

August 22, 2008

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

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

RE: Massachusetts Water Resources Authority Permit Number MA0103284

Dear Ms. Murphy and Mr. Haas:

In compliance with the requirements of MWRA's NPDES Permit MA0103284 - Part I, Item 10.c (page 14 of 32), please find enclosed: Summary Report of MWRA's Demand Management Program for Fiscal Year 2008.

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: MA DEP, NERO
MA DEP, Boston
MA DEP, Worcester
MA DEP, SERO
Richard Chretien, MA DEP
Grace Bigornia-Vitale, Sr. Program Manager, MWRA NPDES Compliance
Carl H. Leone, Sr. Program Manager, MWRA Community Support Program

Summary Report of MWRA Demand Management Program Fiscal Year 2008

This report is organized into four sections, as follows:

1. Summary
2. Background and Long Range Water Supply Program
3. Ongoing Demand Management Programs and Detailed Activities during Fiscal Year 2008
4. Demand Management Plans for Fiscal Year 2009

1. Summary

This report has been prepared to meet the requirements of the Massachusetts Water Resources Authority's (MWRA) NPDES Permit MA0103284 - Part I, Item 10.c (page 14 of 32). The purpose of the demand management section (including water conservation) in MWRA's NPDES permit is to help maintain the dry day wastewater flow to the Deer Island Wastewater Treatment Plant below the 436 million gallons per day (mgd) permit limit. MWRA's wastewater flow is derived from three flow components: sanitary flow, groundwater infiltration, and stormwater inflow. The demand management program will help reduce the sanitary component of wastewater flow as well as provide benefits to the water system and source watersheds. Information on reduction of infiltration and inflow is provided in the MWRA Annual Infiltration and Inflow Reduction Report for Fiscal Year 2008 (submitted under separate cover letter).

MWRA has maintained the 365 calendar day running average dry day wastewater flow well below the 436 mgd limit and well below the 415 mgd trigger (see NPDES Permit Part I, Item 10.a and 10.b). For fiscal year 2008 (ending June 30, 2008), the 365-calendar day running average dry day flow to the Deer Island Wastewater Treatment Plant was 286.2 mgd; dry day flow has averaged about 320 mgd over the last nine years (see Table 1). The dry day flow is reported monthly by MWRA as part of the NPDES Operational Performance Summary.

Table 1 – History of 365-Calendar Day Running Average Dry Day Wastewater Flow

| Fiscal Year | Running dry day flow (mgd) |
|-------------------|-------------------------------|
| 2000 | 323.8 |
| 2001 | 323.5 |
| 2002 | 293.5 |
| 2003 | 330.4 |
| 2004 | 320.9 |
| 2005 | 344.5 |
| 2006 | 323.1 |
| 2007 | 331.8 |
| 2008 | 286.2 |
| Nine Year Average | 320 |

MWRA continues to implement effective water demand management policies and programs for the MWRA-owned distribution system, as well as member community-owned distribution systems. The

following bullets provide an overview of actions take during FY08. Background information and details on each program are provided in other sections of this report.

- Leak detection survey of 271 miles of MWRA distribution main and subsequent leak repairs, saving approximately 0.15 mgd of water;
- Leak detection survey of 3,334 miles of member community distribution main in 21 communities, and subsequent leak repairs, saving approximately 5.0 mgd of water;
- \$10 million in interest-free loans to fund 19 local community water pipeline rehabilitation projects, providing 13 miles of new water main and 12 miles of cleaned and lined water main;
- Distribution of approximately 13,000 water saving fixtures (low-flow showerheads and faucet aerators), installation instructions and leak detection tablets are distributed with the low-flow fixtures;
- Distribution of over 480,000 pieces of water conservation literature; and
- 365 classroom presentations reaching more than 10,000 students in the service area.

