

MASSACHUSETTS WATER RESOURCES AUTHORITY

**Board of Directors Report**  
On  
**Key Indicators of MWRA Performance**  
For  
Second Quarter FY2013

Q1	Q2	Q3	Q4



Frederick A. Laskey, Executive Director  
Michael J. Hornbrook, Chief Operating Officer  
February 13, 2013

# Board of Directors Report on Key Indicators of MWRA Performance Second Quarter FY2013

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This quarterly report is prepared by MWRA staff to track a variety of MWRA performance measures for routine review by MWRA's board of directors. The content and format of this report is expected to develop as time passes. Information is reported on a preliminary basis as appropriate and available for internal management use and is subject to correction and clarification.

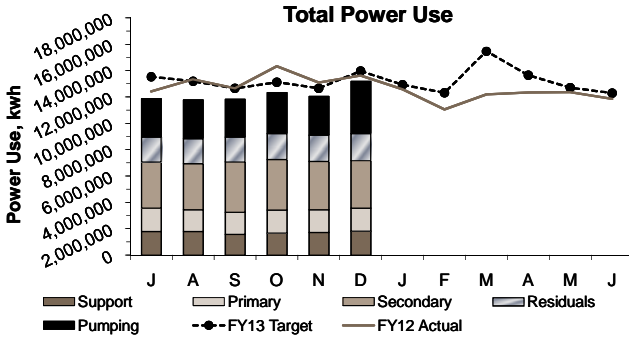
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# OPERATIONS AND MAINTENANCE

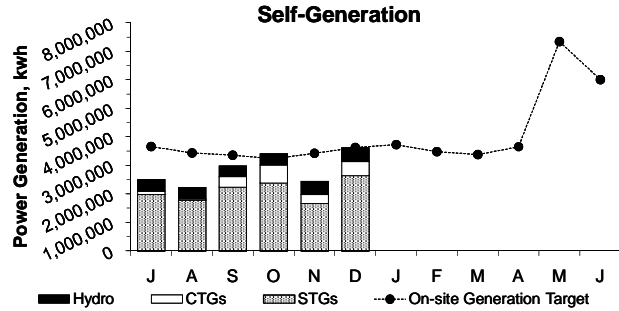
# Deer Island Operations

2nd Quarter - FY13

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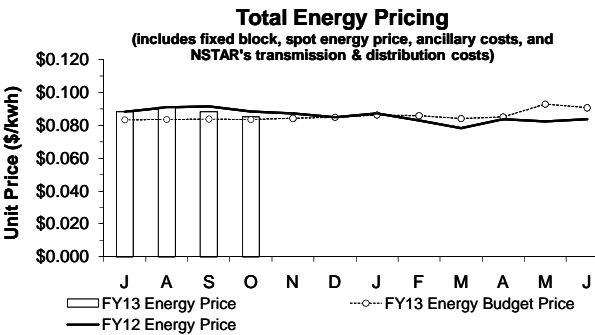


Total Power Use in the 2nd Quarter was 6% lower than the FY13 projections due principally to lower-than-expected Power Used for pumping (as a result of lower-than-expected Total Plant Flow) and for secondary wastewater treatment (as a result of energy optimization measures in the secondary reactor process area). Total Power Use was 8% lower than in FY12 for the same period, and year to date is 7.5% less than budget.



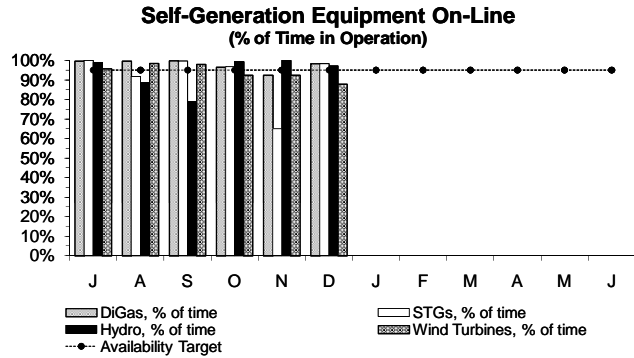
Power generated on-site during the 2nd Quarter was within 2% of the target. Generation by the STGs was 12% lower than target this quarter as the system was taken down for annual maintenance in November. Hydro Turbine generation was 9% lower due to lower-than-expected plant flows.

Generation by the CTGs was six times higher than target for the quarter mainly due to operation during extreme storm conditions in each month of this quarter, and for a demand response test event on December 13, in addition to operation for routine maintenance / checkout purposes. Year to date on-site generation is 11.7% less than budget.

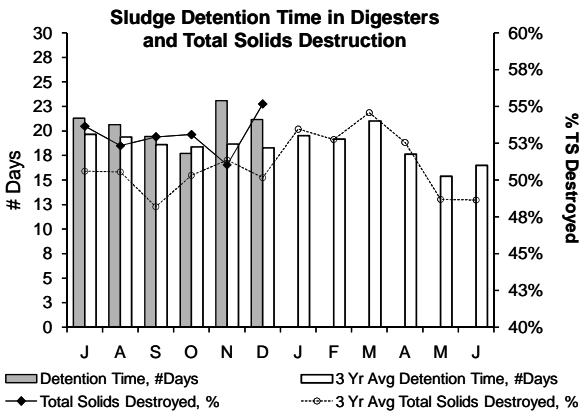


Note: Only the actual energy prices are now being reported. The November and December invoices from Hess have not yet been received.

Overall, the total energy price in the 2nd Quarter (October price only) was 2% higher than the FY13 budget estimate. Year-to-date costs are \$73,796 (-2%) less than budgeted as of the end of October due to lower than expected Power Demand, even though total energy prices in the first four(4) months of FY13 averaged 5% higher-than-expected.

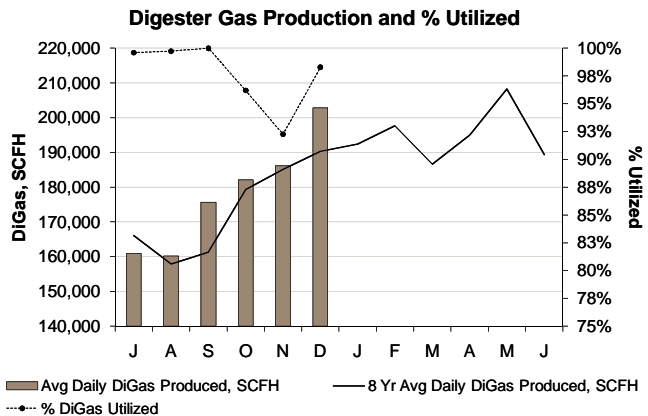


The DiGas and Hydro Turbine systems both met their 95% Availability Target for the 2nd Quarter. The STGs and Wind Turbines fell 8.3% and 4.2% below the 95% target. The STGs were taken offline during scheduled annual maintenance and the Wind Turbines were offline due to turbulent storm conditions during several significant storm events, including sensor icing issues following the December 29 rain, ice, and snowstorm.



Total solids destruction averaged 53% following anaerobic sludge digestion during the 2nd Quarter with an average sludge detention time in the digesters of 20.6 days. Solids destruction was 2% higher than the 3-year average for the quarter as the detention time was 12% higher. DI operated with an average of 7.8 digesters this quarter as the 4 digesters in Module #1 were activated and the 3 digesters in Module #3 were taken out of service for maintenance resulting in 8 digesters in operation by the end of the quarter.

Solids destruction is dependent on sludge detention time which is determined by primary and secondary solids production, plant flow, and the number of active digesters in operation.

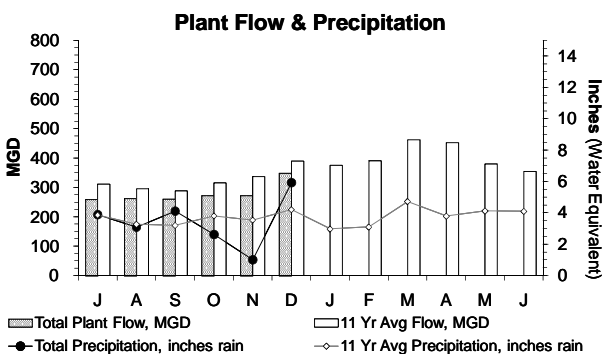


The Avg Daily DiGas Production during the 2nd Quarter was 3% higher than the 8 Year Avg Daily DiGas Production as Total Solids destruction following anaerobic digestion was also slightly higher than average. An average of 96% of all the DiGas produced in the 2nd Quarter was utilized at the Thermal Power Plant. Boiler maintenance occurred in late October and early November.

# Deer Island Operations

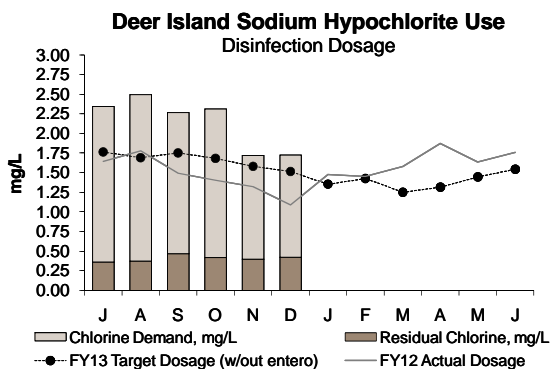
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The Total Plant Flow for the 2nd Quarter was 14% lower than target (297.1 MGD actual vs. 346.6 MGD expected) as precipitation was 17% lower-than-expected for the quarter (9.56 inches actual vs. 11.56 inches expected). Only the 5.93 inches of precipitation in December exceeded the 11 year average rainfall of 4.20 inches. The effects of the much drier than normal conditions for much of this calendar year can still be observed in the lower than normal current plant flow even with the higher-than-expected rainfall in December.

The Total Plant Flow for each month of FY13 has been below the 11 year average flow and continues a pattern that began in January of FY12. This is the first time DITP plant flows have been below target for 12 consecutive months.



The disinfection dosing rate in the 2nd Quarter was 21% higher than the target for the quarter. Dosing was higher-than-expected due to a higher chlorine demand as a result of stronger wastewater caused by the lengthy period of much lower-than-normal plant flows since January FY12. DITP maintained an average disinfection chlorine residual of 0.42 mg/L this quarter with an average dosing rate of 1.92 mg/L (and chlorine demand of 1.51 mg/L).

The overall disinfection dosing rate (target and actual) is dependent on plant flow, target effluent total chlorine residual levels, effluent quality and NPDES permit levels for fecal coliform.

## Secondary Blending Events

Month	Count of Blending Events	Count of Blending Events Due to Rain	Count of Blending Events Due to Non-Rain-Related Events	Secondary, as a Percent of Total Plant Flow	Total Hours Blended During Month
J	2	2	0	99.7%	5.78
A	1	1	0	99.9%	2.04
S	2	2	0	99.8%	4.35
O	3	3	0	99.6%	6.92
N	0	0	0	100.0%	0.00
D	4	4	0	98.3%	22.41
J					
F					
M					
A					
M					
J					
<b>Total</b>	<b>12</b>	<b>12</b>	<b>0</b>	<b>99.5%</b>	<b>41.51</b>

There were a total of seven (7) separate secondary blending events during the 2nd Quarter of FY13; all were due to high plant flows resulting from heavy rain.

All seven (7) blending events combined produced a total of 29.33 hours of blending and 218.4 Mgal of flow blended with secondary effluent.

**Secondary permit limits were met at all times during the 2nd Quarter.**

## Deer Island Operations & Maintenance Report

### Environmental/Pumping:

The total precipitation of 9.56 inches for the 2nd Quarter of FY13 was 17% lower than the 11 year average precipitation for the quarter of 11.56 inches. Precipitation was 31% and 71% lower than the 11 year average precipitation in October and November and 41% higher-than-expected in December. Measureable precipitation fell on 36 of the 92 days in the quarter with the majority of this falling in the form of rain in the Boston area and along the immediate coastline. Total precipitation for the 2nd Quarter of FY13 was 36% lower than the FY12 precipitation of 14.95 inches. The total plant flow for the 2nd Quarter was 14% lower than the target total plant flow (297.1 actual vs. 346.6 MGD target) due to the lingering effects of the much drier than normal conditions observed for much of this calendar year.

The plant achieved a maximum average hourly flow rate of 1,152.2 MGD during the afternoon of December 27 as a result of a northeaster storm system that brought a total of 2.68 inches of rain (Chelsea gage) and mixed precipitation to this area over a two day period and peak wind gusts of 57 miles per hour at Logan Airport. In comparison, a maximum average hourly flow rate of 954.2 MGD occurred during the overnight hours of October 29 as a result of Hurricane Sandy which brought a total of 1.65 inches of rain to this region over a four day period from October 28 through October 31 and peak wind gusts of 62 miles per hour at Logan Airport. Pumping and treatment operations continued without incident through both these storm events, as well as throughout the entire quarter.

# Deer Island Operations

2nd Quarter - FY13

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## Deer Island Operations & Maintenance Report (continued)

### Environmental/Pumping (continued):

A couple of 365-day flow records were broken this quarter including a record lowest 365-day total flow in history (for data evaluated since 2000); a total 108.4 billion gallons of flow was treated by DITP from December 1, 2011 through November 30, 2012. The previous record low was 118.6 billion gallons of flow from December 1, 2001 through November 30, 2002. Also, December's 267.7 MGD Dry Day Flow is the lowest 365-Dry Day Flow in the history of the new NPDES Permit (1999). The previous 365-Dry Day Flow record of 277.0 MGD was recently set in November and before this was 279.6 MGD from April 2011.

### Residuals Treatment:

All four digesters in Module #1 were returned to operation during the middle of November after having been offline since October 2008. The Module #1 digesters were offline while significant piping and valve repair and replacement work was being performed under MWRA Contract 7055: Piping and Valve Replacement Project. Once these digesters were in operation, the three active digesters in Module #3 were taken offline. The Module #3 digesters will be offline for a period of four to six weeks to undergo maintenance that includes installing level sensors in the overflow box in the digesters, gas valves that would allow for the ability to remotely isolate the digesters, and overflow flushing water lines in each digester. Going forward, DITP will operate at steady state using eight active digesters when possible.

### Odor Control:

Airflow Fan #14, which draws process air from the South System Pump Station (SSPS) for odor control treatment in the West Odor Control (WOC) Facility, experienced an unanticipated catastrophic failure on July 17, 2012. The nature of this fan failure raised concerns about the integrity of the remaining fans in this facility, as well as with the fans in the East Odor Control (EOC) Facility which are of similar design and setup. Additional safety procedures restricting personnel from the area while the fans are in operation were temporarily implemented pending the outcome of detailed inspections and investigation into the possible cause of the failure.

Facility-wide shutdowns were scheduled in both the WOC and EOC Facilities in Quarter 2 to remove and replace the failed fan and to perform various essential maintenance activities such as fan impeller cleaning and replacing activated carbon in the carbon adsorber units. The initial inspection of the fans in the WOC Facility was done in conjunction with the fan manufacturer and the inspections found all the fans in both facilities to be in good condition. By November, after careful review of all the inspections and evaluations from the investigation, odor control airflow fans were allowed to remain in operation while workers are within the facility as there was no indications of risk.

Hydrogen peroxide was added to the influent wastewater during these shutdowns to reduce the level of the odor causing hydrogen sulfide in the wastewater. No odor complaints were received during these shutdowns. Planned shutdowns in the WOC, EOC, and NPOC Facilities were documented in the Quarterly Non-combustion Emissions Report as required by the Air Quality Operating Permit issued to DITP by the Massachusetts Department of Environmental Protection (MaDEP).

### Energy and Thermal Power Plant:

Solar Power generation was 1.3% (average of 42,841 kwh) and Wind Turbine generation was 4.86% (average of 162,801 kwh) of the total power generated on-site for the 2nd Quarter. Solar power generation includes solar installations on the roof of the Residuals Odor Control (ROC) Facility, Maintenance/Warehouse (M/W), and the Grit Facility buildings, in addition to the solar installation on the ground of the South Parking Lot. Wind Turbine power generation includes generation by the two wind turbines located in the South Parking Lot and intermittent generation during optimization and testing by the FloDesign wind turbine installed near the Hydro Power Plant.

Overall, total power generated on-site accounted for 26.8% of Deer Island's total power use for the 2nd Quarter of FY13.

The primary Steam Turbine Generator (STG) was taken offline for 10 days in November during the Thermal Power Plant's annual maintenance. The maintenance on the BP STG took place from November 11 to November 13 at which time both STGs were offline at the same time. The final week of the Thermal Power Plant's annual maintenance was completed in early December and included combustion testing and boiler tuning on both Zurn boilers. The boiler combustion testing required each boiler to be tested at various loads while using digester gas, fuel oil, and a combination of both. The boilers performed within expectations during the combustion testing.

### Regulatory:

Based on preliminary December data, Deer Island should qualify to receive NACWA's (National Association of Clean Water Agencies) Platinum Award for Peak Performance which recognizes member agency facilities for outstanding compliance of their National Pollutant Discharge Elimination System (NPDES) permit limits. The Platinum award is given to agencies in recognition of 100% compliance with NPDES permits over a consecutive five year period. Preliminarily, Deer Island would qualify for its second consecutive Platinum Award for having operated with no permit violations from 2007 through 2012. Deer Island's last permit violation occurred in August 2006.

### Clinton AWWTP:

The construction contract for the fine bubble diffused air system is progressing as scheduled. MWRA has accepted the diffused air system, and it is operational. Pump integration control between the new submersibles and the existing internal lift (screw) pumps is planned for January 2013. This will involve setting the float controller elevations to coordinate with the ultrasonic signals to the submersibles and testing system integration/control in the SCADA system.

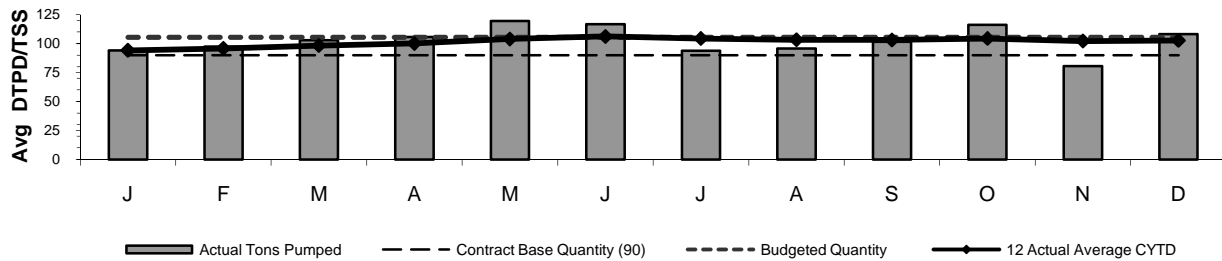
The training of plant staff on the associated equipment and controls has been completed with the exception of a final training session on SCADA. This session will be completed after the system has been in use for a period of time and staff becomes more familiar with it. The plant will receive an NGRID energy grant for MWRA for approximately \$177,000.

## Deer Island Residuals

2nd Quarter - FY13

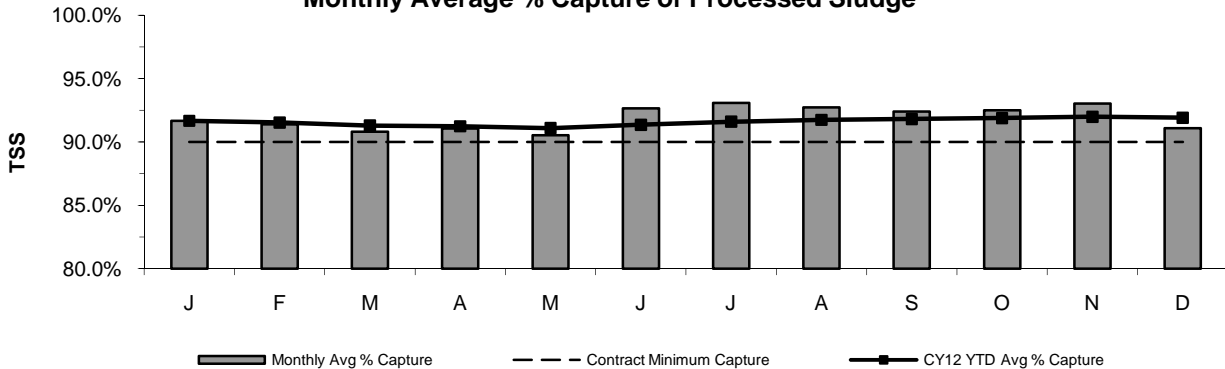
MWRA pays a fixed monthly amount for the calendar year to process up to 90 DTPD/TSS as an annual average. The monthly invoice is based on 90 DTPD/TSS (Dry Tons Per Day/Total Suspended Solids) times 365 days divided by 12 months. At the end of the year, the actual totals are calculated and additional payments are made on any quantity above the base amount. The base quantity of 90 DTPD/TSS was set for the 15-year term of the contract, even though, on average, MWRA processes more than 90 DTPD/TSS each year (FY13's budget is 105.7 DTPD/TSS).

### Sludge Pumped From Deer Island



The average total quantity of sludge pumped in the 2nd Quarter was 101.1 DTPD - lower than FY13's budget of 105.7 DTPD. The lower amount is due to better digestion due to longer detention times and the transfer of sludge to allow for maintenance.

### Monthly Average % Capture of Processed Sludge



The contract requires NEFCo to capture at least 90% of the solids delivered to the Biosolids Processing Facility in Quincy; the solids capture rate for the 2nd Quarter was 92.2%.

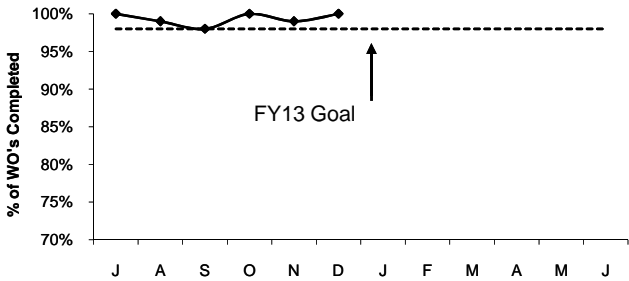
# Deer Island Maintenance

2nd Quarter - FY13

## Productivity Initiatives

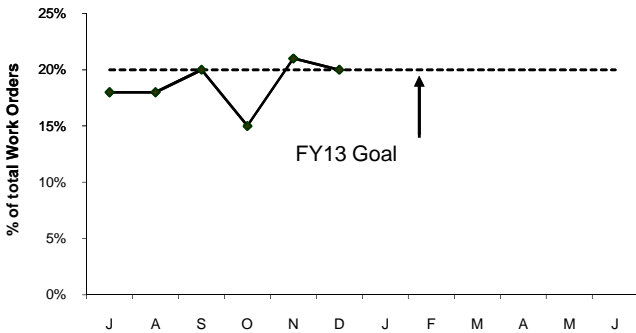
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in the overall maintenance backlog.

### Predictive Maintenance Compliance



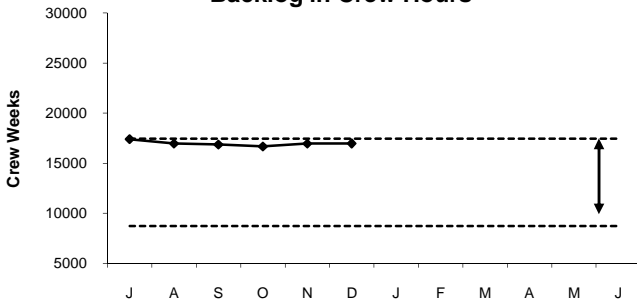
Deer Island FY13 predictive maintenance goal is 98%. DITP completed 99% of all PDM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program.

### Predictive Maintenance



Deer Island's FY13 predictive maintenance goal is 20% of all work orders to be predictive maintenance. 19% of all work orders were predictive maintenance this quarter. The industry is moving toward increasing predictive maintenance work to reduce down time and better predict when repairs are needed.

### Maintenance Backlog in Crew Hours

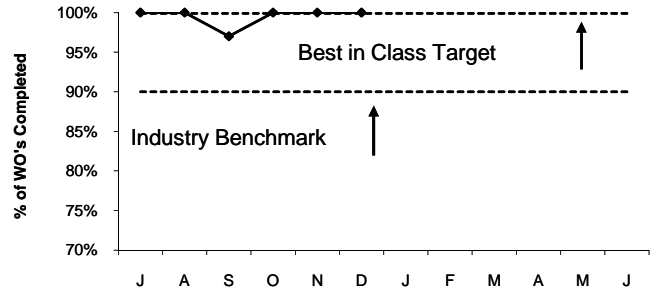


DITP's maintenance backlog at Deer Island is 16,865 hours. DITP is within, but at the upper end, of the industry average for backlog. The industry Standard for maintenance backlog with 97 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog has been adversely effected due to nine staff members out on I/A and medical leave. Management continues to monitor backlog and to ensure all critical systems and equipment are available.

## Proactive Initiatives

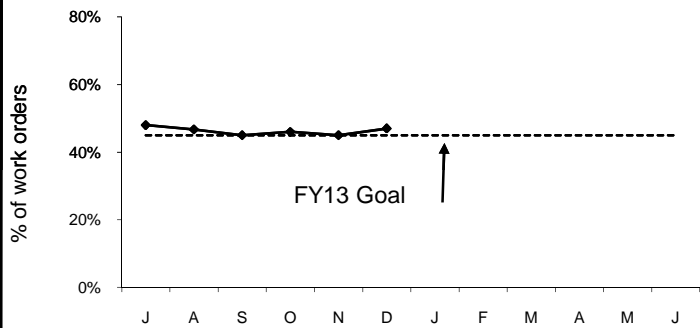
Proactive initiatives include completing 100% of all preventive maintenance tasks and increasing preventive maintenance kitting. These tasks should result in lower maintenance costs.

### Preventive Maintenance Compliance



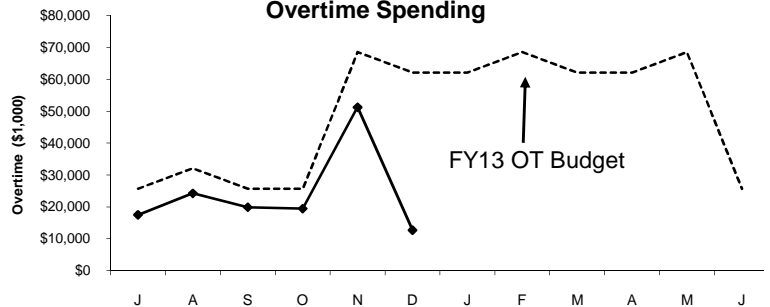
Deer Island's FY13 preventive maintenance goal is 100% completion of all PM work orders from Operations and Maintenance. DITP completed 100% of PM work orders this quarter.

### Maintenance Kitting



Deer Island's FY13 maintenance kitting goal is 45% of all work orders to be kitted. 46% of all work orders were kitted this quarter. Kitting is staging of parts or material necessary to complete maintenance work. This has resulted in more wrench time and increased productivity.

### Overtime Spending



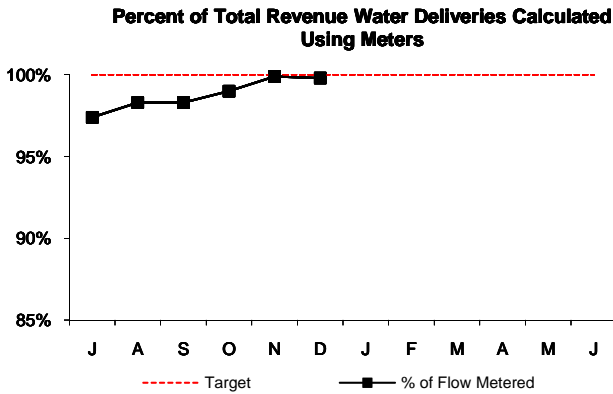
Maintenance overtime was under by \$73K this quarter. Management continues to monitor backlog and to ensure all critical systems and equipment are available. This quarter overtime was used for storm coverage including Hurricane Sandy, replacing west odor control fan #14, replacing new impeller in west odor control fan #15, support thermal power plant annual outage activities, install hot water valves in maintenance building heat system, and balance out heat loop system to ensure the Digesters receive enough heat during cold weather.



