

MASSACHUSETTS WATER RESOURCES AUTHORITY

**Board of Directors Report**  
On  
**Key Indicators of MWRA Performance**  
For  
First Quarter FY2015

| Q1 | Q2 | Q3 | Q4 |
|----|----|----|----|
|    |    |    |    |



Frederick A. Laskey, Executive Director  
Michael J. Hornbrook, Chief Operating Officer  
December 17, 2014

# Board of Directors Report on Key Indicators of MWRA Performance

## First Quarter FY15

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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.

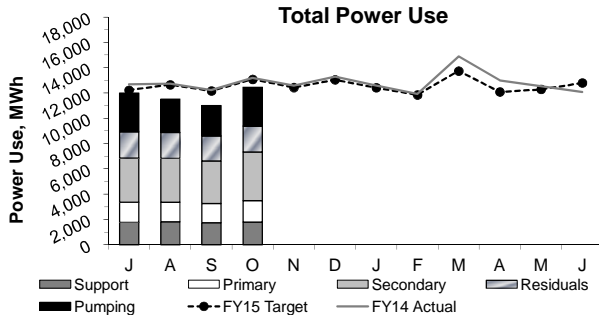
Frederick A. Laskey, Executive Director  
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**December 17, 2014**

# OPERATIONS AND MAINTENANCE

# Deer Island Operations

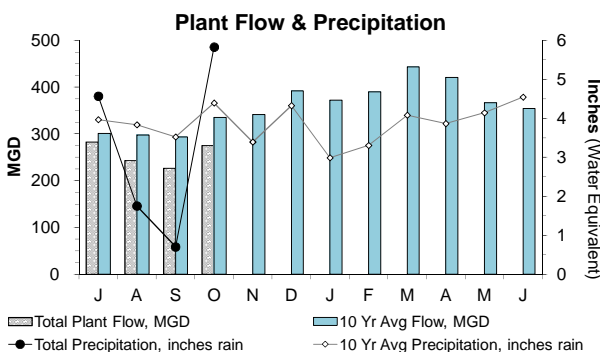
1st Quarter - FY15

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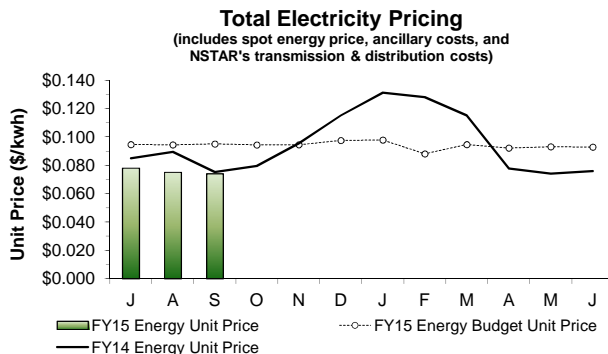
Total Power Use in the 1st Quarter was 6.8% lower than budgeted primarily due to 14.7% lower-than-expected usage for pumping operations as the 3 year average plant flow was 15.7% lower than projected for the quarter.

Note: Power usage projections are based on 3 year averages.

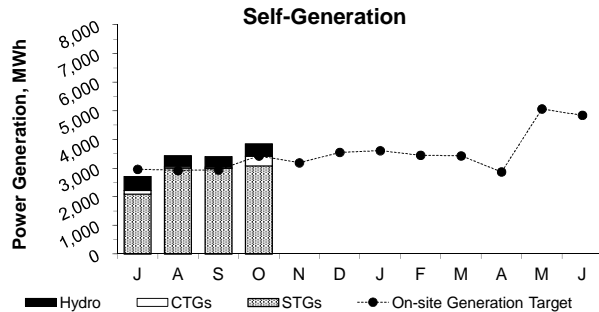


The total plant flow for the quarter was 15.7% lower than the 10 year average total plant flow (250.8 MGD actual vs. 297.4 MGD expected) as precipitation for the 1st Quarter was 38% lower than target (7.02 inches actual vs. 11.33 inches expected).

Several monthly low flow records for September were set as a result of the extended dry conditions. A record low Total Plant flow for September of 226.7 MGD broke the previous record of 243.4 MGD from 2013. New September low flow records for both the North System (159.1 MGD) and for the South System (67.7 MGD) also broke previous records of 164.1 MGD from 2013 and 72.0 MGD from 1993.

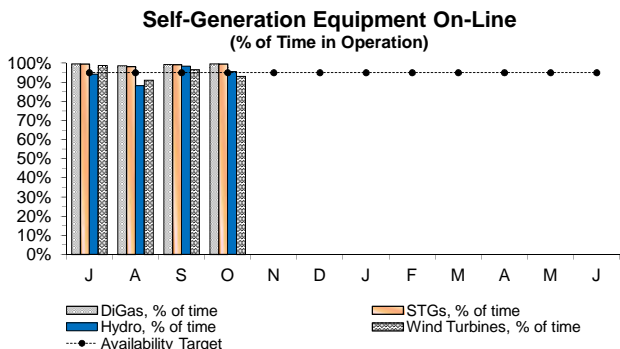


Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The actual Total Energy Unit Price in the 1st Quarter (actuals through September) as 20.0% lower than the FY15 budget estimate for the same period. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges.

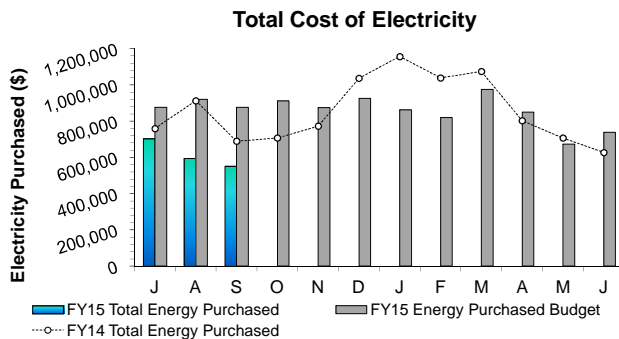


Power generated on-site during the 1st Quarter was 14.8% higher than target as generation by the STGs and the Wind Turbines were both higher-than-expected. Generation by the STGs was 20% higher-than-expected as the back pressure turbine system underwent optimization and testing during the quarter by running in "summer mode", or in a vacuum, with interim supplemental use of fuel oil. The CTGs, Hydro Turbines, and Solar Panels generated slightly lower than their targets. The CTGs ran for maintenance and checkout purposes and on three (3) occasions for peak demand avoidance.

Note: Power generation by the Solar Panels and the Wind Turbines are not included in the graph (as the amounts generated cannot be seen within the current scale of this graph); a total of 274 MWh was generated by the Solar Panels and 298 MWh was generated by the Wind Turbines in the 1st Quarter.



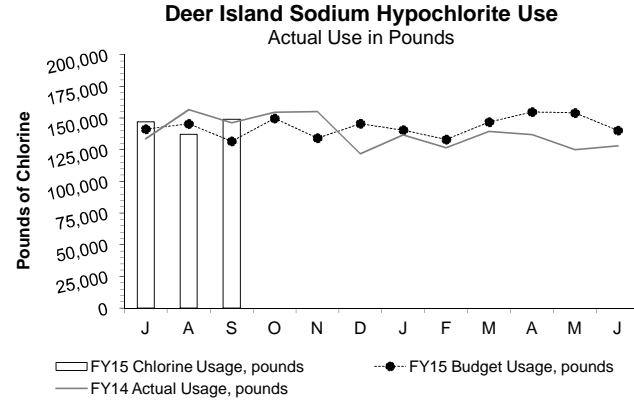
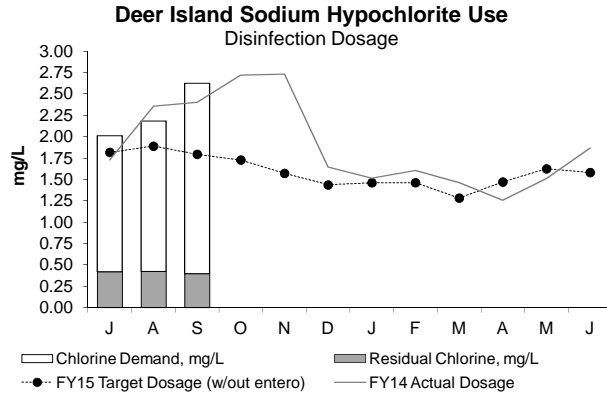
The DiGas, STG, Hydro Turbine, and Wind Turbine systems all met or exceeded the 95% availability target for the 1st Quarter. Wind Turbine and Hydro Turbine availability did fall slightly below target in August due mainly to scheduled maintenance.



The cost of electricity Purchased through the 1st quarter (actuals through September) was 30.8% lower than budgeted. Year-to-date costs are \$823,395 lower than budgeted through the quarter (actuals) as the Total Energy Unit Price and the Total Power Purchased were both lower than budgeted by 20.0% and 13.7% through the 1st quarter.