The continued effectiveness of MWRA’s conservation efforts over the past year is demonstrated by the fact that baseline water demand (water withdrawal from MWRA reservoirs) continues to remain stable or decline and is comfortably below the system’s safe yield of 300 mgd as shown on Figure 1 (for additional detail, see notes under Table 2).

MWRA 5-Year Average System Demand

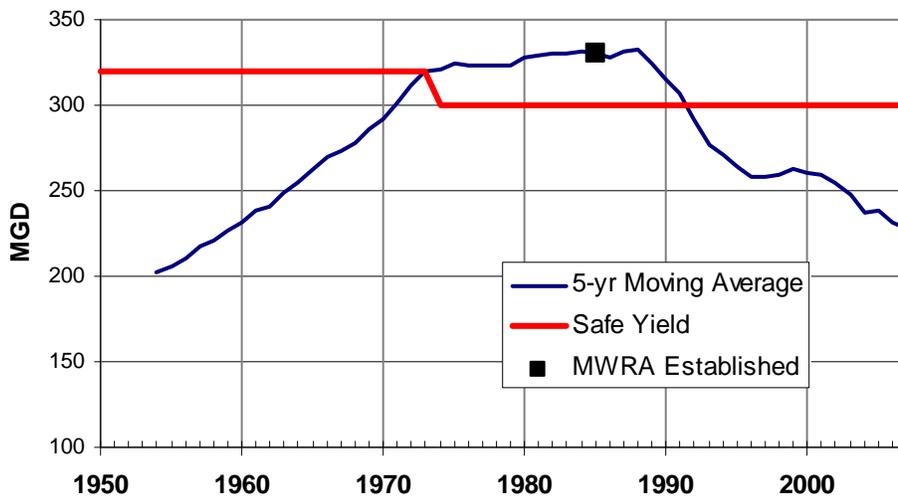


Figure 1 – MWRA Reservoir Withdrawals

For calendar year 2007, water demand was 219.9 mgd. Table 2 provides data on water use and wastewater generation over the most recent ten-year period (calendar year data). The data on “water demand” represents total water withdrawals from MWRA reservoirs. The data on “wholesale water

sales” represents water provided by MWRA to all 50 fully and partially supplied communities (a population of about 2.3 million). “Total wastewater generation” data represents the total flow to the Deer Island Treatment Facility from all 43-member sewer communities (a sewered population of about 2.0 million). The “dry day wastewater generation” data represents flow to the Deer Island Treatment Facility during only dry days as defined in MWRA’s NPDES Permit.

Table 2 – MWRA Total Water Demand and Wastewater Generation

| Calendar Year | Water Demand (Withdrawals) | Wholesale Water Sales | Total Wastewater Generation | Dry Day Wastewater Generation |
|-----------------|----------------------------|-----------------------|-----------------------------|-------------------------------|
| 1998 | 260 mgd | 231 mgd | 412 mgd | N/A |
| 1999 | 276 mgd * | 245 mgd* | 344 mgd | 307 mgd |
| 2000 | 252 mgd * | 229 mgd* | 362 mgd | 331 mgd |
| 2001 | 247 mgd * | 229 mgd* | 346 mgd | 305 mgd |
| 2002 | 237 mgd | 219 mgd | 340 mgd | 309 mgd |
| 2003 | 222 mgd** | 214 mgd | 382 mgd | 333 mgd |
| 2004 | 216 mgd** | 208 mgd | 356 mgd | 327 mgd |
| 2005 | 225 mgd** | 213 mgd | 403 mgd | 342 mgd |
| 2006 | 212 mgd | 201 mgd | 380 mgd | 322 mgd |
| 2007 | 220 mgd | 209 mgd | 330 mgd | 300 mgd |
| 10 Year Average | 237 mgd | 220 mgd | 366 mgd | 320 mgd |

* Total withdrawals and water sales included an additional (temporary) demand from Cambridge while it rebuilt its own water treatment plant. For calendar year 1999, 15 mgd; calendar year 2000, 14 mgd; and calendar year 2001, 6 mgd. ** Total withdrawals do not include an additional demand associated with Carroll Water Treatment Plant start up and testing activities. For calendar year 2003, 2,710 MG (annual average 7.4 mgd); calendar year 2004, 1,326 MG (annual average 3.6 mgd); calendar year 2005, 12,264 MG (annual average 33.6 mgd).