## Operations Division Metering

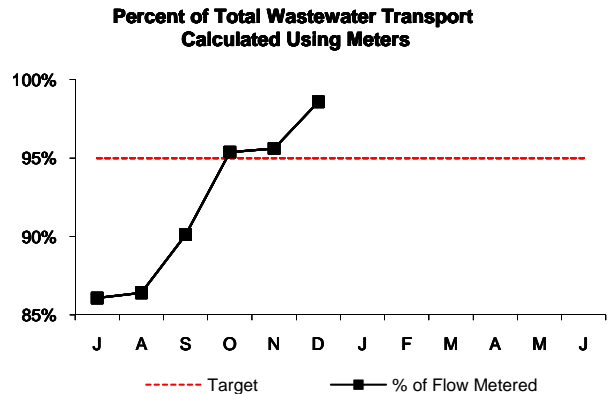
### 2nd Quarter - FY13

#### WATER METERS



The target for revenue water deliveries calculated using meters is 100%. Estimates are generated for meters that are out of service due to instrumentation problems or in-house and capital construction projects. During the 2nd Quarter of FY13, meter actuals accounted for 99.6% of flow; only 0.4% of total revenue water deliveries were estimated. The following is the breakdown of estimations:  
 In-house and Capital Construction Projects - 0.2%  
 Instrumentation Failure - 0.2%

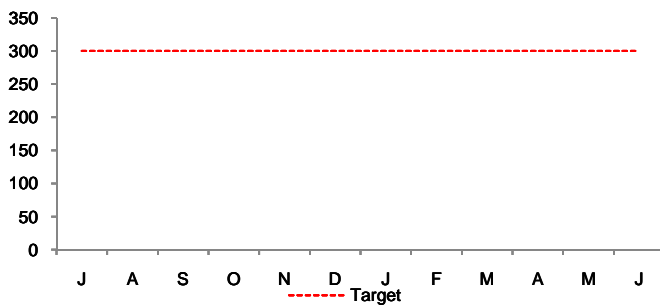
#### WASTEWATER METERS



The target for revenue wastewater transport calculated using meters is 95%. Estimates are generated for meters missing data due to instrument failure and/or erratic meter behavior. Estimates are produced using data from previous time periods under similar flow conditions. During the 2nd Quarter of FY13, meter actuals accounted for 96.5% of flow; 3.5% of wastewater transport was estimated.

#### WATER DISTRIBUTION SYSTEM PIPELINES

##### Miles Surveyed for Leaks



No inspections occurred in November and December due to staffing issues. New staffing will be put in place and a contractor will be brought in as well.

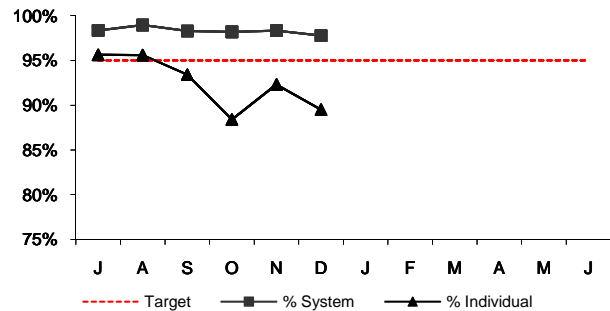
##### Water Distribution System

Month	J	A	S	O	N	D	J	F	M	A	M	J
Leaks Detected	2	2	1	0	0	1						
Leaks Repaired	2	1	2	0	0	1						
Backlog	0	1	0	0	0	0						
Avg. Lag Time	1.0	2.3	3.0	3.0	3.0	4.5						

During the 2nd Quarter of FY13, one leak occurred on Adams Avenue in Dorchester. It was isolated the same day and non-emergency repair completed within 12 days. For the 2nd Quarter of FY13 all leaks have been repaired.

The Pipeline Program's goal is to repair all leaks found during the fiscal year. However, if the goal cannot be reached due to restrictions, isolations, communities, or degree of difficulty, then the goal is to have not more than two leaks outstanding at year's end.

##### % Wastewater Meter Uptime



During the 2nd Quarter of FY13, out of a possible 1,601,472 data points, only 30,545 points were missed resulting in a system-wide up time of 98.1%. Of the 181.3 revenue meters installed, on average 18.0 meters/mth. experienced down time greater than the 5% target resulting in a 90.1% individual meter uptime. For the 2nd Quarter of FY13, down time for an individual meter is defined by any individual meter having on average less than 2796.7 data points out of a potential 2,944 data points.

# Water Distribution System Valves

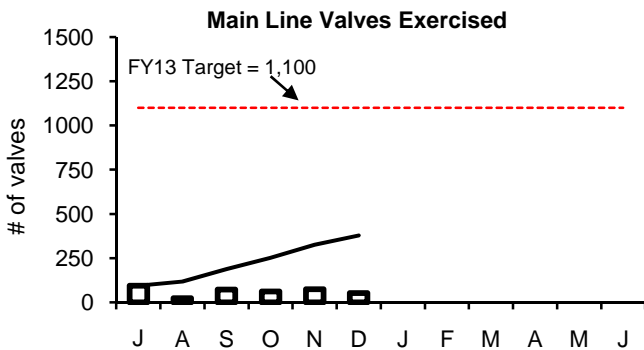
2nd Quarter - FY 13

## Background

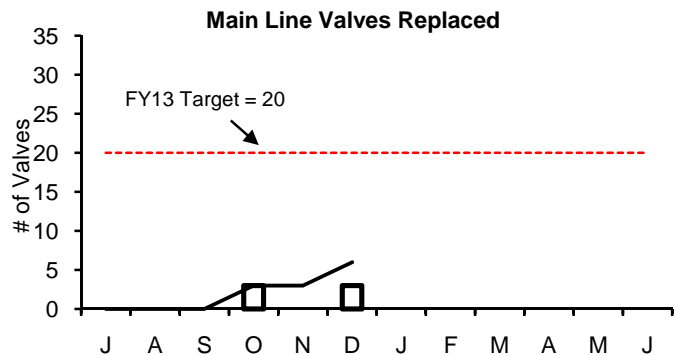
Valves are exercised, rehabilitated, or replaced in order to improve their operating condition. This work occurs year round. Valve replacements occur in roadway locations during the normal construction season, and in off-road locations during the winter season. Valve exercising can occur year round but is often displaced during the construction season. This is due to the fact that a large number of construction contracts involving rehabilitation, replacement, or new installation of water lines, requires valve staff to operate valves and assist with disinfection, dechlorination, pressure-testing, and final acceptance. Valve exercising can also be impacted due to limited redundancy in the water system; valve exercising cannot be performed in areas where there is only one source of water to the community meters or flow disruptions will occur.

Type of Valve	Inventory #	Operable Percentage	
		FY13 to Date	FY13 Targets
Main Line Valves	2,092	97.5%	92%
Blow-Off Valves	1,206	95.4%	94%
Air Release Valves	1,335	93.5%	92%
Control Valves	48	100.0%	95%

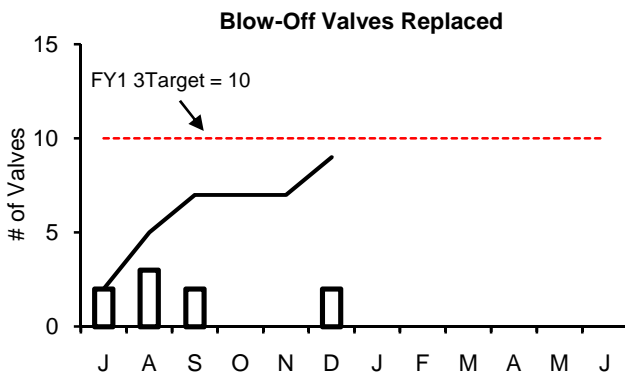
Key to Symbols:  FY2013 Monthly Total  
 FY2013 Cumulative Total  
 FY2013 Target



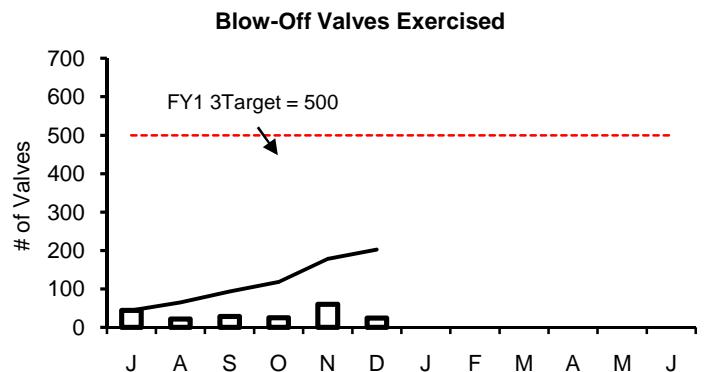
During Q2 of FY13, staff exercised only 189 main line valves due to water quality issues at Fells Covered Storage, draining and cleaning of Blue Hills tank number 2, and contractor support for water main filling, valve testing and pressure testing of new valves on the Hultman Aqueduct rehab project. The total exercised for the fiscal year to date is 378.



During Q2 of FY13, six main line valves were replaced. The total replaced for the fiscal year to date is six.



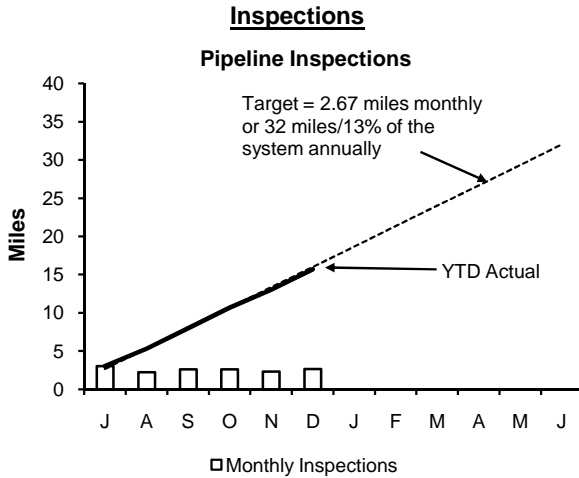
During Q2 of FY13, staff replaced two blow off valves. The total replaced for the fiscal year to date is nine.



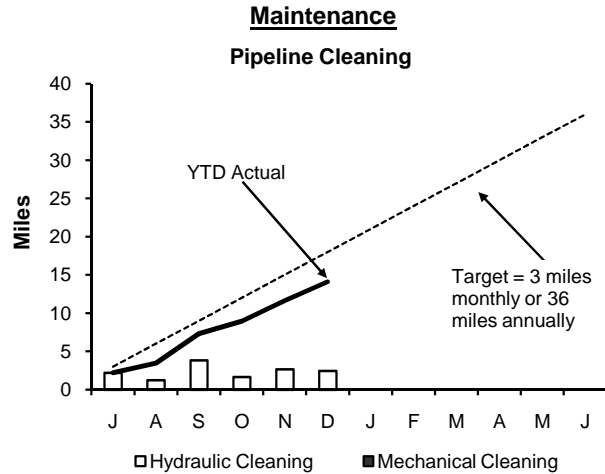
During Q2 of FY13, staff exercised 109 blow-off valves. The total exercised for the fiscal year to date is 202.

# Wastewater Pipeline and Structure Inspections and Maintenance

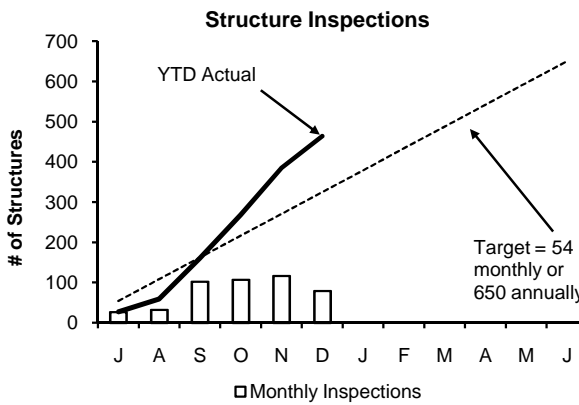
2nd Quarter - FY13



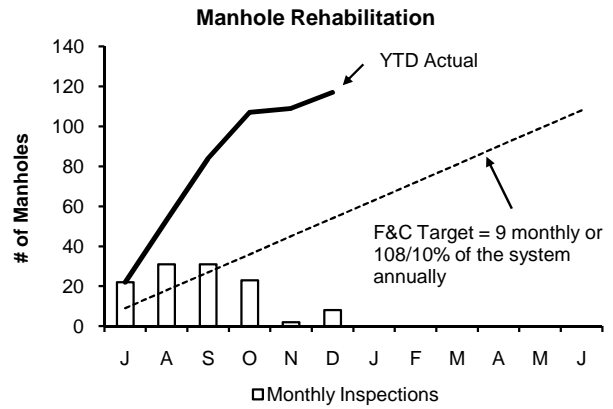
Staff internally inspected 7.72 miles of MWRA sewer pipeline during the second quarter. The year to date total is 15.71 miles. No Community Assistance was provided this quarter.



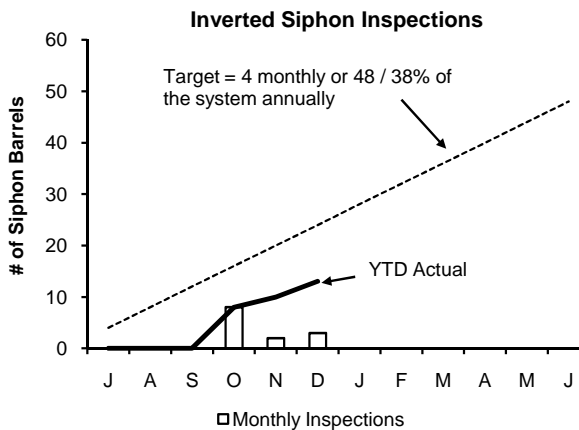
Staff cleaned 6.77 miles of MWRA's sewer system and removed 41 yards of grit and debris during the second quarter. The year to date total is 14.08 miles. Community Assistance was provided to the city of Everett and Waltham.



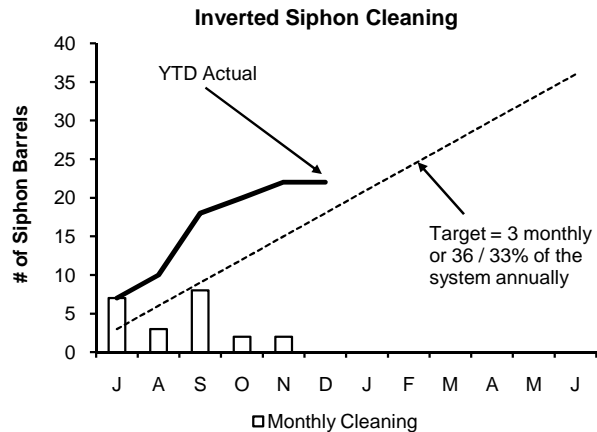
Staff inspected the 36 CSO structures and performed 267 additional manhole/structure inspections during this quarter. The year to date total is 464 inspections.



Staff replaced 33 frames & covers during the second quarter. The year to date total is 117.



Staff inspected 13 siphon barrels during the second quarter. Year to date total is 13 inspections.



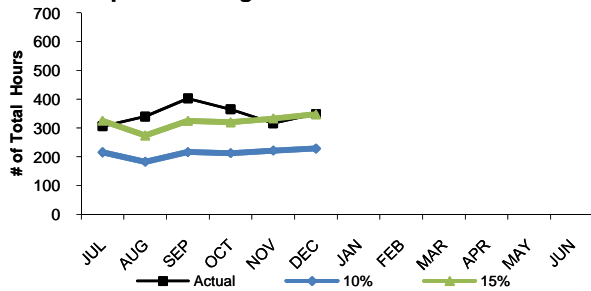
Staff cleaned 4 siphon barrels during the second quarter. The year to date total remains at 22 barrels.

# Field Operations' Metropolitan Equipment & Facility Maintenance

## 2nd Quarter - FY13

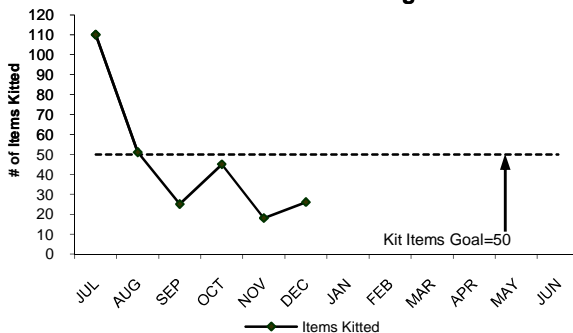
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus reducing maintenance spending. Backlog and overtime metrics monitor the success of these maintenance initiatives.

**Operations Light Maintenance PM Hours**



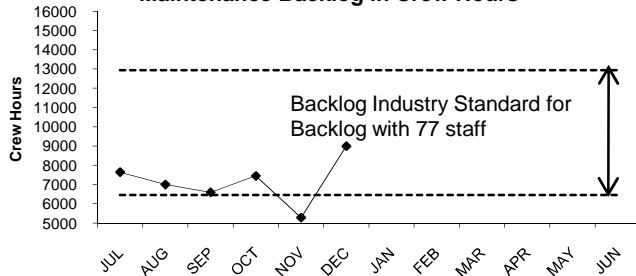
Operations staff averaged 343 hours of preventive maintenance during the 2nd Quarter, an average of 16% of the total PM hours for the 2nd Quarter, which is above the industry benchmark of 10% to 15%.

**Items Kitted Utilizing Maximo**



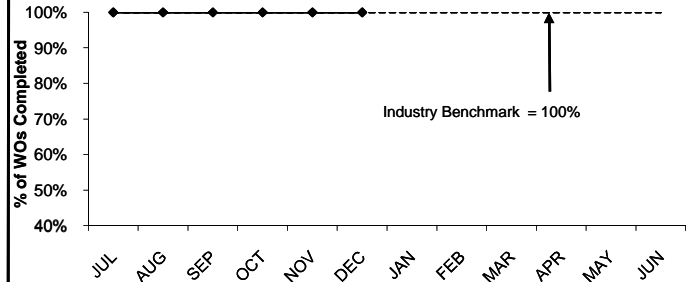
In an effort to more efficiently complete work, maintenance staff and work coordination staff have utilized the Lawson/Maximo interface to better kit stock and non stock material. The goal for FY13 is to "kit" 50 stock and non stock items total per month. An average of 30 items were kitted during the 2nd Quarter. Staff will work to increase the number of items kitted next quarter to meet the monthly goal.

**Maintenance Backlog in Crew Hours**



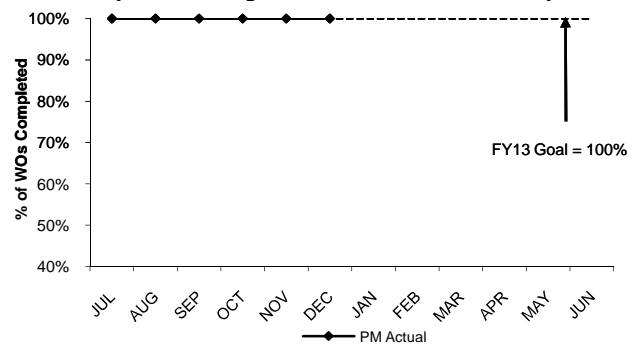
The 2nd Quarter backlog average is 7240 hours, due in part to the addition of several substantial projects. Management's goal is to continue to control overtime focusing in most critical needs, and still stay within the industry benchmark of 6450 to 12,940 hours. There are currently 2 vacant positions: a facility specialist and an electrician.

**Overall Preventive Maintenance**



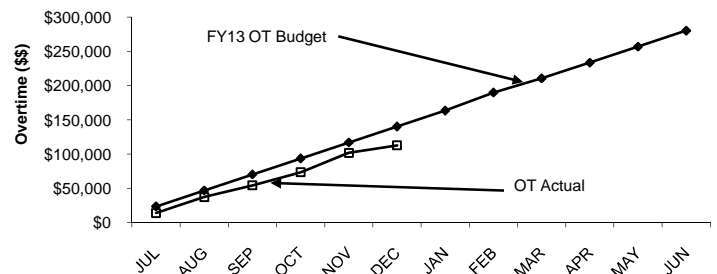
The Field Operations Department (FOD) preventive maintenance goal for FY13 is 100% of all PM work orders. Staff completed an average of 100% of all PM work orders in the 2nd Quarter.

**Operations Light Maintenance % PM Completion**



Wastewater Operators complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY13 PM goal is completion of 100% of all PM work orders assigned. Operations completed an average of 100% of PM work orders in the 2nd Quarter.

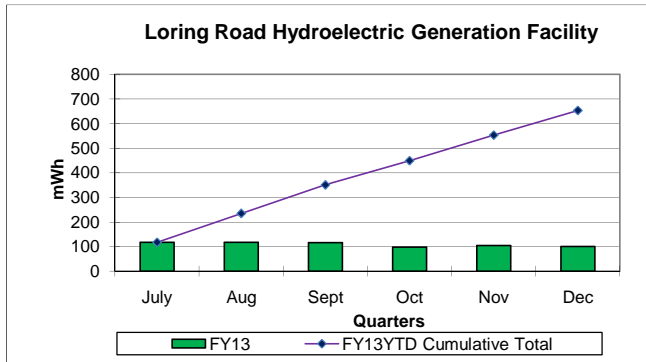
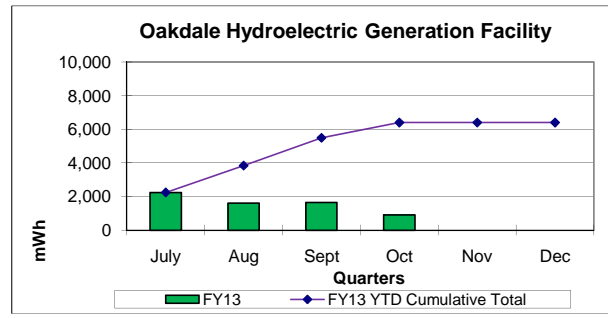
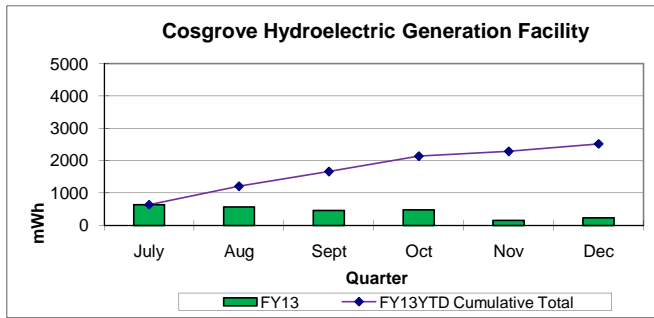
**Overtime Spending**



Maintenance overtime was \$27k under budget for FY13. Overtime was used for Chelsea Administration Building improvements, emergency repairs and wet weather coverage.

# Hydroelectric Generation and other Energy Programs

2nd Quarter - FY13



In the 2nd Quarter, the **Cosgrove Hydroelectric Station** generated a net of 857 MWh; approximately 31% more power than was generated during the same quarter in FY12. The revenue generated at Cosgrove in the second quarter was \$35,468 exclusive of Renewable Energy Certificates.

The **Oakdale Hydroelectric Station** generated a net of 910 MWh; approximately 10% more power than was generated during the same quarter in FY12. The revenue generated at Oakdale in the second quarter was \$30,082. Oakdale Hydroelectric Station is off line until May due to rehabilitation of electric equipment.

The **Loring Road** hydroelectric station generated 303 MWh; approximately 12% less power than was generated during the same quarter in FY12. Power is generated as water conveyed from Norumbega to the Loring Road storage tanks is reduced in pressure and the energy available is captured by the turbine. The facility operates continuously. Some power is consumed on site, with the bulk exported to the grid.

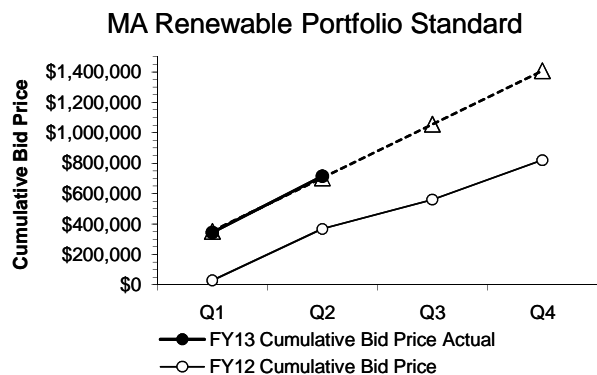
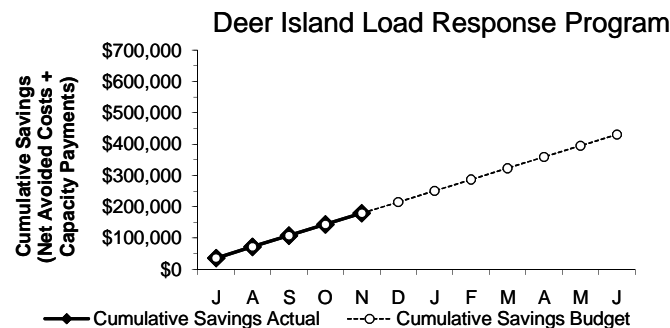
**Energy Audits and Implementation of Audit Recommendations at FOD Facilities:** Audits of 24 facilities were performed in two phases from FY10 through the first quarter of FY12. The focus of these energy audits were lighting, HVAC, pumps, and motors. Implementation of the audit recommendations began at the end of the 1st Quarter of FY11 and are on-going. Audits of an additional 6 facilities began in the second quarter of FY12 and are on-going. Implementation of additional audit recommendations began in the second quarter of FY13, including:

- The installation of 101 energy efficient LED outdoor lights at 14 water and wastewater facilities, expected to save about 94,172 kWh and \$17,000 annually. Phase two of this project, the completion of the remaining facilities, is expected to begin in the third quarter of FY13.
- Installation of energy efficient interior lighting at Cottage Farm, expected to save approximately 30,016 kWh and \$4,200 annually. This work began at the end of the second quarter and will be completed during the third quarter of FY13.
- Evaluation of feasibility of converting specific facilities from oil to natural gas for heating. Currently three facilities have been identified for evaluation, Chelsea Creek, Brattle Court, and the IPS.

**Southborough:** Based on the energy audit an energy management system is being installed at the Southborough Facility. NSTAR has committed to providing a \$30,000 incentive based on the projected energy savings. This project falls under the requirements of the Green Communities Act since it would be under \$100,000. The work began in September 2012 and is expected to be completed during the 3rd quarter of FY13.

**Demand Response Payments:**

The John Carroll Water Treatment Plant, Loring Road Hydro, and Chelsea Creek, Columbus Park, and Ward Street Headworks are all enrolled in the ISO's Demand Response Program. The total net capacity payments for the first two quarters of FY13 was \$22,806.



Deer Island participates in the ISO-New England Load Response Programs. By agreeing to have its Combustion Turbine Generators available to run and thus relieve the New England energy grid of Deer Island's load during times of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. "Net Avoided Cost" is the avoided NSTAR payments offset by the cost of running the CTGs. Cumulative savings are the sum of Net Avoided Costs and monthly Capacity Payments - totaling \$179,268 through November.

