluation of the Sanitary Sewer System
Final Report (October 2007)

Private Source Inflow Removal Program: Town Meeting adopted a Stormwater Bylaw in May 2008. Regulations are being drafted for approval by Board of Selectmen. These regulations will serve as a tool for the Town in removing sump pumps from the sewer system.

I/I Rehabilitation Projects in Design or Construction: In July 2008, construction began to excavate and replace approximately 2000 LF of 8-inch VC sewer on School Street. This is an area where regular surcharging has occurred. Camera inspection revealed that the sewer main is cracked and quartered in many areas with significant infiltration occurring. The volume of infiltration being eliminated is estimated at 7000 gpd. Project work has been completed.

Reporting Period Activity: The town solicited proposals from consulting engineers for the next steps in the sewer renovation work. Weston and Sampson Engineers (WSE) has been selected. The work will begin August 2009. A rehabilitation contract will be bid for award this year for work to be done beginning March 2010. The scope of this work will be in two project areas. In Lexington Sewer Basin 10, work will include review and supplement existing investigations. They will prepare a rehabilitation contract for manholes, sewer main and laterals for the basin. In Lexington Sewer Basin 6 and 7, work will include similar investigations and preparation of a

rehabilitation contract. In this area, the emphasis will be on environmentally sensitive and cost-effective access to manholes in remote easements. Shortly, the Town or WSE will request a meeting with MWRA staff for review and comment.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$3,507,300 allotted through the Program's Phases 1-6, the community has \$1,973,700 remaining in funding assistance.

18. MALDEN: North System

Background Information:

- Miles of Sewer: 100
- Sewered Population: 55,815
- Three Year ('06 - '08) Annual Average I/I: 4.82 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Malden Sewer System Survey (SSES) – Phase III Report (June 2009)

Private Source Inflow Removal Program: No additional inspections were reported.

I/I Rehabilitation Projects in Design or Construction: Construction of Contract No. 2007-S-1 was substantially complete August 2008. Additional sewer rehabilitation work was added under Change Orders to Contract No. 2007-S-1. Contract 2007-S-1 is complete. The total (including additional work) sewer main relining under this contract is as follows: 6-inch sewer – 681 LF; 8-inch sewer – 26,519 LF; 10-inch sewer – 6076 LF and 12-inch sewer – 1036 LF. Estimated I/I removal is an additional 78,594 gpd for a total of 423,000 gpd. Funds for this project were distributed by MWRA in December 2006 (MWRA Project No. WRA-P6-18-3-601).

Reporting Period Activity: The Final Report of the Malden Sewer System Survey – Phase III Report was completed June 2009. The recommendations of this report will be used to develop the next phase of sewer rehabilitations.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$5,641,900 allotted through the Program's Phases 1-6, the community has \$1,048,000 remaining in funding assistance.

19. MEDFORD: North System

Background Information:

- Miles of Sewer: 113
- Sewered Population: 53,469
- Three Year ('06 - '08) Annual Average I/I: 4.93 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Analysis / Limited SSES – Part 2 (October 2002)

Private Source Inflow Removal Program: No additional inspections were reported.

I/I Rehabilitation Projects in Design or Construction: The Essex Street Sewer and Water Replacement Project began July 2008. A portion of this project involves the installation of a drain connection for the elimination of an estimated 27 sump pumps from the sewer system. The drain connection installations have been completed and connections of the sump pump discharges to the drain nearing completion. The Essex Street Sewer and Water Replacement Project also involved the replacement of 750 LF of sewer.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I reduction projects through the Authority's funding assistance program. Of the \$5,834,600 allotted through the Program's Phases 1-6, the community has \$1,040,000 remaining in funding assistance.

20. MELROSE: North System

Background Information:

- Miles of Sewer: 74
- Sewered Population: 26,339
- Three Year ('06 - '08) Annual Average I/I: 2.79 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Rehabilitation Project Recommendations (November 2001)

Private Source Inflow Removal Program: No inspections were reported during this period.

I/I Rehabilitation Projects in Design or Construction: Two sewer rehabilitation projects (Contract Nos. 07-1 / 07-2) have been completed. Contract No. 07-1 involved cleaning, inspecting testing and sealing of 6 to 20-inch sewers; chemical root treatment; various manhole rehabilitations and liner installations; and TV inspection, testing and grouting of service connections. Contract No. 07-2 involved a series of open cut spot repairs in Ardsmoor Road, Leonard Road, Irving Street, Harvard Street, and the easement between Harvard Street and Lebanon Street.

An additional ongoing design project involves sewer rehabilitations within the area tributary to the Upham Street Pump Station. These rehabilitations were identified in the “Upham Street Pump Station Tributary Area I/I Reduction Project” Report dated February 1995.

Design of the next I/I sewer rehabilitation project (Contract No. 09-1) has begun. This sewer rehabilitation will be performed in Sewer Subareas Nos.4, 8, 9, 11, 11A, 12, 14A, 15, 20, 21, 22 and 23. The project work will include: cleaning, TV inspection, joint testing & sealing; chemical root treatment; installation of cured-in-place pipe (CIPP) short liners; installation of manhole to manhole CIPP liners; cutting of protruding services connections; internal inspection, testing and grouting of service connections; open cut sewer repairs; and sewer manhole rehabilitations. The estimated peak I/I reduction is 0.30 mgd. This project was funded in May 2009 under the MWRA I/I Local Financial Assistance Program (MWRA Project No. WRA-P6-20-3-660).

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority’s funding assistance program. The City has utilized all of the \$2,845,300 allotted through the Program’s Phases 1-6.

21. MILTON: South System (Small Portion Tributary to the North System)

Background Information:

- Miles of Sewer: 83
- Sewered Population: 24,212
- Three Year (‘06 - ‘08) Annual Average I/I: 2.41 mgd
- Massachusetts DEP Administrative Order: No. 580 (Issued June 13, 1985)

Latest I/I or SSES Report: Town-Wide Sewer System Evaluation - Year 5 (February 2008)
Re-Prioritization Evaluation Report (March 2009)

Private Source Inflow Removal Program: The Town is continuing to pursue the removal of sump pumps and other private inflow sources identified through a previously completed building inspection program. All new connections to the municipal sanitary sewer system will be charged a one-time I/I mitigation fee. Connection applicants must remove four gallons of I/I from the sewer system for each one gallon of new wastewater flow requested in the connection permit. If there are not sources of I/I that, at the discretion of the DPW Director, are appropriate for removal at the time of the permit, a monetary fee may be required (at a cost of \$3.00 per gallon of flow per day to be removed).

I/I Rehabilitation Projects in Design or Construction: Town-Wide Sewer Evaluation Program – Year 4 I/I Rehabilitation construction was completed March 2009. An estimated 0.13 mgd of infiltration was removed. Town-Wide Sewer Evaluation Program – Year 5 was completed February 2008. Subsequent I/I Rehabilitation – Year 5 design was completed May 2009. Year 5 I/I Rehabilitation construction scheduled for completion in CY09. An estimated 0.19 mgd of infiltration will be removed. A Re-prioritization Evaluation Report was completed March 2009. This report updated the Town-Wide Sewer Evaluation schedule for the next twelve years.

Reporting Period Activity: Approximately 1150 LF of 8-inch PVC sewer was installed on Brush Hill Road to extend the sewer main from the Fuller Village service southerly to the intersection with Blue Hill Avenue. Approximately 1700 LF of 8-inch PVC sewer was installed for the development of Fletcher Steele Way from Highland Street, through Fletcher Steele Way, to the intersection of Highland Street and Reed Street.

MWRA I/I Local Financial Assistance Program: The community has financed sixteen (16) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$2,779,500 allotted through the Program's Phases 1-6.

22. NATICK: South System

Background Information:

- Miles of Sewer: 123
- Sewered Population: 27,535
- Three Year ('06 - '08) Annual Average I/I: 1.13 mgd
- Massachusetts DEP Administrative Order: No. 593 (Issued November 15, 1985)

Latest I/I or SSES Report: Town-Wide SSES (Ongoing)

Private Source Inflow Removal Program: The SSES includes a house-to-house inspection component. Home inspections also have been conducted in conjunction with a water meter replacement program.

I/I Rehabilitation Projects in Design or Construction: The SSES includes manhole inspection, house-to-house private source investigation and sewer line smoke testing. Estimated peak infiltration removed is 0.01 mgd. The Town performed the following sewer rehabilitation projects: Lined 804 LF of 10-inch sewer on East Street. Project completed April 2009. Estimated peak infiltration removed is 0.01 mgd. Lined 1054 LF of 12-inch sewer on Bolster Avenue Easement. Project completed April 2009. Estimated peak infiltration removed is 0.01 mgd. Lined 768 LF of 8-inch sewer on University Drive Easement. Project completed April 2009. Estimated peak infiltration removed is 0.01 mgd. Lined 574 LF of 8-inch sewer on East Central Street. Project completed April 2009. Estimated peak infiltration removed is 0.01 mgd. Lined 103 LF of 24-inch sewer on Lake Street. Project completed April 2009. Estimated peak infiltration removed is 0.01 mgd. Lined 290 LF of 8-inch sewer on Tamarack Road Easement. Project completed May 2009. Estimated peak infiltration removed is 0.01 mgd.

Reporting Period Activity: Bacon Street (3 connections) sewer extension added 500 LF of 8-inch PVC gravity sewer. Everett Street (2 connections) sewer extension added 375 LF of 8-inch PVC gravity sewer. Private sewers at Chrysler Road Apartments (1 connection/404 apartments/592 bedrooms) and South Natick Hills Development (268 condominium units) were added.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$2,754,600 allotted through the Program's Phases 1-6, the community has \$982,600 remaining in funding assistance.

23. NEEDHAM: South System

Background Information:

- Miles of Sewer: 131
- Sewered Population: 25,718
- Three Year ('06 - '08) Annual Average I/I: 2.39 mgd
- Massachusetts DEP Administrative Order: No. 549 (Issued November 21, 1984)

Latest I/I or SSES Report: House-to-House Sump Pump Inspection (November 2007)
Smoke Testing Report (November 2007)

Private Source Inflow Removal Program: House-to-House Sump Pump Inspection and Private Inflow Source Removal project (Area 19-1) completed November 2007.

I/I Rehabilitation Projects in Design or Construction: Sewer Sub-Areas 2 / 24 / Lower 21 were TV inspected. The resultant design/rehabilitation project included root treatment, heavy cleaning, testing and sealing of joints, spot CIP repair and full length (manhole-to-manhole) pipe replacement. Project work completed during FY09. Also, the Town (as a result of the 'Route 128 Add-A-Lane' project) has rehabilitated existing sewer lines within Route 128, eliminated 3000 LF of sewer parallel to the travel lanes and installed 3000 LF of sewer perpendicular to Route 128. Route 128 project work completed Fall 2008. The Town has also rehabilitated 700 LF of sewer, extending from Crawford Street to Reservoir Street.