Considerable additional data on MWRA demand management and water conservation programs can be found on MWRA’s website at www.mwra.com.

2. Background and Long Range Water Supply Program

The MWRA, an independent public authority, was established through legislation in 1985 to provide wholesale water and sewer services to 2.5 million people in 61 cities and towns. Some of the Authority’s goals, purposes and objectives relate directly to water demand management efforts, including:

- Efficient and economical operation of water delivery;
- Programs for leak detection for member communities; and,
- Repair, replacement, rehabilitation, modernization and extension of the delivery of water within the service area of the Authority.

From its inception, MWRA has made demand management/water conservation a high priority. In 1985, MWRA inherited a water system that had been exceeding its safe yield of 300 mgd for almost twenty years. In response to increasing water demand during the 60s, 70s and 80s, several water supply studies were undertaken by MWRA’s predecessor agency, the Metropolitan District Commission (MDC). These studies, collectively called the Long Range Water Supply Study-EIR 2020, projected the need for 70 mgd of additional supply by 2020 above a base demand of 340 mgd.

The studies identified a series of supply development options including diversion of a portion of the Connecticut River flow. Demand management options were also examined. In 1986, the MWRA Board of Directors, through a series of water policy decisions, opted to aggressively pursue demand management strategies rather than pursue options for increasing water supply. This commitment to demand management resulted in the implementation of a highly successful water conservation program that has been a role model for water conservation efforts both nationally and globally.

Long Range Water Supply Program

Following the commitment by the Board of Directors in 1986 to demand management, MWRA in 1987 developed and launched its Long Range Water Supply Program (LRWSP). The LRWSP included 30 different recommendations to be completed over the next decade at a cost of tens of millions of dollars. The demand management components of the LRWSP were meant to reduce water use and water losses throughout the service area. During a three-year trial program from 1987-1989, MWRA, along with its member communities, initiated demand management efforts that reduced average demand from 326 mgd in 1987 to 285 mgd in 1990 (see Figure 1). This reduction put average demand below the water system's safe yield of 300 mgd for the first time in over 20 years. With this success, the demand management components of the LRWSP were continued beyond the trial program. A detailed discussion of the demand management activities developed from the LRWSP, covering the 1991 through 2000 period, was provided in the Fiscal Year 2000 MWRA Demand Management Report (available at www.mwra.state.ma.us/harbor/enquad/pdf/ms-061.pdf).

Drought Management Plan

In addition to long range planning, the need for a short term drought management plan was made clear after two years of below average precipitation and overuse of the Quabbin-Ware-Wachusett system led to a potential drought warning in the 1988-1989 period. The MWRA Drought Management Plan was submitted to the Massachusetts Department of Environmental Protection in 1989. Shortly thereafter, precipitation returned to normal and the reservoirs rose back to normal. In spring 2000, MWRA was involved in the Massachusetts Drought Management Task Force's development of a state drought response plan. The plan outlines agency responsibilities during drought and sets drought stage triggers based on hydrologic conditions. The plan is regionally flexible; for example, small water systems may need water use restrictions during a short-term drought while the MWRA service area would avoid restrictions due to the large storage volumes in Wachusett and Quabbin Reservoirs. Only a long-term drought more severe than the 1960's drought of record would lead to restrictions in the MWRA service area. The plan also retains responsibilities for MWRA's direct lines of communication with member communities and customers during a drought.