DITP participated in one demand response test event this quarter on December 13. Note:

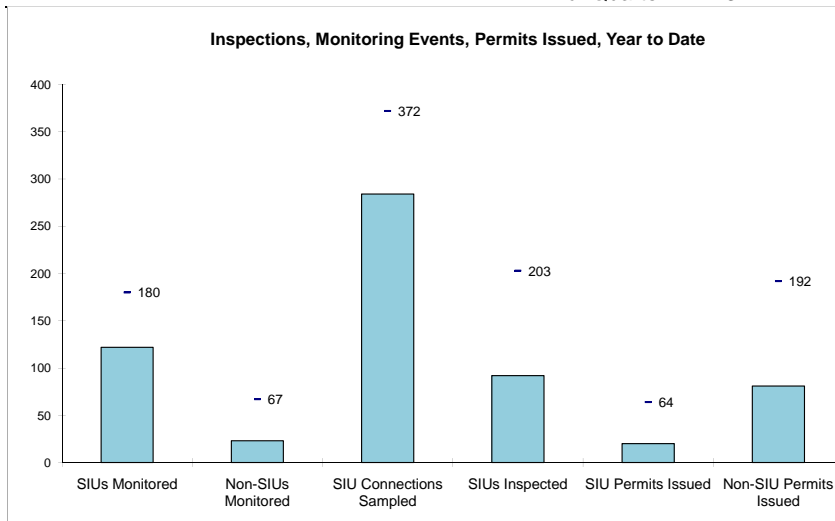
Only the actual payments received are now being reported. The capacity payment for December is not reported here as the payment has not been received.

Bids were awarded in October for the sale of 116 Solar Renewable Energy Certificates (S-RECs) for a total value of \$48,684 and 7,126 Class I RECs for a total value of \$321,816.

REC prices reflect the bid prices on the date that bids are accepted. Cumulative bid price reflects the total value of bids received to date. The FY13 budgeted cumulative bid estimate through the 2nd Quarter is \$703,528 while the actual bid total is \$714,951.

# Toxic Reduction and Control

2nd Quarter - FY13



EPA Required SIU Monitoring Events  
for FY13: 180  
YTD: 122

Required Non-SIU Monitoring Events  
for FY13: 67  
YTD: 23

SIU Connections to be Sampled  
For FY13: 372  
YTD: 284

EPA Required SIU Inspections  
for FY13: 203  
YTD: 92

SIU Permits due to Expire  
In FY13: 64  
YTD: 20

Non-SIU Permits due to Expire  
for FY13: 192  
YTD: 81

Significant Industrial Users (SIUs) are MWRA's highest priority industries due to their flow, type of industry, and/or their potential to violate limits. SIUs are defined by EPA and require a greater amount of oversight. EPA requires that all SIUs *with flow* be monitored at least once during the fiscal year. The "SIU Monitored" data above reflects the number of industries monitored in the month. However, many of these industries have more than one sampling point and the "SIU Connections Sampled" data reflect samples taken from multiple sampling locations at these industries.

TRAC's annual monitoring and inspection goals are set at the beginning of each fiscal year but they can fluctuate due to the actual number of SIUs at any given time. During the course of the year, some SIUs do not discharge and cannot be monitored. TRAC also monitors one-third of the non-SIUs each year.

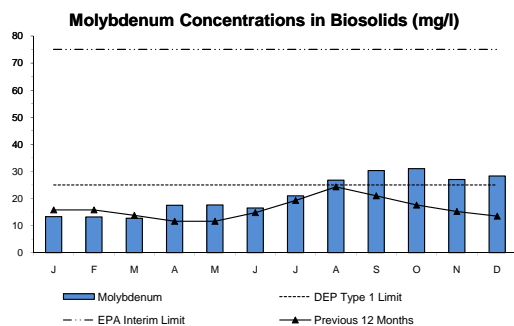
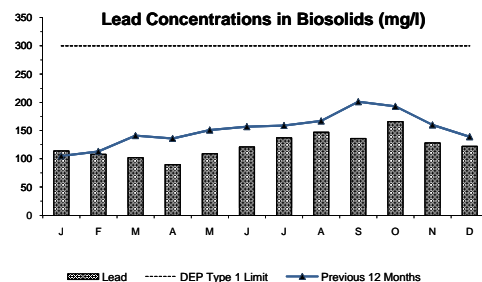
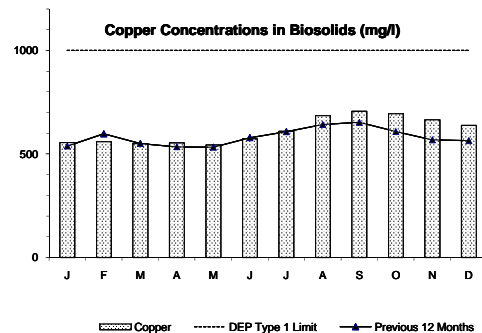
SIU and Non-SIU permits are issued with durations of two to five years, depending on the category of industry, varying the number of permits that expire in a given year.

	Number of Days to Issue a Permit						Total Permits Issued	
	0 to 120		121 to 180		181 or more		SIU	Non-SIU
	SIU	Non-SIU	SIU	Non-SIU	SIU	Non-SIU		
Jul	2	8	0	0	0	0	2	8
Aug*	1	9	1	0	0	0	2	9
Sep	1	8	0	1	0	1	1	10
Oct	4	25	0	2	0	1	4	28
Nov	6	13	0	1	0	1	6	15
Dec	4	9	1	0	0	2	5	11
Jan							0	0
Feb							0	0
Mar							0	0
Apr							0	0
May							0	0
Jun							0	0
% YTD	90%	89%	10%	5%	0%	6%	20	81

EPA requires MWRA to issue or renew 90% of SIU permits within 120 days of receipt of the application or the permit expiration date - whichever is later. EPA also requires the remaining 10% of SIU permits to be issued within 180 days. In Q2 of FY13, one SIU permit was issued more than 120 days but less than 180 days after receipt of its application while staff reviewed issues related to its compliance status. Seven non-SIU permits were issued more than 120 days after receipt of their applications: three issued in less than 180 days and four were delayed for more than 180 days. Delays were attributable to issues related to i) the determination of their permit categories ii) the payment of permit charges and iii) other processing considerations.

Copper, lead, and molybdenum are metals of concern for MWRA as their concentrations in its biosolids have, at times, exceeded regulatory standards for unrestricted use as fertilizer. Cooling tower usage typically causes a seasonal spike in molybdenum concentrations due to the blowdown on large AC systems that use corrosion inhibitors containing molybdenum. Levels drop again following the end of the cooling season, although this is delayed due to biosolids processing time. The hotter the season, the higher the spike. TRAC has an ongoing program to persuade cooling tower operators to switch to phosphate-based corrosion inhibitors.

In Q2 of FY13, levels of molybdenum again exceeded the DEP type 1 Limit due to a warmer summer in 2012. MWRA and its contractor (NEFCO) do not distribute product in Massachusetts between July and January under its approval of suitability.



**Field Operations Highlights – Orange Notebook Bullets**  
2<sup>nd</sup> Quarter – FY13

**Western Water Operations and Maintenance**

- CWTP: The Carroll Water Treatment Plant was transitioned to half plant operation for the winter maintenance period in November. Treatment Train “B” maintenance was completed in December.
- Cosgrove Intake and Power Station: The initial site visit for the upcoming hydro-turbine governor controls improvements, and an underwater inspection of the sluice gates within Inlet Well #2 were conducted
- Hurricane Sandy: Staff started cleaning up storm damage along the aqueduct right of ways at the reservoirs and facilities. Well over one hundred downed trees have been cleared in the process.

**Metro Water Operations & Maintenance**

- Hurricane Sandy: Metro Operations Staff prepared for and responded to Hurricane Sandy along with the rest of the MWRA. Fortunately, only a few facilities lost power in the Metropolitan service area, none of which affected service.
- Incidents/Leak Repairs: Pipeline Staff reset the Bell Joint Clamp on Section 8, Second Street in Everett in November, after the gas company relocated their 4” gas main under Section 8. Water was reported surfacing at 1164 Adams Street in Dorchester on December 6. Section 22, a 48” steel main, is located on Adams Street. The main was isolated, and the water stopped surfacing. Water Pipeline Staff excavated and repaired the leak. The main was returned to service later in the month. Service remained normal in the Southern High Service area throughout the event. Water was reported entering drain manholes on Beacon Street near Borland Street in Brookline. This was the site of a leak repair on the MWRA Beacon Street Line (BSL, 48” cast iron) in 2006. The line was isolated and the water stopped. The main travels under the middle of the two MBTA Cleveland Circle Green Line tracks. The isolation of the BSL also isolates Meter 44 to Boston. There are no service impacts to Boston’s low service supply area as a result of the isolation. The potential internal lining of the pipeline is being pursued by MWRA Engineering and Operations Staff.
- Blue Hills Covered Storage Tank: Tank 2 at Blue Hills was drained in mid October for warranty work on the bolts and piping in the tank. The work was completed, and it was returned to service on December 17, after disinfection and water quality testing. The warranty work on Tank 1 will begin in early January. Service has remained normal in the Southern High Service (SHS) area during all of the work.
- Fells Covered Storage Facility: Cells 1 and 2 were returned to service on October 6. All three cells are now in service, and service remains normal in the Northern High/Fells service area.
- Lynnfield Pipeline Activation: The newly installed 36” and 24” Lynnfield pipeline (Section 109) was activated on December 10. Immediate improvements to the hydraulic operation of the Lynnfield Pump Station were observed with the activation of the new pipeline.

**Wastewater Operations & Maintenance**

- Phase 2-PCB Sampling and Analysis/Remote Headworks Facilities-Contract #7244: Operation Staff coordinated and worked with Engineering & Construction Staff and Malcolm Pirnie, Inc at individual headworks during internal wall coating sampling for hazardous materials. Staff maintained facility operations while ongoing construction work was successfully carried out.
- Nut Island PH/ORP Meter Replacement: This project was established to purchase and install new PH/ORP probes and transmitters on the wet scrubbers at Nut Island. During the September-October high H2S period of 2012, it became necessary to switch from the carbon odor control system at Nut Island to the wet scrubber system that had not been run for approximately 4 years. The electronic equipment used to pace chemicals for treatment was found to be in need of replacement. PC&PS Staff worked with Maintenance, Operations and Purchasing to procure replacement equipments, design and build new probe mounts, and install and commission the new equipment on all four wet scrubbers. Additional maintenance work is expected in January to provide full functionality of all four wet scrubbers.
- Nut Island/Braintree/Weymouth Carbon Replacement: This project will replace the carbon in the five carbon adsorbers at Nut Island and the carbon adsorber at the Braintree/Weymouth Facility. Contract documents were provided to Purchasing for bid in October. A purchase order will be cut once insurance documentation is finalized. Carbon replacement is expected this winter while H2S levels are low.

**Toxic Reduction and Control**

Annual Industrial Waste Report #28: TRAC submitted its Annual Report to EPA and DEP on October 31, 2012, summarizing TRAC’s pretreatment program activities and providing detailed information on all Significant Industrial Users (SIUs) as required by MWRA’s NPDES Permits for Deer Island and Clinton Wastewater Treatment Plants.

## **Toxic Reduction and Control (cont.)**

- Monitoring: During October, TRAC and Operations Staff developed an SOP to comply with the monitoring requirements of the Carroll Water Treatment Plant's Draft NPDES Permit. The permit will require sampling of the discharge from the plant's annual winter maintenance at the plant and two locations in the Sudbury Reservoir. The SOP was tested and refined during sampling events in November.
- Compliance/Enforcement-Consent Agreement between Twin Rivers Technologies (TRT) and MWRA: TRAC and TRT entered into a Consent Agreement, effective December 18, 2012, to resolve violations by TRT of MWRA's acrolein limit and ongoing organics and phenol violations. The Consent Agreement requires TRT to pay a \$75,000 administrative penalty for the acrolein violations and install a pretreatment system to achieve compliance with MWRA's organics and phenol limits by June 15, 2013.

## **Metro Equipment and Facility Maintenance**

- Nut Island #3 Grit Conveyor Belt: The #3 Grit Belt at Nut Island belt was torn and approaching the end of its useful life. MWRA Electricians disconnected all protective instrumentation and MWRA Mechanics disassembled the conveyor. This work included removal of the inspection covers, cover and carrying belts, bearings, shafts and rollers. Mechanics replaced all bearings, inspected and changed out rollers and shafts as needed and restrung both belts. An outside company vulcanized the belts, the belts were aligned, safetys rewired, covers installed and the Grit Belt was returned to operation.
- Alewife Pump Station: Screen 2 was in need of rehabilitation and MWRA Mechanics performed this task. Work included removal of flytes, chain, shaft, bearings and sprockets. New chain, sprockets and bearing were installed. Flytes were inspected with some being reused and the remainder were replaced.
- IPS Motor #1: Vibration testing indentified a bearing issue with Pump Motor #1. The motor was disconnected electrically and removed by MWRA Maintenance Staff. The motor was rebuilt by outside sources, returned and put back in service.
- Commercial Point: The 2 hypochlorite tanks at the facility needed to be removed. MWRA Electricians removed all electrical conduits around the tanks, Grounds Staff demolished part of the containment wall, and Mechanics cut up the tanks and removed and disposed the tank parts.

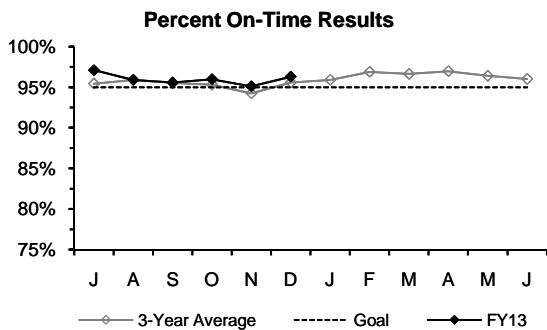
## **Operations Support**

- Development of ERP Training Programs: Staff are continuing implementation of the community emergency response training program as required by DEP. Training is provided by MWRA expert staff to community and MWRA Staff. An updated version of the program is currently being developed for delivery starting in January 2013. A two-day 10-hour modular course will be repeated at least 4 times in 2013 to accommodate the expected heavy community participation due to licensing deadlines in 2013. A series of community training meetings is underway targeting service areas with particular redundancy issues (NIH in early 2012 and SEH in November). The IH/NEH Workshop is planned for spring 2013.
- Meter Systems: In the 2<sup>nd</sup> Quarter, staff have essentially completed Rosemount flow transmitter replacement system-wide with a newer generation that allows a wider accurate span. Staff are also implementing converting water meter data collection to wireless transmission to cut costs. Wireless antennas are being deployed at water meter sites. This requires conversion to a new Telog Database which is currently in final testing.
- Review of Benefit/Cost Analyses: Staff have begun reviewing where updating may be necessary for community flow formulas to reflect changed local system conditions. The issue was discussed at the October Full Advisory Board, then at a series of Operations Committee Meetings including the November and December sessions. Staff have begun working on more detailed program proposals for the community flow formulas as well as for the next round of updating sewer meters. Follow-up discussion is scheduled for the January Operations Committee Meeting.
- Online Water Quality Monitoring: Staff continued updating the distribution water quality monitoring analyzer system. Fourteen units have been installed and made operational via SCADA through December and two more are in progress. Central data collection equipment and its associated server are operational. Staff continued implementing the data collection network with Verizon connections now being available for 7 of the 11 sites. Response SOPs are being developed for alarm response when the system is fully operational. Two-alarm monitoring SOPs tabletops were held in December and a Consequence Management Plan tabletop is scheduled in January to allow alarm response protocols to be implemented.
- Seasonal Coliform Bacteria Issues: Staff continued supporting local nitrification issues by consulting with community staff to optimize local strategies. In the 2<sup>nd</sup> Quarter, summer issues associated with warm water have diminished.

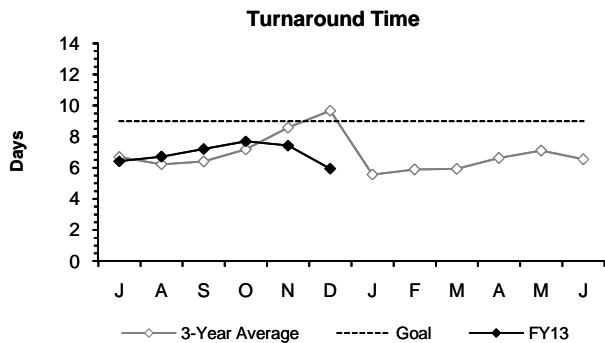


# Laboratory Services

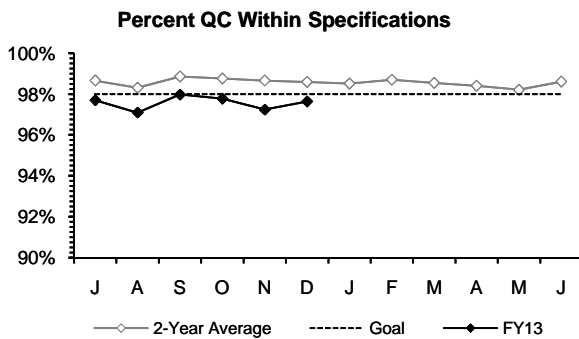
2nd Quarter - FY13



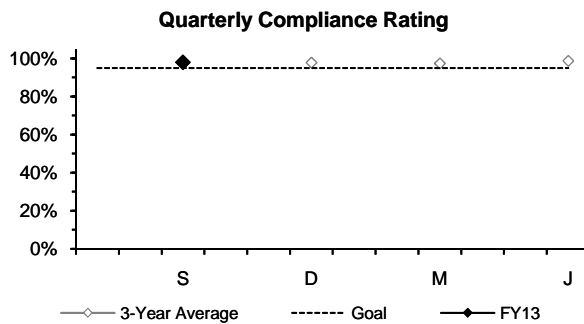
The Percent On-Time measurement exceeded the 95% goal each month of the quarter.



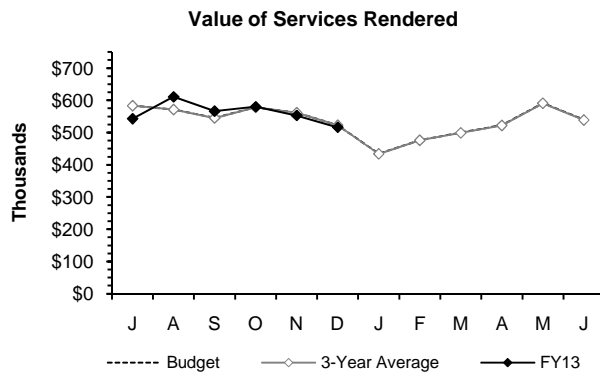
Turnaround Time was faster than the 9-day goal each month of the quarter.



Percent of QC tests meeting specifications was slightly below the 98% goal each month of the quarter due in part to difficult Harbor and Outfall Monitoring (HOM) fish/shellfish samples.



The Q2 in-house audit on methods and procedures was not completed in time for this report due to staff availability. Compliance audits are performed in September, December, March, and June.



Value of Services Rendered was at or near the seasonally adjusted budget projection each month of the quarter.

## Highlights:

**Quality Assurance:** Completed all 2012 DEP-required proficiency test (PT) samples needed to maintain certification plus voluntary PT samples for seawater nutrients and shellfish bacteria.

**DITP:** Tested digester feed and digested sludge for a variety of parameters in support of a UMass Amherst study of co-digestion of biosolids and food waste.

**ENQUAD:** Completed Harbor and Outfall Monitoring mussel samples. The lobster samples will be completed in January. These biological tissue samples are tested every three years. Completed a technical memo on trace organics detected in fat particles collected in net tows near the DITP outfall site during wet weather. This is a requirement of the NPDES permit.

**TRAC:** Beginning in September the TRAC Sampling Associates are scanning their samples directly into LIMS for a tighter record of sample custody.

**Water Quality Assurance:** Completed the annual Lead and Copper Rule samples.

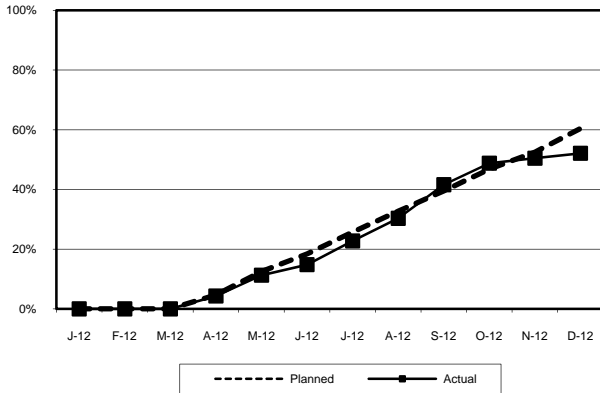
# CONSTRUCTION PROGRAMS

## Projects In Construction

### 2<sup>nd</sup> Quarter , FY13

(Progress Percentages based on Construction Expenditures)

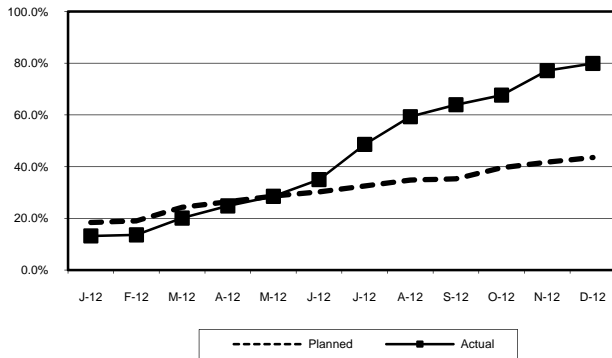
**Hultman Aqueduct Interconnection CP-6B**  
Progress –December 2012



*Project Summary:* This project includes the replacement and rehabilitation of valves and piping in the Shaft 4 Headhouse, adjoining aqueduct chamber and the sections of the Hultman Aqueduct located in Marlborough and Southborough.

*Status and Issues:* As of December, the Contractor completed the load testing of the new 7.5 and 20 ton hoists, and painted the valves at the Hosmer and Boland Pump Stations. They also continued with the submittal process and the clean up at Sta. 70+02.

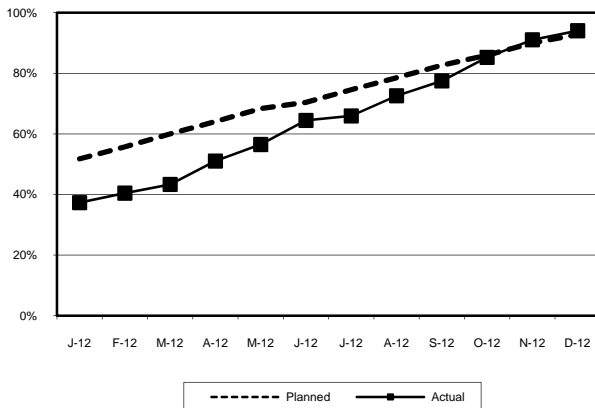
**UV Disinfection Facilities CWTP**  
Progress – December 2012



*Project Summary:* In accordance with the EPA's requirement to have two primary methods of disinfection, the Authority will add an Ultraviolet (UV) light disinfection process at the Carroll Water Treatment Plant, which will render Cryptosporidium inactive.

*Status and Issues:* As of December, the Contractor completed the installation of 48-inch stainless steel pipe, knife gates and butterfly valves at the A & B sides; formed and poured the number 2 & 3 stair pans at the A & B sides and formed and poured concrete into the opening around the 48-inch steel pipe at the B side UV room. In addition, they disconnected the temporary sump discharge and connected to the permanent sump discharges at the A & B UV rooms. Electrical work continues.

**Lynnfield/Saugus Pipelines**  
Progress - December 2012



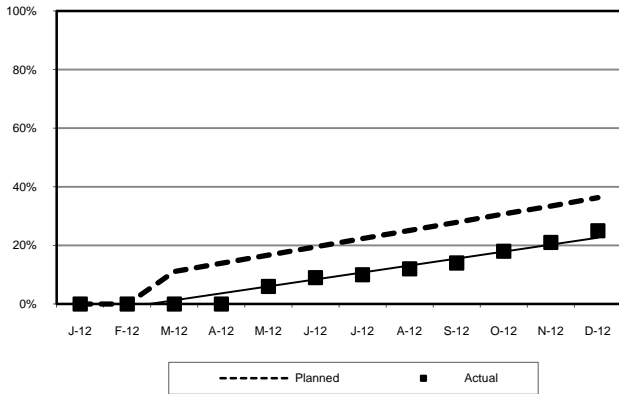
*Project Summary:* Installation of MWRA water mains including 1,800 linear feet of 36-inch pipe and 4,700 feet of 24-inch pipe. Project also includes 6,000 linear feet of 12-inch pipeline for the Town of Saugus. Pipeline construction is located along Route 1 in Saugus.

*Status and Issues:* The Ribbon Cutting Ceremony with State and Local Officials was held on December 10<sup>th</sup>, at which time the new MWRA main was activated. In addition, the existing traverse feeds were abandoned, which was a Town of Saugus project goal. The Contractor commenced demobilizing the staging area, and began final miscellaneous site cleanup and restoration work.

## Projects In Construction 2<sup>nd</sup> Quarter , FY13

(Progress Percentages based on Construction Expenditures)

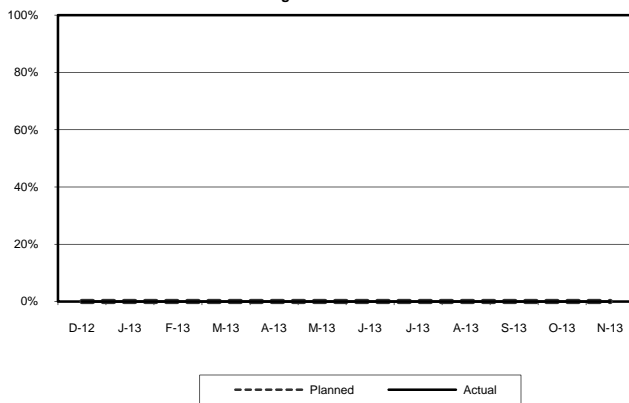
**Spot Pond Water Storage Facility  
Progress – December 2012**



*Project Summary:* This is a design/build project for the construction of two, 10 million-gallon covered concrete storage tanks and a buried pump station, which will provide back-up redundancy for the Northern High and Northern Intermediate High distribution service areas.

*Status and Issues:* As of December, the Contractor completed final blasting and continued with the preparation of the sub-grade. They installed the crushed stone bedding for the first tank (#2) and began the concrete work, with the first placement taking place by months end. In addition, erosion controls at Pipeline and Hemlock Road were installed, as well as tree protection on Hemlock Road.

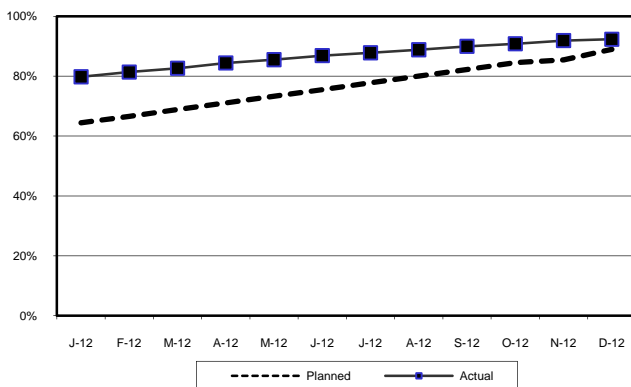
**Quabbin UV Disinfection  
Progress – December 2012**



*Project Summary:* This project will improve the quality of the drinking water delivered to the CVA communities serviced by the MWRA. It involves the addition of UV disinfection at the Quabbin Disinfection Facility to meet the EPA's regulation for a second means of disinfection for unfiltered water systems.

*Status and Issues:* This contract in the amount of \$5.5 million was awarded at the December 12, 2012 Board of Director's meeting.