Reporting Period Activity: Great Plain Avenue Pumping Station rehabilitation scheduled for completion September 2009. Reservoir B Pumping Station replacement and Richardson Drive Pumping Station elimination in design phase. Private sewer along Charles River Street (300 LF) was added. An additional 300 LF of private sewer along Charles River Street is proposed.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$3,218,600 allotted through the Program's Phases 1-6, the community has \$1,740,300 remaining in funding assistance.

24. NEWTON: North and South Systems

Background Information:

- Miles of Sewer: 271
- Sewered Population: 81,827
- Three Year ('06 - '08) Annual Average I/I: 10.49 mgd
- Massachusetts DEP Administrative Order: ACO-NE-00-1001

Latest I/I or SSES Reports: Walker/Washington Sts Area Sewer Investigation (Draft June 2009)

Private Source Inflow Removal Program: The City continues to conduct home inspections for illicit connections to the sewer collection system. The sewer task force, created to develop/implement a Private Inflow Removal Program, has been holding meetings to discuss program issues. A draft Private Inflow Removal Program has been completed. Presentation before the Board of Aldermen is expected in the near future.

I/I Rehabilitation Projects in Design or Construction: Notice to Proceed for the Sanitary Sewer/Underdrain Rehabilitation (2006) (#08-03) Project was issued on November 12, 2007. Final inspection was completed on March 24, 2009. It is estimated that 304,092 gpd of peak infiltration was removed as part of this project.

Notice to Proceed for the Cochituate Aqueduct Sanitary Sewer Rehabilitation Project (#08-10) was issued on January 7, 2008. Substantial completion was issued on April 23, 2008. Final inspection was completed on January 22, 2009. It is estimated that 792 gpd of peak infiltration was removed as part of this project.

The Bennington Street, Regent Street, and Margaret Road Area Sewer Replacement and California Street Sewer Extension Project will be advertised for public bidding on July 8, 2009. Documents were made available to bidders on July 16, 2009. Bids were opened August 6, 2009. It is estimated that 5472 gpd of peak infiltration will be removed as part of this project.

The Area B Sanitary Sewer Rehabilitation Project will be advertised for public bidding in August 2009. It is estimated that 246,290 gpd of peak infiltration and 69,159 gpd of peak inflow will be removed as part of this project.

Reporting Period Activity:

- The "Walker/Washington Streets Area Sewer Investigation" Draft Report was submitted to MWRA in June 2009.
- The "Sewer Manhole Inspections Related to Underdrain Contamination at Walnut Street" Final Report (dated November 2008) was approved by MWRA in December 2008. A copy of this report was forwarded to DEP.
- The "2007 Sewer/Underdrain Investigation Project" Final Report (dated January 2009) was approved by MWRA in March 2009. A copy of this report was forwarded to DEP.

- In August 2008, funds were distributed for two projects: (1) Design and Bid/Award of the Sewer Rehabilitations as recommended by the 2007 Sanitary Sewer/Underdrain Investigation Report; (2) Construction and engineering during construction for sewer rehabilitation in the Regent Street, Bennington Street and Margaret Road areas (MWRA Project No. WRA-P6-24-3-652).
- In February 2009, funds were distributed for the sewer rehabilitation construction as recommended by the various sewer/manhole investigation studies performed in the Walnut Street, Washington Street, Boyd Street and Commonwealth Avenue areas (MWRA Project No. WRA-P6-24-3-657).

MWRA I/I Local Financial Assistance Program: The community has financed twenty-two (22) I/I reduction projects through the Authority's funding assistance program. The City has utilized all of the \$10,089,400 allotted through the Program's Phases 1-6.

25. NORWOOD: South System

Background Information:

- Miles of Sewer: 83
- Sewered Population: 28,193
- Three Year ('06 - '08) Annual Average I/I: 2.86 mgd
- Massachusetts DEP Administrative Order: No. 534 (Issued July 25, 1983)

Latest I/I or SSES Report: Meadowbrook Area Sewer Inspection (August 2006)

Private Source Inflow Removal Program: As part of the Meadowbrook Area Sewer Inspection, ten buildings were inspected for illicit connections. Eleven illegal connections removed to date. As part of the Norwood Gardens SSES, fifty-six buildings were inspected and 10,000 LF of sewer line was smoke tested. Within the Hawes Brook sewer tributary area, eight property owners have been notified to redirect sump pumps.

I/I Rehabilitation Projects in Design or Construction: Hawes Brook Sewer Rehabilitation (CIP Liner) design complete August 2009. Construction scheduled for completion December 2009 (MWRA Project No. WRA-P7-25-3-707). Guild Street Sewer Rehabilitation design complete July 2008. Construction scheduled for completion August 2009 (Contract No. NPW-09-01 / MWRA Project No. WRA-P6-25-3-646). Jefferson Drive Sewer Rehabilitation construction completed July 2009 (MWRA Project No. WRA-P6-25-3-653). Meadowbrook Area Underdrain Access Manhole Project construction completed June 2007 (Contract No. NPW-07-04 / MWRA Project No. WRA-P6-25-3-610).

Reporting Period Activity: An out-of-community housing development was connected to the Norwood sanitary system in accordance with all applicable permits/legislation. An inflow reduction mitigation plan was approved in conjunction with project.

MWRA I/I Local Financial Assistance Program: The community has financed fifteen (15) I/I reduction projects through the Authority's funding assistance program. Of the \$3,355,400 allotted through the Program's Phases 1-6, the community has \$450,437 remaining in funding assistance.

26. QUINCY: South System

Background Information:

- Miles of Sewer: 202
- Sewered Population: 90,241
- Three Year ('06 - '08) Annual Average I/I: 6.94 mgd
- Massachusetts DEP Administrative Order: No. 644 (Issued October 23, 1986)

Latest I/I or SSES Report: Squantum Area Flow Monitoring Evaluation Study (May 2008)
Tidal I/I Source Identification Study (July 2009)

Private Source Inflow Removal Program: Storm Water Discharge Ordinance has been approved. The ordinance forbids non-sanitary connections. Developers contribute one percent of total project value to Sewer Rehabilitation Fund. The City recently purchased a TV sewer inspection vehicle. The vehicle provided significant input towards the development of the Tidal I/I Source Identification Study.

I/I Rehabilitation Projects in Design or Construction: Fenno Street / Division Street Sewer Improvements construction completed August 2009 (MWRA Project No. WRA-P6-26-3-616). Spot Repairs of Direct Inflow Sources of Seawater into Sanitary Sewers project construction completed July 2009. Parkhurst area direct inflow removal completed.

Reporting Period Activity: Chubbock Street extension completed. Hough's Neck Collection System/Sea Street Interceptor Improvements Project ongoing. Edgewater Drive Improvements Project construction ongoing. Removed and replaced (with 12-inch PVC pipe) 654 LF of 12-inch PVC and VCR sewer main. Lined 1779 LF of sewer main.

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. The City has utilized all of the \$9,373,000 allotted through the Program's Phases 1-6.

27. RANDOLPH: South System

Background Information:

- Miles of Sewer: 101
- Sewered Population: 30,438
- Three Year ('06 - '08) Annual Average I/I: 1.79 mgd
- Massachusetts DEP Administrative Order: No. 548 (Issued October 23, 1986)

Latest I/I or SSES Report: Amelian Road SSES (January 2003)

Private Source Inflow Removal Program: The Town developed a sump pump inspection and amnesty program. As a result of the program, the Town was contacted by two hundred and two (202) homeowners having sump pumps. Internal inspections were completed to determine sump pump location. One hundred twenty-one homes (121) were determined to have sump pumps connected to the sewer system. Ninety-four (94) of these homes have drainage directly adjacent to the homes. Each of the 94 homes was inspected. Design was completed to redirect these sump pumps to the drainage system. Sump pump redirection construction began October 2008. The redirection project was broken into three separate contracts. The first contract (23 houses) is complete. The second and third contracts are ongoing and scheduled for completion October 2009. Total peak flow inflow removed is estimated to be 610,000 gpd.

I/I Rehabilitation Projects in Design or Construction: Root Street Area Sewer System Rehabilitation Project design completed July 2008 (MWRA Project No. WRA-P6-27-3-609). Project construction began April 2009 and is scheduled for completion Fall 2009. Sewer System Rehabilitation Project (Sub-areas 1-4/8) construction completed September 2007 (MWRA Project No. WRA-P5-27-3-551).

Reporting Period Activity: The Town, working in conjunction with Avalon Bay, completed a manhole sealing and sewer lining project. The I/I removal project eliminated approximately 200,000 gpd.

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. Of the \$2,866,800 allotted through the Program's Phases 1-6, the community has \$699,900 remaining in funding assistance.

28. READING: North System

Background Information:

- Miles of Sewer: 96
- Sewered Population: 22,098
- Three Year ('06 - '08) Annual Average I/I: 1.70 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Infiltration/Inflow Investigations – Spot Gauging & Flow Isolation Draft Report (June 2009)

Private Source Inflow Removal Program: The Town is continuing to work with property owners where illicit connections were found during the Building Inspection Program. No additional illicit connections were removed during this period. The Town did install 500 LF of new drain line on Juniper Circle which was equipped with connections for sump pump tie-ins.

I/I Rehabilitation Projects in Design or Construction: The Town is continuing with its annual sewer rehabilitation program which included cleaning/TV inspection of 4941 LF of sewer, testing 1397 joints, sealing 245 joints and sealing of one manhole.

Reporting Period Activity:

- In August 2007, funds were distributed for a Town-wide Flow Monitoring Program. This project consists of continuous flow metering 11 subareas and instantaneous flow metering at the other subareas for a 10 week period (MWRA Project No. WRA-P6-28-1-627). The Final Report on the Town-wide flow monitoring (conducted on the sewer system during Spring 2007) was completed October 2008. This report recommended smoke testing, flow isolation and topside manhole inspection in certain metered areas. The report also recommended continuation of the joint testing & sealing program and increased sump pump redirection efforts.
- For the period May 2009 – June 2009, the Town performed spot gaging at five locations. From this work, it was recommended that 8824 LF of 52,098 LF be further investigated. For the same period, flow isolation was performed on 148,000 LF of sewer.

MWRA I/I Local Financial Assistance Program: The community has financed two (2) I/I reduction projects through the Authority's funding assistance program. Of the \$2,116,100 allotted through the Program's Phases 1-6, the community has \$299,400 remaining in funding assistance.