# Deer Island Operations

1st Quarter - FY15



The disinfection dosing rate in the 1st Quarter was 24% higher than the target. DITP maintained an average disinfection chlorine residual of 0.41 mg/L this quarter with an average dosing rate of 2.27 mg/L (as chlorine demand was 1.86 mg/L). Dosing was higher-than-expected due to a higher chlorine demand as a result of stronger wastewater caused by the lower-than-expected plant flows. The actual hypochlorite usage in pounds of chlorine, however, was within 4% of the Q1 FY15 target.

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   | 99.4%                                       | 8.50                             |
| A            | 1                        | 1                                    | 0   | 99.95%                                      | 1.90                             |
| S            | 0                        | 0                                    | 0   | 100.0%                                      | 0.00                             |
| O            |                          |                                      |   |   |                                  |
| N            |                          |                                      |   |   |                                  |
| D            |                          |                                      |   |   |                                  |
| J            |                          |                                      |   |   |                                  |
| F            |                          |                                      |   |   |                                  |
| M            |                          |                                      |   |   |                                  |
| A            |                          |                                      |   |   |                                  |
| M            |                          |                                      |   |   |                                  |
| J            |                          |                                      |   |   |                                  |
| <b>Total</b> | <b>3</b>                 | <b>3</b>                             | <b>0</b>  | <b>99.8%</b>                                | <b>10.40</b>                     |

99.8% of all flows were treated at full secondary for the 1st Quarter. There were a total of three (3) separate secondary blending events in the quarter; all due to high plant flows resulting from heavy rain. The three (3) blending events combined produced a total of 10.4 hours of blending and 53.01 Mgal of flow blended with secondary effluent. The Maximum Secondary Capacity for the entire quarter was 700 MGD.

Secondary permit limits were met at all times during the 1st Quarter of FY15.

## Deer Island Operations & Maintenance Report

### Environmental/Pumping:

The plant achieved a maximum average hourly flow rate of 953.7 MGD during the evening of July 3 as a result of a tropical rain system, remnants of Hurricane Arthur, that produced 2.51 inches of rain over three (3) days. Pumping and treatment operations at DITP continued without incident through this storm event, as well as throughout the entire quarter.

### Primary and Secondary Treatment:

Progress on the major Primary and Secondary Scum Tip Tube Replacement Project that began on June 2 continued through Q1 FY15. The primary scope of this project is to replace 88 of the 96 primary treatment tip tubes, 72 treatment tip tubes in Secondary Batteries A and B, and modification of 36 secondary tip tubes in Secondary Battery C. The contractor is limited by the construction documents to working in no more than four (4) primary clarifiers (preferably limited to one battery) and three (3) secondary clarifiers (one or two per battery to minimize capacity constraints so as to not reduce the overall secondary capacity). Construction was approximately 33.3% complete for the primary clarifiers and 16.7% complete for the secondary clarifiers by the end of September.

### Disinfection Treatment:

Staff performed essential maintenance on the existing effluent disinfection feed system on July 1 which required using an alternate backup chlorine feed system during the maintenance period. Chlorine feed and disinfection continued uninterrupted during this maintenance work and the normal disinfection feed system was returned to operation on the morning of July 2. Effluent disinfection system chlorine and fecal coliform results were all within permit levels and were at typical levels during this period. EPA and DEP were notified in advance of this maintenance.

# Deer Island Operations

1st Quarter - FY15

## Deer Island Operations & Maintenance Report (continued)

### Odor Control Treatment:

Activated carbon media was changed out during this quarter in carbon adsorber (CAD) units #1, #2, and #6 in the East Odor Control (EOC), #5 in the West Odor Control (WOC), and #3 in the North Pumping Odor Control (NPOC) Facilities as part of routine practice to replace spent carbon media.

### Energy and Thermal Power Plant:

Solar power generation accounted for 2.71% (273.8 MWh) of the total power generated on-site in the 1st Quarter while Wind Turbine generation accounted for 2.95% (297.8 MWh) of the total power generated on-site in the 1st Quarter. Overall, total power generated on-site accounted for 29.3% of Deer Island's total power use for the quarter. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 28.6% of Deer Island's total electrical power use for the quarter.

Hydro Turbine #2, which had been out of service since June 15, was returned to service on July 21 after preventative maintenance and repairs to the wicket gate were completed. The cable for the influent flow gate on Hydro Turbine #1 unexpectedly broke on August 26 during maintenance, causing the gate to remain shut and leaving the unit isolated. This unit will remain unavailable for operation until the cable is replaced. Hydro Turbine #2 has remained in operation on a daily basis except during short periods of time for routine scheduled maintenance. It is as efficient operating with only a single Hydro Turbine unit, as it is with two (2) units, at current plant flow levels.

Optimization testing in the Thermal Power Plant began in August following the installation of a steam by-pass valve in the steam electricity generation system. The addition of this steam by-pass valve in conjunction with the operation of the back-pressure turbine (BP-STG) have allowed staff to operate the steam system at higher efficiencies by operating the main turbine in a vacuum, extracting the highest possible amount of electricity from the steam. The performance for average digester gas production with the original system would generate roughly 2.84 MW of power, while the revised system (based on the results from the optimization testing using supplemental fuel oil) will generate upwards of 4.04 MW of power, a 1.3 MW increase in electrical production. Staff estimate this increase will be sustainable from May through November each year, and will provide an additional 4.5 million kWh of renewable energy for MWRA annually.

Maintenance was performed for both CTG units in August which included replacing the duplex fuel filter as well as isolation valves. The software in both units was also upgraded. Each CTG was placed into operation briefly for testing purposes following the maintenance work and software upgrade and one (1) CTG unit was always available for operation as the backup while maintenance was being performed on the other unit. Additionally, electrical testing of the bus duct and other related components was performed while the CTGs were down for maintenance.

Scheduled preventative maintenance was also performed for both South Parking Lot Wind Turbines in August. Each unit was taken offline during this period in order to perform the maintenance and functionality testing.

The Annual Overhaul Maintenance of CTG -1A began on September 29 and was successfully completed and returned to service on October 6. The CTG was locked and tagged out each night, except during the weekend of October 4-5, when the unit was available for stand-by operation, due to a potential high flow forecast, but was never needed for operation.

### Regulatory:

Emissions compliance testing on the West Odor Control (WOC) treatment system on DITP was conducted by consultants during the second week of July. The WOC treatment system treats process air from Primary Batteries C and D, from half of the Grit Facility, and from the South System Pump Station. The DITP Air Quality Operating Permit issued by the MA DEP requires that DITP conduct emissions compliance testing for the various emission units once every five (5) years to demonstrate compliance with applicable total reduced sulfur (TRS) and non-methane hydrocarbons (NMHC) emissions limits. For the WOC treatment system, this testing included the continuous emissions monitoring of the outlet (stack) and three (3) inlet locations to the odor control system over a 24-hour period for both Total Reduced Sulfur (TRS) and non-methane hydrocarbons (NMHC). All the test results show that DITP was in compliance. Staff have already reviewed and commented on the draft emissions report prepared by the consultant.

MA DEP were onsite at DITP on July 24 for an unannounced (annual) site visit of the treatment plant to review and inspect the plant's wastewater treatment operations and practices. They were given a comprehensive plant tour by the Director of DITP covering the entire wastewater and residuals treatment facilities and process areas. Initial communications indicate the inspection had gone well.

The Federal Energy Regulatory Commission (FERC) performed an annual inspection of both Hydro Turbine units on August 18. No outstanding issues were found and the units passed the inspection. No further action is needed and a copy of the inspection report is expected in a few months.

The annual RATA (Relative Accuracy Test Audit) of the boiler Continuous Emissions Monitoring System (CEMS) was conducted by a certified consultant on September 9 and 10. This test is a requirement of DITP's Air Quality Operating Permit issued by the DEP and validates the CEMS data generated by the individual boilers against the data generated by the consultant's CEMS which was located in a test trailer at the base of the emissions stack for the purpose of conducting this audit test.

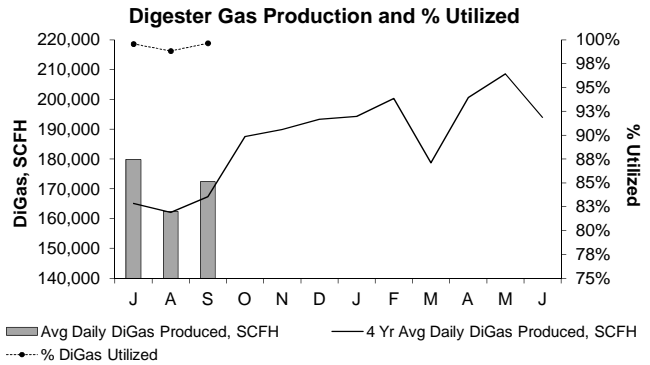
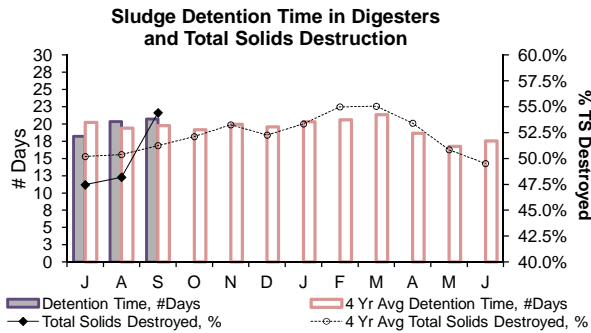
### Clinton AWWTP:

Construction started July 1 on the rehabilitation of primary clarifiers and anaerobic digesters. The work is scheduled to be completed within 24 months. Following are the items completed to date:

The excavation of soil around tanks 3 & 4 and all mechanical components of tanks and railings were removed. The tanks were saw cut 2 feet down from top and the concrete was removed. New concrete was formed and pored. Tanks were sandblasted to prepare for Tnemec coating. The 93,000 pound floating cover was removed from the secondary digester and relocated to the staging area to begin sandblasting before painting. Modifications are being performed to accommodate new mixer. A total of 39 of the 98 sludge valves that are scheduled for replacement have been installed.