**Hultman Aqueduct Interconnections Project  
Progress - December 2012**



*Project Summary:* This project includes rehabilitation construction to the Hultman Aqueduct to provide redundancy to the MetroWest Tunnel from Southborough to Weston by adding five new MetroWest/Hultman interconnections, two surge relief structures, 13.5 miles of internal rehabilitation and 15 miles of external access work.

*Status and Issues:* Through December, the Contractor continued with the excavation and replacement of five 60-inch TED valves and piping at River Road. They reinstalled the 48" BFV in the Branch Line Chamber and began the 30 cycle time test to verify the seal. In addition, they installed manholes at River Road on the WASM 3 and 4 pipelines and continued with the installation of the new 84-inch steel pipe at Loring Road.

# CSO CONTROL PROGRAM

2nd Quarter - FY13

As reported last quarter, 29 of the 35 projects in MWRA's Long-Term CSO Control Plan are complete and 4 CSO projects are in construction. In March 2012, MWRA commenced design of the remaining two projects – Outfall MWR003 Gate and Floatables Control/Rindge Ave. Siphon Relief and Outfall SOM01A Interceptor Connection Relief and Floatables Control – both related to Alewife Brook. Progress of work to complete the CSO plan is described below.

Project	Court Milestones in Schedule Seven (Shaded milestones are complete.)			Status as of December 31, 2012																					
	Commence Design	Commence Construction	Complete Construction																						
Brookline Sewer Separation	Nov 06	Nov 08	Jul 13	<p>The \$26.0 million Brookline sewer separation project comprises two Brookline construction contracts and one MWRA construction contract.</p> <p><u>Town of Brookline Sewer Separation Phase 1</u> Brookline attained substantial completion of its \$1.4 million first construction contract in January 2010. The contract involved the installation of 5,658 linear feet of new storm drain.</p> <p><u>Town of Brookline Sewer Separation Phase 2</u> The \$16.6 million second construction contract, which Brookline commenced in January 2011, is approximately 91% complete. This contract involves the installation of 3,790 linear feet of storm drain and 1,290 linear feet of sanitary sewer by open trench method and 4,550 linear feet of sanitary sewer by micro-tunneling. Brookline recently extended the contract schedule by approximately two months and now expects to attain substantial completion by March 29, 2013, ahead of the July 2013 milestone in Schedule Seven. Surface restoration activities will continue into the summer of 2013.</p> <p><u>MWRA Outfall MWR010 Cleaning Contract</u> MWRA issued the Certificate of Substantial Completion effective August 31, 2012.</p>																					
Reserved Channel Sewer Separation	Jul 06	May 09	Dec 15	<p>BWSC continues to make construction progress with five of nine planned contracts for the \$64.3 million Reserved Channel Sewer Separation project.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">Contract 1 - CSO outfall rehab</td> <td style="width: 10%;">\$ 4.0 M</td> <td style="width: 20%;">Complete</td> </tr> <tr> <td>Contract 2 – sewer separation</td> <td>\$ 6.9 M</td> <td>Complete</td> </tr> <tr> <td>Contract 3A – sewer separation</td> <td>\$ 9.9 M</td> <td>Complete</td> </tr> <tr> <td>Contract 3B – sewer separation</td> <td>\$10.9 M</td> <td>50% complete</td> </tr> <tr> <td>Contract 4 – sewer separation</td> <td>\$ 9.1 M</td> <td>NTP 10/1/12</td> </tr> <tr> <td>Contract 7 – pavement restoration</td> <td>\$ 1.2 M</td> <td>Complete</td> </tr> <tr> <td>Contract 8 – pavement restoration</td> <td>\$ 6.8 M</td> <td>NTP 10/1/12</td> </tr> </table> <p>BWSC continues with the design of Contract 5 (existing sewer cleaning and lining) and Contract 6 (downspout disconnections), to be awarded in 2013. BWSC plans to complete the Reserved Channel sewer separation project by December 2015, in compliance with Schedule Seven.</p>	Contract 1 - CSO outfall rehab	\$ 4.0 M	Complete	Contract 2 – sewer separation	\$ 6.9 M	Complete	Contract 3A – sewer separation	\$ 9.9 M	Complete	Contract 3B – sewer separation	\$10.9 M	50% complete	Contract 4 – sewer separation	\$ 9.1 M	NTP 10/1/12	Contract 7 – pavement restoration	\$ 1.2 M	Complete	Contract 8 – pavement restoration	\$ 6.8 M	NTP 10/1/12
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Contract 3B – sewer separation	\$10.9 M	50% complete																							
Contract 4 – sewer separation	\$ 9.1 M	NTP 10/1/12																							
Contract 7 – pavement restoration	\$ 1.2 M	Complete																							
Contract 8 – pavement restoration	\$ 6.8 M	NTP 10/1/12																							

Project		Court Milestones in Schedule Seven (Shaded milestones are complete.)			Status as of December 31, 2012
		Commence Design	Commence Construction	Complete Construction	
Cambridge/ Alewife Brook Sewer Separation	CAM004 Outfall and Wetland Basin		Apr 11	Apr 13	Cambridge continues to make progress with construction of the \$16.8 million CAM004 stormwater outfall and wetland basin (\$3.9 million MWRA share), which Cambridge commenced in April 2011. During the past quarter, Cambridge's contractor completed excavation and grading of the main basin and vegetative plantings. The contractor continues to install the pedestrian overlook at the Oxbow area, construct the boardwalks across the basin area and, and grade the multi-use path running along the south side of the basin that is part of the Massachusetts Highway Department's new bikeway. The contractor also completed installing all sections of the stormwater outfall conduit except for the section along Wheeler Street, which it will commence installing in January. The contract is approximately 85% complete. Verizon and Cambridge were able to overcome utility relocation delays along Wheeler Street, and Cambridge has implemented a recovery schedule that accommodates substantial completion by April 2013, in compliance with Schedule Seven.
	CAM004 Sewer Separation	Jan 97	Jul 98	Dec 15	Cambridge completed four initial construction contracts for this project several years ago and recently awarded another contract (Contract 8A) and plans to award two additional contracts, (8B and 9) to complete the project.  Contract 8A Construction NTP 9/29/12 Contract 8B Design 60% complete Contract 9 Design NTP 1/1/13
			Sep 12		Cambridge has informed MWRA that its capital cost estimate for this project, together with updated costs for the other Alewife related CSO projects, has increased to \$88 million (the current MOU/FAA total award amount for the Cambridge projects is \$60 million). Cambridge has also informed MWRA that it may not be able to complete Contract 9 by the December 2015 milestone in Schedule Seven, due to additional contract work, extensive utility relocations and the need to offset work in Contracts 8B and 9 to avoid cumulative traffic impacts on Huron and Concord avenues.
	MWR003 Gate and Rindge Ave. Siphon	Apr 12	Aug 14	Oct 15	MWRA has received the Final Preliminary Design Report and the first 100% design submission for the SOM01A project. Staff are reviewing the plans and specifications. The contract is scheduled to commence in September 2013, in compliance with Schedule Seven. The consultant continues with the hydraulic modeling of alternatives for the MWR003/Rindge Ave. Siphon project, with the goals of optimizing the performance of the parallel Alewife Brook Sewer and Alewife Brook Conduit, attaining the mandated long-term levels of CSO control, and providing adequate hydraulic relief in extreme storms. Staff continue to coordinate with DCR and the Cambridge Conservation Commission as needed. MWRA's FY13 CIP includes \$4.1 million for this project.
SOM01A Connection Relief and Floatables Control	Sep 13		Jun 14		

#### Other CSO Related Work

##### South Dorchester Bay Sewer Separation Post-Construction Inflow Removal

BWSC continues to investigate alternatives for removing additional stormwater inflow from its Dorchester Interceptor or otherwise relieving hydraulic conditions in the interceptor during extreme storms. BWSC plans to issue an interim report in early 2013 and a final report with recommendations by spring 2013. Through flow monitoring and field investigations, BWSC has found numerous locations of stormwater inflow into sanitary sewers. The majority involve catch basin laterals. BWSC crews are currently sealing the locations that can be eliminated by trenchless methods. BWSC also recently advertised a \$625,000 construction contract for the relocation of seventeen catch basin connections to an existing storm drain. MWRA's FY13 CIP includes a total of \$5.6 million for this inflow removal effort.

## CIP Expenditures 2<sup>nd</sup> Quarter-FY13

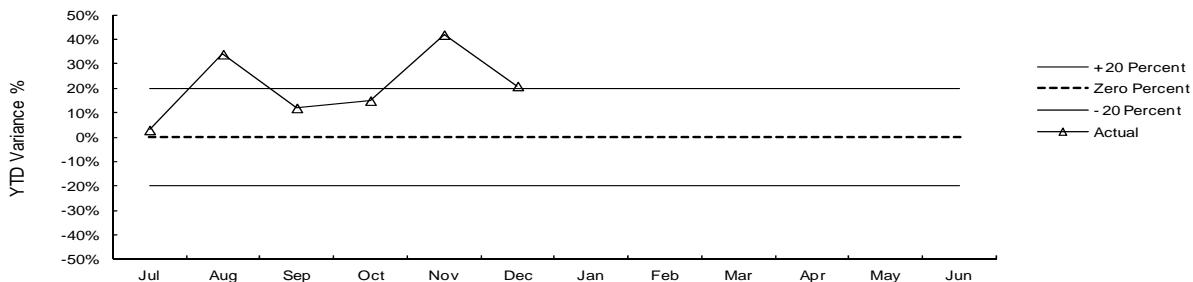
The Year-To-Date variances are highlighted below:

FY13 Capital Improvement Program Expenditure Variances through December by Program (\$000)				
Program	FY13 Budget Through December	FY13 Actual Through December	Variance Amount	Variance Percent
Wastewater	29,187	43,686	14,499	50%
Waterworks	38,610	41,550	2,940	8%
Business and Operations Support	4,385	1,756	(2,629)	60%
Total	\$72,182	\$86,992	\$14,810	21%

Overspending within Wastewater is primarily due to greater than anticipated requests for community grants and loans for the I/I program, greater than anticipated progress for the Reserved Channel Sewer Separation, and Clinton Aeration Efficiency projects. This was partially offset by timing of North Main Pump Station Variable Frequency Drives Construction work and Melrose Sewer reimbursement. Overspending in Waterworks is due to: greater than anticipated community requests for loans and repayments, greater than anticipated contractor progress for the Carroll Plant Ultraviolet Disinfection, Upper Hultman Rehabilitation (CP-6B), and Oakdale Phase 1A Electrical Construction contracts. This was partially offset by delay in start of concrete work for the Spot Pond Storage Facility Design/Build contract, timing of work for the Lower Hultman Rehabilitation CP-6A contract, and Watershed Land purchases.

### CIP Expenditure Variance

*Total FY13 CIP Budget of \$164,912,000.*



### Construction Fund Management

All payments to support the capital program are made from the Construction Fund. Sources of fund in-flows include bond proceeds, commercial paper, SRF reimbursements, loan repayments by municipalities, and current revenue. Accurate estimates of cash withdrawals and grant payments (both of which are derived from CIP spending projections) facilitate planning for future borrowings and maintaining an appropriate construction fund balance.

Cash Balance 12/29/2012	\$154 million
Unused capacity under the debt cap:	\$620 million
Estimated date for exhausting construction fund without new borrowing:	May-14
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper outstanding:	\$144 million
Commercial paper capacity:	\$350 million
Budgeted FY13 capital spending*:	\$135 million

\* Cash based spending is discounted for construction retainage.

# DRINKING WATER QUALITY AND SUPPLY



## Source Water – Microbial Results and UV Absorbance

2nd Quarter – FY13

### Source Water – Microbial Results

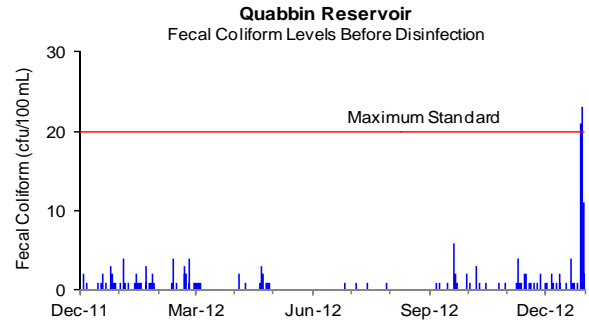
Total coliform bacteria are monitored in both source and treated water to provide an indication of overall bacteriological activity. Most coliforms are harmless. However, fecal coliform, a subclass of the coliform group, are identified by their growth at temperatures comparable to those in the intestinal tract of mammals. They act as indicators of possible fecal contamination. The Surface Water Treatment Rule for unfiltered water supplies allows for no more than 10% of source water samples prior to disinfection over any six-month period to have more than 20 fecal coliforms per 100mL.

#### Sample Site: Quabbin Reservoir

Quabbin Reservoir water is sampled at the Ware Disinfection Facility (WDF) raw water tap before being treated and entering the CVA system.

Two samples collected during the 2nd Quarter were above 20 cfu/100mL. On December 28 and 29, snow storms and high winds prevented DCR staff from implementing bird harassment on the reservoir itself. On December 30, DCR used LASER harassment from the shore to prevent the birds from landing on the reservoir.

**For the current six-month period, 1.1% of the samples have exceeded a count of 20 cfu/100mL.**

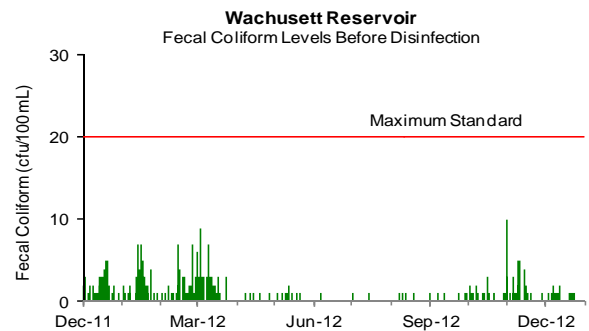


#### Sample Site: Wachusett Reservoir

Wachusett Reservoir water is sampled at the CWTP raw water tap in Marlborough before being treated and entering the MetroWest/Metropolitan Boston systems.

Fecal coliform levels tend to increase during the winter because, when water bodies near Wachusett ice over, waterfowl seek open water. Many roost at Wachusett, which tends to freeze later in the year than smaller ponds nearby. DCR has an active bird harassment program to move the birds away from the intake area.

All samples collected during the 2nd Quarter were below 20 cfu/100mL. **For the current six-month period, 0% of the samples exceeded a count of 20 cfu/100mL.**

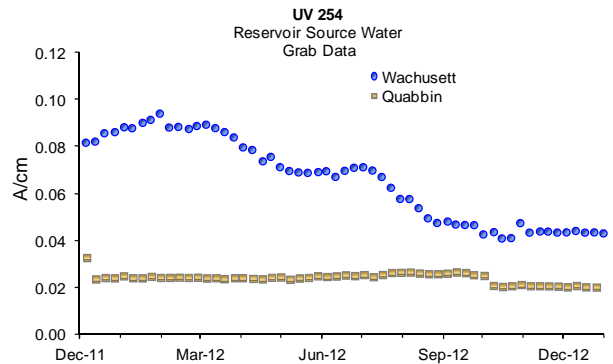


### Source Water – UV Absorbance

UV Absorbance at 254nm wavelength (UV-254), is a measure of the amount and reactivity of natural organic material in source water. Higher UV-254 levels cause increased ozone and chlorine demand resulting in the need for higher ozone and chlorine doses, and can increase the level of DBPs. UV-254 is impacted by tributary flows, water age, UV/ sunlight and other factors. Hurricanes can have a significant and long lasting impact.

Quabbin Reservoir UV-254 levels are currently around 0.02 A/cm.

Wachusett Reservoir UV-254 levels are currently around 0.04 A/cm.



## Source Water – Turbidity

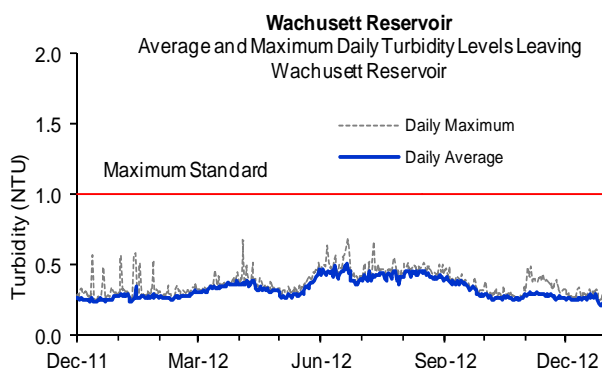
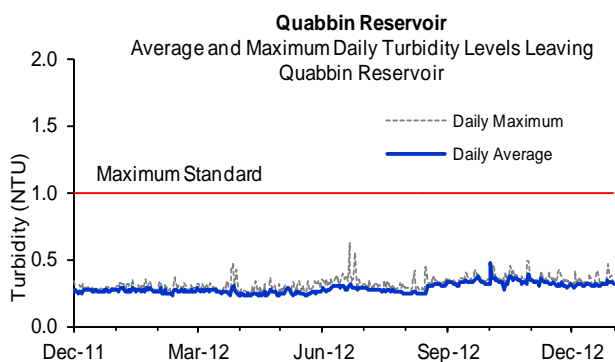
2nd Quarter – FY13

Turbidity is a measure of suspended and colloidal particles including clay, silt, organic and inorganic matter, algae and microorganisms. The effects of turbidity depend on the nature of the matter that causes the turbidity. High levels of particulate matter may have a higher chlorine demand or may protect bacteria from the disinfectant effects of chlorine, thereby, interfering with the disinfectant residual throughout the distribution system.

There are two standards for turbidity: all water must be below 5 NTU (Nephelometric Turbidity Units), and water only can be above 1 NTU if it does not interfere with effective disinfection.

Turbidity of Quabbin Reservoir water is monitored continuously at the Ware Disinfection Facility (WDF) before chlorination. Turbidity of Wachusett Reservoir is monitored continuously at the Carroll Water Treatment Plant before ozonation.

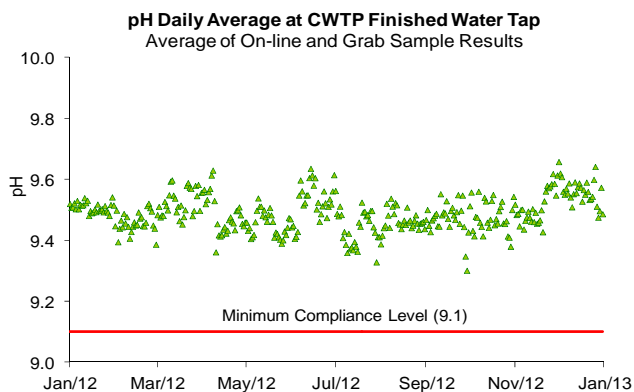
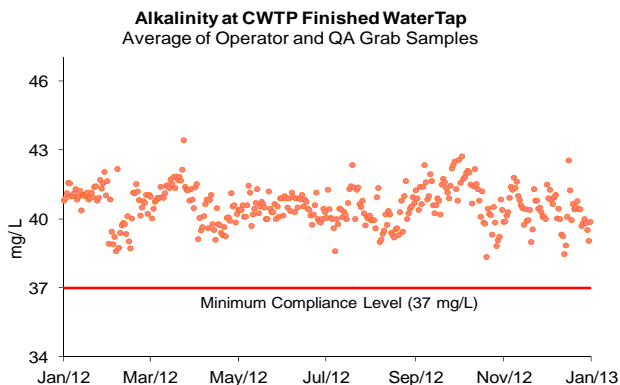
Maximum turbidity results at Quabbin and Wachusett were within DEP standards for the quarter.



## Treated Water – pH and Alkalinity Compliance

MWRA adjusts the alkalinity and pH of Wachusett water to reduce its corrosivity, which minimizes the leaching of lead and copper from service lines and home plumbing systems into the water. MWRA tests finished water pH and alkalinity daily at the CWTP's Fin B sampling tap. MWRA's target for distribution system pH is 9.3; the target for alkalinity is 40 mg/l. Per DEP requirements, CWTP samples have a minimum compliance level of 9.1 for pH and 37 mg/L for alkalinity. Samples from 27 distribution system taps have a minimum compliance level of 9.0 for pH and 37 mg/L for alkalinity. Results must not be below these levels for more than nine days in a six month period. Distribution system samples are collected in March, June, September, and December.

Distribution system samples were collected on December 10, 2012. Distribution system sample pH ranged from 9.4 to 9.7 and alkalinity ranged from 40 to 42 mg/L. No sample results were below DEP limits for this quarter.



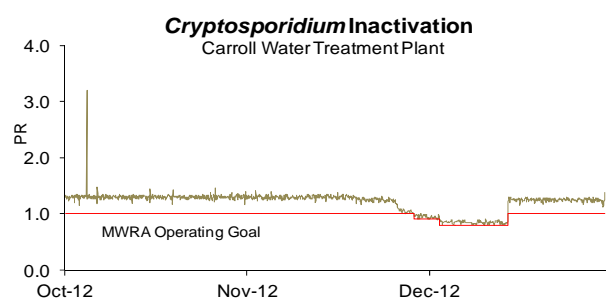
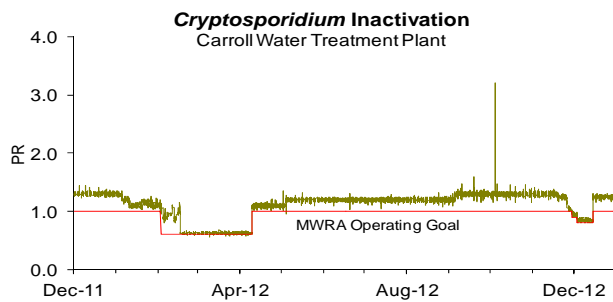
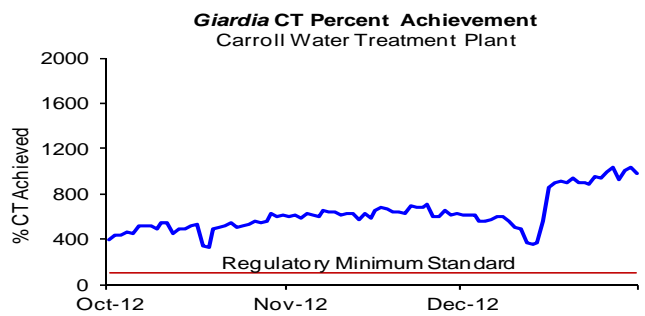
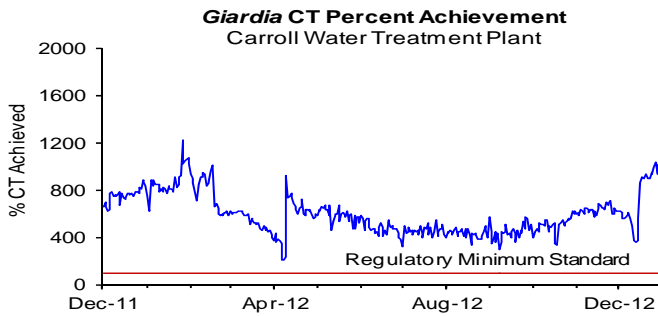
## Treated Water – Disinfection Effectiveness

2nd Quarter – FY13

At the Carroll Water Treatment Plant (CWTP), MWRA reports on both regulatory required 99.9% inactivation for *Giardia* (reported as “CT”), and its voluntary operating goal of 99% inactivation for *Cryptosporidium*. MWRA calculates hourly CT inactivation rates and reports daily CT inactivation rates at maximum flow, as specified by EPA regulations. The concentration (C) of the disinfectant over time (T) yields a measure of the effectiveness of disinfection. CT achievement for *Giardia* assures CT achievement for viruses, which have a lower CT requirement. The required CT for ozonated water varies with water temperature. Compliance with the *Giardia* standard is expressed as percent of required CT achieved; 100% is the minimum allowed. To avoid confusion with regulatory requirements, inactivation of *Cryptosporidium* is reported as Performance Ratio (PR); a PR of 1 demonstrates inactivation of 99% of *Cryptosporidium* based on site-specific data.

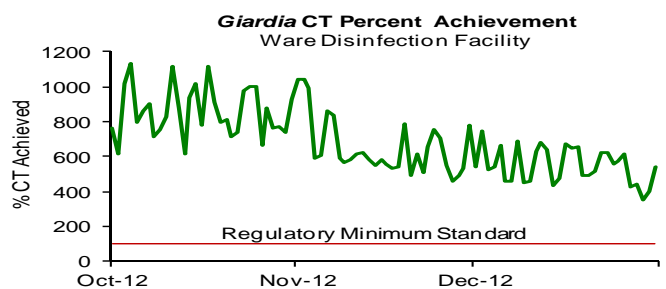
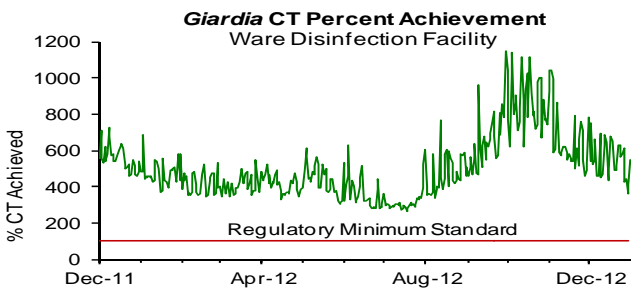
### Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 1.4 to 3.0 mg/L for the quarter.
- CT was maintained above 100% at all times the plant was providing water into the distribution system this quarter, as well as every day for the last fiscal year.
- On October 4, solvent vapors associated with a tank repair created a false positive ozone gas leak alarm which resulted in a plant shutdown. CWTP was restarted in 30 minutes. During start up, there was a brief spike in PR as shown in the middle graphs. There was no compliance concern.
- MWRA will not be able to fully meet the voluntary *Cryptosporidium* inactivation target at all times during the UV construction project. This change in treatment was reviewed and approved by the Massachusetts Department of Environmental Protection as part of its permitting for this project.
- In October, the lowest PR achieved was 1.0, which provides 99.0% *Cryptosporidium* inactivation.
- In November, the lowest PR achieved was 0.9, which provides 98.4% *Cryptosporidium* inactivation.
- In December, the lowest PR achieved was 0.8, which provides 97.5% *Cryptosporidium* inactivation.



### Quabbin Reservoir at Ware Disinfection Facility (CVA Supply):

CT was maintained above 100% at all times the plant was providing water into the distribution system for the quarter, as well as every day for the last fiscal year. The chlorine dose at Ware Disinfection Facility (WDF) is adjusted in order to achieve MWRA’s target of  $\geq 0.75$  mg/L at Ludlow Monitoring Station. The chlorine dose at WDF varied between 1.4 mg/L to 1.5 mg/L for the quarter.



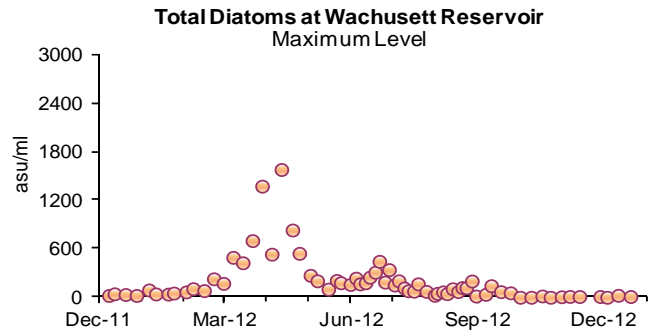
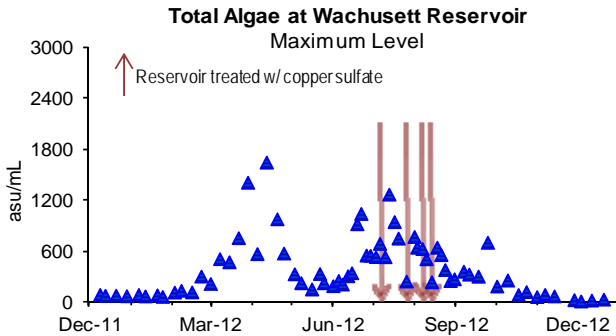
## Algae in the Source Water

### 2nd Quarter – FY13

Algae levels in Wachusett Reservoir are monitored by DCR and MWRA. These results, along with taste and odor complaints, are used to make decisions on source water treatment for algae control.