3. Ongoing MWRA Demand Management Programs and Activities During Fiscal Year 2008

Planning and Policies

In January 2007, MWRA completed an updated Water System Master Plan which is intended to serve as the framework for annual capital planning and budgeting decisions. As part of this effort,

staff documented supply and demand characteristics of the system to confirm that the 300 mgd safe yield of the MWRA water system is sufficient to meet future demand for water both within the service area and additional demand outside the service area as may be approved. Staff used the following conservative demand planning scenario to arrive at this conclusion: continuation of current base demand in the existing MWRA service area (230 mgd, based on 5-year average demand in FY2004); projected increased demand from population and employment growth through 2030 within the existing MWRA service area (13 mgd); approximately 5 mgd from new communities that were actively pursuing admission or increased withdrawals from MWRA in 2007; an allowance for the potential additional demand for MWRA water from partially served communities (planning assumption is up to 18 mgd); and potential additional demand for MWRA water from as many as 22 communities not currently or actively pursuing MWRA admission but within proximity to the service area and that may have or face future water deficits (up to 10 mgd). The conservative planning scenario represents a potential future demand of 276 mgd, well below the system safe yield of 300 mgd.

MWRA has adopted Policies that establish stringent controls and a rigorous approval process for entities seeking admission to the MWRA water system or to use MWRA water on an emergency basis. These policies include:

- **OP.05, Emergency Water Supply Withdrawals.** This policy applies to communities outside MWRA's water service area that are seeking water on an emergency basis. The MWRA may approve emergency withdrawals for no more than six months at a time.
- **OP.09, Water Connections Serving Property Partially Located in a Non-MWRA Community,** also referred to as the "Water Straddle" policy. This policy applies to all parties seeking to obtain water for a location, building, or structure situated entirely outside the MWRA water service area but located on a parcel of land, under single ownership, and which is subject to an integrated plan for use or development, that is partly inside the MWRA's water service area.
- **OP.10, Admission of New Community to MWRA Water System.** This policy applies to communities seeking admission to the MWRA water system, and to state, county, institutional, and federal facilities seeking MWRA water for a location outside MWRA's water service area, as defined in MWRA's Enabling Act.

Demand management is also an important component of regulations for MWRA's Continuation of Contract Water Supply (360 CMR 11.00) that is applicable to 24 communities that purchase water from the Authority under a cooperative contract basis. In addition, all communities that purchase water from MWRA are required to complete a leak detection survey and perform follow-up leak repairs of their entire distribution system at least once every two years (360 CMR 12.00).

Leak Detection and Repair of MWRA Distribution System

The MWRA annual leak detection and repair program (initially established during 1988 to 1990) is performed by MWRA personnel. All MWRA water distribution pipes (284 miles) are surveyed on a regular maintenance schedule for leaks with repairs made promptly. During FY08, a total of 271.6 miles of MWRA-owned distribution main were surveyed for leaks. A total of 3 leaks were

detected and repaired, accounting for approximately 0.2 mgd of water savings. Table 3 shows the history of the last nine years of leak detection on MWRA distribution system.

Table 3 – Leak Detection on MWRA Distribution System

| Period | Miles Surveyed | Number of leaks | Estimated leakage-mgd |
|----------------|----------------|-----------------|-----------------------|
| FY00 | 260 | 17 | 0.4 |
| FY01 | 267 | 13 | 0.5 |
| FY02 | 257 | 13 | 0.5 |
| FY03 | 230 | 26 | 1.0 |
| FY04 | 184 | 16 | 0.5 |
| FY05 | 227 | 19 | 0.6 |
| FY06 | 270 | 10 | 0.6 |
| FY07 | 258 | 16 | 0.4 |
| FY08 | 272 | 3 | 0.2 |
| 9 Year Average | 247 | 15 | 0.5 |

MWRA Capital Projects from the 2007 Water Master Plan

Total water system needs identified for the FY07- 48 Master Plan timeframe are approximately \$1.1 billion (in current dollars) including projects already in the CIP. The Master Plan is based on the following major assumptions and findings:

- The 300 mgd safe yield of the MWRA water system is sufficient to meet future demand for water both within the service area and additional demand outside the service area as may be approved.
- There is adequate treatment plant capacity, and generally adequate transmission capacity under normal operations to meet MWRA system needs under the demand planning scenario. Distribution capacity is generally adequate with the exception of a few weak spots addressed in either the Master Plan or existing CIP.
- MWRA’s transmission system lacks redundancy in some key areas; a proposed redundancy study will identify potential solutions and help to prioritize major expenditures.
- Areas within the distribution system without adequate redundancy were targeted in the Master Plan and initial studies are now underway to address these deficiencies. These studies are focused on the Northern Intermediate High and Southern Extra High pressure zones.
- MWRA falls short of its goal of distribution storage sufficient to meet one day of demand. The Master Plan recommends addressing the system’s highest risk areas. Again, initial focus is on the Northern Intermediate High and Southern Extra High pressure zones for opportunities to increase distribution storage in these areas.

- No new design and construction funds are included to address the impacts of potential changes in federal or state regulations. The FY08 CIP already includes funds to meet the requirements of the Long Term 2 Enhanced Surface Water Treatment Rule.
- Continuation of MWRA’s ongoing program to systematically replace old, cast iron water mains is recommended for continued water quality improvements. This work is also consistent with EPA’s anticipated direction on distribution system regulation. To date, MWRA has lined 38 miles of old cast iron main with approximately 90 additional miles of main identified for rehabilitation or replacement in either the CIP or 2007 Master Plan.

All of the projects identified in the Master Plan were prioritized and, as a result, much of the work noted above has been incorporated into the Final FY09 CIP and MWRA anticipates an ongoing process to review and update this information.

Leak Detection and Repair of Member Community Distribution Systems

To help communities identify leaks in their local distribution systems, a program providing a free one-time leak detection survey was established during 1988 to 1990. Based on the success of the initial program, MWRA developed leak detection regulations (360 CMR 12.00) that went into effect in July 1991. Communities that purchase water from MWRA are required to complete a leak detection survey of their entire distribution system at least once every two years. Communities can accomplish the survey in one of three ways: (1) using their own crews, (2) hiring their own contractor, or (3) using MWRA’s task order leak detection services contract. Leak detection/repair work is generally cost effective as the value of the saved water often far exceeds the cost of the leak detection/repair work. During FY08, a total of 3,334 miles of local water pipeline were surveyed for leaks. A total of 458 leaks were detected and repaired in 21 community distribution systems, accounting for 5.0 mgd of water savings. Table 4 shows the history of the last seventeen years of leak detection on community pipes.

Table 4 - Leak Detection on Community Pipes

| Period | Miles Surveyed | Number of leaks | Estimated leakage-mgd |
|-----------------|----------------|-----------------|-----------------------|
| FY92 & FY93 | 6227 | 1988 | 24.8 |
| FY94 & FY95 | 5924 | 1134 | 14.1 |
| FY96 & FY97 | 6013 | 1527 | 17.8 |
| FY98 & FY99 | 5924 | 1257 | 12.4 |
| FY00 & FY01 | 6650 | 928 | 9.3 |
| FY02 & FY03 | 6198 | 1032 | 8.6 |
| FY04 & FY05 | 6753 | 968 | 13.2 |
| FY06 & FY07 | 6871 | 833 | 8.5 |
| FY08 | 3334 | 458 | 5.0 |
| 17 Year Average | 3170 | 596 | 6.7 |

Rehabilitation and Replacement of Member Community Distribution Systems

MWRA implemented the pilot Water Infrastructure Rehabilitation Financial Assistance Program in 1997-1999. This program provided \$30 million in 25 percent grants and 75 percent interest-free loans to member water communities for water system rehabilitation projects. Local projects implemented through this program resulted in the replacement of over 22,000 water meters and rehabilitation or replacement of over 80 miles of distribution pipeline. Water loss from both pipeline and valve leakage was reduced.