# Deer Island Operations and Residuals

1st Quarter - FY15

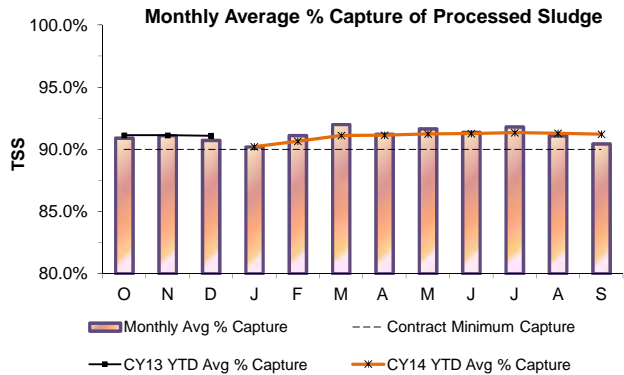
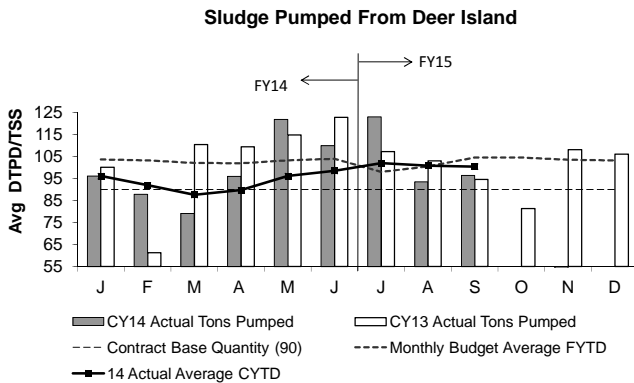


Total solids (TS) destruction following anaerobic sludge digestion averaged 50.0% during the 1st Quarter, similar to the 4 year average, as sludge detention time in the digesters (19.7 days) was also similar to the 4 year average. Eight (8) digesters were in operation during the entire 1st Quarter.

The Avg Daily DiGas Production in the 1st Quarter was 4.1% higher than the target 4 Year Avg Daily DiGas Production for the same period. On average, 99.4% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant.

Total solids (TS) 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. Solids destruction is also significantly impacted by changes in the number of digesters and the resulting shifting around of sludge.

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 (FY15's budget is 102.9 DTPD/TSS).



The average total quantity of sludge pumped in the 1st Quarter was 104.2 DTPD - higher than FY15's budget of 102.9 DTPD. The higher amount is mainly due to higher sludge production going to digestion in July caused by several significant rain events which increased flows in the collection system sending the previously settled solids to DITP. The YTD average tonnage is 100.4.

The contract requires NEFCo to capture at least 90% of the solids delivered to the Biosolids Processing Facility in Quincy. The YTD average capture is 91.21%

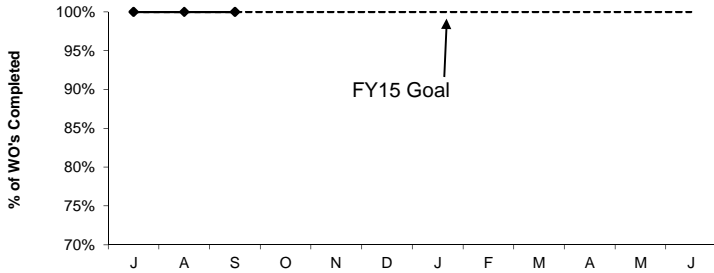
# Deer Island Maintenance

1st Quarter FY 15

## Productivity Initiatives

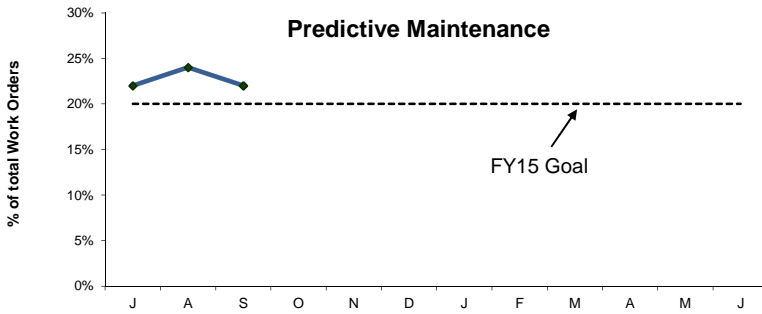
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in overall maintenance backlog.

### Predictive Maintenance Compliance



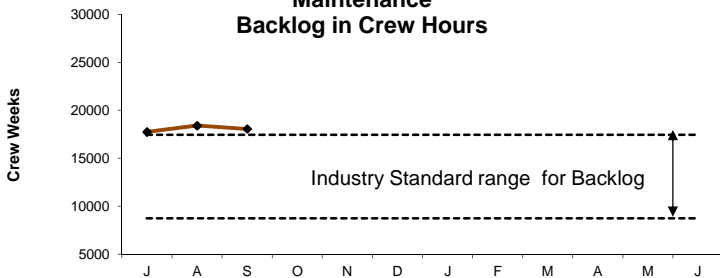
Deer Island's FY15 predictive maintenance goal is 100%. DITP completed 100% of all PdM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program.

### Predictive Maintenance



Deer Island's FY15 predictive maintenance goal is 20% of all work orders to be predictive. 23% of all work orders were predictive maintenance this quarter. The industry is moving toward increasing predictive maintenance work to reduce downtime and better predict when repairs are needed.

### Maintenance Backlog in Crew Hours

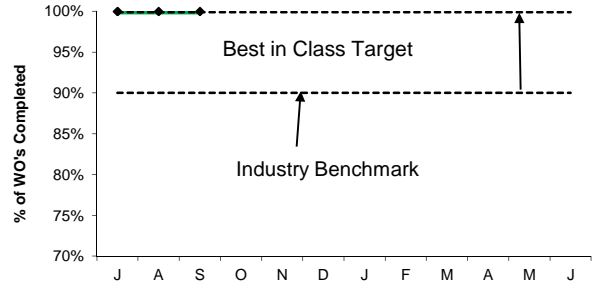


DITP's maintenance backlog at Deer Island is 18,067 hours this quarter. DITP is above the industry average for backlog. The industry Standard for maintenance backlog with 100 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog is affected by two vacancies, a Plumber and an Instrument Tech, and two on medical leave, a B&G Worker and an Electrician. Also, the HVAC department has an extremely high backlog (15 weeks). Management continues to monitor backlog and to ensure all critical systems and equipment are available.

## Proactive Initiatives

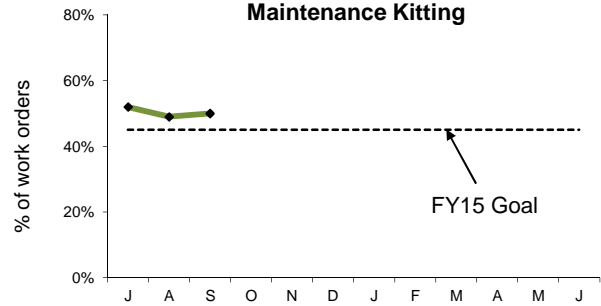
Proactive initiatives include completing 100% of all preventative maintenance tasks and increasing preventative maintenance kitting. These tasks should result in lower maintenance costs.

### Preventative Maintenance Compliance



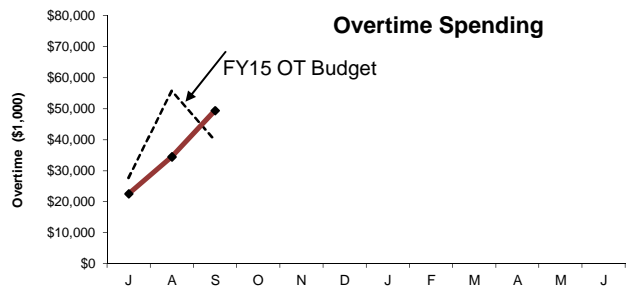
Deer Island's FY15 preventative maintenance goal is 100% completion of all work orders from Operations and Maintenance. DITP completed 100% of all PM work orders this quarter.