Taste and odor complaints at the tap may be due to algae, which originate in source reservoirs, typically in trace amounts. Occasionally, a particular species grows rapidly, increasing its concentration in water. When *Synura*, *Anabaena*, or other nuisance algae bloom, MWRA may treat the reservoir with copper sulfate, an algacide. During the winter and spring, diatom numbers may increase. While not a taste and odor concern, consumers that use filters may notice a more frequent need to change their filters.

In the 2nd Quarter, there were no complaints related to algae reported from local water departments. Algae densities are extremely low this quarter. Flat calm conditions on the reservoir on October 17 combined with the low densities contributed to an exceptional measurement of water clarity. An all-time record for Secchi transparency at Wachusett was recorded at 36.5 feet. The prior record of 34 feet was first recorded on Dec. 11, 2007 and was observed again on Nov. 3, 2010.

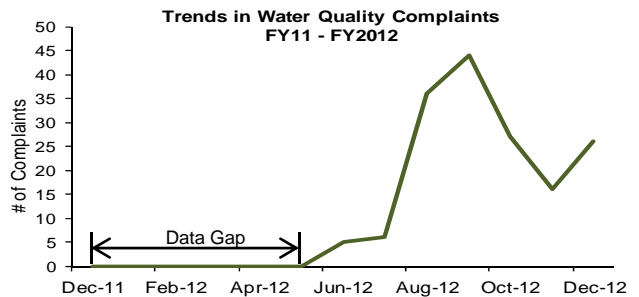
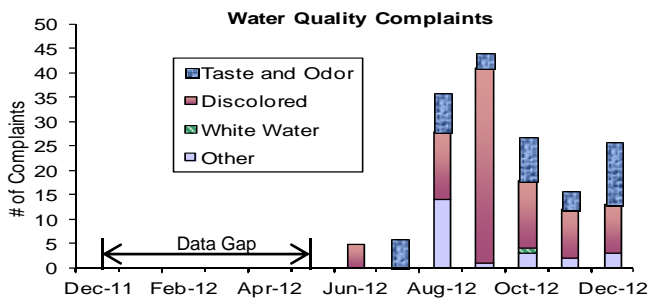


## Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

MWRA collects information on water quality complaints that typically fall into four categories: 1.) discoloration due to MWRA or local pipeline work; 2.) taste and odor due to algae blooms in reservoirs or chlorine in the water; 3.) white water caused by changes in pressure or temperature that traps air bubbles in the water; or 4.) “other” complaints including no water, clogged filters or other issues.

MWRA routinely contacts communities to classify and tabulate water complaints from customers. This count, reflecting only telephone calls to towns, probably captures only a fraction of the total number of customer complaints. Field Operations staff have improved data collection and reporting by keeping track of more kinds of complaints, tracking complaints to street addresses and circulating results internally on a daily basis.

Communities reported 69 complaints during the quarter. Of these complaints, 34 were for “discolored water”, 26 were for “taste and odor”, 1 was for “white water”, and 8 were for “other”. Of these complaints, 4 were MWRA related, 35 were local community issues, and 30 were unknown.



\* Outgoing calls to communities were interrupted during a portion of FY12 and resumed during Q1 FY13, thus, some results are not directly comparable with historical data.

## Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

### 2nd Quarter – FY13

While all communities collect bacteria samples for the Total Coliform Rule (TCR), 42 systems (including Deer Island and Westborough State Hospital) use MWRA's Laboratory for TCR compliance testing. These systems collect samples for bacteriological analysis and measure water temperature and chlorine residual at the time of collection.

There are 139 sampling locations for which MWRA is required to report TCR results. These locations include a subset of the community TCR locations, as well as sites along MWRA's transmission system, water storage tanks, and pumping stations.

The TCR requires that no more than 5% of all samples may be total coliform positive in a month (or that no more than one sample be positive when less than 40 samples are collected each month). Public notification is required if this standard is exceeded.

*Escherichia coli* (*E.coli*) is a specific coliform species that is almost always present in fecal material and whose presence indicates potential contamination of fecal origin. If *E.coli* are detected in a drinking water sample, this is considered evidence of a critical public health concern. Public notification is required if follow-up tests confirm the presence of *E.coli* or total coliform. A disinfectant residual is intended to maintain the sanitary integrity of the water; MWRA considers a residual of 0.2 mg/L a minimum target level at all points in the distribution system.

### Highlights

In the 2nd Quarter, forty-four of the 5,896 community samples (0.8% system-wide) submitted to MWRA labs for analysis tested positive for coliform (Bedford, Hanscom AFB, South Hadley FD – in October; Boston, Westboro SH – in November; Boston – in December). Of the 1,925 (0.02%) MWRA samples taken, four tested positive for total coliform. No sample tested positive for *E.coli*. Several communities had local water quality issues and failed the TCR. Bedford, Hanscom AFB, South Hadley FD violated the TCR in October. Only 6.1% of samples had any results with a disinfectant residual lower than 0.2 mg/L for the quarter.

	# Coliform Samples (a)	Total Coliform # (%) Positive	E.coli # Positive	Public Notification Required?	Minimum Chlorine Residual (mg/L)	Average Chlorine Residual (mg/L)
<b>MWRA Sampling Locations (d)</b>	1925	4 (0.2%)	0	No	0.02	2.05
ARLINGTON	173	0 (0%)	0		0.01	1.31
BELMONT	103	0 (0%)	0		0.08	1.85
BOSTON	791	4 (0.5%)	0	No	0.57	2.36
BROOKLINE	221	0 (0%)	0		0.02	2.29
CHELSEA	169	0 (0%)	0		1.09	1.85
DEER ISLAND	52	0 (0%)	0		1.27	2.30
EVERETT	130	0 (0%)	0		0.83	1.07
FRAMINGHAM	207	0 (0%)	0		0.19	1.89
LEXINGTON	117	0 (0%)	0		0.29	2.16
LYNNFIELD	18	0 (0%)	0		0.35	0.88
MALDEN	244	0 (0%)	0		1.38	1.57
MARBLEHEAD	72	0 (0%)	0		0.12	1.72
MEDFORD	221	0 (0%)	0		0.58	1.82
MELROSE	117	0 (0%)	0		0.01	0.92
MILTON	96	0 (0%)	0		1.01	1.83
NAHANT	30	0 (0%)	0		0.09	1.38
NEWTON	276	0 (0%)	0		0.12	1.91
NORWOOD	108	0 (0%)	0		0.01	1.50
QUINCY	299	0 (0%)	0		0.08	1.66
READING	130	0 (0%)	0		0.02	1.49
REVERE	195	0 (0%)	0		0.90	1.87
SAUGUS	104	0 (0%)	0		1.26	1.87
SOMERVILLE	270	0 (0%)	0		1.03	1.77
SOUTHBOROUGH	30	0 (0%)	0		0.12	1.94
STONEHAM	91	0 (0%)	0		0.40	2.12
SWAMPSCOTT	53	0 (0%)	0		0.01	1.13
WALTHAM	211	0 (0%)	0		0.11	2.17
WATERTOWN	130	0 (0%)	0		0.30	1.87
WESTBORO HOSPITAL	14	1 (5.6%)	0	No	0.01	0.02
WESTON	48	0 (0%)	0		0.26	2.30
WINTHROP	72	0 (0%)	0		0.05	1.15
<b>Total: Fully Served</b>	<b>4792</b>	<b>5 (0.1%)</b>				
<b>CVA &amp; Partially Served (b)</b>						
BEDFORD	89	13 (14.6%)	0	Yes	0.04	0.56
HANSCOM AFB	63	23 (36.5%)	0	Yes	0.04	0.56
MARLBORO	126	0 (0%)	0		0.07	2.06
NEEDHAM	126	1 (0.8%)	0	No	0.02	0.47
NORTHBORO	48	0 (0%)	0		0.02	1.64
WAKEFIELD	143	0 (0%)	0		0.10	1.29
WELLESLEY	108	0 (0%)	0		0.02	0.62
WILMINGTON	87	0 (0%)	0		0.09	1.42
WINCHESTER	65	0 (0%)	0		0.19	1.53
WOBURN	195	0 (0%)	0		0.02	1.45
SOUTH HADLEY FD1 (c)	54	2 (3.7%)	0	Yes	0.06	0.47
<b>Total: CVA &amp; Partially Served</b>	<b>1104</b>					
<b>Total: Community Samples</b>	<b>5896</b>	<b>44 (0.8%)</b>				

(a) The number of samples collected depends on the population served and the number of repeat samples required.

(b) These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.

(c) Part of the Chicopee Valley Aqueduct System. Free chlorine system.

(d) MWRA total coliform and chlorine residual results include data from 125 community pipe locations as described above. In most cases these community results are accurately indicative of MWRA water as it enters the community system; however, some are clearly strongly influenced by local pipe conditions. Residuals in the MWRA system are typically between 1.0 and 2.8 mg/L.

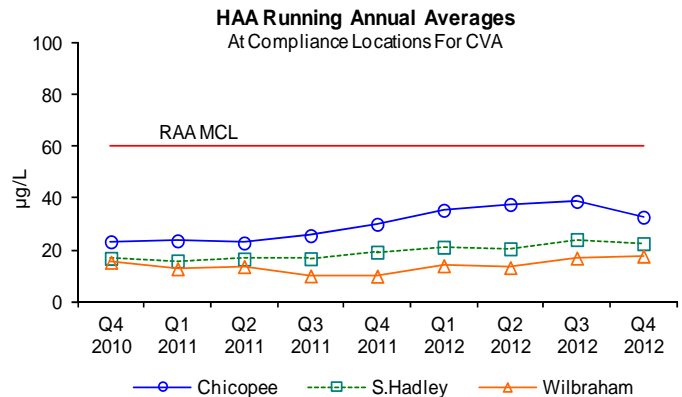
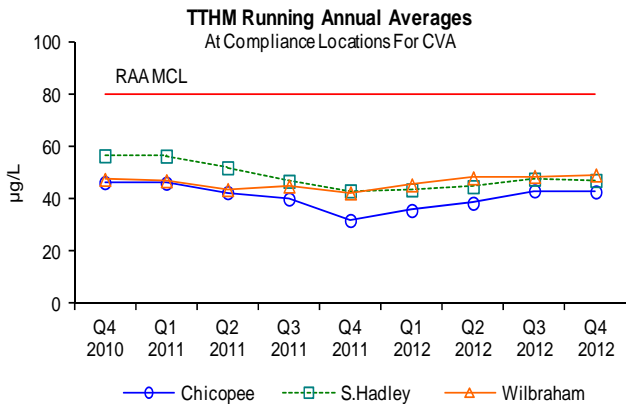
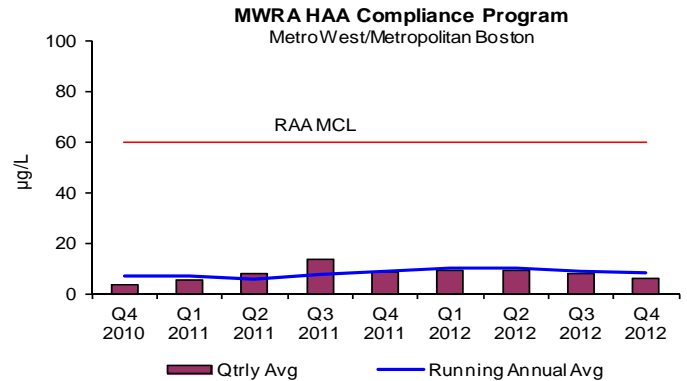
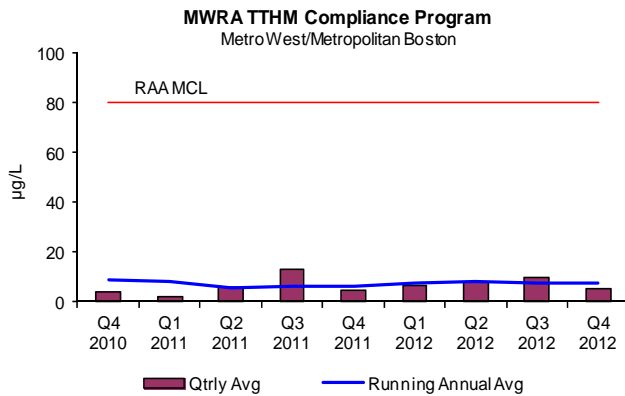
## Treated Water Quality: Disinfection By-Product (DBP) Levels in Communities

2nd Quarter – FY13

Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5s) are by-products of disinfection treatment with chlorine. TTHMs and HAA5s are of concern due to their potential adverse health effects at high levels. EPA's running annual average (RAA) standard is 80 µg/L for TTHMs and 60 µg/L for HAA5s. Effective Q2 2013, under the Stage 2 DBPR compliance will be based on a LOCATIONAL running annual average, rather than an overall average. MWRA initiated monitoring under this new Stage 2 rule May 2012. Sampling locations have increased from 16 to 32 each quarter. Until May 2013, MWRA will continue to report an overall quarterly and running annual average. After May 2013, LRAA's will be reported for each site. Partially served communities are responsible for their own compliance monitoring and reporting and must be contacted directly for their results.

Bromate is tested monthly per DEP requirements for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA's RAA MCL standard for bromate is 10 ug/L.

The RAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remained below current standards. The RAA for TTHMs = 7.6 ug/L; HAA5s = 8.1 ug/L. The current RAA for Bromate = 0.0 ug/L. CVA's DBP levels continue to be below current standards.



# Water Supply and Source Water Management

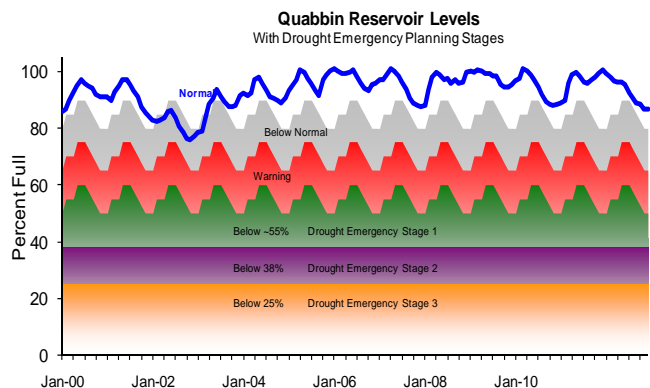
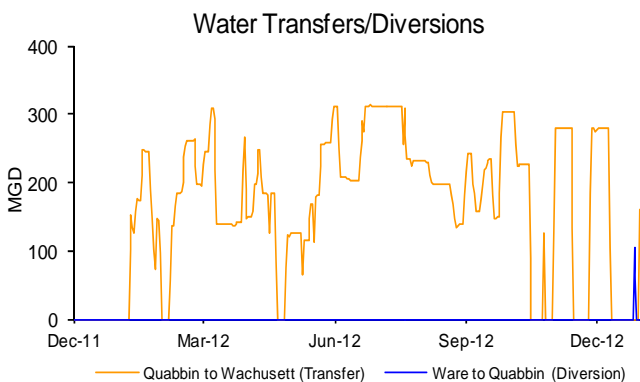
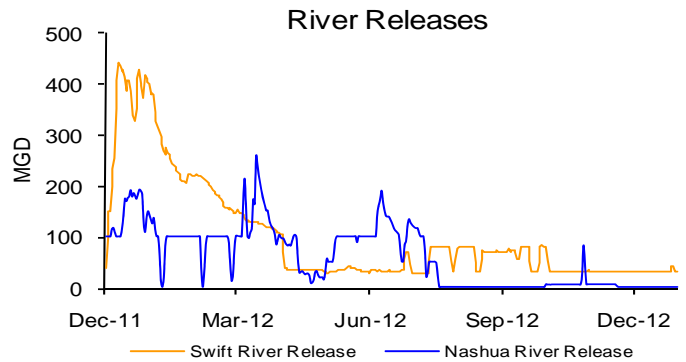
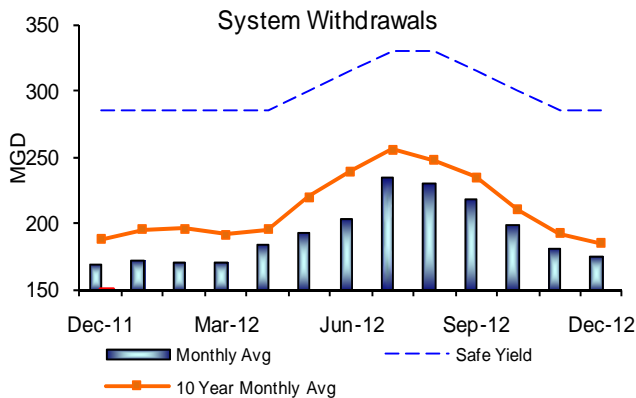
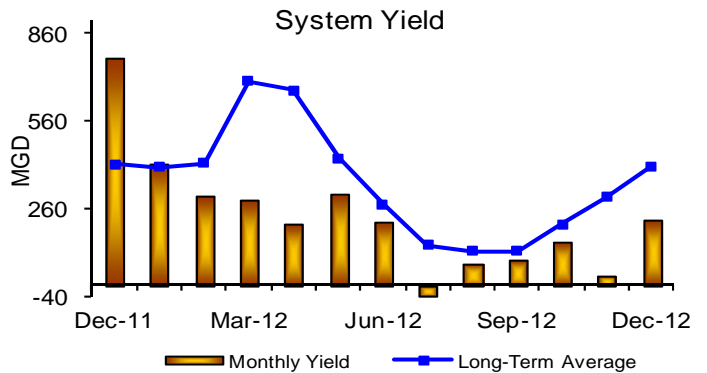
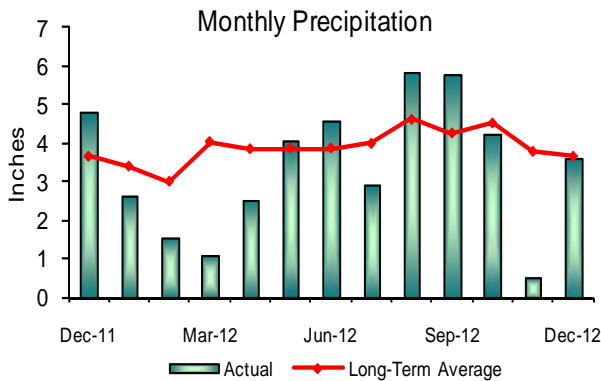
2nd Quarter – FY13

## Background

A reliable supply of water in MWRA's reservoirs depends on adequate precipitation during the year and seasonal hydrologic inputs from watersheds that surround the reservoirs. Demand for water typically increases with higher summer temperatures and then decreases as temperatures decline. Quabbin Reservoir was designed to effectively supply water to the service areas under a range of climatic conditions and has the ability to endure a range of fluctuations. Wachusett Reservoir serves as a terminal reservoir to meet the daily demands of the Greater Boston area. A key component to this reservoir's operation is the seasonal transfer of Quabbin Reservoir water to enhance water quality during high demand periods. On an annual basis, Quabbin Reservoir accounts for nearly 50% of the water supplied to Greater Boston. The water quality of both reservoirs (as well as the Ware River, which is also part of the System Safe Yield) depend upon implementation of DCR's DEP-approved Watershed Protection Plans. System Yield is defined as the water produced by its sources, and is reported as the net change in water available for water supply and operating requirements.

## Outcome

Quabbin Reservoir level remains above the normal operating range for this period of the year. The reservoir was at 87.0% of capacity as of December 31, 2012; a 1.9% decrease for the quarter, which represents a decrease of 7.7 billion gallons of storage. Yield for the quarter was below its long term averages. Monthly withdrawals continue to be below the long-term average. Precipitation for the year was 7.46 " below its 28 year average.



# WASTEWATER QUALITY

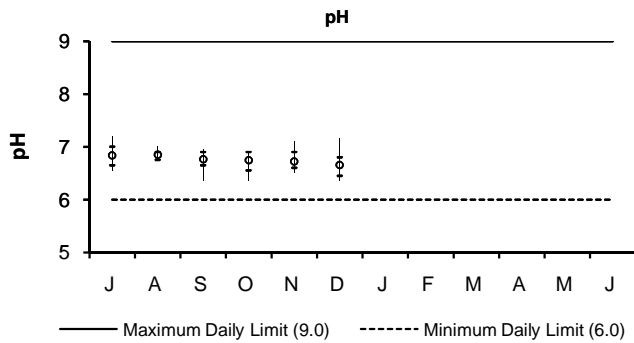


**NPDES Permit Compliance: Deer Island Treatment Plant**  
2nd Quarter - FY13

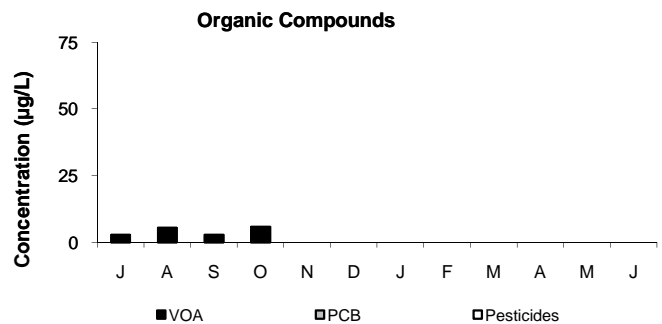
**NPDES Permit Limits**

Effluent Characteristics		Units	Limits	October	November	December	2nd Quarter Violations	FY13 YTD Violations
Dry Day Flow:		mgd	436	248.3	265.3	267.7	0	0
cBOD:	Monthly Average	mg/L	25	4.7	3.8	6.8	0	0
	Weekly Average	mg/L	40	6.6	4.7	8.6	0	0
TSS:	Monthly Average	mg/L	30	7.3	4.9	8.9	0	0
	Weekly Average	mg/L	45	8.2	11.8	10.5	0	0
TCR:	Monthly Average	ug/L	456	<40	<40	<40	0	0
	Daily Maximum	ug/L	631	<40	<40	<40	0	0
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	21	43	54	0	0
	Weekly Geometric Mean	col/100mL	14000	7	10	10	0	0
	% of Samples >14000	%	10	0	0	0	0	0
	Consecutive Samples >14000	#	3	0	0	0	0	0
pH:		SU	6.0-9.0	6.4-6.9	6.5-7.1	6.4-7.2	0	0
PCB, Aroclors:	Monthly Average	ug/L	0.000045	UNDETECTED			0	0
Acute Toxicity:	Mysid Shrimp	%	50	>100	>100	>100	0	0
	Inland Silverside	%	50	>100	>100	>100	0	0
Chronic Toxicity:	Sea Urchin	%	1.5	25	100	25.0	0	0
	Inland Silverside	%	1.5	50	100	50	0	0

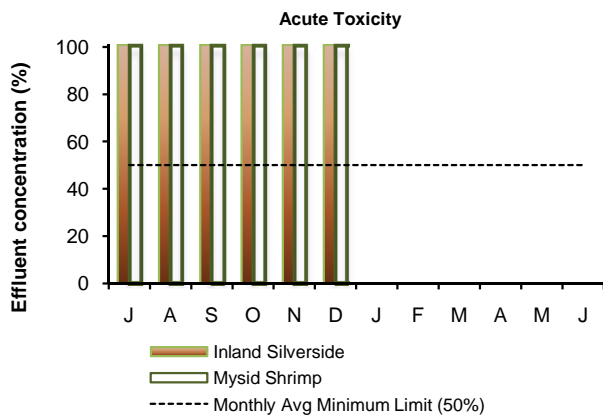
There have been no permit violations in FY13 at the Deer Island Treatment Plant.



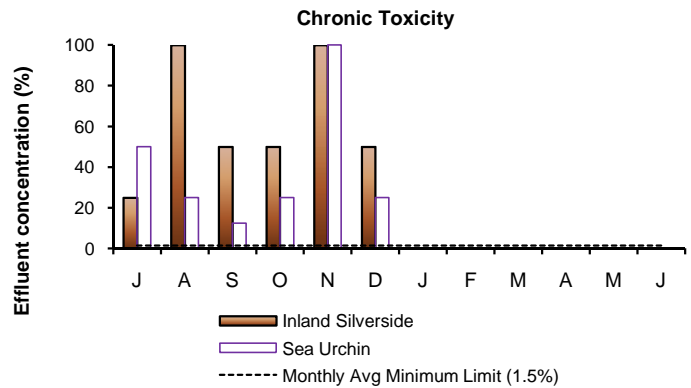
pH is a measure of the alkalinity or acidity of the effluent. Fluctuations in pH do not have an adverse effect on marine environments. Because of the pure oxygen used in the activated sludge reactor, the effluent pH tends to be at the lower pH range. pH measurements for the 2nd Quarter were within the daily permit limits.



An important wastewater component to be monitored in the effluent is organic compounds, including volatile organic acids, pesticides, and polychlorinated biphenyls. The secondary treatment process has significantly reduced organic compounds in the effluent stream.



The acute toxicity test simulates the short-term toxic effects of chemicals in wastewater effluent on marine animals. The test measures the concentration (percent) of effluent that kills half the test organisms within four days. The higher the concentration of effluent required, the less toxic the effluent. For permit compliance, the effluent concentration that causes mortality to mysid shrimp and inland silverside must be at least 50%. Acute toxicity permit limits were met for the 2nd Quarter for both the inland silverside and mysid shrimp.



Typically, effects of chronic exposures differ from those of acute exposures. Because of this, chronic toxicity responses are not necessarily related to acute toxicity. The chronic toxicity test simulates the long-term toxic effects of chemicals in wastewater effluent on marine animals. To meet permit limits, a solution of 1.5% effluent and 98.5% dilution water must show no observed effect on the growth and reproduction of the test species. Chronic toxicity permit limits were met for the 2nd Quarter for both the inland silverside and sea urchin.

## NPDES Permit Compliance: Clinton Wastewater Treatment Plant 2nd Quarter - FY13

### NPDES Permit Limits

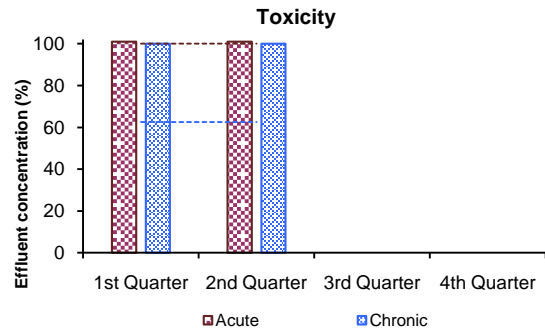
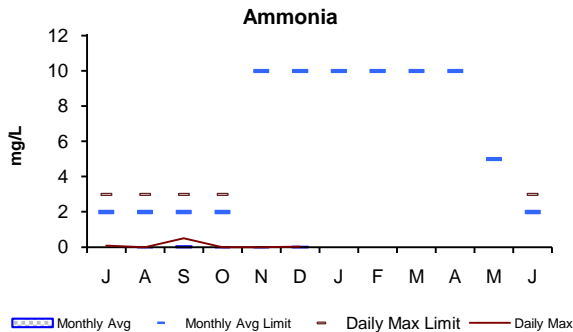
Effluent Characteristics	Units	Limits	October	November	December	2nd Quarter Violations	FY13 YTD Violations
Flow:	mgd	3.01	2.80	2.65	2.47	0	2
BOD: Monthly Average:	mg/L	20	2.4	2.6	3.1	0	0
Weekly Average:	mg/L	20	2.8	2.9	3.4	0	0
TSS: Monthly Average:	mg/L	20	2.2	3.1	5.2	0	0
Weekly Average:	mg/L	20	2.4	4.2	6.2	0	0
pH:	SU	6.5-8.3	6.8-7.6	7.0-7.6	7.0-7.6	0	0
Dissolved Oxygen: Daily Minimum:	mg/L	6	8.3	9.0	9.4	0	0
Fecal Coliform: Daily Geometric Mean:	col/100mL	400	17	9	8	0	0
Monthly Geometric Mean:	col/100mL	200	6	4	4	0	0
TCR: Monthly Average:	ug/L	50	0	0.0	0.0	0	0
Daily Maximum:	ug/L	50	7	0.0	0.0	0	0
Total Ammonia Nitrogen: May 1 - May 31							
Monthly Average:	mg/L	10.0	0.00	0.00	0.02	0	0
Daily Maximum:	mg/L	35.2	0.00	0.00	0.04	0	0
Copper: Monthly Average:	ug/L	20	7.4	7.8	8.5	0	0
Phosphorus: May 1 - Oct 31							
Monthly Average:	mg/L	1.0	0.26	--	--	0	0
Acute Toxicity: Daily Minimum:	%	100	*N/A	*N/A	> 100	0	0
Chronic Toxicity: Daily Minimum:	%	62.5	*N/A	*N/A	100	0	0

There have been two permit violations in FY13 at the Clinton Treatment Plant.