29. REVERE: North System

Background Information:

- Miles of Sewer: 78
- Sewered Population: 45,761
- Three Year ('06 - '08) Annual Average I/I: 3.51 mgd
- Massachusetts DEP Administrative Order: No. 837 (Issued April 21, 1991)

Latest I/I or SSES Report: Hydraulic Model Report (May 2009)

Private Source Inflow Removal Program: The City removed an additional nine illegal sump pumps during this period. Sewer Mitigation Funds, which are received from developers (10:1 ratio), are used to perform sewer rehabilitations.

I/I Rehabilitation Projects in Design or Construction: The following sewer rehabilitations were completed: lined 178 LF of 24-inch sewer on Tuscano Avenue; replaced 262 LF of 12-inch sewer within easement between Vane Street and Reservoir Avenue; completed point repair of collapsed sewer on Beach Street and Central Avenue; cleaned and internally inspected 5918 LF of 10-inch; 2349 LF of 12-inch; 869 LF of 15-inch; 2222 LF of 18-inch and 1255 LF of 20-inch sewers.

Reporting Period Activity: City-wide Sewer System Evaluation Survey (SSES) ongoing.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. The City has utilized all of the \$4,582,900 allotted through the Program's Phases 1-6.

30. SOMERVILLE: North System

Background Information:

- Miles of Sewer: 128
- Sewered Population: 74,963
- Three Year ('06 - '08) Annual Average I/I: 5.44 mgd
- Massachusetts DEP Administrative Order: NON-NE-00-1006 (Issued January 21, 2000)

Latest I/I or SSES Report: City-wide Sewer Assessment Report (February 2007)

Private Source Inflow Removal Program: A 4 to 1 I/I Reduction policy continues to be enforced with potential developers.

I/I Rehabilitation Projects in Design or Construction: There were no design/construction projects associated with I/I elimination or sewer rehabilitation during this period.

Reporting Period Activity: The analysis and planning for I/I mitigation in the Ten Hills area (to replace the storm drain and sewer where substantial mixing has been occurring due to broken pipelines) was completed.

Inspection and design solutions to sources of contamination in storm drains (as cited in DEP letter to City dated 6/4/08) in the Alewife Brook watershed and the lower Mystic River 24" x 24" storm outlet is ongoing.

Investigation of the storm drainage system tributary to the Somerville Marginal Conduit for sources of contamination (with an ultimate goal of repairing the 7' x 7' drain under McGrath Highway) is ongoing.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$7,459,800 allotted through the Program's Phases 1-6, the community has \$1,736,010 remaining in funding assistance.

31. STONEHAM: North System

Background Information:

- Miles of Sewer: 63
- Sewered Population: 21,258
- Three Year ('06 - '08) Annual Average I/I: 1.76 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Manhole/CCTV Inspection in Marble/Main Streets Area Final Report (September 2007)

Private Source Inflow Removal Program: Continuing to inspect buildings on a limited basis.

I/I Rehabilitation Projects in Design or Construction: Construction of Marble Street/Main Street Area Sanitary Sewer System Rehabilitation has been completed. This project involved rehabilitation of sewer lines/manholes in two areas. Area One includes Marble / Lincoln / Congress / Warren / Wright / Hancock / Benton and Winthrop Streets. Area Two includes Main Street / Fells / Middlesex and Peabody Road.

Phase 2 Sewer System Rehabilitation design was completed and bid on August 28, 2008. The construction work has begun with completion expected by late Summer 2009. This project consists of cleaning and internal inspection of 9050 LF of 6 to 12-inch sewer; 4 open cut point repairs; root treatment of 2400 LF of sewer; testing & sealing of 490 LF of sewer; and installation of 4850 LF of cured-in-place pipe liner.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$2,451,900 allotted through the Program's Phases 1-6.

32. STOUGHTON: South System

Background Information:

- Miles of Sewer: 60
- Sewered Population: 17,350
- Three Year ('06 - '08)
- Annual Average I/I: 2.11 mgd
- Massachusetts DEP Administrative Order: No. 538 (Issued June 12, 1984)

Latest I/I or SSES Report: 2008 Sewer System Evaluation (Ongoing)
Flow Metering Report (June 2009) / Hydraulic Model Rpt (Ongoing)

Private Source Inflow Removal Program: Town has adopted new sewer use regulations which address private inflow removal. TV inspection of service connections / house-to-house inspections ongoing. Sewer System Evaluation ongoing (MWRA WRA-P6-32-1-650). Public Building Inspection Report portion of Sewer System Evaluation completed May 2009.

I/I Rehabilitation Projects in Design or Construction: Sewer System Infiltration Rehabilitation (Contract No. 07-1) construction complete. Warranty retesting completed June 2009 (MWRA WRA-P6-32-3-623). Estimated peak infiltration reduction is 118,800 gpd. Years 1 / 2 Sewer System Rehabilitation warranty retesting completed May 2009. Year 4 Sewer System Evaluation Report completed February 2009. Years 3 / 4 Sewer System Infiltration Rehabilitation design ongoing. Year 5 Sewer System Evaluation Report ongoing. Morton Street Easement Sewer Lining Project scheduled for completion August 2009 (MWRA WRA-P6-32-3-623).

Reporting Period Activity: Sewer System Evaluation ongoing (Public Building Inspection Report completed May 2009; Flow Metering Report completed June 2009; GIS Mapping and Hydraulic Model Development ongoing).

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$2,276,900 allotted through the Program's Phases 1-6, the community has \$442,100 remaining in funding assistance.

33. WAKEFIELD: North System

Background Information:

- Miles of Sewer: 93
- Sewered Population: 23,592
- Three Year ('06 - '08) Annual Average I/I: 3.01 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Brick Trunk Outfall Sewer Investigation (October 2008)
Subarea 7 Smoke Testing & Dyed Water Testing (July 2008)

Private Source Inflow Removal Program: Colonial Hilton is eliminating roof drains and parking area inflow entering the sewer system. Americal Civic Center (Main Street) roof drain removal is ongoing. Town continues to receive 4 to 1 removal from completed subdivisions/developments.

I/I Rehabilitation Projects in Design or Construction: Currently, there are no projects in design or construction.

Reporting Period Activity:

- The Final Report on the Subarea 7 Inflow Investigations (Smoke Testing and Dyed Water Testing) submitted May 2008 (revised July 2008) was approved by MWRA in July 2008. A report copy was submitted to DEP.
- In August 2007, funds were distributed for the review/analysis of the TV inspection of the 28" x 48" Brick Trunk Sewer Interceptor Outfall. TV inspection of the Brick Trunk Sewer Outfall was performed by the MWRA in February/March 2007. A summary and engineering analysis of the TV inspection was presented in a Draft Report dated May 2008 (MWRA Project No. WRA-P6-33-1-625). The Final Report was completed in October 2008.

MWRA I/I Local Financial Assistance Program: The community has financed sixteen (16) I/I reduction projects through the Authority's funding assistance program. Of the \$2,880,900 allotted through the Program's Phases 1-6, the community has \$335,900 remaining in funding assistance.

34. WALPOLE: South System

Background Information:

- Miles of Sewer: 59
- Sewered Population: 15,485
- Three Year ('06 - '08) Annual Average I/I: 1.28 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: I/I Removal Program: Year 2 (May 2009)
I/I Removal Program: Year 3 (Ongoing)

Private Source Inflow Removal Program: The Town includes house-to-house private inflow inspection program as part of its water meter replacement program. Town-wide wastewater metering was conducted between November 2008 and May 2009. Report preparation ongoing.

I/I Rehabilitation Projects in Design or Construction: Under Engineering Contract 2005-23, 58,000 LF of sewer and 250 manholes were inspected in Subareas 1/2. Resultant data analysis and rehabilitation design completed March 2008 (MWRA Project No. WRA-P6-34-2-602).

Year 2 Rehabilitation (Contract 2008-32 / MWRA Project No. WRA-P6-34-3-641) work included cleaning and inspection of 10,100 LF of 8 to 36-inch sewer; testing 2560 sewer joints; sealing 1277 sewer joints; sealing 26 manhole inverts; cementitious lining of 250 VF of manholes; chemical root treatment of 2620 LF of 8 to 36-inch sewer; installing 111 LF of CIP short liner; installing 8 LF of CIP structural short; installing 1890 LF of CIP pipe; rehabilitating 30 service connections and flow isolation (post-construction) of 15,000 LF of sewer. Project work completed June 2009.

Year 3 Investigation (Contract 2008-32 / MWRA Project No. WRA-P6-34-3-641) work included flow isolation of 41,600 LF of sewer; cleaning and inspection of 37,500 LF of 6 and 8-inch sewer; cleaning and inspection of 4100 LF of 10 and 12-inch sewer and 200 manhole inspections. Year 3 Investigation work was performed in conjunction with the Year 2 Rehabilitation work.

Reporting Period Activity: Approximately 1400 LF of gravity sewer was added on Pine Street to connect sewer flow from Route 1 to the existing collection system discharging to Washington Street. An out-of-community automobile dealership was connected to the Walpole sanitary system in accordance with all applicable permits/legislation. An inflow reduction mitigation plan was approved in conjunction with dealership project.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. The Town has utilized all of the \$1,759,000 allotted through the Program's Phases 1-6.

35. WALTHAM: North System

Background Information:

- Miles of Sewer: 138
- Sewered Population: 59,496
- Three Year ('06 - '08) Annual Average I/I: 5.73 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-04-IN004 (March 16, 2005)

Latest I/I or SSES Report: Infiltration/Inflow Investigation Report for the Warrendale Area (Updated July 2008)

Private Source Inflow Removal Program: Construction documents for the removal of 55 illegal sump pumps ready for bid Summer 2009 based upon the Conservation Commission vote that a Notice of Intent would not be needed due to the general nature of the work at various locations City-wide. The second area of private source inflow investigation is underway; 800 additional homes have been leafleted with good response for inspections. Documents for construction could be advertised Fall 2009.

I/I Rehabilitation Projects in Design or Construction:

- Sharon Street Sewer & Roadway Reconstruction Project replaced 720 LF: Completed October 2008
- Main Street, Gore Street & Barbara Road Sewer Emergency replaced 110 LF: Completed October 2008
- Candace Avenue Sewer & Drain Reconstruction – 380 LF: Completed December 2008
- Warrendale Area Sewer Rehabilitation (cleaning & lining) Project – 340 LF portion completed December 2008
- Everett Street portion of sewer replaced 185 LF: Completed July 2009
- Charlotte Road portion of sewer replaced 360 LF: Completed July 2009
- Farnum Road Sewer & Drain Project: Ready for bid at a future date

Reporting Period Activity: I/I Mitigation was also performed by private developers at various locations throughout the City. The amount of I/I removed from the sewer system as reported to DEP for the period August 2008 to July 15, 2009 was 58,391 gpd.