### Maintenance Kitting



Deer Island's FY15 maintenance kitting goal is 45% of all work orders to be kitted. 50% 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 budget by \$17K this quarter. Management continues to monitor backlog and to ensure all critical equipment and systems are available. This quarter's overtime was predominately used for installation of HVAC units (coils, condensers, evaporators, fabricating and installing filter racks) throughout Deer Island, install dampener in West Odor Control, replace vent and drainage piping for all four foam separators in Digester MOD 2, community events and storm coverage.

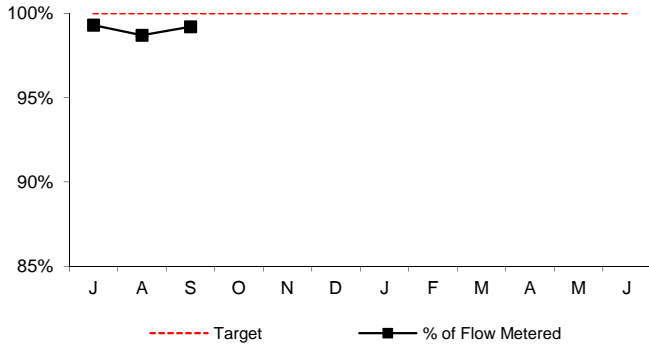


# Operations Division Metering

1st Quarter - FY15

## WATER METERS

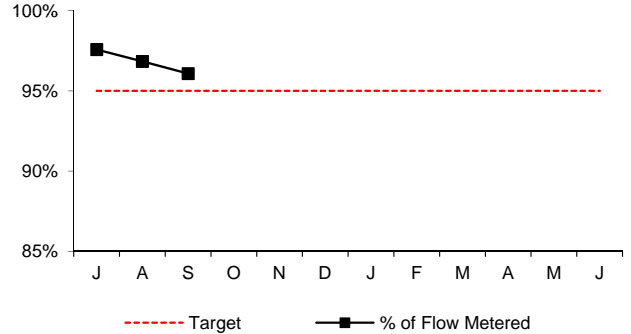
**Percent of Total Revenue Water Deliveries Calculated Using Meters**



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 1st Quarter of FY15, meter actuals accounted for 99.07% of flow; only 0.93% of total revenue water deliveries were estimated. The following is the breakdown of estimations:  
 In-house and Capital Construction Projects - 0.27%  
 Instrumentation Failure - 0.66%

## WASTEWATER METERS

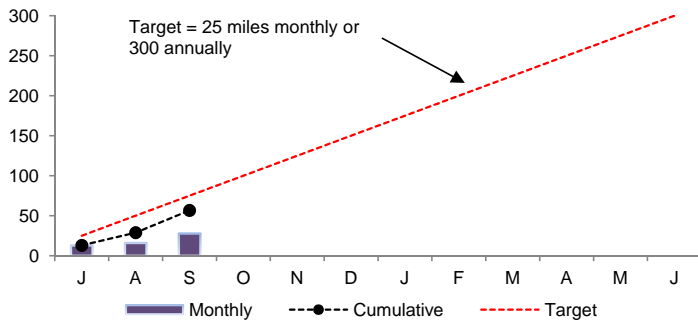
**Percent of Total Wastewater Transport Calculated Using Meters**



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 1st Quarter of FY15, meter actuals accounted for 96.8% of flow; 3.2% of wastewater transport was estimated.

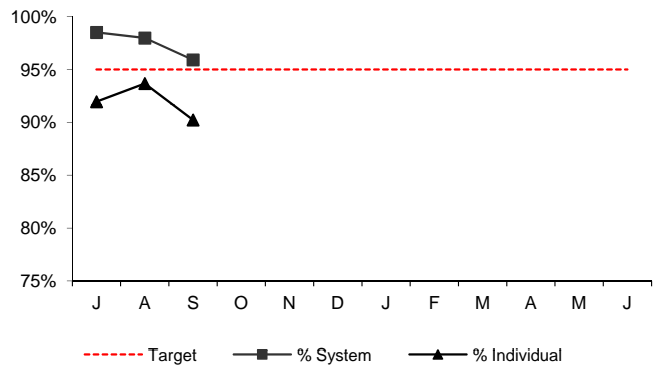
## WATER DISTRIBUTION SYSTEM PIPELINES

**Miles Surveyed for Leaks**



During the 1st Quarter of FY15, 56.71 miles of water mains were inspected.

**% Wastewater Meter Uptime**



During the 1st Quarter of FY15, out of a possible 1,536,768 data points, only 38,672 points were missed resulting in a system-wide up time of 97.5%. Of the 174 revenue meters installed, on average 14 experienced down time greater than the 5% target resulting in a 92% individual meter uptime. For the 1st Quarter of FY15, down time for an individual meter is defined by any individual meter having less than 2,796.7 data points out of a potential 2,944 data points.

Water Distribution System

| Month                 | J    | A    | S    | O | N | D | J | F | M | A | M | J |
|-----------------------|------|------|------|---|---|---|---|---|---|---|---|---|
| <b>Leaks Detected</b> | 6    | 1    | 7    |   |   |   |   |   |   |   |   |   |
| <b>Leaks Repaired</b> | 8    | 1    | 1    |   |   |   |   |   |   |   |   |   |
| <b>Backlog</b>        | 4    | 4    | 10   |   |   |   |   |   |   |   |   |   |
| <b>Avg. Lag Time</b>  | 12.9 | 22.4 | 24.5 |   |   |   |   |   |   |   |   |   |

During the 1st Quarter of FY15, fourteen new (14) leaks were detected and ten leaks were repaired (including 7 new leaks and 3 leaks from FY14.). The seven (7) new leaks not yet repaired were all detected in September, three (3) of which, were detected on September 29th. All the leaks in the backlog, except for Section 80, are of a very small nature (1 to 2 gallons per minute), and are non-surfacing. The Section 80 leak in Weston is off road, and cannot be repaired until lower demand periods when Wellesley and Needham are not using MWRA water.

Staff repaired 3 of the 6 leaks that carried over from FY14 including: Forest Street, Stoneham; Park Street, Chelsea, and Appleton Street, Everett. These leaks were repaired in July. The remaining three (3) leaks carried over from FY14 include: 1 at Walnut Street, Saugus; and 2 on the GE Bridge, Revere/Lynn line. These leaks were originally detected on October 23, 2013 and May 9, 2014 respectively. The leak at Walnut Street is a very small non-surfacing leak and remains unrepaired due to higher priorities as well as hydraulic issues. The two leaks on the GE Bridge have been isolated. They remain unrepaired due to the need for an extensive coordination of resources including the rental of a barge.

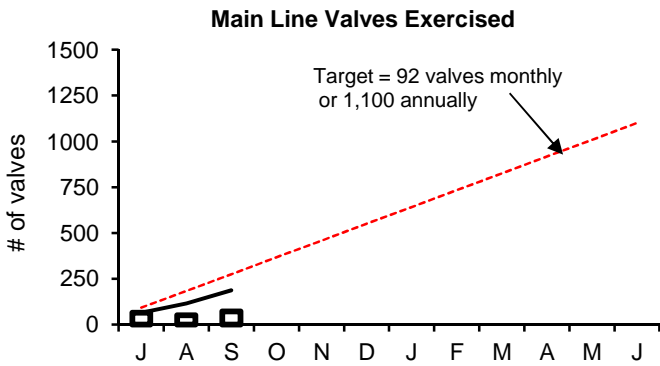
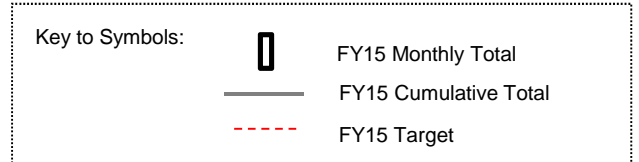
# Water Distribution System Valves

1st Quarter - FY15

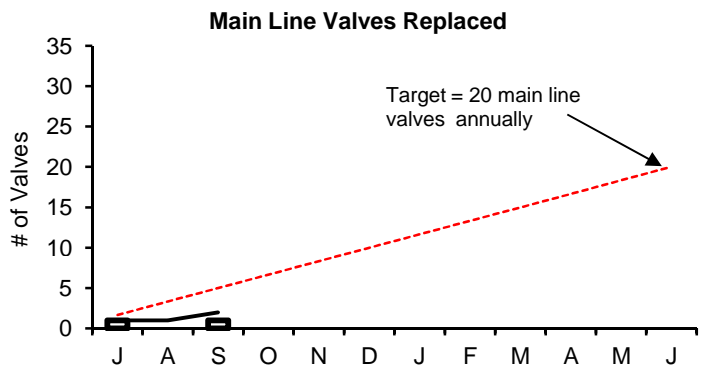
## Background

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.