**1st Quarter:** There were two permit violations in the 1st Quarter of FY13. In July and August 2012 the running average flow was 3.22 and 3.16 MGD respectively, above the permit limit of 3.01 MGD. The actual measured plant flow for July and August was 2.13 and 1.82 MGD.

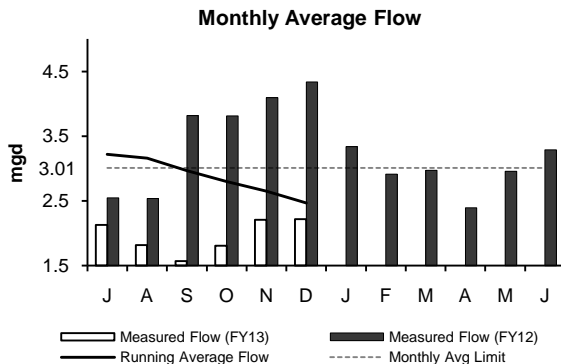
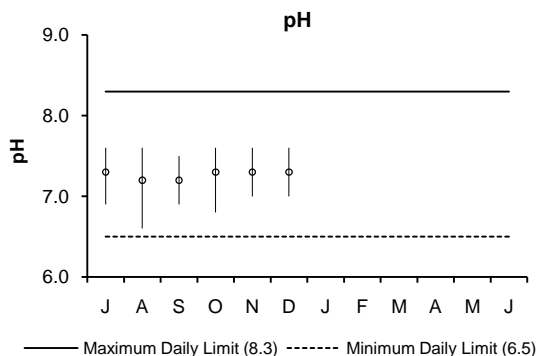
**2nd Quarter:** There were no permit violations in the 2nd Quarter of FY13.

\*Toxicity testing at the Clinton Treatment Plant is conducted on a quarterly basis.



The 2nd Quarter's monthly average and daily maximum concentrations were below the permit limits. The monthly average and daily maximum limits for the 2nd Quarter are 2 mg/L and 3 mg/L (October) and 10.0 mg/L and 35.2 mg/L (November and December). The permit limits are most stringent from June to October when warm weather conditions are most conducive to potential eutrophication.

Acute and chronic toxicity testing simulates the short- and long-term toxic effects of chemicals in wastewater effluent on aquatic animals. For permit compliance, the effluent concentration that causes mortality to the daphnid in acute and chronic testing must be at least >100% and 62.5%, respectively. Toxicity limits were met during the 2nd Quarter.



pH is a measure of the alkalinity or acidity of the effluent. All daily pH results for the 2nd Quarter were within the range set by the permit.

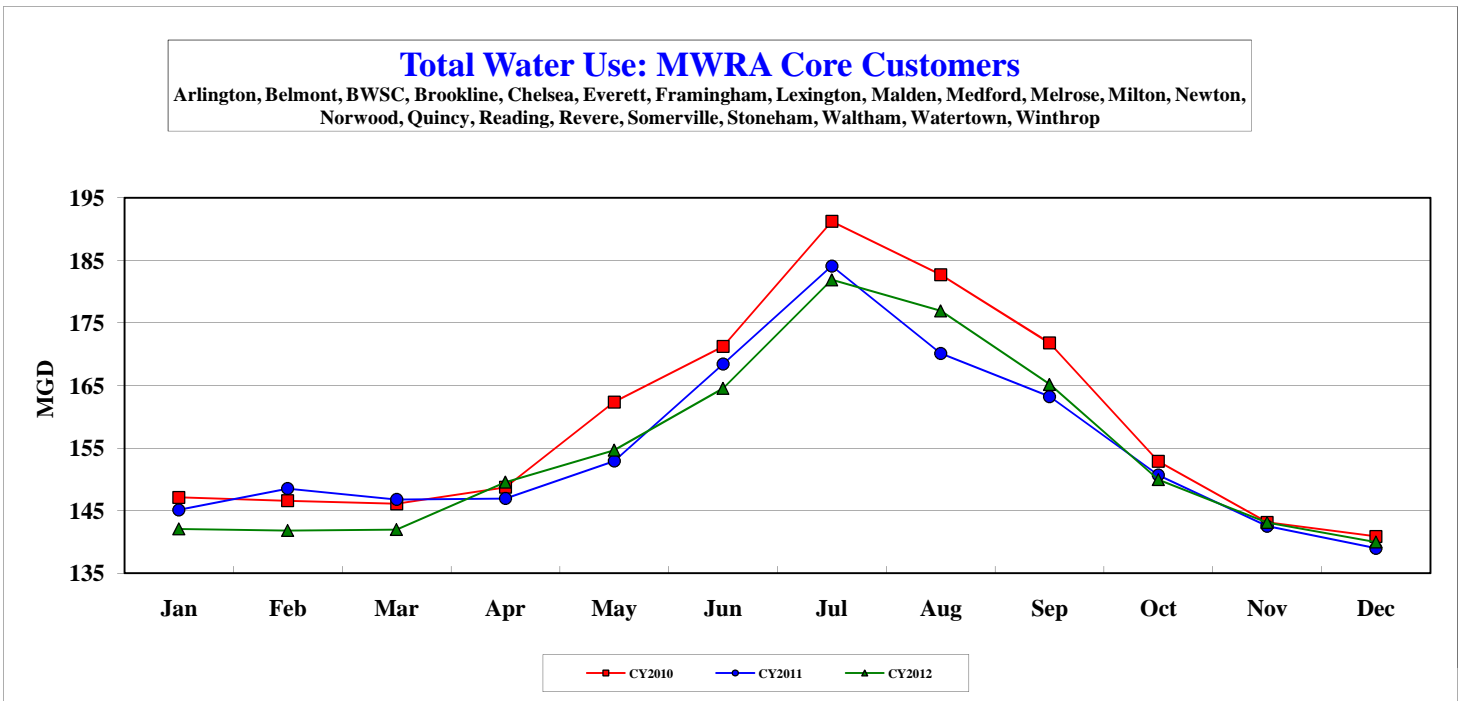
The graph depicts the running annual average monthly flow, measured in million gallons per day, exiting the plant. The average monthly flows during the 2nd Quarter were below the NPDES permit limit.

# COMMUNITY FLOWS AND PROGRAMS

**Water Supplied: MWRA Core Communities**  
2nd Quarter-FY13

MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
<b>CY2010</b>	147.109	146.572	146.104	148.736	162.362	171.224	191.222	182.708	171.780	152.865	143.132	140.875	158.824
<b>CY2011</b>	145.115	148.527	146.797	146.931	152.931	168.416	184.085	170.122	163.231	150.683	142.515	139.004	154.911
<b>CY2012</b>	142.065	141.834	141.967	149.527	154.647	164.532	181.880	176.915	165.162	149.943	143.080	139.979	154.348

MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
<b>CY2010</b>	4,560.379	4,104.007	4,529.220	4,462.067	5,033.225	5,136.713	5,927.887	5,663.942	5,153.392	4,738.813	4,293.973	4,367.117	57,970.734
<b>CY2011</b>	4,498.571	4,158.744	4,550.712	4,407.920	4,740.857	5,052.494	5,706.639	5,273.797	4,896.915	4,671.177	4,275.458	4,309.129	56,542.412
<b>CY2012</b>	4,404.020	4,113.193	4,400.982	4,485.812	4,794.071	4,935.954	5,638.293	5,484.376	4,954.853	4,648.220	4,292.406	4,339.356	56,491.537



Each community's annual water use relative to the system as a whole is the primary factor in allocating the annual water rate revenue requirement to MWRA water communities. Calendar year 2012 water use will be used to allocate the FY14 water utility rate revenue requirement.

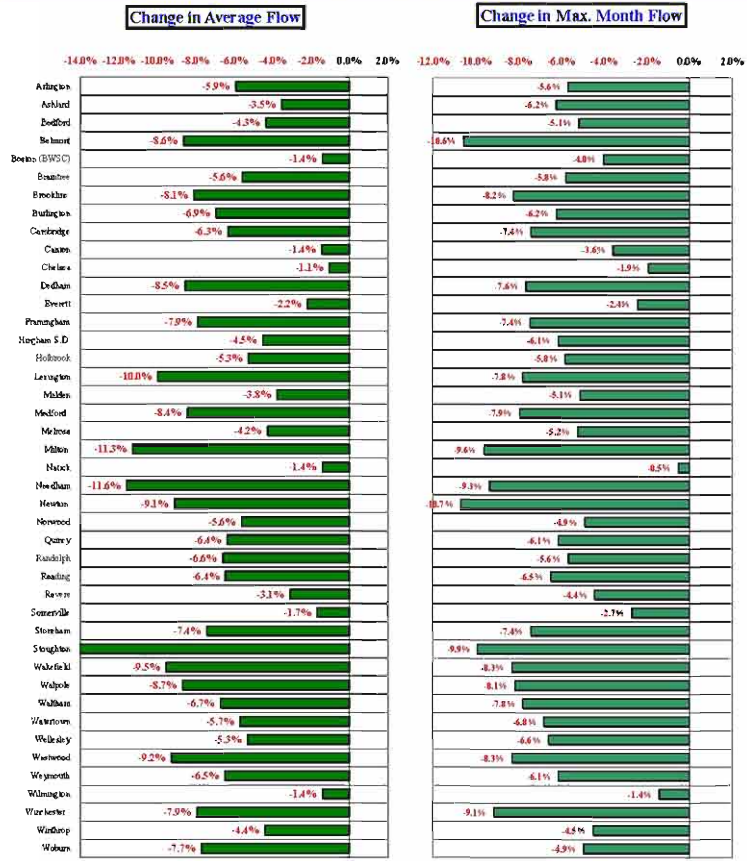
December 2012 water supplied of 167.3 mgd (for revenue generating users) is up 3.9 mgd or 2.4% compared to December 2011. System-wide annual water consumption for CY12 is also higher than CY11 with 189.4 mgd being supplied to MWRA customers through December. This is 1.3 mgd higher than CY11, an increase of 0.7%.

# Community Wastewater Flows

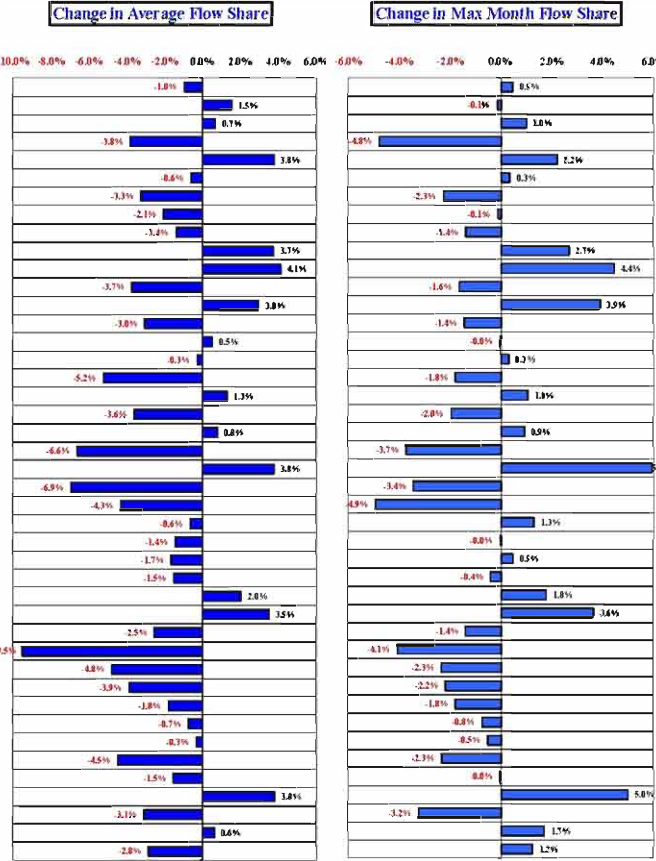
Second Quarter - FY13

## How Projected CY2012 Community Wastewater Flows Could Effect FY2014 Sewer Assessments <sup>1,2,3</sup>

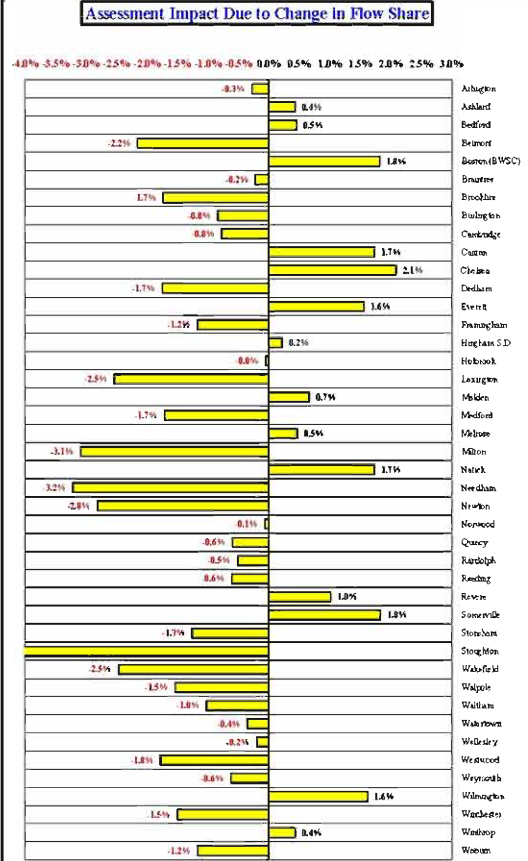
The flow components of FY2014 sewer assessments will be calculated using a 3-year average of CY2010 to CY2012 wastewater flows compared to FY2013 assessments that used a 3-year average of CY2009 to CY2011 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the **RELATIVE** change in CY2010 to CY2012 flow share compared to CY2009 to CY2011 flow share, compared to all other communities in the system.



The chart below illustrates the change in the **TOTAL BASE** assessment due to **FLOW SHARE CHANGES**.



Notes:  
<sup>1</sup> MWRA uses a 3-year flow average to calculate sewer assessments. Three-year averaging smoothes the impact of year-to-year changes in community flow share, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.  
<sup>2</sup> Based on CY2009 to CY2012 average wastewater flows as of 02/04/13. Flow data is preliminary and subject to change pending additional MWRA and community review.  
<sup>3</sup> CY2009 to CY2012 wastewater flows based on actual meter data.  
<sup>4</sup> Represents **ONLY** the impact on the total BASE assessment resulting from the changes in average and maximum wastewater **FLOW SHARES**.

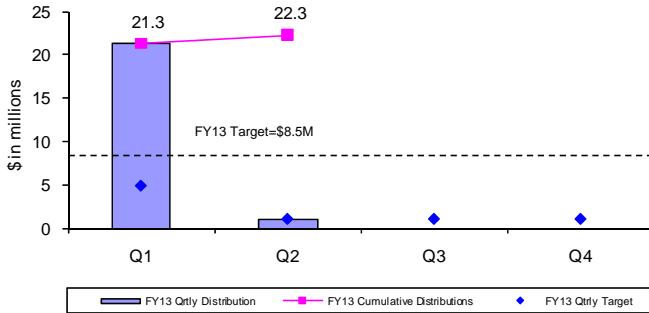
# Community Support Programs

## 2nd Quarter – FY13

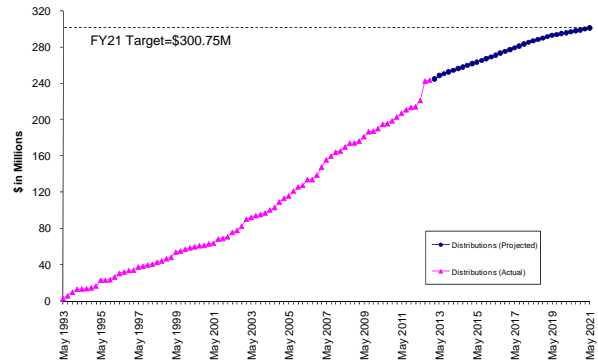
### Infiltration/Inflow Local Financial Assistance Program

MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$300.75 million in grants and interest-free loans (average of about \$10 million per year from FY93 through FY21) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Eligible project costs include: sewer rehabilitation construction, pipeline replacement, removal of public and private inflow sources, I/I reduction planning, engineering design, engineering services during construction, etc. I/I Local Financial Assistance Program funds are allocated to member sewer communities based on their percent share of MWRA's wholesale sewer charge. Interest-free loans are repaid to MWRA over a five-year period beginning one year after distribution of the funds.

**FY13 Quarterly Distributions of Sewer Grant/Loans**



**I/I Local Financial Assistance Program Distribution FY93-FY21**

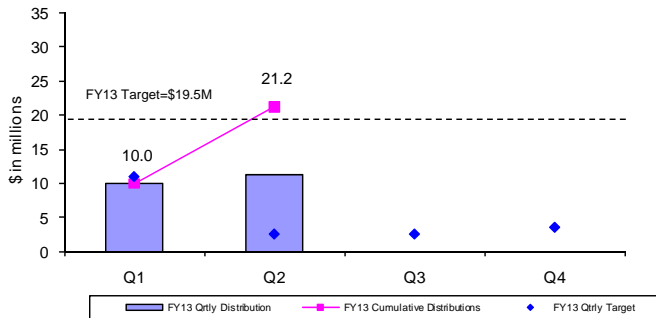


During the 2<sup>nd</sup> Quarter of FY13, \$1.0 million in financial assistance (45% grants and 55% interest-free loans) was distributed to fund local sewer rehabilitation projects in Boston and Stoneham. Total grant/loan distribution for FY13 is \$22.3 million (which includes new Phase 8 funds). From FY93 through the 2<sup>nd</sup> Quarter of FY13, all 43 member sewer communities have participated in the program and more than \$243 million has been distributed to fund 436 local I/I reduction and sewer system rehabilitation projects. Distribution of the remaining funds has been approved through FY21 and community loan repayments will be made through FY26. All scheduled community loan repayments have been made.

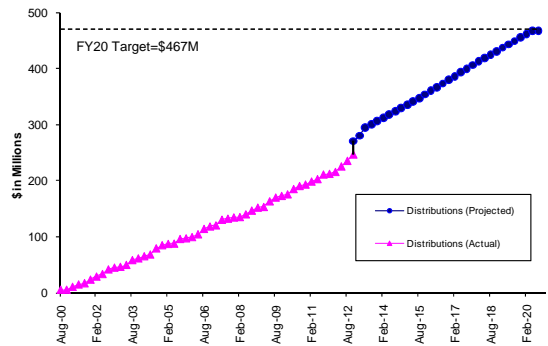
### Water Local Pipeline and Water System Assistance Programs

MWRA's Local Pipeline and Water System Assistance Programs (LPAP and LWSAP) provide \$467 million in interest-free loans (an average of about \$23 million per year from FY01 through FY20) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. Eligible project costs include: water main cleaning/lining, replacement of unlined water mains, lead service replacements, valve, hydrant, water meter, tank work, engineering design, engineering services during construction, etc. MWRA partially-supplied communities receive pro-rated funding allocations based on their percentage use of MWRA water. Interest-free loans are repaid to MWRA over a ten-year period beginning one year after distribution of the funds.

**FY13 Quarterly Distributions of Water Loans**



**Local Pipeline and Water System Assistance Programs Distribution FY01-FY20**



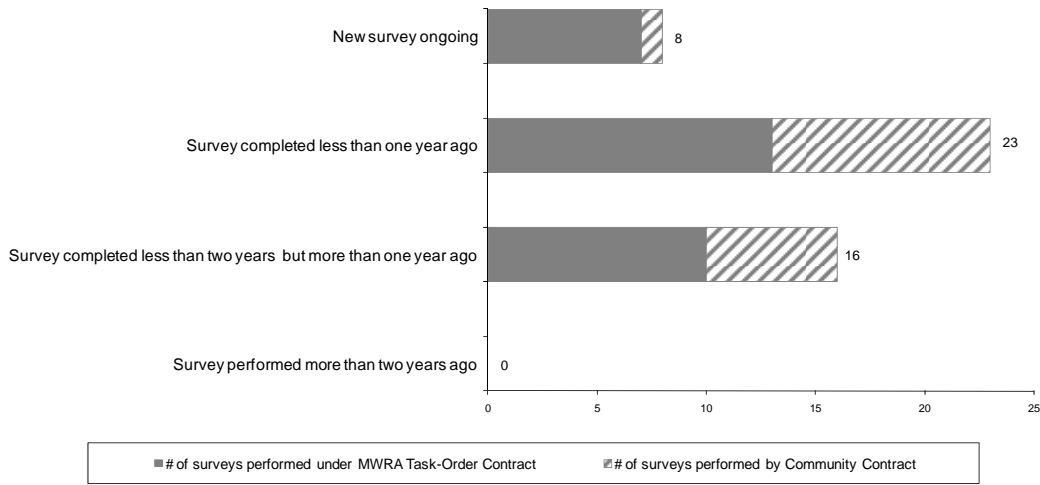
During the 2<sup>nd</sup> Quarter of FY13, \$11.2 million in interest-free loans was distributed to fund local water projects in Framingham, Quincy and Stoughton. Total loan distribution for FY13 is \$21.2 million. From FY01 through the 2<sup>nd</sup> Quarter of FY13, more than \$246 million has been distributed to fund 286 local water system rehabilitation projects in 38 MWRA member water communities. Distribution of the remaining funds has been approved through FY20 and community loan repayments will be made through FY30. All scheduled community loan repayments have been made. FY13 is the last year of community loans under the Phase 1 Local Pipeline Assistance Program (Phase 2 Local Water System Assistance loans began in FY11 and will be distributed through FY20).

## Community Support Programs

2nd Quarter – FY13

### Community Water System Leak Detection

To ensure member water communities identify and repair leaks in locally-owned distribution systems, MWRA developed leak detection regulations that went into effect in July 1991. Communities purchasing 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 using their own contractors or municipal crews; or alternatively, using MWRA's task order leak detection contract. MWRA's task order contract provides leak detection services at a reasonable cost that has been competitively procured (3-year, low-bid contract) taking advantage of the large volume of work anticipated throughout the regional system. Leak detection services performed under the task order contract are paid for by MWRA and the costs are billed to the community the following year. During the 2nd Quarter of FY13, all member water communities were in compliance with MWRA's Leak Detection Regulation.



### Community Water Conservation Outreach

MWRA's Community Water Conservation Program helps to maintain average water demand below the regional water system's safe yield of 300 mgd. Current 5-year average water demand is less than 210 mgd. The local Water Conservation Program includes distribution of water conservation education brochures (indoor and outdoor bill-stuffers) and low-flow water fixtures and related materials (shower heads, faucet aerators, toilet leak detection dye tabs, and instructions), all at no cost to member communities or individual customers. The Program's annual budget is \$25,000 for printing and purchase of materials. Annual distribution targets and totals are provided in the table below. Distributions of water conservation materials are made based on requests from member communities and individual customers.

FY13 DISTRIBUTION	Annual Target	Q1	Q2	Q3	Q4	Annual Total
Educational Brochures	100,000	45,178	16,370			61,548
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	1,566	3,178			4,744
Toilet Leak Detection Dye Tablets	-----	1,196	3,477			4,673

During FY12, requests for educational brochures (indoor and outdoor bill stuffers) were lower than in prior years. For FY13, the target for educational brochure distribution has been lowered from 150,000 to 100,000.

## BUSINESS SERVICES

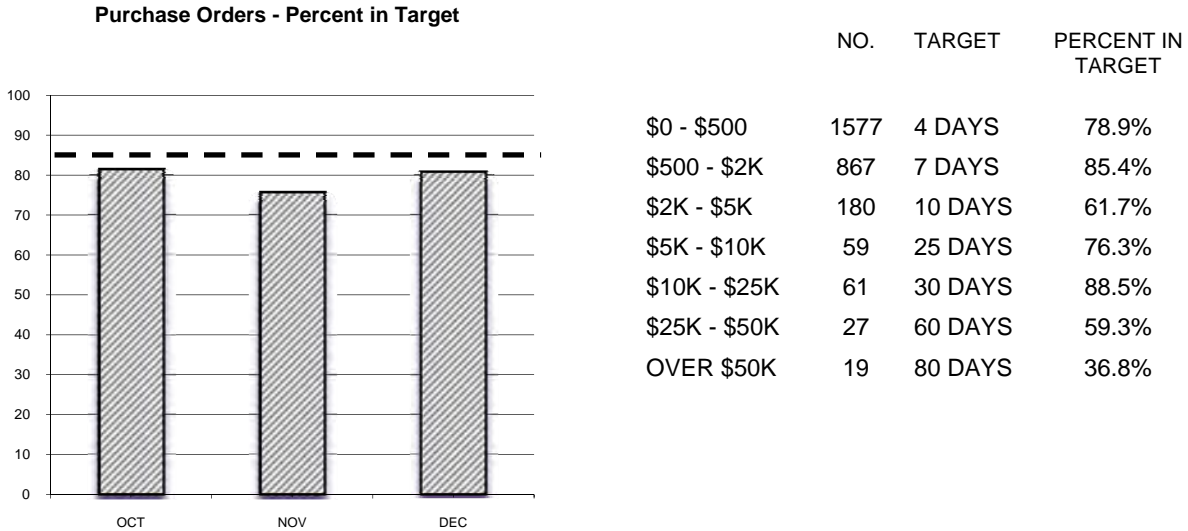


## Procurement: Purchasing and Contracts Second Quarter FY13

**Background:** Goal is to process 85% of Purchase Orders and 80% of Contracts within Target timeframes.

**Outcome:** Processed 80% of purchase orders within target; Avg. Processing Time was 6.38 days vs. 5.85 days in Qtr 2 of FY12. Processed 76% (19 of 25) contracts within target timeframes; Avg. Processing Time was 148 days vs. 174 days in Qtr 2 of FY12.

### Purchasing

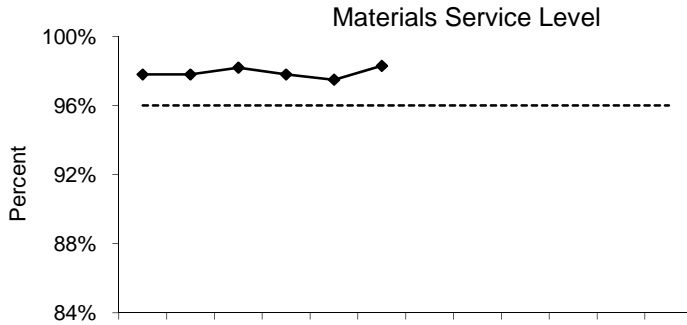


- Purchasing Unit processed 2790 purchase orders, 217 fewer than the 3007 processed in Qtr 2 of FY12, for a total value of \$20,250,332 vs. a dollar value of \$8,385,700 in Qtr 2 of FY12.
- The target was not achieved for the \$2k - \$5k category due to vendor sourcing and end user review and confirmation, the \$5k - \$10k category due to vendor sourcing, the \$25k - \$50k category because of extended specification development, end user review of bids and timing of the need for the service and the over \$50k category due to extended negotiations, extended review of bids and timing of the need for the service.