In November 1999, MWRA approved the \$256 million Local Pipeline Assistance Program (LPAP) established with the primary objective of improving water quality in community-owned distribution systems. This interest-free loan program primarily funds replacement and/or cleaning/lining of unlined watermains. A secondary benefit of the program is the reduction of water pipeline leakage. Quarterly funding distribution under the Local Pipeline Assistance Program began in August 2000 (FY01). Through eight years of the program, \$140 million has been distributed to twenty-nine communities to fund 176 local projects. These projects have provided for a total of 135 miles of new lined water pipe and 86 miles of cleaning and lining of existing water pipe. Table 5 shows the history of the Pilot and Local Pipeline Assistance Programs.

Table 5 – Summary of Pilot and LPAP Programs

| Period | \$ Distributed | Projects Funded | Miles of New Pipe | Miles of Rehabilitated Pipe |
|---------|----------------|-----------------|-------------------|-----------------------------|
| FY98/99 | \$30 million | 85 | 42 | 39 |
| FY01 | \$17 million | 32 | 18 | 22 |
| FY02 | \$16 million | 19 | 22 | 6 |
| FY03 | \$16 million | 18 | 16 | 9 |
| FY04 | \$19 million | 22 | 24 | 4 |
| FY05 | \$20 million | 24 | 17 | 15 |
| FY06 | \$17 million | 17 | 7 | 4 |
| FY07 | \$26 million | 25 | 18 | 14 |
| FY08 | \$10 million | 19 | 13 | 12 |
| TOTAL | \$170 million | 261 | 177 | 125 |

Water Metering and Monitoring

Continued annual routine calibration and maintenance of the revenue meters allows MWRA to track water use and accurately charge its wholesale customer communities. MWRA analyzes nighttime low flow data and historical trends from the revenue meters to help member communities identify potential water leakage in local systems. During FY08, MWRA continued its ongoing program for operation and maintenance of the water metering system. All meters received routine calibration on a regular schedule.

Residential Water Conservation

MWRA continues to provide low-flow device kits to member communities, housing authorities, development corporations, and individual retail customers at no cost. The low-flow device kits include: 2.0 gallon per minute (gpm) showerheads, 1.5 gpm bathroom faucet aerators, 2.2 gpm kitchen faucet aerators, fixture installation instructions, and leak detection dye tablets. MWRA also maintains its water conservation hotline (617-242-SAVE). During FY08, a total of 12,998 water saving fixtures (4,365 showerheads, 8,633 faucet aerators) were distributed to MWRA households and member community water departments.

Public Education Outreach

MWRA continues to provide public education material to communities and individual customers at no cost. Member communities are encouraged to distribute the water conservation information to retail customers (usually distributed as a bill insert). The primary information targeted for retail customers is indoor and outdoor water conservation brochures printed/folded to be used by member communities as bill inserts. MWRA also provides the brochures directly to retail customers, watershed associations, environmental groups, etc. to fulfill e-mail and telephone requests.

During FY08, MWRA sent letters and follow-up e-mails to all water and sewer member communities highlighting the Authority's bill insert educational brochures on indoor and outdoor water conservation, and outlining the availability (at no cost) of the water conservation kits. Seventy percent of the member communities took advantage of this offer. In all, over 480,000 pieces of printed materials were distributed.

During FY08, MWRA teamed with the US EPA to become a WaterSense program partner to help consumers save water for future generations and reduce costs on their utility bills. WaterSense aims to decrease indoor and outdoor water use through water-efficient products and simple water-saving practices. The program encourages customers to look for WaterSense labeled products, which have been independently certified for efficiency and performance, and promotes water-saving techniques that reduce stress on water systems and the environment.