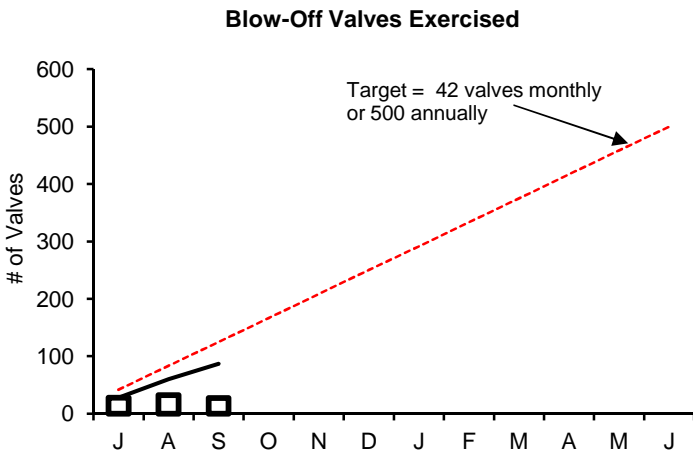
| Type of Valve      | Inventory # | Operable Percentage |              |
|--------------------|-------------|---------------------|--------------|
|                    |             | FY15 to Date        | FY15 Targets |
| Main Line Valves   | 2,092       | 96.6%               | 95%          |
| Blow-Off Valves    | 1,206       | 92.1%               | 95%          |
| Air Release Valves | 1,335       | 91.7%               | 95%          |
| Control Valves     | 48          | 100.0%              | 95%          |



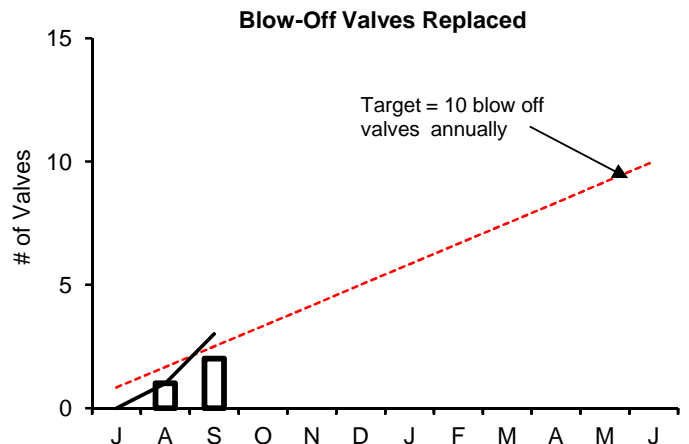
During the 1st Q of FY15 staff exercised 186 main line valves.



During the 1st Q of FY14 staff replaced two main line valves.



During the 1st Q of FY14 staff exercised 87 blow-off valves.



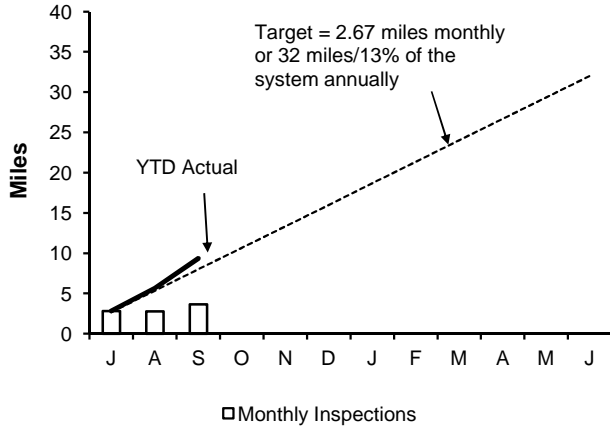
During the 1st Q of FY15 staff replaced three blow valves.

# Wastewater Pipeline and Structure Inspections and Maintenance

1st Quarter - FY15

## Inspections

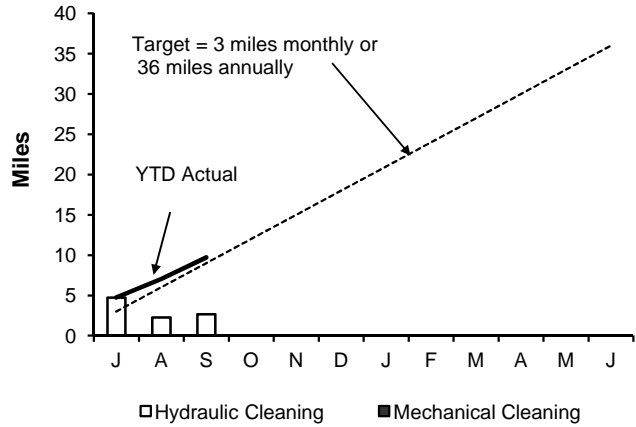
### Pipeline Inspections



Staff internally inspected 9.34 miles of MWRA sewer pipeline during this quarter. The year to date total is 9.35 miles. Community Assistance was provided internal pipeline inspections to the city of Somerville, Boston and Brookline, resulting in 0.29 miles (1,530 linear feet), 0.45 miles (240 linear feet) and 0.6 miles (338 linear feet)

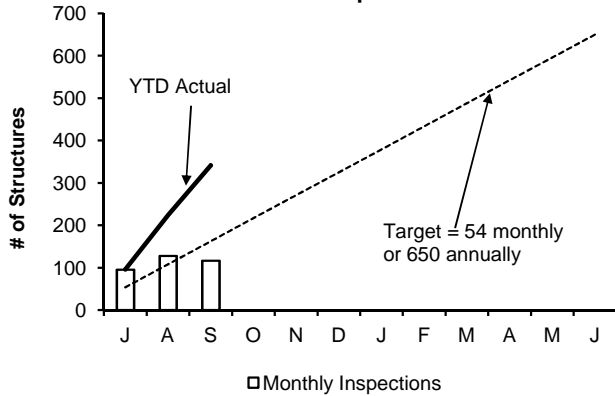
## Maintenance

### Pipeline Cleaning



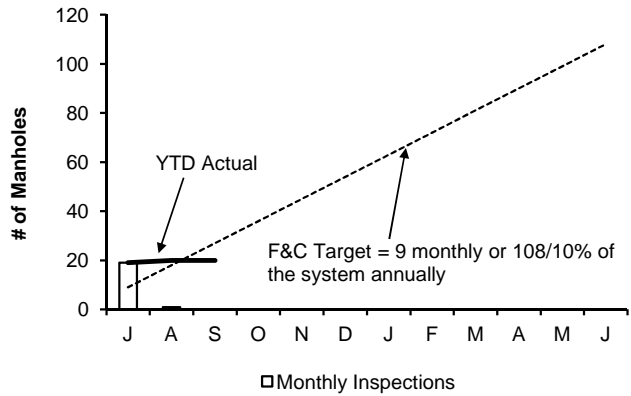
Staff cleaned 9.71 miles of MWRA's sewer system and removed 34 yards of grit and debris during this quarter. The year to date total is 9.71 miles. Community Assistance was provided to the city of Somerville; staff cleaned 0.32 miles (1,700 linear feet) of 12" and 28" diameter sewer line this quarter.

### Structure Inspections



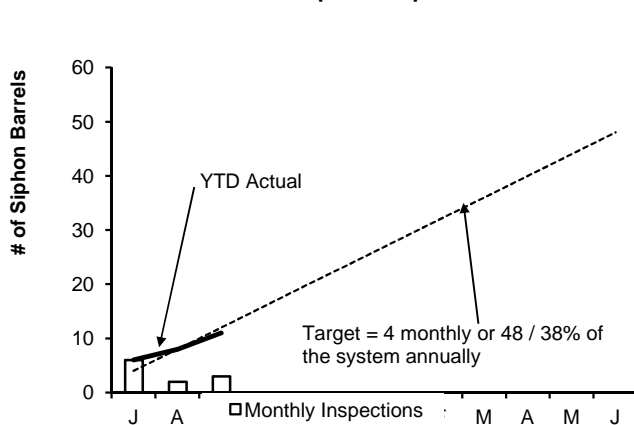
Staff inspected the 36 CSO structures and performed 305 additional manhole/structure inspections during this quarter. The year to date total is 341 inspections.

### Manhole Rehabilitation



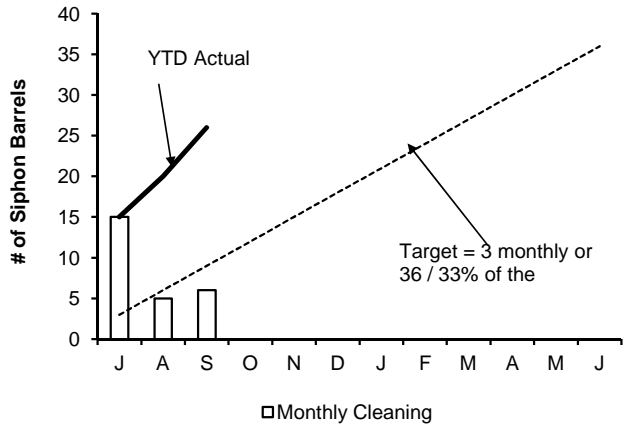
Staff replace 20 frames & covers during this quarter. The year to date total is 20.

### Inverted Siphon Inspections



Staff inspected 11 siphon barrels during this quarter. Year to date total is 11 inspections.