In August 2008, funds were distributed for the construction of sewer rehabilitations in the Warrendale Avenue Area which included a contract for pipelining approximately 2600 LF of sewer and a contract for pipe replacement of approximately 760 LF of sewer (MWRA Project No. WRA-P6-35-3-654).

MWRA I/I Local Financial Assistance Program: The community has financed six (6) I/I reduction projects through the Authority's funding assistance program. Of the \$6,580,400 allotted through the Program's Phases 1-6, the community has \$1,818,000 remaining in funding assistance.

36. WATERTOWN: North System

Background Information:

- Miles of Sewer: 75
- Sewered Population: 32,303
- Three Year ('06 - '08) Annual Average I/I: 1.85 mgd
- Massachusetts DEP Administrative Order: ACOP-NE-97-5004

Latest I/I or SSES Report: TV Inspection Report (Cottage Street Easement/Spring Street Sewers)
(Draft July 2007)

Private Source Inflow Removal Program: The Town performed 37 building inspections for potential inflow sources and/or illicit discharges during this period.

I/I Rehabilitation Projects in Design or Construction: Contract Documents for Contract #08-1 (CIP Liner Installation) and Contract #08-2 (Sewer Replacement) in the Cottage Street easement and Spring Street were completed January 2008. Bid Opening for these two contracts occurred May 2008. Construction, which began on both projects in August 2008, is nearing completion. For Contract #08-1, approximately 3100 LF of sewers were rehabilitated using cured-in-place pipe (CIPP) methods. This work included rehabilitation of approximately 710 LF of deteriorated 15 and 18-inch VC sewer segments along Spring Street and rehabilitation of approximately 2390 LF of deteriorated 12 and 18-inch sewers along the Cottage Street easement. The estimated I/I amount removed as a result of the rehabilitation work is 66,240 gpd. Also included in this Contract, five manholes on Spring Street were rehabilitated by cement lining and epoxy coating. One Cottage Street manhole and two siphon structures were also rehabilitated. The work is estimated to remove 11,520 gpd of I/I. Under Contract #08-2, approximately 850 LF of sewer was replaced. This work included replacement of deteriorated 15 and 18-inch VC sewer segments along Spring Street. In addition, a 12-inch ductile iron sewer crossing a drain line was replaced with 13 feet of 16-inch ductile sewer. The estimated I/I amount removed as a result of the rehabilitation work is 41,760 gpd.

The Town also performed seven repairs to the sanitary collection system, rebuilt/repared six sanitary sewer manholes and removed three illicit connections between the sanitary and storm water systems.

Reporting Period Activity: See above work description.

In May 2008, funds were distributed for: (1) Additional I/I Investigations in Subsystem #6, Nichols Avenue and Boylston Street; and (2) Design/Construction of Sewer Rehabilitations in Howard Street, Pleasant Street, Nichols Avenue and Boylston Street (MWRA Project No. WRA-P6-36-3-648). This rehabilitation work includes: 470 LF of sewer rehabilitation (CIPP) on Howard Street; 670 LF of sewer rehabilitation (CIPP) on Pleasant Street; 3100 LF of rehabilitation (CIPP) on Nichols Avenue and Boylston Street; rehabilitation of 20 sewer manholes; field investigations to further pinpoint sources of infiltration; inspection of 75 sewer manholes; and internal TV inspection of 6000 LF of sewers. The investigation/study portion of

this project is expected to be completed August 2009 with the design to be completed by September 2009.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I investigation projects through the Authority's funding assistance program. Of the \$3,113,800 allotted through the Program's Phases 1-6, the community has \$1,626,400 remaining in funding assistance.

37. WELLESLEY: South System

Background Information:

- Miles of Sewer: 130
- Sewered Population: 26,169
- Three Year ('06 - '08) Annual Average I/I: 2.14 mgd
- Massachusetts DEP Administrative Order: No. 579 (Issued May 23, 1985)

Latest I/I or SSES Report: Phase 2 SSES (November 1994)

Private Source Inflow Removal Program: The DPW is contacting the owners of illegal sump pumps, based on previous private source inflow studies. To date, 18 sump pumps have been removed from the sanitary system. Also, the Town continues to pursue illegal sump pump connections identified through the ERT Battery Changeout Transaction Program.

I/I Rehabilitation Projects in Design or Construction: The second year of the three year Wellesley Sewer Rehabilitation Project (Contract No. 07C-50-22 / MWRA Project No. WRA-P6-37-3-644) was completed June 2009. Project work included cleaning and television inspection of 63,360 LF of sewer; testing 6303 joints; sealing 2577 joints and rehabilitating 44 manholes. Estimated annual I/I reduction is approximately 32,700 gpd.

Sewer System Improvements Project (Contract No. 06C-50-19) between Earle Road and Cleveland Road was completed Spring 2009. Project work consisted of replacing 55 LF of 12-inch VC sewer and lining 487 LF of 12-inch VC sewer. The Town also undertook a Service Connection Sealing Pilot Program. Project work consisted of the injection of acrylamide grout at six penetration type service connections where infiltration (between 1-3 gpm) was noted. The work was successfully performed with visual confirmation of no infiltration.

Reporting Period Activity: Cochituate Aqueduct Sanitary Sewer Rehabilitation (City of Newton Bid # 08-10 / MWRA Project No. WRA-P6-37-3-644): The objective of this intermunicipal sewer rehabilitation project was to eliminate infiltration into a portion of the 48-inch reinforced concrete interceptor known as the Cochituate Aqueduct Sanitary Sewer. Rehabilitation work included installation of 1105 LF of 48-inch CIP sewer pipe liner (Manhole CA-10 to Manhole CA-11); epoxy lining of Manhole CA-12; and cutting of one protruding service connection. Project Notice to Proceed was issued January 2008. Substantial completion was issued April 2008. Final inspection was completed January 2009.

MWRA I/I Local Financial Assistance Program: The community has financed eight (8) I/I reduction projects through the Authority's funding assistance program. Of the \$2,779,700 allotted through the Program's Phases 1-6, the community has \$1,295,453 remaining in funding assistance.

38. WESTWOOD: South System

Background Information:

- Miles of Sewer: 77
- Sewered Population: 13,205
- Three Year ('06 - '08) Annual Average I/I: 0.71 mgd
- Massachusetts DEP Administrative Order: No. 578 (Issued May 23, 1985)

Latest I/I or SSES Report: SSES Phases 1 and 2 (January 1991)

Private Source Inflow Removal Program: A House-to-house inspection survey (part of the FY08 Annual Inspection Program) has been completed. The survey included inspection of 1880 residences and identified 135 suspect sump pumps. The Town is expecting to undertake a community-wide I/I Study within the next CY.

I/I Rehabilitation Projects in Design or Construction: The FY09 maintenance program has been completed. The program included cleaning and television inspection of 117,000 LF of sewer. The FY08 maintenance program included cleaning and television inspection of 98,000 LF of sewer and house-to-house inspection surveys to identify illicit connections to the sewer system.

Reporting Period Activity: Private subdivision work (Summer Street) included the installation of 1700 LF of sewer extensions.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$1,209,300 allotted through the Program's Phases 1-6, the community has \$170,000 remaining in funding assistance.

39. WEYMOUTH: South System

Background Information:

- Miles of Sewer: 238
- Sewered Population: 51,583
- Three Year ('06 - '08) Annual Average I/I: 4.02 mgd
- Massachusetts DEP Administrative Order: No. 543 (Issued November 14, 1984)
ACO-NE-04-1N002 (Issued November 19, 1998)

Latest I/I or SSES Report: Sewer Investigation Study - Subareas C-8 / C-10 (July 2008)
Town-Wide Sewer Investigation – Year 1 (December 2008)
Sewer System Hydraulic Model / Evaluation (Ongoing)

Private Source Inflow Removal Program: The Town has completed the redirection of 318 sump pumps (for an estimated 159,000 gpd of inflow removal). No sump pumps were redirected during FY09.

I/I Rehabilitation Projects in Design or Construction: Sewer System CIP Contract 1, Winter Street to Essex Street Sewer Replacement complete. Approximately 123,900 gpd of infiltration removed from sewer system. Mill River/North Weymouth Infiltration Rehabilitations (Contract S05-1) complete. Approximately 509,500 gpd of infiltration removed from sewer system.

Reporting Period Activity: Montcalm Sanitary Sewer Overflow Study (Phase 2) included cleaning and television inspection of 3097 LF of sewer from MH 1145 to MWRA connection at Newell Park. The Town removed and replaced 1435 LF of 21, 27, 30-inch sewer with 42-inch sewer from Winter Street to Washington Street and 1225 LF of 30-inch sewer with 42-inch Vylon pipe on Essex Street. Sewer extension (Commercial Street) added 423 LF of 8-inch gravity sewer to the sanitary system.

MWRA I/I Local Financial Assistance Program: The community has financed fourteen (14) I/I reduction projects through the Authority's funding assistance program. Of the \$5,561,900 allotted through the Program's Phases 1-6, the community has \$1,032,000 remaining in funding assistance.

40. WILMINGTON: North System

Background Information:

- Miles of Sewer: 20
- Sewered Population: 3,951
- Three Year ('06 - '08) Annual Average I/I: 0.50 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Draft Infrastructure Maintenance and Management Program (IMMP) Phase 2 Report (March 2005)

Private Source Inflow Removal Program: Town continuing inspections on an as needed basis.

I/I Rehabilitation Projects in Design or Construction: The design for the Main Street Interceptor Sewer Rehabilitation Project was completed and bids were accepted. This project consists of the construction and rehabilitation of the 36-inch RCP interceptor sewer which conveys the Town's sewage to the MWRA sewer system. A large portion of this interceptor sewer, which was inspected by in-line closed circuit television inspection in 2001, is in poor condition as a result of interaction of hydrogen sulfide with the reinforced concrete pipe and manholes. Infiltration was also observed at various locations. The rehabilitation will consist of the installation of approximately 3300 LF of cured-in-place liner (CIPPL); epoxy coating of the sewer manholes; and various specific manhole rehabilitations. The work will also involve the cleaning and internal inspection of the interceptor sewer prior to the installation of the CIPPL. The rehabilitation work is expected to begin in August 2009 and be completed by the end of the year.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed four (4) I/I reduction projects through the Authority's funding assistance program. Of the \$1,180,000 allotted through the Program's Phases 1-6, the community has \$212,000 remaining in funding assistance.