During FY08, MWRA expanded its water conservation information included in the 2007 Annual Drinking Water Quality Report. This report is mailed to every household in the MWRA service area, a distribution of more than 800,000. The Annual Water Quality Report also carries the EPA WaterSense Partner logo.

School Education

MWRA continues to promote water conservation awareness for young people. The ongoing School Education program is designed to provide a science-based curriculum using a four step process: educational curriculum development, conducting classroom presentations, wide-spread teacher training and continual follow-up, and support to educators. Educational materials have been designed for students from the elementary level to the high school level. During the FY08 (2007/2008) school year, MWRA's School Educational outreach program (including water conservation information) made 365 classroom presentations reaching more than 10,000 students in pre-kindergarten through college level classes in 45 communities. In addition to classroom presentations, the MWRA again held a Poster/Writing Contest. More than 2,000 posters and writing

entries were submitted. The poster contest topic for all three writing categories (grades K-2; grades 3-5 and grades 6-8) was tap vs. bottled water.

Industrial, Commercial, and Institutional Audits and New Technologies

MWRA has found that conservation initiatives for industrial, commercial, and institutional water users are widely available through private consulting firms. MWRA has developed and offers at no cost a 52-page Guide To Water Management that contains detailed information to help local facility managers reduce overall water use. In addition, detailed fact sheets on industrial, commercial, and institutional water users are available at MWRA's web site at <http://www.mwra.com/04water/html/indust.htm>. These include specifics on hospitals, schools, colleges and athletic facilities; restaurants; and commercial buildings.

Water Supply Citizens Advisory Committee

MWRA's 1986 decision to aggressively pursue water conservation rather than look for additional sources of water was strongly advocated by the Water Supply Citizens Advisory Committee (WSCAC). This unique citizen's group was formed in 1977 to review a proposed Connecticut River diversion plan to supply water to the metropolitan Boston area. From its beginning, the group has been a strong supporter of water conservation measures. It helped formulate the water conservation language in MWRA's Enabling Act legislation. In 1986, WSCAC encouraged MWRA to pursue demand management rather than look for new water supplies. During the late 1980's and early 1990's, the citizen's group took a lead role promoting trigger and drought management planning. With its long commitment to the water supply system, WSCAC continues to provide independent citizen input on MWRA's policies and programs, while voicing public support of source protection and conservation. During FY08, the Water Supply Citizens Advisory Committee has continued to strongly support MWRA's water conservation efforts. The committee has been active providing review and input on water system expansion issues. A two-year contract for continuation of WSCAC was authorized by the MWRA Board of Directors on June 6, 2007.

Other Activities

In addition to the activities outlined above, MWRA staff have provided assistance to outside agencies in the area of water conservation. In celebration of Earth Day, MWRA provided water conservation fixtures and literature for EPA's Green Expo, Chicopee's GreenFest, and Needham Technology Center's celebration. Also, staff provided water conservation fixtures and literature to promote water conservation for: Celebrate Milton Day, A Science Fair at The Amigo's School in Cambridge and Boston's West End Civic Association Festival.

4. Demand Management Plans for Fiscal Year 2009

During FY09, MWRA plans to continue its demand management efforts at a similar level as FY08. The Authority's long-range planning, leak detection, system rehabilitation, water conservation and educational outreach programs have long been established as essential components of demand management. MWRA's Community Support Program will continue to work with both water and sewer member communities to foster water conservation activities and help minimize wastewater flow.

During FY08, MWRA applied for and received an \$80,000 grant to initiate two new community based water conservation programs. One is a community water audit pilot project (two communities) to balance the volume of water purchased from MWRA (wholesale purchase) with the volume billed (retail sales) and account for the remainder of non-billed water volume. The second is a direct incentive program to promote water member communities to purchase/install low flow (1.6 gallon per flush or less) toilets in public buildings. The direct incentive will be provided via a \$100 rebate for purchase/installation of a low flow toilet that replaces an older, less efficient toilet using a larger water volume per flush.