### Inverted Siphon Cleaning



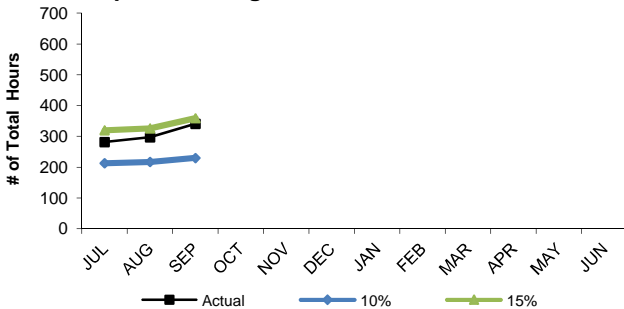
Staff cleaned 26 siphon barrels during this quarter. The year to date total is 26 barrels.

# Field Operations' Metropolitan Equipment & Facility Maintenance

## 1st Quarter, FY15

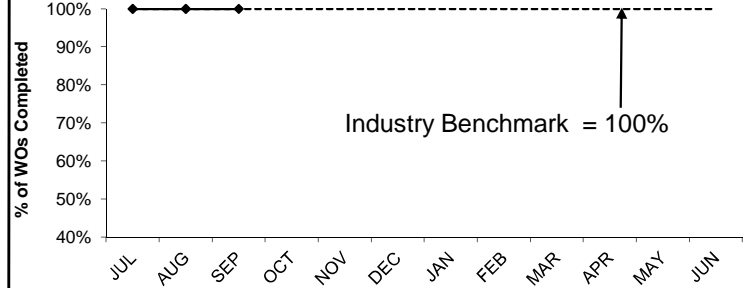
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus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

**Operations Light Maintenance PM Hours**



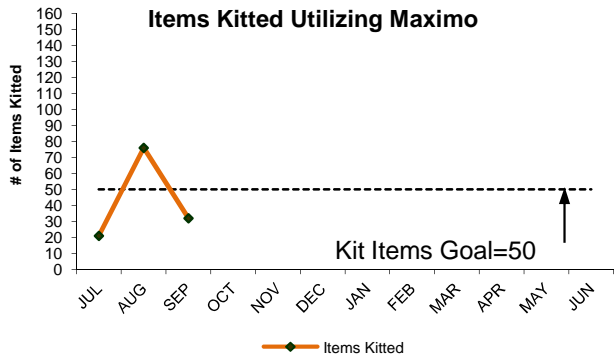
Operations staff averaged 307 hours of preventive maintenance during the 1st Quarter, an average of 14% of the total PM hours for the 1st Quarter, which is within the industry benchmark of 10% to 15%.

**Overall Preventive Maintenance**



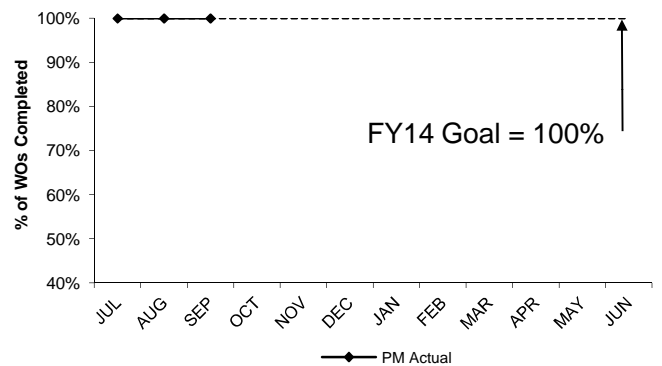
The Field Operations Department (FOD) preventive maintenance goal for FY15 is 100% of all PM work orders. Staff completed an average of 100% of all PM work orders in the 1st Quarter.

**Items Kitted Utilizing Maximo**



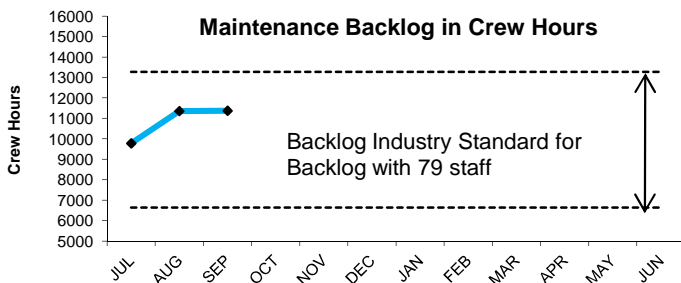
In an effort to more efficiently complete work, maintenance staff and work coordination staff have utilized the Lawson/Maximo interface to better kit stock and non stock material. The goal for FY15 is to "kit" 50 stock and non stock items total per month. An average of 43 items were kitted during the 1st Quarter.

**Operations Light Maintenance % PM Completion**



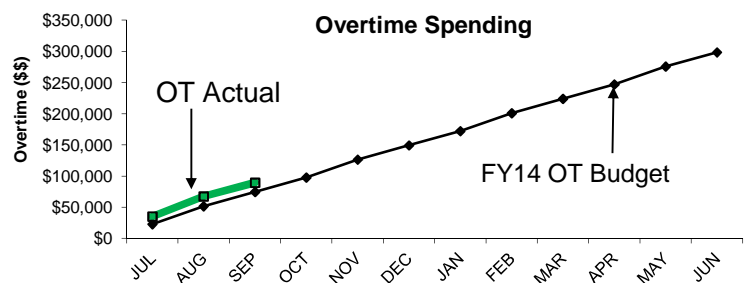
Wastewater Operators complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY15 PM goal is completion of 100% of all PM work orders assigned. Operations completed an average of 100% of PM work orders in the 1st Quarter.

**Maintenance Backlog in Crew Hours**



The 1st Quarter backlog average is 10,841 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6450 to 12,940 hours. There are currently four vacant positions, two Facility Specialist, one Mechanic and one OMC Laborers.

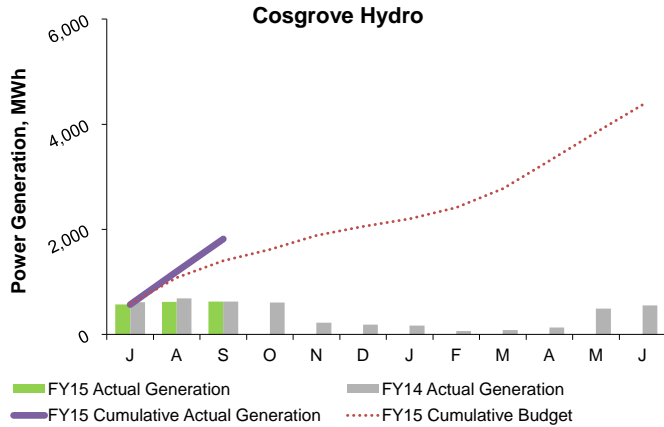
**Overtime Spending**



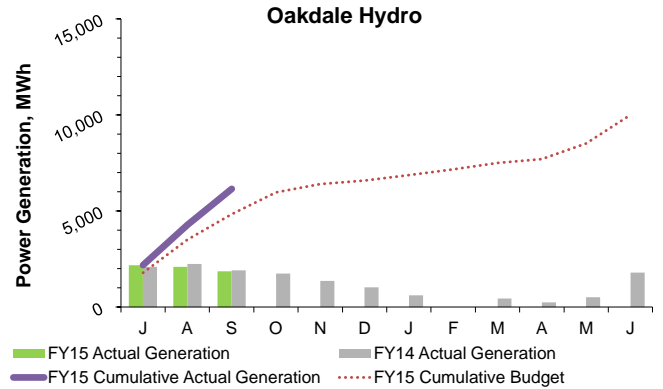
Maintenance overtime was \$15k over budget for the 1st Quarter. Overtime was used for staging for weather events, critical maintenance repairs, and upgrades to the Chelsea Administration Building.

# Green Energy - Field Operations Renewable Electricity Generation Revenue

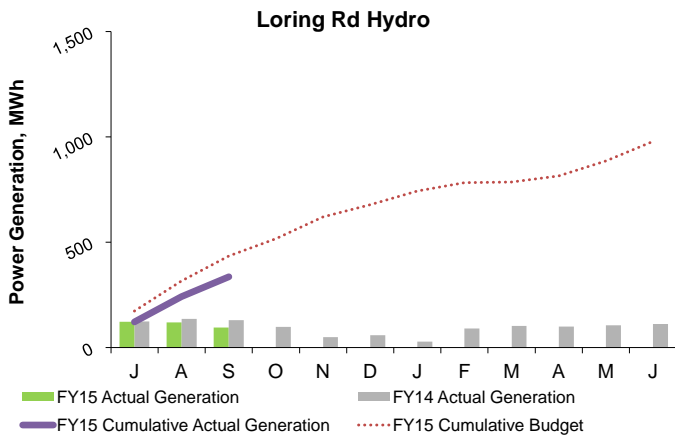
1st Quarter - FY15



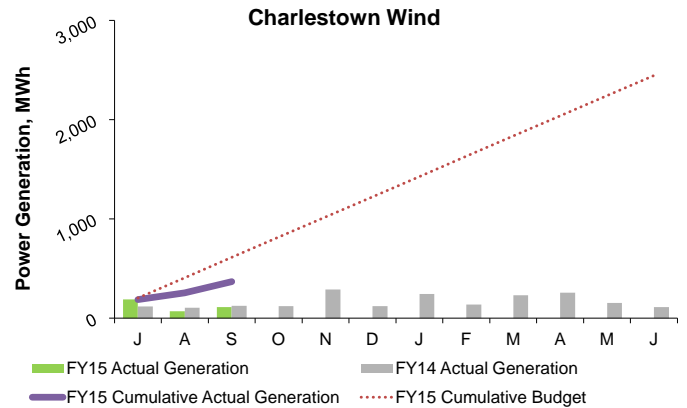
In the 1st Quarter, the Cosgrove Hydroelectric Station generated a net of 1,819 MWh; approximately 6% less power than was generated during the same quarter in FY14. The revenue generated in the 1st quarter was approximately \$69,796 (September revenue has not yet been received and is based on approximation).