41. WINCHESTER: North System

Background Information:

- Miles of Sewer: 83
- Sewered Population: 21,160
- Three Year ('06 - '08) Annual Average I/I: 1.46 mgd
- Massachusetts DEP Administrative Order: Draft ACO in 2001.

Latest I/I or SSES Report: West Side Building Inspection Report (May 2009)

Private Source Inflow Removal Program: The Town's Private Inflow Source Removal Program is ongoing. The Town has removed 24 sump pump inflow sources from the sewer over the past year.

I/I Rehabilitation Projects in Design or Construction: No design or sewer rehabilitation work was completed over the period.

Reporting Period Activity:

- A final report on the West Side Smoke and Dye Testing was completed October 2008.
- The final report on the West Side Building Inspection Program was sent to MWRA in May 2009.
- A capacity evaluation of the sewer system upstream of MWRA Meter WC-1C was completed which was related to the Hamilton Farms Development Project. The project includes a hydraulic sewer model, I/I evaluation and physical inspection of 13,000 LF of sewer. The report was completed February 2009.

MWRA I/I Local Financial Assistance Program: The community has financed three (3) I/I reduction projects through the Authority's funding assistance program. Of the \$2,072,000 allotted through the Program's Phases 1-6, the community has \$1,119,700 remaining in funding assistance.

42. WINTHROP: North System

Background Information:

- Miles of Sewer: 36
- Sewered Population: 17,069
- Three Year ('06 - '08) Annual Average I/I: 1.16 mgd
- Massachusetts DEP Administrative Order: None

Latest I/I or SSES Report: Sanitary Sewer Evaluation Report (April 2007)

Private Source Inflow Removal Program: No additional inspections were reported during this period.

I/I Rehabilitation Projects in Design or Construction: The Town is proceeding with sewer replacement construction in Putnam Street and Putnam Place. The recommended sewer construction work involves the replacement of approximately 1100 LF of 10-inch sewer and 500 LF of 8-inch sewer along with associated manholes and sewer services. The estimated annual I/I removal is 0.01 mgd. Design was completed April 2009. Bids were accepted on July 9, 2009. The contract is expected to be awarded August 2009. This project is being funded under MWRA I/I Local Financial Assistance Program Project No. WRA-P6-42-3-647.

Reporting Period Activity: See above work description.

MWRA I/I Local Financial Assistance Program: The community has financed five (5) I/I reduction projects through the Authority's funding assistance program. Of the \$1,614,400 allotted through the Program's Phases 1-6, the community has \$614,600 remaining in funding assistance.

43. WOBURN: North System

Background Information:

- Miles of Sewer: 141
- Sewered Population: 35,290
- Three Year ('06 - '08) Annual Average I/I: 5.83 mgd
- Massachusetts DEP Administrative Order: ACO-NE-01-1005 (August 16, 2001)

Latest I/I or SSES Report: Arlington Road Area SSES (March 2009)

Private Source Inflow Removal Program: Private inflow sources identified in the Dix Road, West Side and Area #3 Subareas will be removed as part of the Dix Road, West Side, and Area #3 Private Inflow Source Removal Project, which will be completed May 2010. Ninety-nine positive inflow sources and thirty-nine suspect inflow sources were identified that will be addressed as part of this project. There are an additional 705 properties in these areas that have not been inspected. Certified return receipt letters were sent to the property owners to encourage

building inspections during the next twelve months. Property owners who do not participate may be subject to a daily fine for violating the sewer use ordinance.

I/I Rehabilitation Projects in Design or Construction: Bids for the Dix Road, West Side and Area #3 Private Inflow Source Removal Project were opened on February 26, 2009. A Notice Proceed was issued on April 13, 2009.

Reporting Period Activity: The West Side and Dix Road Supplementary Building Inspection Report was completed September 2008. The study was performed on those buildings not previously inspected. Under this study, an additional 111 buildings were inspected. There are approximately 270 buildings that have not been inspected in the area. This study identified 12 additional private inflow sources.

The Arlington Road Area Sewer System Evaluation Survey (SSES) was completed March 2009.

MWRA I/I Local Financial Assistance Program: The community has financed seven (7) I/I reduction projects through the Authority's funding assistance program. Of the \$5,318,500 allotted through the Program's Phases 1-6, the community has \$685,500 remaining in funding assistance.

ATTACHMENT 6
TO
MWRA ANNUAL I/I REDUCTION REPORT FOR FY09
Reporting Period – July 2008 Through June 2009

CY08 COMMUNITY WASTEWATER FLOW DATA

This attachment contains calendar year 2008 wastewater flow data for the 43 MWRA member sewer communities. There are three separate data tables. The first table (one page) presents the CY08 monthly total wastewater flow estimates for each community derived from MWRA's wastewater metering system. Each community's percent average daily flow and percent maximum month flow are used as components of MWRA's annual wholesale sewer charge. The second table (one page) presents the CY08 community flow components (sanitary flow, infiltration, and stormwater inflow) as estimated by MWRA. The third table (three pages) presents the estimated community flow components in two formats: (1) alphabetically and (2) sorted (ranked) from high to low.

CY08 MWRA WASTEWATER METERING SYSTEM COMMUNITY FLOW ESTIMATES

Community	Total Population	Sewered Population	CY08 Average Daily Flow (ADF) By Calendar Month (MGD)												12 Month Average Daily Flow (MGD)	Percent Average Daily Flow	Max. Month ADF (MGD)	Percent Max. Month ADF
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
Arlington	41,224	40,812	5.80	9.01	8.71	5.88	4.69	3.72	4.43	4.23	4.51	4.52	4.27	9.22	5.74	1.6%	9.22	1.8%
Ashland	15,551	10,870	1.33	1.91	1.95	1.44	1.13	1.00	0.97	1.08	1.15	1.16	1.16	2.42	1.39	0.4%	2.42	0.5%
Bedford	12,462	11,216	2.88	4.11	4.44	3.21	3.03	2.42	2.36	2.11	2.12	2.24	2.23	3.52	2.89	0.8%	4.44	0.9%
Belmont	23,371	22,927	4.37	6.51	5.73	3.99	3.05	2.74	3.34	3.03	3.32	2.97	2.90	5.89	3.98	1.1%	6.51	1.3%
BWSC	559,034	558,475	92.13	121.92	107.62	91.12	82.28	84.91	94.49	91.99	97.12	82.36	88.91	114.46	95.69	27.2%	121.92	24.2%
Braintree	33,681	33,647	7.43	9.78	9.27	6.74	6.07	4.75	4.17	4.84	5.18	5.56	5.99	10.47	6.68	1.9%	10.47	2.1%
Brookline	55,590	55,479	11.73	17.05	15.28	10.67	9.22	8.28	8.49	8.78	10.23	9.04	8.83	17.11	11.21	3.2%	17.11	3.4%
Burlington	23,299	23,276	3.91	5.52	5.67	4.36	3.79	3.21	3.48	3.43	3.41	3.40	3.20	5.09	4.04	1.1%	5.67	1.1%
Cambridge	100,135	100,035	20.70	27.92	25.14	22.04	18.84	19.16	21.24	20.67	23.91	16.80	18.79	27.72	21.89	6.2%	27.92	5.5%
Canton	21,571	14,021	2.82	3.43	3.22	2.35	2.09	1.76	1.69	2.17	2.15	2.27	2.27	3.73	2.49	0.7%	3.73	0.7%
Chelsea	32,518	32,518	4.36	6.12	5.33	4.22	3.94	4.23	4.23	4.21	4.46	3.23	3.77	5.53	4.46	1.3%	6.12	1.2%
Dedham	23,736	21,505	4.72	7.14	6.89	4.28	3.55	2.74	2.58	2.88	2.85	3.24	3.68	7.10	4.30	1.2%	7.14	1.4%
Everett	36,837	36,837	6.52	7.86	7.35	5.63	5.01	4.52	5.54	5.85	5.47	5.06	4.80	7.59	5.93	1.7%	7.86	1.6%
Framingham	65,060	62,946	7.70	12.63	12.15	8.89	7.08	5.60	5.79	6.42	6.71	6.10	5.72	9.39	7.83	2.2%	12.63	2.5%
Hingham	7,257	6,625	1.50	2.38	2.20	0.99	0.90	0.56	0.53	0.58	0.69	0.77	0.80	2.55	1.20	0.3%	2.55	0.5%
Holbrook	10,775	8,453	0.95	1.12	1.30	1.02	0.83	0.76	0.75	0.74	0.73	0.76	0.82	1.18	0.91	0.3%	1.30	0.3%
Lexington	30,266	29,055	6.49	9.64	10.04	6.70	5.52	4.57	5.88	5.98	5.35	5.18	4.63	9.78	6.64	1.9%	10.04	2.0%
Malden	55,871	55,815	11.52	13.87	13.05	10.23	8.95	7.72	8.30	9.51	8.63	8.31	7.95	12.97	10.08	2.9%	13.87	2.7%
Medford	53,523	53,469	10.89	13.25	12.81	9.52	8.09	6.88	8.52	8.96	8.73	8.32	7.98	13.14	9.75	2.8%	13.25	2.6%
Melrose	26,365	26,339	5.81	8.13	7.46	5.10	4.25	3.40	3.91	5.01	4.14	3.81	3.63	7.47	5.17	1.5%	8.13	1.6%
Milton	26,034	24,212	4.65	6.81	6.72	3.81	2.90	2.06	1.88	2.09	2.39	2.54	3.10	6.96	3.82	1.1%	6.96	1.4%
Natick	31,943	27,535	3.13	4.52	4.47	3.26	2.78	2.30	2.92	3.15	3.13	3.26	2.78	3.19	3.24	0.9%	4.52	0.9%
Needham	28,418	25,718	4.73	7.36	7.27	4.89	4.07	3.07	2.87	3.26	3.05	3.13	3.24	6.42	4.44	1.3%	7.36	1.5%
Newton	83,158	81,827	19.93	30.67	28.35	20.36	15.93	12.34	13.38	15.13	15.25	15.74	14.24	34.01	19.59	5.6%	34.01	6.7%
Norwood	28,478	28,193	6.25	8.34	7.59	4.86	4.69	3.41	3.38	3.47	3.77	3.97	4.14	8.98	5.23	1.5%	8.98	1.8%
Quincy	90,250	90,241	16.89	21.00	20.74	14.87	13.42	11.59	11.53	12.19	12.52	12.58	13.24	21.26	15.14	4.3%	21.26	4.2%
Randolph	30,468	30,438	4.09	5.94	5.83	3.81	3.28	2.64	2.46	2.70	2.75	3.15	3.31	6.22	3.84	1.1%	6.22	1.2%
Reading	23,164	22,098	3.85	5.29	5.35	3.82	3.08	2.35	2.67	2.52	2.42	2.52	2.58	4.62	3.42	1.0%	5.35	1.1%
Revere	45,807	45,761	7.91	10.23	9.53	6.59	6.56	6.19	6.89	7.75	7.48	6.00	5.82	10.65	7.63	2.2%	10.65	2.1%
Somerville	74,963	74,963	10.47	17.01	14.30	10.47	8.95	9.98	11.87	11.10	12.86	7.56	7.31	13.87	11.29	3.2%	17.01	3.4%
Stoneham	21,582	21,258	4.31	5.60	5.40	3.83	3.06	2.64	3.03	3.11	3.13	3.03	2.81	5.27	3.77	1.1%	5.60	1.1%
Stoughton	26,692	17,350	4.03	5.55	5.98	4.02	3.39	2.75	2.66	2.76	2.82	3.22	3.27	5.61	3.84	1.1%	5.98	1.2%
Wakefield	24,575	23,592	5.57	7.96	8.26	5.73	4.34	3.27	4.05	4.04	3.78	3.94	3.60	7.08	5.13	1.5%	8.26	1.6%
Walpole	23,112	15,485	2.50	3.40	3.36	2.62	2.39	1.98	1.76	2.00	2.07	2.17	2.05	3.14	2.45	0.7%	3.40	0.7%
Waltham	59,556	59,496	12.02	16.64	15.87	11.96	10.49	9.07	11.86	10.56	10.40	10.27	9.62	15.99	12.06	3.4%	16.64	3.3%
Watertown	32,303	32,303	4.48	6.24	5.96	4.35	3.73	3.26	3.84	3.83	3.92	3.91	3.58	5.97	4.42	1.3%	6.24	1.2%
Wellesley	26,978	26,169	4.38	6.71	6.91	4.73	3.88	2.95	3.24	3.30	3.27	3.25	3.05	6.46	4.34	1.2%	6.91	1.4%
Westwood	13,900	13,205	1.79	2.51	2.41	1.69	1.50	1.20	1.02	1.13	1.20	1.27	1.26	2.56	1.63	0.5%	2.56	0.5%
Weymouth	53,788	51,583	8.82	11.60	11.52	7.85	7.15	5.86	5.12	5.70	5.92	6.39	6.52	11.57	7.83	2.2%	11.60	2.3%
Wilmington	21,472	3,951	1.51	1.85	1.88	1.55	1.40	1.37	1.30	1.29	1.36	1.44	1.39	1.71	1.50	0.4%	1.88	0.4%
Winchester	21,181	21,160	3.11	4.64	4.60	3.16	2.47	1.76	1.96	2.12	1.99	2.16	1.91	4.30	2.85	0.8%	4.64	0.9%
Winthrop	17,069	17,069	2.24	3.08	2.75	2.20	2.02	1.98	2.08	2.11	2.17	2.06	2.25	2.91	2.32	0.7%	3.08	0.6%
Woburn	37,147	35,290	10.82	13.19	12.79	10.95	8.80	7.09	7.98	7.98	7.57	7.29	6.43	11.56	9.36	2.7%	13.19	2.6%
Total/Average	2,070,164	1,993,217	361.04	495.44	463.45	349.76	302.59	274.04	300.44	305.76	316.08	285.95	289.83	476.64	351.45	100%	504.60	100%