### Contracts, Change Orders and Amendments

- Six contracts were not processed within target timeframes for the following reasons: one due to timing of the need for the service; three were the result of extended specification development and generation of competition; one due to extended review of bidder qualifications; and one due to review of specifications and an extended review of bidder qualifications.
- Procurement processed fifteen contracts with a value of \$11,500,121 and nine amendments with a value of \$1,991,903.
- Twenty-nine change orders were executed during the period, but some were credit change orders and are recorded as negative numbers. The dollar value of all non-credit change orders during the 2nd quarter FY13 was \$1,618,198 and the value of credit change orders was (\$5,802,244).
- In addition, staff reviewed 65 proposed change orders and 29 draft change orders.

## Materials Management 2nd Quarter, FY13



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 8,423 (97.8%) of the 8,610 items requested in Q2 from the inventory locations for a total dollar value of \$1,169,987.

## Inventory Value - All Sites

Inventory goals focus on:

- Maintaining optimum levels of consumables and spare parts inventory
- Adding new items to inventory to meet changing business needs
- Reviewing consumables and spare parts for obsolescence
- Managing and controlling valuable equipment and tools via the Property Pass Program

The FY13 goal is to reduce consumable inventory from the July '12 base level (\$7.7 million) by 4.0% (approximately \$310,231), to \$7.4 million by June 30, 2013 (see chart below).

Items added to inventory this quarter include:

- Deer Island – penetrant, 115V condensate pump, impellar and mechanical seal for Residuals; hex head washers, penetrating oil, thermocouple and thermocouple wire and seal kit for Core; flanges, sleeves, screws and collar sets for Liquid Train.
- Chelsea –filters, shocks, clutch fans, alternators, receiver pin, gas cap, brake calipers, mirrors, heater block pulley belt and isolator fan for VMM; solenoid valve, roller, knife valve, check valve, sump pump, PVC conduit pipe and unions for Work Order Coordination Group.
- Southboro – CO2 sensor, chlorine sensor, O2 sensor, Sulphur Dioxide sensor, Ammonia sensor for Carroll Water Treatment Plant; Sign brackets, spray paint, demister filters, CPVC pipe, pruners and loppers for Maintenance.

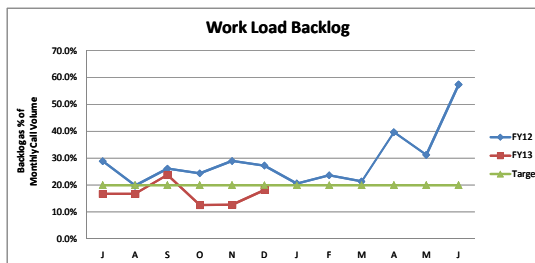
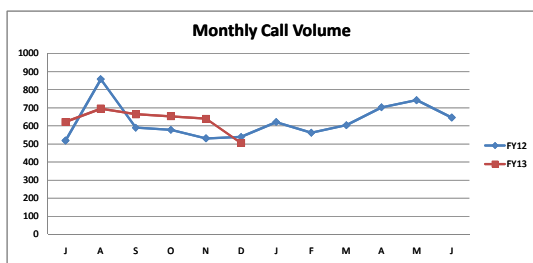
Property Pass Program:

- Audits were conducted at Sewer Metering, Clinton, Southboro VMM, Southboro Machine Shop, Chelsea Machine Shop, Chelsea HVAC and Chelsea Electric during Q2.
- Numerous obsolete computers, monitors, printers, keyboards, laptops, mice, television stands and cameras have been received into property pass as surplus. Disposition is being handled as part of our ongoing recycling efforts.
- Scrap revenue received to date for the quarter amounted to \$15,314.
- Revenue received from online vehicle auction held during Q2 amounted to \$115,338.25.

Items	Base Value July-12	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	7,755,777	6,516,557	-1,239,220
Spare Parts Inventory Value	7,368,162	7,308,859	-59,303
Total Inventory Value	15,123,939	13,825,416	-1,298,523

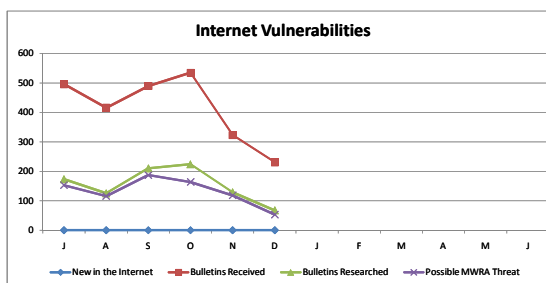
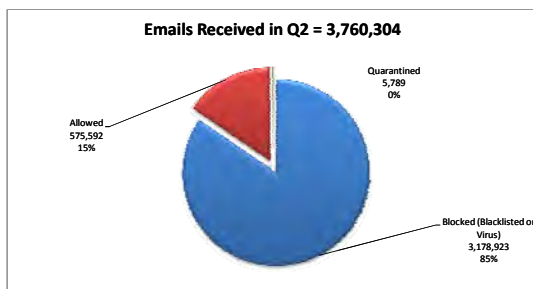
**Note:** New adds are items added at an inventory location for the first time for the purpose of servicing a group/department to meet their business needs/objectives.

## MIS Program 2nd Quarter FY13



**Performance:**

Call Volume: Peaked in October and increased by 9% from Q2 last year. Call Backlog: Peaked in December and is below the targeted benchmark of 20%.



**Information Security:**

During Q2, staff pushed security fixes and updates to desktops and servers throughout the quarter in order to protect against 49 vulnerabilities. LANDesk Antivirus quarantined 28 distinct viruses from 29 MWRA computers. MWRA's systems are current with anti-virus providers' signatures for all known malware.

**Infrastructure:**

Firmware Upgrades: Completed the VPN firmware upgrades at remote sites Chelsea Headworks, Columbus Park, Ward Street, Ware Disinfectant, Barre1, Barre2, and Norumbega. This a low cost network solution to provide MWRA staff access to MIS data networks services, and applications.

Bandwidth Capacity: The Chelsea building and campus backbone fiber upgrade completed in the month of December. This infrastructure upgrade increases the bandwidth capacity of the site from 1GB to 10GB and provides the best industry design and solution for increasing bandwidth demand.

Flat Screen Monitor Rollout: Completed the rollout of 113 19" flat screen monitors, keeping 13 as spares for requests and replacements. These replaced 5 year and older models of 17" monitors.

Oracle Server Consolidation: Installation of the new Oracle Database Appliance (ODA) was completed in Q2 FY13. The ODA will be used to consolidate twelve database servers into the one ODA.

**Applications/Training/Records Center:**

Strategic Sourcing and Contract Management: Development activities were the focus of the quarter for Lawson Strategic Sourcing and Contract Management applications implementations. Activities included collecting Terms of Use (TOU) samples and peer web site addresses and provided them to Procurement, Accounts Payable, Affirmative Action, and Law for review. Production hardware and software were configured and installed and a week-long System Administration class was held. The Lawson core team continued to meet and focused on supplier/vendor creation and the contracts and purchasing types that the MWRA uses. User scripts and test plans were developed and extensive user testing was conducted. Over 90 percent of Strategic Sourcing test cases were completed and used.

Rain Gauge Portal: The MWRA is continuing to develop and refine an application for displaying current and historical rain data via a web page. Staff added WeatherBug's Fenway Park rain gauge data to the web portal on the development server for a proof of concept test. During December, MIS staff met with users resulting in (1) a decision to procure the WeatherBug Application Programming Interface (API) service for downloading real-time weather data, (2) the addition of specific WeatherBug rain stations data on the static map, and (3) some minor changes to the web application such as a request to use newer pictures for the MWRA collection sites.

Asset Management Systems Consolidation: In December, MIS kicked off a new project to analyze current in-house databases and enterprise applications that track MWRA assets in an effort to consolidate the systems where appropriate. Staff collected the data elements and reviewed application functionality for a number of departmental applications; user meetings were set up with all the departmental application users to understand how they use the systems. Additional applications including applications used to track records and maintenance agreements were added to the scope of the review. In the short term, this project will result in the retirement of some departmental applications by incorporating the data and functionality in into enterprise applications; in the long term, dependent on enterprise system upgrades or additional modules, further consolidation can be realized.

Construction Photo Project: Efforts to collect and create digital assets for historical MWRA/MDC construction projects has continued. The formal letter of acceptance of the MWRA application for DigiCom services for scanning was received. Initial scans from the pilot project were received from the Boston Public Library on 10/26. Digital Commonwealth (DigiCom) returned the pilot glass negatives to the State Archives and picked up additional scanning work (10 boxes) from the State Archives. Pilot images were delivered to Public Affairs for digital asset management catalog development. Library staff sent metadata to Public Affairs staff to add to the Cumulus digital asset management database and is working on the generating the metadata for the next batch. Library and Public Affairs staff toured Digital Commonwealth (DigiCom) facilities.

TRAC/LIMS: Implemented TRAC Receiving functionality for laboratory samples in LIMS production. Previously, the receiving function was performed by the central laboratory. This process change improves the flow of data for sampling activity being done by TRAC.

PI: Updated and configured the PI interface that collects data from the SCADA Carroll Water Treatment system. Some of the notable features are better security, faster startup times, and better monitoring. This is the last of the three PI-EDA interface nodes to be updated.

Library & Records Center: The Library completed 45 research requests (98 YTD), added 13 books (64 YTD), distributed 123 periodicals (216 YTD) and 1740 electronically (3,790 YTD) linked articles to staff. The Records Center added 58 boxes (139 YTD) and attended 3 Record Conservation Board Meetings.

IT Training: For the quarter, 41 staff attended 10 classes and 2 workshops. 6% of the workforce have attended at least one class year-to-date. Introduction to Outlook Calendar 2007 course development completed. Blackberry job aid completed and posted on the intranet.

# Legal Matters

## 2nd Quarter FY 2013

### PROJECT ASSISTANCE

#### COURT AND ADMINISTRATIVE ORDER

- **Boston Harbor Litigation and CSO:** Reviewed Amendment No. 13 to memorandum of understanding and financial assistance agreement between MWRA and BWSC for implementation of CSO projects. Submitted annual report to EPA and DEP providing updated information on the landfill sites that NEFCO identified as acceptable landfill sites for use as part its emergency residuals disposal back up plan in accordance with the September 28, 2005 Order. Reviewed and filed Compliance and Progress Report with Federal District Court. Submitted annual summary regarding the sewage pumpout boat supplemental environmental project to the United States DOJ and EPA in accordance with the September 8, 2008 Stipulation and Order in the Boston Harbor case.
- **Administrative Consent Order (DITP power outages):** Reviewed and submitted updated semi-annual *Consultant's Deer Island Energy Recommendations Tracking Sheet* to DEP and EPA.
- **NPDES:** Reviewed draft Carroll Water Treatment Plant NPDES permit for fall/winter maintenance activities and MWRA's comments on draft permit. Drafted letter to EPA and DEP for advance notice of activities at Clinton Wastewater Treatment Plant.

#### REAL ESTATE, CONTRACT AND OTHER SUPPORT

- **Ware Disinfection Facility:** Drafted a license agreement with DCR for the continued use of the Ware Disinfection Facility, development of a UV disinfection facility and the installation of hydro turbine.
- **Wireless Carrier Permits:** Reviewed and commented on permits for T-Mobile Northeast, LLC for space at Walnut Hill in Lexington and Bell Atlantic Mobile for space at Turkey Hill in Arlington.
- **Public Access 8(m) Permits/Sudbury Aqueduct:** Drafted permit for the portion of Sudbury Aqueduct in Wellesley to be opened to the public for passive recreation.
- **City of Chelsea - 285 Central Avenue:** Drafted 8(m) permit for the City of Chelsea to allow it to perform environmental testing at 285 Central Avenue. Reviewed and revised the purchase agreement prepared by Chelsea's City Solicitor for the City to purchase MWRA's property located at 285 Central Avenue.
- **Sudbury Aqueduct:** Reviewed various sections of the aqueduct's original takings depicted on recorded plans as easements to check consistency with the language in the taking documents.
- **Wireless Carrier Permits:** Reviewed revocable permit agreement for entry onto MWRA land for sprint mobile communications at Turkey Hill in Arlington.
- **System Expansion:** Researched and provided written response re: whether the MWRA could pay a community to wheel MWRA water through its system to another community and then pass those costs onto the recipient community.
- **Wetlands Protection Land Acquisition:** Reviewed documents related watershed land acquisition for a two (2) parcels of property owned by Ralph Lindquist and Michael and Mary Lindquist located in Petersham.
- **Miscellaneous:** Reviewed and approved thirty-seven (37) Section 8(m) Permits and three (3) Direct Connect Permits.

#### ENVIRONMENTAL

- **Regulatory:** Researched and drafted memo concluding that septage could be added directly to anaerobic digesters under current statutory and regulatory scheme.

## LABOR, EMPLOYMENT AND ADMINISTRATIVE

<b>New Matters</b>	Eleven demands for arbitration were filed.  One charge was filed at the Massachusetts Commission Against Discrimination.
<b>Matters Concluded</b>	Received an arbitrator's decision in favor of MWRA finding that the MWRA did not violate Article 13 of the collective bargaining agreement when it did not select the grievant for promotion.

## LITIGATION/TRAC

<b>New Matters</b>	During the Second Quarter of FY 2013 one new lawsuit was received.  <u>The Dow Company v. MWRA</u> : This is an action by a general contractor for alleged breach of contract and quantum meruit damages against MWRA under MWRA Contract No. 6394, which provided for cleaning, lining and repairs to water lines in Somerville and Medford. Plaintiff alleges that it furnished additional work ordered by MWRA totaling \$488,723.49 which to date MWRA has failed to pay.
<b>Significant Developments</b>	<u>MWRA v. J.F. Shea Co., Inc., et al.</u> : On December 3, 2012 a Status Conference was held whereby the Court allowed MWRA's Motion to Serve in Excess of Thirty (30) Interrogatories.

### SUMMARY OF PENDING LITIGATION MATTERS

TYPE OF CASE/MATTER	As of Dec 2012	As of Sept 2012	As of June 2012
Construction/Contract/Bid Protest (other than BHP)	3	2	3
Tort/Labor/Employment	6	7	6
Environmental/Regulatory/Other	1	1	1
Eminent Domain/Real Estate	0	1	1
<b>total – all defensive cases</b>	<b>10</b>	<b>11</b>	<b>11</b>
Affirmative Cases: <u>MWRA v. J. F. Shea Co., Inc., et al.</u>	1	1	2
Other Litigation matters (restraining orders, etc.)	0	0	0
<b>total – all pending lawsuits</b>	<b>11</b>	<b>12</b>	<b>13</b>
Significant claims not in suit: <u>Giaquinto/Geico Automobile Accident Claims</u> <u>Oscar Malera personal injury claim</u> <u>Trooper Walker Injury Claim</u>	3	3	3
Bankruptcy	2	1	1
Wage Garnishment	14	14	15
TRAC/Adjudicatory Appeals	0	2	1
Subpoenas	6	3	6
<b>TOTAL – ALL LITIGATION MATTERS</b>	<b>36</b>	<b>35</b>	<b>39</b>

<b>Matters Concluded</b>	<u>Nikeala Porter v. MWRA</u> : Has been resolved and dismissed, with prejudice. Ms. Porter filed suit against MWRA, claiming property damage to her vehicle as a result of road re-surfacing on River Street in Boston in May 2012. MWRA's contractor on the Southern Spine Distribution Mains Project (Contract #7099) had responsibility for road re-surfacing at that time and location. RJV Construction Corporation agreed to pay Ms. Porter's damages totaling \$292 on behalf of MWRA. Ms. Porter signed a Release, and the Stipulation of Dismissal with prejudice was filed with the Court on November 7, 2012. The matter is now closed.
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William A. Davison, et al. MWRA: On October 17, 2012 the Board of Directors authorized the Executive Director to issue payment of the net judgment arising from the jury verdict rendered on March 23, 2012 in this eminent domain proceeding. The total judgment amounted to \$313,386.43, consisting of the net jury verdict of \$269,700 plus pre-judgment interest in the sum of \$43,686.43 as of October 19, 2012. Plaintiffs had alleged damages in the amount of \$1.73 million, exclusive of interest. On September 24, 2012, the Superior Court denied Plaintiffs' motion for "additur" which asked the Court to increase the amount of damages awarded by the jury. At the same time, the Court denied Plaintiffs' alternative request for a new trial. On October 19, 2012 MWRA delivered a check in the sum of \$313,386.43 to Plaintiffs' counsel, who reserved Plaintiffs' rights to appeal the judgment. As of December 31, 2012, no appeal was filed by plaintiffs, and this case appears to be concluded.

**Subpoenas** During the Second Quarter of FY 2013, four new subpoenas were received, and six subpoenas were pending at the end of the Second Quarter FY 2013.

**Public Records** During the Second Quarter of FY 2013 four new public records requests were received and two remained pending at the end of the Second Quarter FY 2013.

## **TRAC/MISC.**

**New Appeals** No new appeals were received in the 2<sup>nd</sup> Quarter FY 2013.

**Settlement by Agreement of Parties** No cases were settled by Agreement of Parties in the 2<sup>nd</sup> Quarter FY 2013.

**Stipulation of Dismissal** No cases were dismissed by Stipulation of Dismissal.

**Notice of Dismissal Fine paid in full** Two cases were dismissed by Joint Stipulation of Dismissal with Prejudice, fine paid in full.

Advanced Imaging; MWRA Docket No. 12-02

Kirkwood Printing; MWRA Docket No. 12-03

**Tentative Decisions** No Tentative Decisions were issued in the 2<sup>nd</sup> Quarter FY 2013.

**Final Decisions** No Final Decision were issued during the 2<sup>nd</sup> Quarter FY 2013.

**INTERNAL & CONTRACT AUDIT PROGRAM**  
2<sup>nd</sup> Quarter FY13

**Highlights**

Chelsea Physical Security

A final report addressing physical security at the Chelsea facility was issued December 31st. A total of 31 recommendations were made to strengthen controls. Management addressed issues as they were identified.

As a result, 19 of the recommendations were implemented prior to the issuance of the report. The recommendations included an upgrade to the Guard 1 software to enable the tracking and reporting on security rounds, clarifying the written protocol for responding to alarms, maintaining a current restricted employee/former employee list, updating the access lists to restricted areas, instituting the use of logbooks in two storage rooms, enhancing the security over stored MIS equipment, and replacing locks and physically hardening doors and windows in certain parts of the facility.

**Status of Open Audit Recommendations** (26 recommendations closed in the 2nd quarter)

The Internal Audit Department follows up on open recommendations on a continuous basis. All pending recommendations have target implementation dates. When a recommendation has not been acted on in 48 months the appropriateness of the recommendation is re-evaluated during a subsequent audit. On closed assignments 98% of recommendations have been implemented.

Report Title (date)	Recommendations Pending Implementation	Closed Recommendations
Boston Water & Sewer Commission CSO Financial Assistance Agreement (9/18/09)	1	2
Construction Change Order Pricing (12/31/09)*	3	2
Warehouse Practices (9/30/10)	2	8
Facility Card Access Controls (2/22/11)	3	17
DITP Data Center Access Controls (10/14/11)	5	17
Review of Fleet Services Activities (1/9/12)	2	3
Chelsea Facility Physical Security (12/31/12)	<u>12</u>	<u>19</u>
<b>Total Recommendations</b>	<b>28</b>	<b>68</b>

\*Recommendations involve an updated construction manual with a target completion of 3/29/13.

**Audit Savings**

The Internal Audit Department's target is to achieve at least \$1 million in cost savings each year. Cost savings vary each year based upon many factors. In some cases, cost savings for one year may be the result of work in prior years.

Savings	FY09	FY10	FY11	FY12	FY13 (2Q)	TOTAL
Consultants	\$316,633	\$194,238	\$520,176	\$259,245	\$230,964	\$1,521,256
Contractors & Vendors	\$1,262,088	\$599,835	\$3,129,538	\$435,760	\$160,313	\$5,587,534
Internal Audits	\$438,027	\$206,282	\$152,478	\$407,350	\$141,827	\$1,345,964
<b>Total</b>	<b>\$2,016,748</b>	<b>\$1,000,355</b>	<b>\$3,802,192</b>	<b>\$1,102,355</b>	<b>\$533,104</b>	<b>\$8,454,754</b>

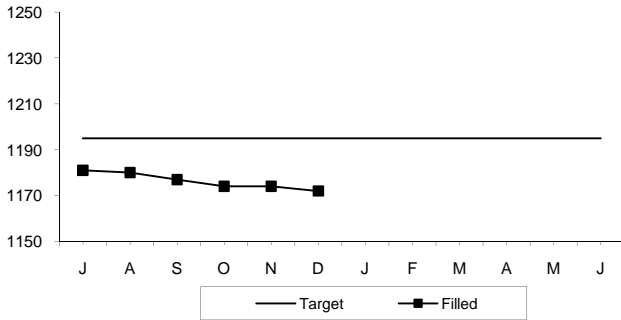
## OTHER MANAGEMENT



# Workforce Management

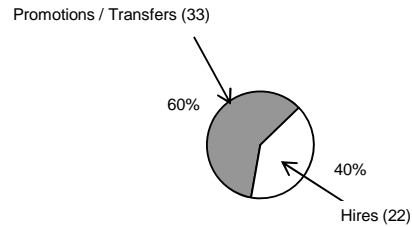
## 2nd Quarter FY13

**Filled Position Tracking**



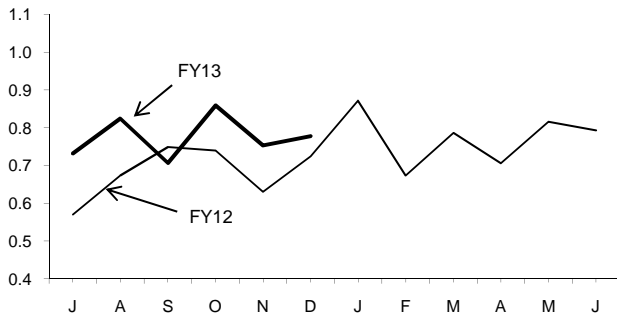
FY13 Target for Filled Positions = 1195  
 Filled Positions as of December 2013 = 1172

**Positions Filled by Hires/Promotions  
 FY13-YTD**



	Pr/Trns	Hires	Total
FY10	66 (76%)	21 (24%)	87
FY11	48 (62%)	30 (38%)	78
FY12	42 (61%)	27 (39%)	69

**Average Monthly Sick Leave Usage  
 Per Employee**



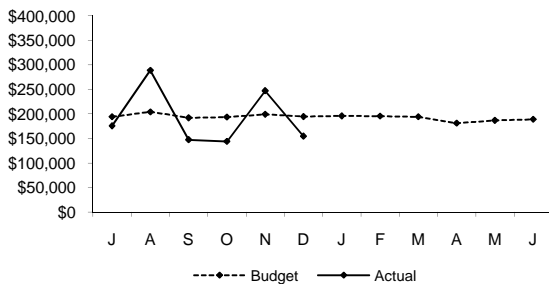
In FY13, the average quarterly sick leave usage has increased 1.14% from the same time last year.

	Number of Employees	YTD	Annualized Total	Annual FMLA %	FY12
A&F	189	7.05	14.10	23.6%	8.18
Aff. Action	6	9.74	19.48	61.2%	13.14
Executive	5	2.16	4.32	0.0%	6.53
Int. Audit	8	5.19	10.37	24.8%	5.94
Law	16	6.04	12.07	41.9%	11.25
OEP	3	4.88	9.77	0.0%	5.21
Operations	920	4.78	9.57	25.6%	8.81
Planning	21	3.15	6.30	26.0%	6.58
Pub. Affs.	13	4.35	8.70	0.0%	7.81
<b>MWRA Avg</b>	<b>1181</b>	<b>4.65</b>	<b>9.31</b>	<b>25.6%</b>	<b>8.69</b>

Percent of sick leave usage attributable to Family and Medical Leave Act (FMLA) leave is 25.3% ending December 31, 2012.

**Field Operations**

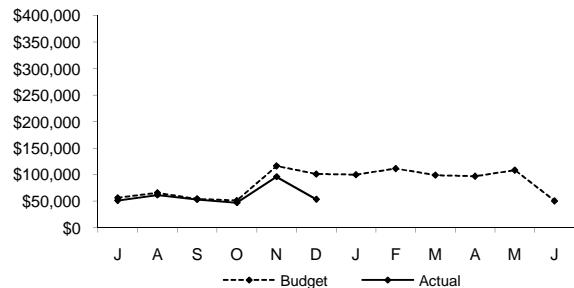
Overtime Expenditure Variance



Total Overtime for Field Operations in December was \$154,450 which is (\$40k) under budget. Emergency overtime was \$86k, which was (\$12k) under budget. The lion's share of overtime for the month, \$81k, was for Hurricane Sandy, emergency operations and emergency maintenance totalled \$48k for non-sandy related overtime. Coverage overtime was \$35k, which was (\$10k) under budget. Vacation coverage was \$17k; sick coverage was \$7k; vacancy coverage was \$3k. Planned overtime was \$33k or (\$18k) under budget. Of that amount, half-plant operations at JCWTP was \$32k, planned operations was \$18k, maintenance off hours work was \$14k.

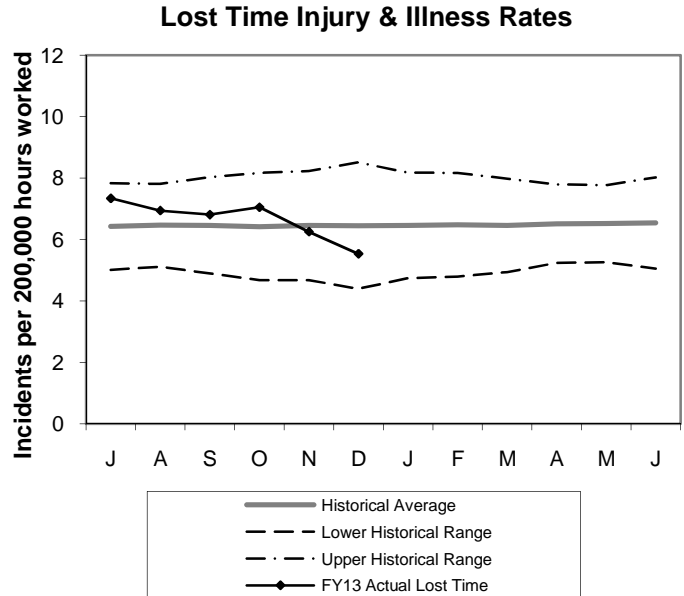
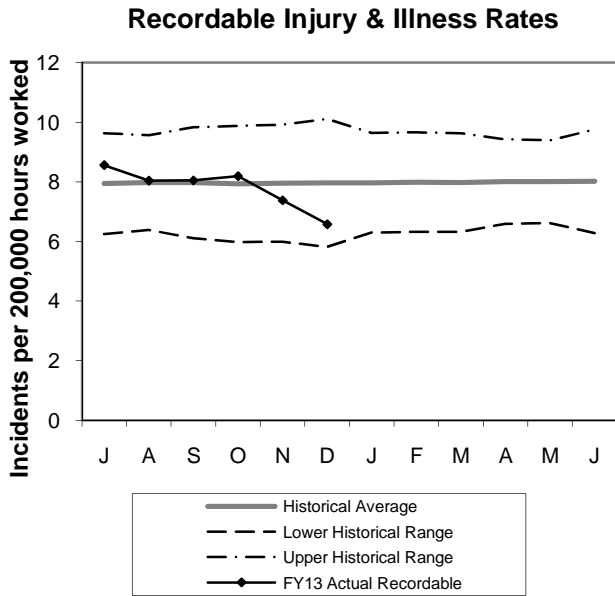
**Deer Island Treatment Plant**

Overtime Expenditure Variance



Deer Island's total overtime expenditure in December 2012 was \$53K, which was (\$48K) or (47.1%) under budget. The variance is mainly attributable to less than anticipated storm coverage requirement, (\$40K). The budget projected 1,091 hours of storm coverage when only 203 actual hours were required. In addition, planned/unplanned overtime is under budget (\$21K) due to Management continued efforts to control overtime spending by allowing overtime to for maintenance or repair of critical equipment only. This is partially offset by higher than anticipated shift coverage overtime, \$14K. All other overtime was (\$1K) under budget

## Workplace Safety Second Quarter FY 13



- 1- **"Recordable"** incidents are all work-related injuries and illnesses which result in death, loss of consciousness, restriction of work or motion, transfer to another job, or require medical treatment beyond first aid.
- 2- **"Lost-time"** incidents, a subset of the recordable incidents, are only those incidents resulting in any days away from work, days of restricted work activity or both - beyond the first day of injury or onset of illness.
- 3- The **"Historical Average"** is computed using the actual MWRA monthly incident rates for FY99 through FY12. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively. FY13 actual incident rates can be expected to fall within this historical range.