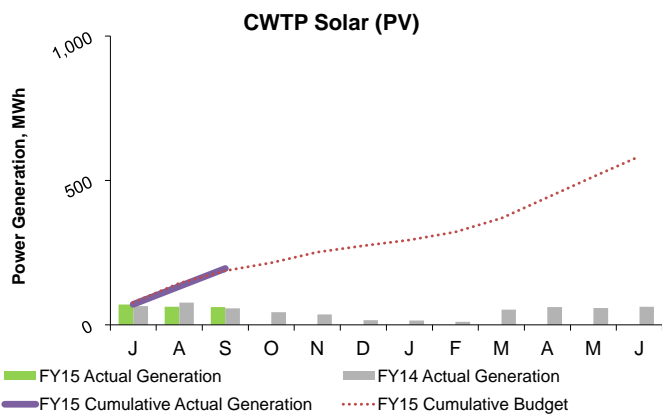
In the 1st Quarter, the Oakdale Hydroelectric Station generated a net of 6,146 MWh; approximately 2% less power than was generated during the same quarter in FY14. The revenue generated in the 1st quarter was approximately \$267,575 (September revenue has not yet been received and is based on approximation).



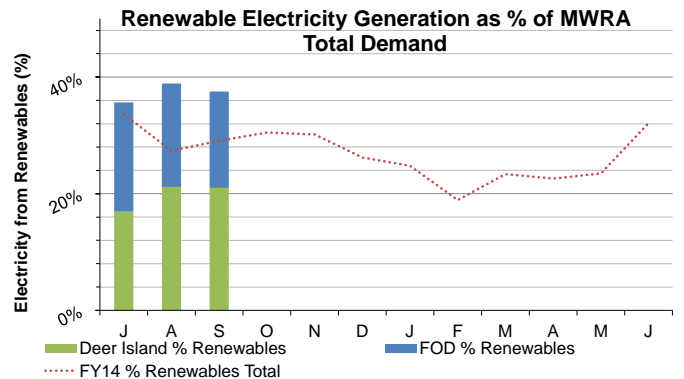
In the 1st Quarter, the Loring Rd hydroelectric Station generated a net of 336 MWh; approximately 14% less power than was generated during the same quarter in FY14. The revenue generated in the 1st quarter was \$10,589 (this only represents power sold to the grid, it does not reflect power used on-site). Power is generated as water conveyed from Norumbega to the Loring Road storage tanks is reduced in pressure and the energy available in this pressure reduction is captured by the turbine. The facility operates continuously. Some power is consumed on site, with the bulk exported to the grid.



In the 1st Quarter, the Charlestown Wind Turbine generated a net of 368 MWh; 7% more power than was generated during the same quarter in FY14. The revenue generated in the 1st quarter was \$74,227.



In the 1st Quarter, the CWTP Solar PV generated a net of 195 MWh; approximately 2% less power than was generated during the same quarter in FY14. The revenue generated in the 1st quarter was \$30,844.



In the 1st Quarter, DI generated an average of 20% of MWRA's total electrical demand and FOD generated an average of 18%. The MWRA Total Demand is based on the FY15 budget.

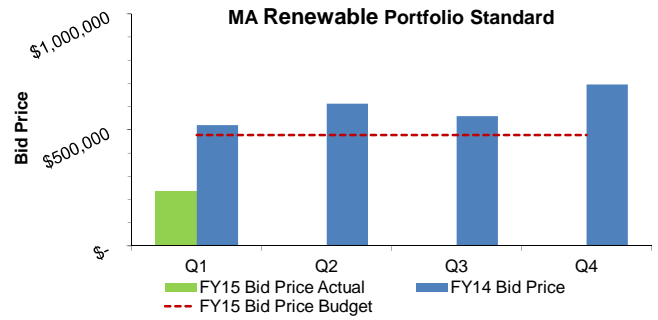
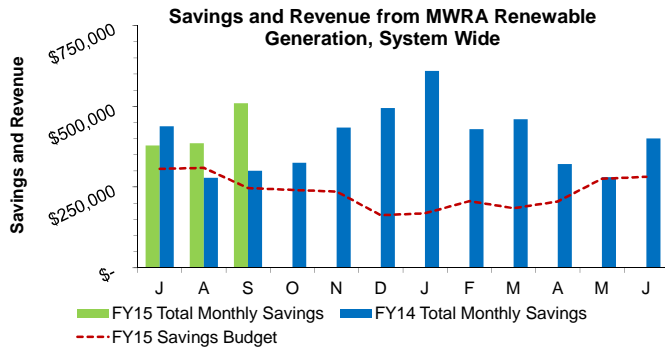
Field Operations Division (FOD) Renewables Generation includes power produced from all non-Deer Island Renewable Electricity Generation Facilities including Cosgrove Hydro, Oakdale Hydro, Loring Road Hydro, Charlestown Wind Turbine, and Carroll Water Treatment Plant solar PV.

In August and September the percentage of electricity production of total demand met by green power increased by 10% from last year, partly due to the BPSTG upgrades on DI.

In addition to electricity generation from on-site renewable sources MWRA also purchases additional green power. In FY14 approximately 7,110 MWh of green power (National Green-e Renewable Energy Certificates) was purchased. MWRA is currently in the process of contracting with a new vendor for the purchase of FY15 green power.

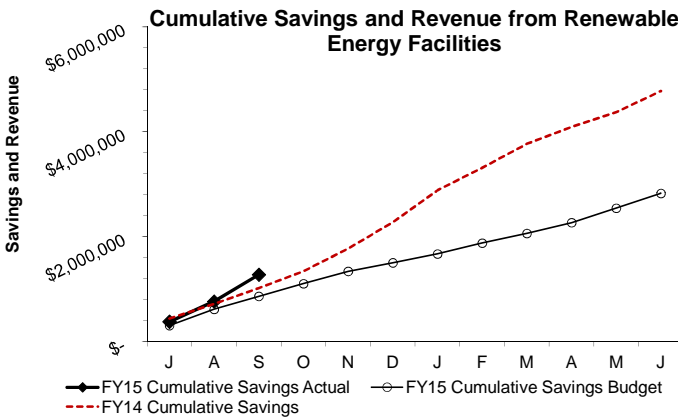
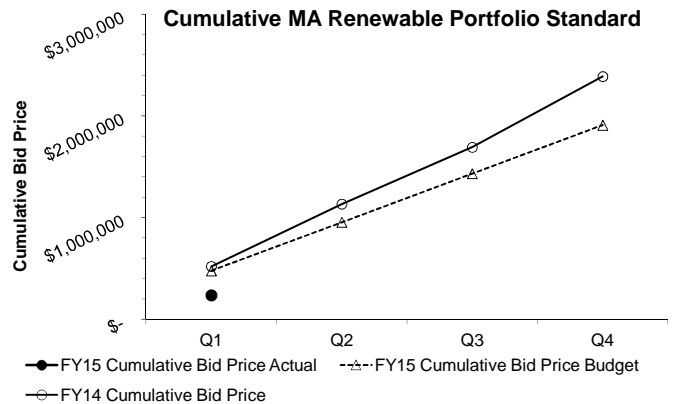
# Green Energy - Savings and Revenue from MWRA Renewable Electricity Generation

## 1st Quarter - FY15



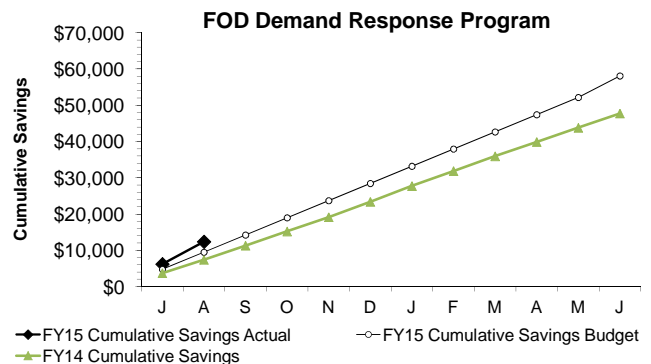
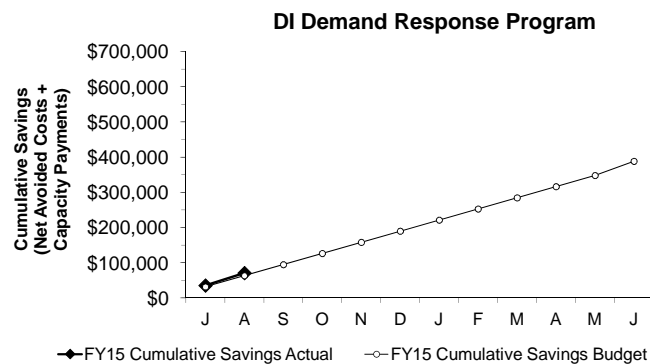
Savings and revenue from MWRA renewable generation in the 1st quarter was \$1,274,177. Savings and revenue from all renewable energy sources include wind turbines, hydroelectric generators, solar panels, and steam turbines (DI). This includes savings and revenue due to electricity generation (does not include avoided fuel costs, demand response program, and RPS RECs). Oakdale and Cosgrove have estimated savings values for September 2014, and DI electricity rate for September is based on FY15 budget.