2008 MWRA COMMUNITY WASTEWATER FLOW COMPONENT ESTIMATES (CY08-12 MONTHS)

02-Jun-09

COMMUNITY						2008 Averages (1)		Components of Average Daily Flow (Estimated) (2)								
	Community Demographics		No. of Connects to MWRA System	Miles of Local Sewers (3)	No. of Meters for Permanent System	Average Daily Flow ADF (MGD)	Percent Average Daily Flow (6)	Selected Dry Day ADF (MGD)	Average Daily Infiltration (MGD)	Infiltration As a % of Average Daily Flow	Average Sanitary Flow (MGD)	Sanitary As a % of Average Daily Flow	Average Daily Inflow (4) (MGD)	Inflow As a % of Average Daily Flow	Peak Month ADF (MGD)	Percent Peak Month ADF (6)
	Total Population	Sewered Population														
Arlington	41,224	40,812	321	106	7	5.74	1.63%	4.95	2.35	40.9%	2.60	45.3%	0.79	13.8%	9.22	1.83%
Ashland	15,551	10,870	2	43	2	1.39	0.40%	1.20	0.40	28.8%	0.80	57.6%	0.19	13.7%	2.42	0.48%
Bedford	12,462	11,216	2	68	2	2.89	0.82%	2.66	1.46	50.5%	1.20	41.5%	0.22	7.6%	4.44	0.88%
Belmont	23,371	22,927	2	78	2	3.98	1.13%	3.35	1.75	44.0%	1.60	40.2%	0.63	15.8%	6.51	1.29%
BWSC (5)	559,034	558,475	234	840	33	95.69	27.23%	80.26	23.26	24.3%	57.00	59.6%	15.43	16.1%	121.92	24.16%
Braintree	33,681	33,647	15	133	7	6.68	1.90%	5.98	2.78	41.6%	3.20	47.9%	0.71	10.6%	10.47	2.07%
Brookline	55,590	55,479	9	102	12	11.21	3.19%	9.77	5.27	47.0%	4.50	40.1%	1.45	12.9%	17.11	3.39%
Burlington	23,299	23,276	0	115	1	4.04	1.15%	3.69	1.69	41.8%	2.00	49.5%	0.34	8.4%	5.67	1.12%
Cambridge (5)	100,135	100,035	116	150	9	21.89	6.23%	17.10	6.10	27.9%	11.00	50.3%	4.79	21.9%	27.92	5.53%
Canton	21,571	14,021	63	62	6	2.49	0.71%	2.18	0.98	39.4%	1.20	48.2%	0.32	12.9%	3.73	0.74%
Chelsea (5)	32,518	32,518	40	41	5	4.46	1.27%	3.36	0.86	19.3%	2.50	56.1%	1.11	24.9%	6.12	1.21%
Dedham	23,736	21,505	25	76	6	4.30	1.22%	3.80	2.00	46.5%	1.80	41.9%	0.50	11.6%	7.14	1.41%
Everett	36,837	36,837	20	57	7	5.93	1.69%	5.09	1.59	26.8%	3.50	59.0%	0.85	14.3%	7.86	1.56%
Framingham	65,060	62,946	4	275	4	7.83	2.23%	7.03	2.53	32.3%	4.50	57.5%	0.81	10.3%	12.63	2.50%
Hingham	7,257	6,625	1	31	1	1.20	0.34%	0.88	0.48	40.0%	0.40	33.3%	0.32	26.7%	2.55	0.51%
Holbrook	10,775	8,453	2	31	2	0.91	0.26%	0.86	0.36	39.6%	0.50	54.9%	0.06	6.6%	1.30	0.26%
Lexington	30,266	29,055	17	151	4	6.64	1.89%	5.88	3.08	46.4%	2.80	42.2%	0.77	11.6%	10.04	1.99%
Malden	55,871	55,815	242	99	6	10.08	2.87%	9.01	4.01	39.8%	5.00	49.6%	1.07	10.6%	13.87	2.75%
Medford	53,523	53,469	71	113	6	9.75	2.77%	8.42	3.92	40.2%	4.50	46.2%	1.33	13.6%	13.25	2.63%
Melrose	26,365	26,339	187	74	5	5.17	1.47%	4.27	2.37	45.8%	1.90	36.8%	0.90	17.4%	8.13	1.61%
Milton	26,034	24,212	45	83	14	3.82	1.09%	3.28	1.88	49.2%	1.40	36.6%	0.54	14.1%	6.96	1.38%
Natick	31,943	27,535	27	107	4	3.24	0.92%	2.96	1.16	35.8%	1.80	55.6%	0.28	8.6%	4.52	0.90%
Needham	28,418	25,718	21	115	2	4.44	1.26%	3.98	1.98	44.6%	2.00	45.0%	0.46	10.4%	7.36	1.46%
Newton	83,158	81,827	51	271	7	19.59	5.57%	17.03	10.43	53.2%	6.60	33.7%	2.57	13.1%	34.01	6.74%
Norwood	28,478	28,193	30	83	6	5.23	1.49%	4.43	2.03	38.8%	2.40	45.9%	0.81	15.5%	8.98	1.78%
Quincy	90,250	90,241	56	202	6	15.14	4.31%	13.70	5.20	34.3%	8.50	56.1%	1.44	9.5%	21.26	4.21%
Randolph	30,468	30,438	2	101	2	3.84	1.09%	3.38	1.38	35.9%	2.00	52.1%	0.46	12.0%	6.22	1.23%
Reading	23,164	22,098	2	86	2	3.42	0.97%	3.07	1.57	45.9%	1.50	43.9%	0.35	10.2%	5.35	1.06%
Revere	45,807	45,761	3	78	1	7.63	2.17%	6.18	2.38	31.2%	3.80	49.8%	1.45	19.0%	10.65	2.11%
Somerville (5)	74,963	74,963	43	107	7	11.29	3.21%	7.63	2.33	20.6%	5.30	46.9%	3.67	32.5%	17.01	3.37%
Stoneham	21,582	21,258	23	63	7	3.77	1.07%	3.22	1.42	37.7%	1.80	47.7%	0.55	14.6%	5.60	1.11%
Stoughton	26,692	17,350	1	60	2	3.84	1.09%	3.52	2.02	52.6%	1.50	39.1%	0.32	8.3%	5.98	1.19%
Wakefield	24,575	23,592	10	82	2	5.13	1.46%	4.57	2.87	55.9%	1.70	33.1%	0.56	10.9%	8.26	1.64%
Walpole	23,112	15,485	1	56	2	2.45	0.70%	2.25	1.05	42.9%	1.20	49.0%	0.20	8.2%	3.40	0.67%
Waltham	59,556	59,496	3	138	3	12.06	3.43%	10.74	5.14	42.6%	5.60	46.4%	1.31	10.9%	16.64	3.30%
Watertown	32,303	32,303	14	75	3	4.42	1.26%	3.94	1.64	37.1%	2.30	52.0%	0.48	10.9%	6.24	1.24%
Wellesley	26,978	26,169	2	130	3	4.34	1.23%	3.84	1.84	42.4%	2.00	46.1%	0.50	11.5%	6.91	1.37%
Westwood	13,900	13,205	3	77	3	1.63	0.46%	1.48	0.68	41.7%	0.80	49.1%	0.14	8.6%	2.56	0.51%
Weymouth	53,788	51,583	17	238	4	7.83	2.23%	7.07	3.27	41.8%	3.80	48.5%	0.76	9.7%	11.60	2.30%
Wilmington	21,472	3,951	2	19	1	1.50	0.43%	1.42	0.62	41.3%	0.80	53.3%	0.08	5.3%	1.88	0.37%
Winchester	21,181	21,160	72	83	7	2.85	0.81%	2.51	1.41	49.5%	1.10	38.6%	0.33	11.6%	4.64	0.92%
Winthrop	17,069	17,069	21	36	6	2.32	0.66%	2.04	0.94	40.5%	1.10	47.4%	0.28	12.1%	3.08	0.61%
Woburn	37,147	35,290	18	141	13	9.36	2.66%	8.45	3.95	42.2%	4.50	48.1%	0.91	9.7%	13.19	2.61%
Totals/Averages	2,070,164	1,993,217	1,840	5,076	234	351.45	100.00%	300.43	124.43	35.4%	176.00	50.1%	51.04	14.5%	504.60	100.00%