### Workers Compensation Claims Highlights - Second Quarter FY13

	New	Closed	Open Claims
Lost Time	2	11	49
Medical Only	42	74	18
	<b>New</b>	<b>YTD Light Duty Returns</b>	
Light Duty Returns	3		8

#### Highlights/Comments:

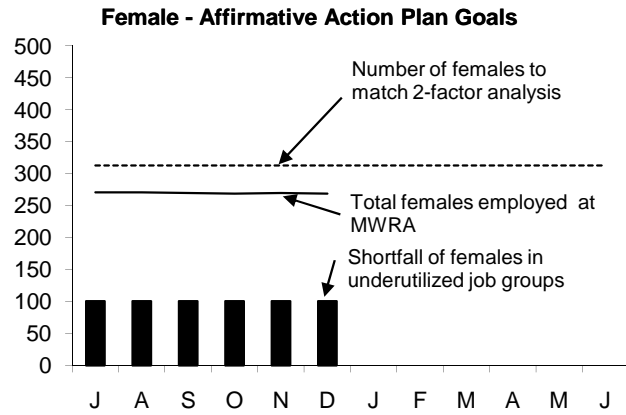
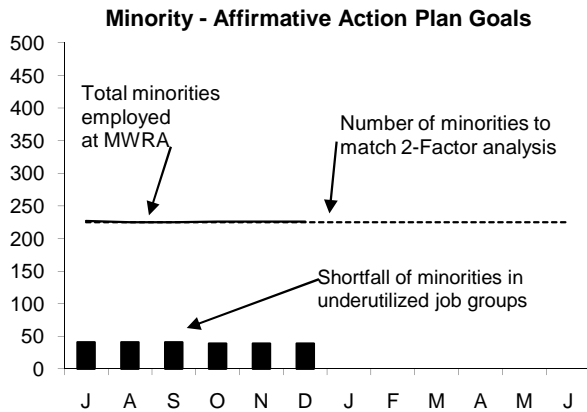
##### Light Duty Returns

- Oct**            1 employee returned to work light duty from IA
- Nov**            1 employee returned to work light duty IA
- Dec**            1 employee returned to light duty from full duty work  
1 employee, while on light duty, had several days during the month of IA

##### Regular Duty Returns

- Oct**            1 employee returned to work full duty from IA  
1 employee returned to work full duty for on week and then returned to IA  
2 employees returned to work full duty from light duty assignments  
1 employee returned to work full duty for 10 days, was on IA for 10 days, and returned to LD
- Nov**            2 employees returned to work full duty from IA
- Dec**            2 employees returned to work full duty from IA

## MWRA Job Group Representation 2nd Quarter, FY13



### Highlights:

At the end of Q2 FY13, 10 job groups or a total of 39 positions are underutilized by minorities as compared to 7 job groups or a total of 55 positions at the end of Q2 FY12; for females 14 job groups or a total of 101 positions are underutilized by females as compared to 11 job groups or a total of 129 positions at the end of Q2 FY12. During Q2, 4 minorities and 2 females were hired. During this same period, 3 minorities and 3 females terminated.

### Underutilized Job Groups - Workforce Representation

Job Group	Employees	Minorities	Achievement Level	Minority	Females	Achievement Level	Female
	as of 12/31/2012	as of 12/31/2012		Over or Under	As of 12/31/2012		Over or Under
Administrator A	19	3	2	1	3	6	-3
Administrator B	19	0	3	-3	4	5	-1
Clerical A	47	21	12	9	41	4	37
Clerical B	36	10	9	1	17	3	14
Engineer A	83	15	17	-2	12	17	-5
Engineer B	51	13	5	8	6	18	-12
Craft A	114	13	21	-8	0	4	-4
Craft B	152	27	22	5	3	9	-6
Laborer	63	18	12	6	2	16	-14
Management A	105	17	22	-5	32	46	-14
Management B	49	8	10	-2	14	24	-10
Operator A	66	4	6	-2	2	3	-1
Operator B	66	7	13	-6	4	5	-1
Para Professional	55	12	24	-12	25	48	-23
Professional A	36	3	7	-4	22	16	6
Professional B	162	38	30	8	76	75	1
Technical A	50	16	10	6	5	10	-5
Technical B	8	1	2	-1	1	3	-2
<b>Total</b>	<b>1181</b>	<b>226</b>	<b>227</b>	<b>44/-39</b>	<b>269</b>	<b>312</b>	<b>58/-101</b>

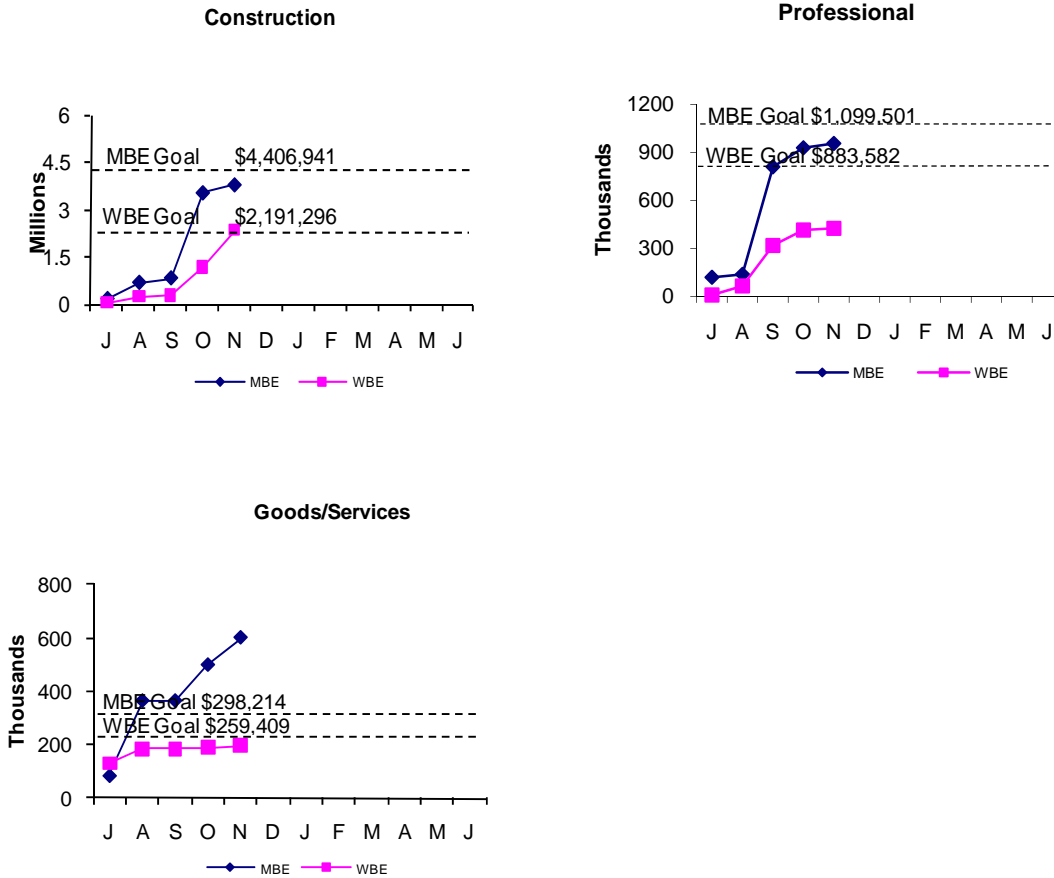
### AACU Candidate Referrals for Underutilized Positions

Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions/ Transfers	AACU Ref. External	Position Status
Craft A	Plumber Pipefitter	1	Ext	0	0	New Hire - WM
Craft A	Heavy Equip. Oper. Spvr.	1	Int			Pending
Para Professional	MIS Coordinator	1	Ext	0	0	Pending
Craft B	Electrician	2	Int/Ext	0	0	Pending
Craft B	Construction Pipelayer	1	Ext	0	0	New Hire - WM
Craft B	Med. Voltage Elec. Specialist	1	Ext	0	0	Pending
Craft B	Sr Medium Voltage Specialist	1	Ext	0	0	Pending
Laborer	OMC Laborer	7	Int/Ext	0	1	Pending
Operator B	Operator	3	Int/Ext	0	0	Pending

# MBE/WBE Expenditures

## 2<sup>nd</sup> Quarter-FY13

**Background:** MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. MBE/WBE percentage goals, resulting from a 2002 Availability Analysis, are applied to the MWRA CIP and CEB expenditure forecasts. As a result of the Availability Analysis, the category of Non-Professional Services is included in Goods/Services. Consistent with contractor reporting requirements, MBE/WBE expenditure data is available through November.



FY13 spending and percentage of goals achieved, as well as FY12 performance are as follows:

	MBE				WBE			
	FY13 Year-to-Date		FY12		FY13 Year-to-Date		FY12	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Construction	3,780,399	85.8%	3,771,155	112.8%	2,357,822	107.6%	6,992,984	305.0%
Professional Svc.	955,801	86.9%	1,216,840	97.2%	425,280	48.1%	524,130	52.1%
<u>Goods &amp; Svcs.</u>	<u>601,289</u>	<u>201.6%</u>	<u>879,467</u>	<u>303.3%</u>	<u>196,400</u>	<u>75.7%</u>	<u>737,776</u>	<u>292.5%</u>
Total	\$5,337,489	92%	\$5,867,462	120.1%	\$2,979,502	89.4%	\$8,184,890	232.0%

## MWRA FY13 CEB Expenses through 2<sup>nd</sup> Quarter FY13

	December 2012 Year-to-Date					
	Period 6 YTD Budget	Period 6 YTD Actual	Period 6 YTD Variance	%	FY13 Approved	% Expended
<b>EXPENSES</b>						
WAGES AND SALARIES	\$ 45,167,317	\$ 43,640,765	\$ (1,526,552)	-3.4%	\$ 94,059,400	46.4%
OVERTIME	1,743,861	1,656,938	(86,923)	-5.0%	3,573,495	46.4%
FRINGE BENEFITS	9,050,455	8,730,070	(320,385)	-3.5%	18,241,926	47.9%
WORKERS' COMPENSATION	1,050,000	809,061	(240,939)	-22.9%	2,100,000	38.5%
CHEMICALS	5,178,610	5,323,699	145,089	2.8%	9,963,496	53.4%
ENERGY AND UTILITIES	10,124,284	9,847,656	(276,628)	-2.7%	23,127,198	42.6%
MAINTENANCE	12,626,139	13,016,679	390,540	3.1%	28,229,070	46.1%
TRAINING AND MEETINGS	204,809	143,711	(61,098)	-29.8%	385,617	37.3%
PROFESSIONAL SERVICES	2,851,945	2,627,872	(224,073)	-7.9%	5,900,785	44.5%
OTHER MATERIALS	1,675,410	1,728,395	52,985	3.2%	5,591,291	30.9%
OTHER SERVICES	11,927,461	11,168,897	(758,564)	-6.4%	23,743,608	47.0%
<b>TOTAL DIRECT EXPENSES</b>	<b>\$ 101,600,291</b>	<b>\$ 98,693,743</b>	<b>\$ (2,906,548)</b>	<b>-2.9%</b>	<b>\$ 214,915,886</b>	<b>45.9%</b>
INSURANCE	\$ 1,048,937	\$ 954,394	\$ (94,543)	-9.0%	\$ 2,097,875	45.5%
WATERSHED/PILOT	13,206,588	12,973,095	(233,493)	-1.8%	26,413,175	49.1%
BEC <sub>o</sub> PAYMENT	1,783,649	1,739,090	(44,559)	-2.5%	3,741,915	46.5%
MITIGATION	783,462	750,275	(33,187)	-4.2%	1,566,923	47.9%
ADDITIONS TO RESERVES	699,165	699,165	-	0.0%	1,398,329	50.0%
RETIREMENT FUND	10,474,376	10,490,247	15,871	0.2%	10,474,376	100.2%
POST EMPLOYEE BENEFITS	-	-	-	---	-	---
<b>TOTAL INDIRECT EXPENSES</b>	<b>\$ 27,996,177</b>	<b>\$ 27,606,266</b>	<b>\$ (389,911)</b>	<b>-1.4%</b>	<b>\$ 45,692,593</b>	<b>60.4%</b>
DEBT SERVICE	\$ 184,995,334	\$ 184,995,334	\$ -	0.0%	\$ 375,248,070	49.3%
DEBT SERVICE ASSISTANCE	(175,000)	-	175,000	-100.0%	-	0.0%
<b>TOTAL DEBT SERVICE</b>	<b>\$ 184,820,334</b>	<b>\$ 184,995,334</b>	<b>\$ 175,000</b>	<b>0.1%</b>	<b>\$ 375,248,070</b>	<b>49.4%</b>
<b>TOTAL EXPENSES</b>	<b>\$ 314,416,802</b>	<b>\$ 311,295,343</b>	<b>\$ (3,121,457)</b>	<b>-1.0%</b>	<b>\$ 635,856,549</b>	<b>49.0%</b>
<b>REVENUE &amp; INCOME</b>						
RATE REVENUE	\$ 303,756,000	\$ 303,756,000	\$ -	0.0%	\$ 607,512,000	50.0%
OTHER USER CHARGES	3,612,945	3,598,211	(14,734)	-0.4%	7,766,692	46.3%
OTHER REVENUE	3,836,614	4,625,236	788,622	20.6%	6,116,845	75.6%
RATE STABILIZATION	-	-	-	---	-	---
INVESTMENT INCOME	7,493,221	7,044,298	(448,923)	-6.0%	14,461,012	48.7%
<b>TOTAL REVENUE &amp; INCOME</b>	<b>\$ 318,698,780</b>	<b>\$ 319,023,745</b>	<b>\$ 324,965</b>	<b>0.1%</b>	<b>\$ 635,856,549</b>	<b>50.2%</b>

As of December 2012, total revenue was \$319.0 million, \$325,000 or 0.1% higher than budget. Total expenses were \$311.3 million, \$3.1 million or 1.0% less than budget after the transfer of \$837,000 to the defeasance account which brought the year-to-date balance to \$6.2 million.

### Expenses –

- **Direct Expenses** are \$98.7 million, \$2.9 million or 2.9% less than budget.
- **Wages and Salaries** are underspent by \$1.5 million or 3.4% due to lower headcount and employees on unpaid time off.
- **Other Services** are \$759,000 or 6.4% under budget mainly for lower Sludge Pelletization of \$382,000 and Other Services of \$305,000 mainly for timing of water quality projects, contaminant monitoring, and remediation activities.
- **Maintenance** is \$391,000 or 3.1% more than budget. Material purchases are greater than budget by \$577,000 due to timing of purchases scheduled for FY12, received this year, offset by \$186,000 underspending in services.
- **Fringe Benefits** are under budget by \$320,000 or 3.5% due to lower than budgeted Health Insurance costs of \$248,000 resulting from lower headcount and because new employees contribute at a higher percentage (25% versus 20%) than employees hired before July 2003.
- **Utilities** are underspent by \$277,000 or 2.7% due to lower electricity of \$163,000, diesel fuel of \$118,000, and natural gas of \$42,000. The underspending is mainly in Field Operations.
- **Workers' Compensation** expenses are lower than budget by \$241,000 or 22.9%. Actual reserves are below budget by \$510,000 while actual payments are higher than budget by \$270,000.
- **Professional Services** are \$224,000 or 7.9% under budget mainly due to timing of IT Strategic Plan and Lawson Module implementation of \$215,000, lower report preparation and as-needed services for the Harbor Monitoring program of \$44,000, and lower need for outside legal services of \$36,000 offset by higher engineering services of \$41,000.
- **Chemicals** are overspent by \$145,000 or 2.8% due to higher spending for Soda Ash of \$176,000 for price increases and Sodium Hypochlorite of \$79,000 offset by lower spending for Nitrazyme of \$103,000 for corrosion control.
- **Overtime** is underspent by \$87,000 or 5.0% mostly at Deer Island.
- **Indirect Expenses** are \$27.6 million, \$390,000 or 1.4% under budget mainly due to an FY12 overaccrual for Watershed Reimbursement of \$233,000 and lower Insurance expense of \$95,000 mainly for lower claims.
- **Debt Service Expenses** total \$185.0 million which is higher than budget by \$175,000 after the transfer of \$6.2 million of favorable year-to-date variance to the Defeasance Account and recognition of loss of Debt Service Assistance (DSA) per the Governor's recent 9C budget cuts.

### Revenue and Income –

- **Total Revenue / Income** for December is \$319.0 million, \$325,000 or 0.1% higher than budget due to higher Non-Rate Revenue of \$774,000 mainly for the Federal Emergency Management Agency (FEMA) reimbursement for last year's storm costs of \$433,000 and higher Miscellaneous Revenue of \$373,000, offset by lower investment income of \$449,000 due to lower than budgeted short-term rates.

# Cost of Debt

## 2<sup>nd</sup> Quarter-FY13

MWRA borrowing costs are a function of the fixed and variable tax exempt interest rate environment, the level of MWRA's variable interest rate exposure and the perceived creditworthiness of MWRA. Each of these factors has contributed to decreased MWRA borrowing costs since 1990.

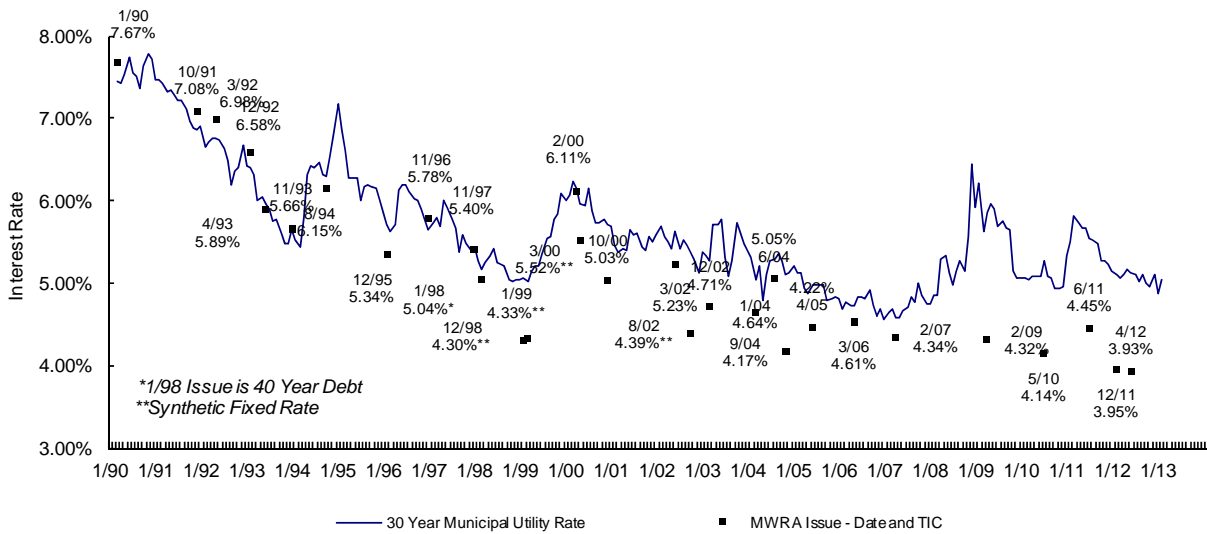
### Average Cost of MWRA Debt

Fixed Debt (\$4,007)	4.42%
Variable Debt (\$551)	0.85%
SRF Debt (\$1,037)	1.17%
<b>Weighted Average Debt Cost (\$5,669)</b>	<b>3.47%</b>

### Most Recent Senior Fixed Debt Issue April 2012

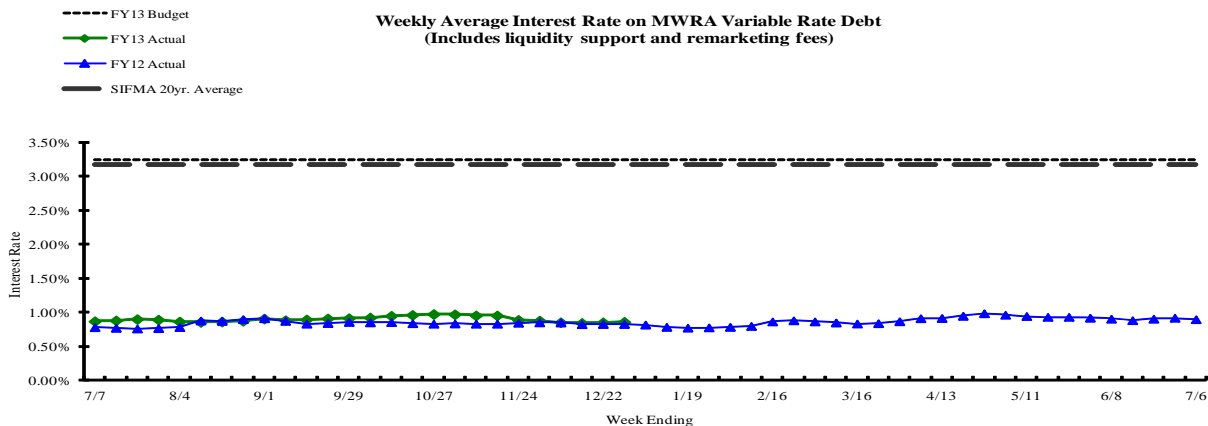
2012 Series A & B (\$236.8)	3.93%
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### MWRA Fixed Rate Debt vs. 30 Year Municipal Utility Interest Rate



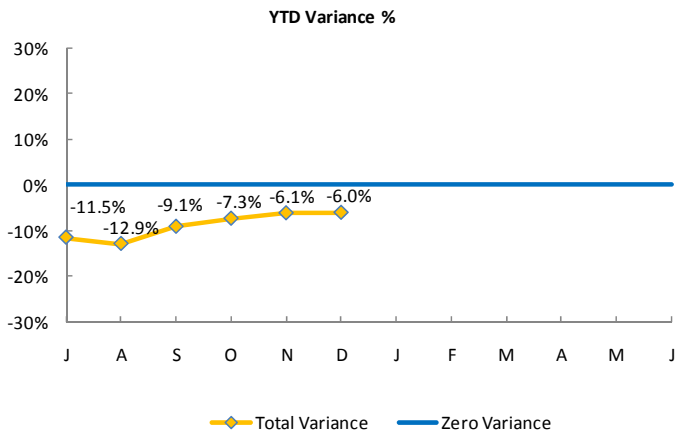
### Weekly Average variable Interest Rates vs. Budget

MWRA currently has nine variable rate debt issues with \$1.2 billion outstanding, excluding commercial paper. Of the nine outstanding series, five have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In December, SIFMA rates fluctuated with a high of 0.16% and a low of 0.13%. MWRA's issuance of variable rate debt, although consistently less expensive in recent years, results in exposure to additional interest rate risk as compared to fixed rate debt.



# Investment Income 2<sup>nd</sup> Quarter FY13

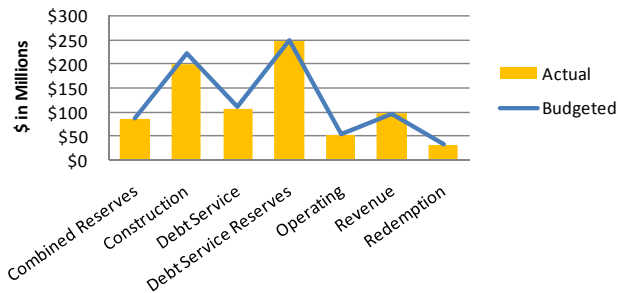
## Year To Date



	YTD BUDGET VARIANCE			
	(\$000)			
	BALANCES IMPACT	RATES IMPACT	TOTAL	%
Combined Reserves	\$5	\$75	79	4.9%
Construction	(\$26)	(\$169)	(195)	-44.3%
Debt Service	(\$9)	(\$87)	(95)	-42.3%
Debt Service Reserves	(\$5)	(\$129)	(135)	-3.1%
Operating	(\$15)	\$1	(14)	-3.7%
Revenue	(\$1)	(\$77)	(78)	-32.1%
Redemption	\$0	(\$11)	(11)	-4.3%
<b>Total Variance</b>	<b>(\$52)</b>	<b>(\$397)</b>	<b>(\$449)</b>	<b>-6.0%</b>

➤ The negative balance is attributed to the lower than budgeted interest rates.

### YTD Average Balances Budgeted vs. Actual

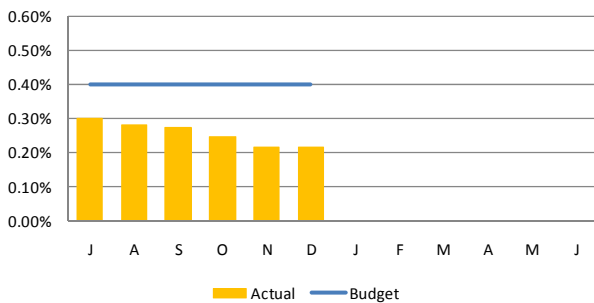


### YTD Average Interest Rate Budgeted vs. Actual

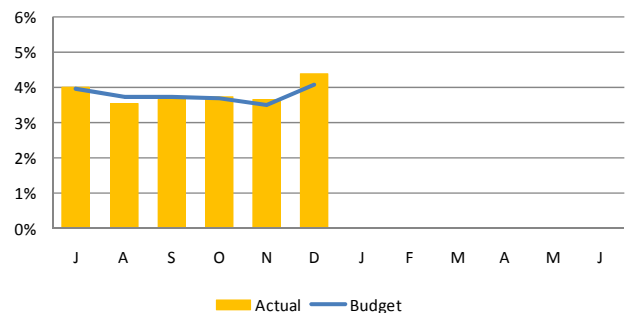


## Monthly

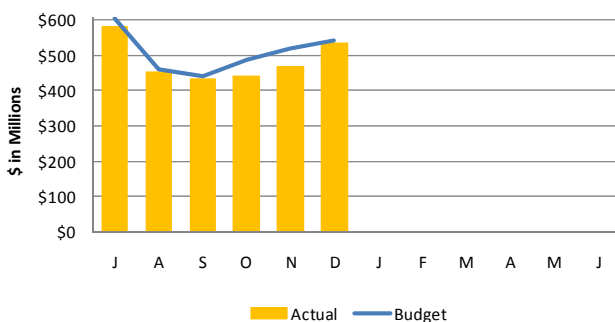
### Short-Term Interest Rates



### Long-Term Interest Rates



### Short-Term Average Balances



### Long-Term Average Balances