FOOTNOTES:

- (1) Figures tabulated using data from the MWRA Wastewater Metering System for Calendar Year 2008.
- (2) Wastewater flow components are estimated through engineering analysis by MWRA staff.
- (3) Miles of Local Sewers are from MWRA's regional collection system database or as reported by the Community and do not include service laterals.
- (4) Average Daily Inflow is calculated as a total inflow over the period of January through December 2008 divided by 366 days. Actual inflow during a specific storm event must be calculated separately.
- (5) Community with combined sewers. Inflow figures include combined flow during storm events tributary to MWRA's WWTP.
- (6) Percent average Daily Flow and Percent Peak Month ADF are the two flow-based components of MWRA's Wholesale Sewer Rate Methodology.

Column Summations: Average Daily Flow (ADF) Column F = I+K+M Average Dry Day Flow Column H = I+K

2008 Final Community Wastewater Flow Component Estimates (Alphabetical Detail page 1 of 3)

19-Jun-09

Community	Sewered Population	Miles of Local Sewers	IDM of Local Sewers	Average Daily Flow ADF (MGD)	Average Annual Infiltration (MGD)	Average Annual Inflow (MGD)	Average Sanitary Flow (MGD)	ADF (GPD Per IDM)	I/I (GPD Per IDM)	Infiltration (GPD Per IDM)	Inflow (GPD Per IDM)	Inflow (GPD Per Sewer Mile)	Average Sanitary (GPD Per Sew. Pop.)
Arlington	40,812	106	896	5.74	2.35	0.79	2.60	6,406	3,504	2,623	882	7,436	64
Ashland	10,870	43	390	1.39	0.40	0.19	0.80	3,564	1,513	1,026	487	4,429	74
Bedford	11,216	68	552	2.89	1.46	0.22	1.20	5,236	3,043	2,645	399	3,235	107
Belmont	22,927	78	708	3.98	1.75	0.63	1.60	5,621	3,362	2,472	890	8,119	70
BWSC	558,475	840	14,024	95.69	23.26	15.43	57.00	6,823	2,759	1,659	1,100	18,367	102
Braintree	33,647	133	1,215	6.68	2.78	0.71	3.20	5,498	2,872	2,288	584	5,355	95
Brookline	55,479	102	1,090	11.21	5.27	1.45	4.50	10,284	6,165	4,835	1,330	14,283	81
Burlington	23,276	115	1,042	4.04	1.69	0.34	2.00	3,877	1,948	1,622	326	2,957	86
Cambridge	100,035	150	2,344	21.89	6.10	4.79	11.00	9,339	4,646	2,602	2,044	31,929	110
Canton	14,021	62	567	2.49	0.98	0.32	1.20	4,392	2,293	1,728	564	5,164	86
Chelsea	32,518	41	618	4.46	0.86	1.11	2.50	7,217	3,188	1,392	1,796	26,831	77
Dedham	21,505	76	712	4.30	2.00	0.50	1.80	6,039	3,511	2,809	702	6,547	84
Everett	36,837	57	686	5.93	1.59	0.85	3.50	8,644	3,557	2,318	1,239	14,795	95
Frammingham	62,946	275	2,519	7.83	2.53	0.81	4.50	3,108	1,326	1,004	322	2,945	71
Hingham	6,625	31	270	1.20	0.48	0.32	0.40	4,444	2,963	1,778	1,185	10,323	60
Holbrook	8,453	31	312	0.91	0.36	0.06	0.50	2,917	1,346	1,154	192	1,935	59
Lexington	29,055	151	1,487	6.64	3.08	0.77	2.80	4,465	2,589	2,071	518	5,097	96
Malden	55,815	99	876	10.08	4.01	1.07	5.00	11,507	5,799	4,578	1,221	10,775	90
Medford	53,469	113	982	9.75	3.92	1.33	4.50	9,929	5,346	3,992	1,354	11,746	84
Melrose	26,339	74	635	5.17	2.37	0.90	1.90	8,142	5,150	3,732	1,417	12,237	72
Milton	24,212	83	680	3.82	1.88	0.54	1.40	5,618	3,559	2,765	794	6,504	58
Natick	27,535	107	954	3.24	1.16	0.28	1.80	3,396	1,509	1,216	294	2,617	65
Needham	25,718	115	1,075	4.44	1.98	0.46	2.00	4,130	2,270	1,842	428	3,998	78
Newton	81,827	271	2,579	19.59	10.43	2.57	6.60	7,596	5,041	4,044	997	9,483	81
Norwood	28,193	83	763	5.23	2.03	0.81	2.40	6,855	3,722	2,661	1,062	9,781	85
Quincy	90,241	202	1,956	15.14	5.20	1.44	8.50	7,740	3,395	2,658	736	7,129	94
Randolph	30,438	101	1,138	3.84	1.38	0.46	2.00	3,374	1,617	1,213	404	4,554	66
Reading	22,098	86	747	3.42	1.57	0.35	1.50	4,578	2,570	2,102	469	4,072	68
Revere	45,761	78	832	7.63	2.38	1.45	3.80	9,171	4,603	2,861	1,743	18,590	83
Somerville	74,963	107	1,523	11.29	2.33	3.67	5.30	7,413	3,940	1,530	2,410	34,162	71
Stoneham	21,258	63	517	3.77	1.42	0.55	1.80	7,292	3,810	2,747	1,064	8,730	85
Stoughton	17,350	60	621	3.84	2.02	0.32	1.50	6,184	3,768	3,253	515	5,369	86
Wakefield	23,592	82	842	5.13	2.87	0.56	1.70	6,093	4,074	3,409	665	6,809	72
Walpole	15,485	56	577	2.45	1.05	0.20	1.20	4,246	2,166	1,820	347	3,571	77
Waltham	59,496	138	1,289	12.06	5.14	1.31	5.60	9,356	5,004	3,988	1,016	9,485	94
Watertown	32,303	75	616	4.42	1.64	0.48	2.30	7,175	3,442	2,662	779	6,396	71
Wellesley	26,169	130	1,271	4.34	1.84	0.50	2.00	3,415	1,841	1,448	393	3,846	76
Westwood	13,205	77	627	1.63	0.68	0.14	0.80	2,600	1,308	1,085	223	1,818	61
Weymouth	51,583	238	2,272	7.83	3.27	0.76	3.80	3,446	1,774	1,439	335	3,193	74
Wilmington	3,951	19	259	1.50	0.62	0.08	0.80	5,792	2,703	2,394	309	4,235	202
Winchester	21,160	83	633	2.85	1.41	0.33	1.10	4,502	2,749	2,227	521	3,976	52
Winthrop	17,069	36	309	2.32	0.94	0.28	1.10	7,508	3,948	3,042	906	7,839	64
Woburn	35,290	141	1,393	9.36	3.95	0.91	4.50	6,719	3,489	2,836	653	6,453	128
Total	1,993,217	5,076	55,398	351.41	124.43	51.04	176.00	261,652	139,181	103,565	35,616	377,116	3,554
Average	46,354	118	1,288	8.17	2.89	1.19	4.09	6,085	3,237	2,408	828	8,770	83

2008 Final Community Wastewater Flow Component Estimates (Ranked Detail page 2 of 3)

19-Jun-09

Community	Sewered Population	Community	Miles of Local Sewers	Community	IDM of Local Sewers	Community	Average Daily Flow ADF (MGD)	Community	Average Annual Infiltration (MGD)	Community	Average Annual Inflow (MGD)	Community	Average Sanitary Flow (MGD)
BWSC	558,475	BWSC	840	BWSC	14,024	BWSC	95.69	BWSC	23.26	BWSC	15.43	BWSC	57.00
Cambridge	100,035	Framingham	275	Framingham	2,579	Cambridge	21.89	Newton	10.43	Cambridge	4.79	Cambridge	11.00
Quincy	90,241	Newton	271	Newton	2,519	Newton	19.59	Cambridge	6.10	Somerville	3.67	Quincy	8.50
Newton	81,827	Weymouth	238	Cambridge	2,344	Quincy	15.14	Brookline	5.27	Newton	2.57	Newton	6.60
Somerville	74,963	Quincy	202	Weymouth	2,272	Waltham	12.06	Quincy	5.20	Brookline	1.45	Waltham	5.60
Framingham	62,946	Lexington	151	Lexington	1,956	Quincy	11.29	Waltham	5.14	Revere	1.45	Revere	5.30
Waltham	59,496	Cambridge	150	Somerville	1,523	Brookline	11.21	Malden	4.01	Quincy	1.44	Malden	5.00
Malden	55,815	Woburn	141	Lexington	1,487	Malden	10.08	Woburn	3.95	Medford	1.33	Brookline	4.50
Brookline	55,479	Waltham	138	Woburn	1,393	Medford	9.75	Medford	3.92	Waltham	1.31	Framingham	4.50
Medford	53,469	Braintree	133	Waltham	1,289	Woburn	9.36	Weymouth	3.27	Chelsea	1.11	Medford	4.50
Weymouth	51,583	Wellesley	130	Wellesley	1,271	Framingham	7.83	Lexington	3.08	Malden	1.07	Woburn	4.50
Revere	45,761	Needham	115	Braintree	1,215	Weymouth	7.83	Wakefield	2.87	Woburn	0.91	Revere	3.80
Arlington	40,812	Burlington	115	Randolph	1,138	Revere	7.63	Braintree	2.78	Melrose	0.90	Weymouth	3.80
Everett	36,837	Medford	113	Brookline	1,090	Braintree	6.68	Framingham	2.53	Everett	0.85	Everett	3.50
Woburn	35,290	Somerville	107	Needham	1,075	Lexington	6.64	Revere	2.38	Framingham	0.81	Framingham	3.20
Braintree	33,647	Natick	107	Burlington	1,042	Everett	5.93	Melrose	2.37	Norwood	0.81	Norwood	2.80
Chelsea	32,518	Arlington	106	Medford	982	Arlington	5.74	Arlington	2.35	Arlington	0.79	Arlington	2.60
Watertown	32,303	Brookline	102	Natick	954	Norwood	5.23	Somerville	2.33	Lexington	0.77	Chelsea	2.50
Randolph	30,438	Randolph	101	Arlington	896	Melrose	5.17	Norwood	2.03	Weymouth	0.76	Norwood	2.40
Lexington	29,055	Malden	99	Malden	876	Wakefield	5.13	Stoughton	2.02	Braintree	0.71	Watertown	2.30
Norwood	28,193	Reading	86	Wakefield	842	Chelsea	4.46	Dedham	2.00	Belmont	0.63	Burlington	2.00
Natick	27,535	Milton	83	Revere	832	Needham	4.44	Needham	1.98	Wakefield	0.56	Needham	2.00
Melrose	26,339	Winchester	83	Norwood	763	Watertown	4.42	Milton	1.88	Stoneham	0.55	Randolph	2.00
Wellesley	26,169	Norwood	83	Reading	747	Wellesley	4.34	Wellesley	1.84	Milton	0.54	Wellesley	2.00
Needham	25,718	Wakefield	82	Dedham	712	Dedham	4.30	Belmont	1.75	Dedham	0.50	Melrose	1.90
Milton	24,212	Revere	78	Belmont	708	Burlington	4.04	Burlington	1.69	Wellesley	0.50	Dedham	1.80
Wakefield	23,592	Belmont	78	Everett	686	Belmont	3.98	Watertown	1.64	Watertown	0.48	Natick	1.80
Burlington	23,276	Milton	77	Westwood	680	Randolph	3.84	Everett	1.59	Everett	0.46	Needham	1.80
Belmont	22,927	Dedham	76	Melrose	635	Stoughton	3.84	Reading	1.57	Randolph	0.46	Wakefield	1.70
Reading	22,098	Watertown	75	Winchester	633	Milton	3.82	Bedford	1.46	Reading	0.35	Belmont	1.60
Dedham	21,505	Melrose	74	Westwood	627	Stoneham	3.77	Stoneham	1.42	Burlington	0.34	Reading	1.50
Stoneham	21,258	Bedford	68	Stoughton	621	Reading	3.42	Winchester	1.41	Winchester	0.33	Stoughton	1.50
Winchester	21,160	Stoneham	63	Chelsea	618	Natick	3.24	Natick	1.38	Randolph	0.32	Milton	1.40
Stoughton	17,350	Canton	62	Watertown	616	Bedford	2.89	Wilmington	1.16	Hingham	0.32	Bedford	1.20
Winthrop	17,069	Stoughton	60	Walpole	577	Winchester	2.85	Walpole	1.05	Stoughton	0.32	Canton	1.20
Walpole	15,485	Everett	57	Canton	567	Canton	2.49	Canton	0.98	Natick	0.28	Walpole	1.20
Canton	14,021	Walpole	56	Bedford	552	Walpole	2.45	Winthrop	0.94	Winthrop	0.28	Winthrop	1.10
Westwood	13,205	Ashland	43	Stoneham	517	Winthrop	2.32	Chelsea	0.86	Bedford	0.22	Winthrop	1.10
Bedford	11,216	Chelsea	41	Ashland	390	Westwood	1.63	Westwood	0.68	Walpole	0.20	Ashland	0.80
Ashland	10,870	Winthrop	36	Holbrook	312	Wilmington	1.50	Wilmington	0.62	Ashland	0.19	Westwood	0.80
Holbrook	8,453	Hingham	31	Winthrop	309	Ashland	1.39	Hingham	0.48	Westwood	0.14	Westwood	0.80
Hingham	6,625	Holbrook	31	Hingham	270	Hingham	1.20	Ashland	0.40	Wilmington	0.08	Holbrook	0.50
Wilmington	3,951	Wilmington	19	Wilmington	259	Holbrook	0.91	Holbrook	0.36	Holbrook	0.06	Hingham	0.40
Total	1,993,217	Total	5,076	Total	55,398	Total	351	Total	124	Total	51	Total	176
Average	46,354	Average	118	Average	1,288	Average	8	Average	3	Average	1	Average	4

2008 Final Community Wastewater Flow Component Estimates (Ranked Detail page 3 of 3)

19-Jun-09

Community	ADF (GPD Per IDM)	Community	LI (GPD Per IDM)	Community	Infiltration (GPD Per IDM)	Community	Inflow (GPD Per IDM)	Community	Inflow (GPD Per Sewer Mile)	Community	Average Sanitary (GPD Per Sew. Pop.)
Malden	11,507	Brookline	6,165	Brookline	4,835	Somerville	2,410	Somerville	34,162	Wilmington	202
Brookline	10,284	Malden	5,799	Malden	4,578	Cambridge	2,044	Cambridge	31,929	Woburn	128
Medford	9,929	Medford	5,346	Newton	4,044	Chelsea	1,796	Chelsea	26,831	Cambridge	110
Waltham	9,356	Melrose	5,150	Medford	3,992	Revere	1,743	Revere	18,590	Bedford	107
Cambridge	9,339	Newton	5,041	Waltham	3,988	Melrose	1,417	BWSC	18,367	BWSC	102
Revere	9,171	Waltham	5,004	Melrose	3,732	Medford	1,354	Everett	14,795	Lexington	96
Everett	8,644	Cambridge	4,646	Wakefield	3,409	Brookline	1,330	Brookline	14,283	Braintree	95
Melrose	8,142	Revere	4,603	Stoughton	3,253	Everett	1,239	Melrose	12,237	Everett	95
Quincy	7,740	Wakefield	4,074	Winthrop	3,042	Malden	1,221	Medford	11,746	Quincy	94
Newton	7,596	Winthrop	3,948	Revere	2,861	Hingham	1,185	Malden	10,775	Waltham	94
Winthrop	7,508	Somerville	3,940	Woburn	2,836	BWSC	1,100	Hingham	10,323	Malden	90
Somerville	7,413	Stoneham	3,810	Dedham	2,809	Stoneham	1,064	Norwood	9,781	Stoughton	86
Stoneham	7,292	Stoughton	3,768	Milton	2,765	Norwood	1,062	Waltham	9,485	Burlington	86
Chelsea	7,217	Norwood	3,722	Stoneham	2,747	Waltham	1,016	Newton	9,483	Canton	86
Watertown	7,175	Milton	3,559	Watertown	2,662	Newton	997	Stoneham	8,730	Norwood	85
Norwood	6,855	Everett	3,557	Norwood	2,661	Winthrop	906	Belmont	8,119	Stoneham	85
BWSC	6,823	Dedham	3,511	Quincy	2,658	Belmont	890	Winthrop	7,839	Medford	84
Woburn	6,719	Arlington	3,504	Bedford	2,645	Arlington	882	Arlington	7,436	Dedham	84
Arlington	6,406	Woburn	3,489	Arlington	2,623	Milton	794	Quincy	7,129	Revere	83
Stoughton	6,184	Watertown	3,442	Cambridge	2,602	Watertown	779	Wakefield	6,809	Brookline	81
Wakefield	6,093	Quincy	3,395	Belmont	2,472	Quincy	736	Dedham	6,547	Newton	81
Dedham	6,039	Belmont	3,362	Wilmington	2,394	Dedham	702	Milton	6,504	Needham	78
Wilmington	5,792	Chelsea	3,188	Everett	2,318	Wakefield	665	Woburn	6,453	Walpole	77
Belmont	5,621	Bedford	3,043	Braintree	2,288	Woburn	653	Watertown	6,396	Chelsea	77
Milton	5,618	Hingham	2,963	Winchester	2,227	Braintree	584	Stoughton	5,369	Wellesley	76
Braintree	5,498	Braintree	2,872	Reading	2,102	Canton	564	Braintree	5,355	Weymouth	74
Bedford	5,236	BWSC	2,759	Lexington	2,071	Winchester	521	Canton	5,164	Ashland	74
Reading	4,578	Winchester	2,749	Needham	1,842	Lexington	518	Lexington	5,097	Melrose	72
Winchester	4,502	Wilmington	2,703	Walpole	1,820	Stoughton	515	Randolph	4,554	Wakefield	72
Lexington	4,465	Lexington	2,589	Hingham	1,778	Ashland	487	Ashland	4,429	Framingham	71
Hingham	4,444	Reading	2,570	Canton	1,728	Reading	469	Wilmington	4,235	Watertown	71
Canton	4,392	Canton	2,293	BWSC	1,659	Needham	428	Reading	4,072	Somerville	71
Walpole	4,246	Needham	2,270	Burlington	1,622	Randolph	404	Needham	3,998	Belmont	70
Needham	4,130	Walpole	2,166	Somerville	1,530	Bedford	399	Needham	3,976	Reading	68
Burlington	3,877	Burlington	1,948	Wellesley	1,448	Wellesley	393	Winchester	3,976	Reading	68
Ashland	3,564	Wellesley	1,841	Weymouth	1,439	Walpole	347	Wellesley	3,846	Randolph	66
Weymouth	3,446	Weymouth	1,774	Chelsea	1,392	Walpole	347	Walpole	3,571	Natick	65
Wellesley	3,415	Randolph	1,617	Natick	1,216	Weymouth	335	Bedford	3,235	Winthrop	64
Natick	3,396	Ashland	1,513	Randolph	1,213	Burlington	326	Bedford	3,235	Winthrop	64
Randolph	3,374	Natick	1,509	Holbrook	1,154	Framingham	322	Weymouth	3,193	Arlington	64
Framingham	3,108	Holbrook	1,346	Westwood	1,085	Wilmington	309	Burlington	2,957	Westwood	61
Holbrook	2,917	Framingham	1,326	Ashland	1,026	Natick	294	Framingham	2,945	Hingham	60
Westwood	2,600	Westwood	1,308	Framingham	1,004	Westwood	223	Natick	2,617	Holbrook	59
						Holbrook	192	Holbrook	1,935	Milton	58
								Westwood	1,818	Winchester	52
Total	261,652	Total	139,181	Total	103,565	Total	35,616	Total	377,116	Total	3,554
Average	6,085	Average	3,237	Average	2,408	Average	828	Average	8,770	Average	83