The use of DITP digester gas as a fuel source provides the benefit of both electricity generation from the steam turbine generators, and provides thermal value for heating the plant, equivalent to approximately 5 million gallons of fuel oil per year.



Bids were awarded during the 1st Quarter from Deer Island's renewable energy assets for the sale of 4,080 Class I Renewable Energy Certificates (RECs) for a total value of \$199,614 and 53 Solar Renewable Energy Certificates (S-RECs) for a total value of \$14,321. The value of the S-RECs is currently more than 5 times higher than the current value of Class I RECs (for STG, hydro and wind). FOD bid total is \$22,430 for the 1st Quarter, for the sale of Class I and Class II RECs, for a total of \$236,365 for MWRA RPS revenue. The budgeted estimate for MWRA total RPS revenue in the 1st quarter was \$477,145.

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.



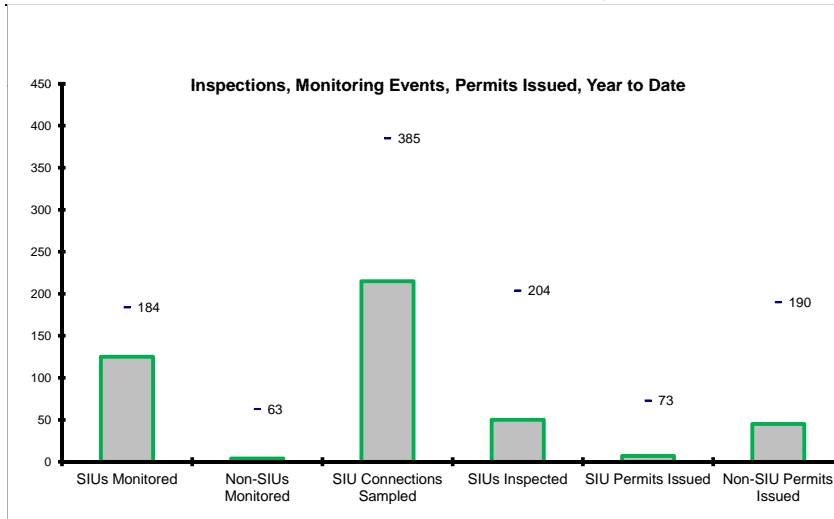
Deer Island, 2 Water, and 4 Wastewater facilities\*\* participate in the ISO-New England Demand Response Programs. By agreeing to have its generators available to run and thus relieve the New England energy grid of some of MWRA's load during times of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates back-up generators during an ISO-NE called event, MWRA receives energy payments from ISO-NE and also avoids the cost of purchasing electricity from the grid. "Net Avoided Cost" is the avoided electricity costs, offset by the cost of running the generators and the energy payments from ISO-NE. Cumulative savings are the sum of Net Avoided Costs and monthly Capacity Payments - totaling \$70,636 for DI and \$12,347 for FOD through August.

Note: \*Only the actual payments received are now being reported.

\*\* FOD Facilities: CWTP, Loring Road, Chelsea Creek, Columbus Park, Ward St., and Nut Island.

# Toxic Reduction and Control

1st Quarter 2015



EPA Required SIU Monitoring Events for FY15: 184  
YTD: **125**

Required Non-SIU Monitoring Events for FY15: 63  
YTD: **4**

SIU Connections to be Sampled For FY15: 385  
YTD: **215**

EPA Required SIU Inspections for FY15: 204  
YTD: **50**

SIU Permits due to Expire In FY15: 73  
YTD: **7**

Non-SIU Permits due to Expire for FY15: 190  
YTD: **45**

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.

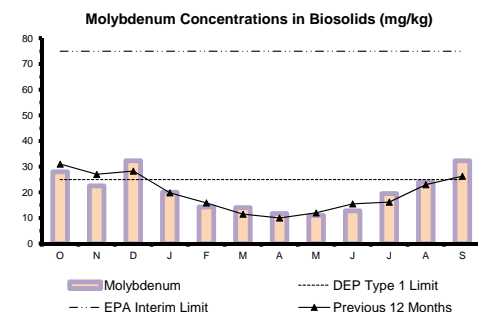
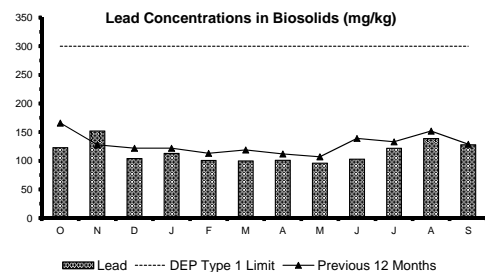
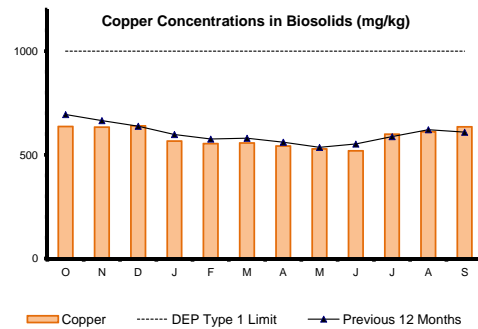
|       | Number of Days to Issue a Permit |         |            |         |             |         | Total Permits Issued |         |
|-------|----------------------------------|---------|------------|---------|-------------|---------|----------------------|---------|
|       | 0 to 120                         |         | 121 to 180 |         | 181 or more |         | SIU                  | Non-SIU |
|       | SIU                              | Non-SIU | SIU        | Non-SIU | SIU         | Non-SIU |                      |         |
| Jul   | 0                                | 10      | 0          | 1       | 0           | 1       | 0                    | 12      |
| Aug   | 2                                | 9       | 0          | 1       | 0           | 2       | 2                    | 12      |
| Sep   | 5                                | 19      | 0          | 2       | 0           | 0       | 5                    | 21      |
| Oct   |                                  |         |            |         |             |         | 0                    | 0       |
| Nov   |                                  |         |            |         |             |         | 0                    | 0       |
| Dec   |                                  |         |            |         |             |         | 0                    | 0       |
| Jan   |                                  |         |            |         |             |         | 0                    | 0       |
| Feb   |                                  |         |            |         |             |         | 0                    | 0       |
| Mar   |                                  |         |            |         |             |         | 0                    | 0       |
| Apr   |                                  |         |            |         |             |         | 0                    | 0       |
| May   |                                  |         |            |         |             |         | 0                    | 0       |
| Jun   |                                  |         |            |         |             |         | 0                    | 0       |
| % YTD | 100%                             | 84%     | 0%         | 9%      | 0%          | 7%      | 7                    | 45      |

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 the period July to September 2014 representing the first quarter of the 2015 fiscal year, fifty-two permits were issued. Of the permits issued, three non-SIU permits were not issued within the 180-day timeframe. These were due to late payment of permit fees, facility construction delays and complex permit category determinations.

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, but increases this year indicate that additional regulatory options must be considered.

In the first quarter of FY15, the level of molybdenum was below the DEP type 1 Limit for the first 2 months but above it in September. 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

## 1<sup>st</sup> Quarter – FY15

### Western Water Operations and Maintenance

- John J. Carroll Water Treatment Plant: Staff removed the old chemical fill station for Hydrofluosilic Acid and installed a custom made fiberglass enclosure that will be more chemically resistant. Staff made preparations for the ribbon cutting ceremony of the new CWTP UV Facilities. Building exteriors were power washed, doors painted, the carbon dioxide storage tanks were painted and grounds work was completed.
- Oakdale Power Station: Staff supported the contractor performing the 5-year overhaul of the Woodward Gateshaft Governor on the power station's hydro turbine. The governor, a complex hydraulic-mechanical device, was completely disassembled, cleaned, reassembled and tested.
- Norumbega Cover Storage Tank Chamber N1: Staff removed the 12,000 square feet exterior roof covering, cleaned, and prepared the surface for new coating. A new three-part liquid applied Urethane membrane was applied to provide a waterproof barrier to the roof of the concrete structure.
- Rutland Holden Sewer Line: Staff, along with assistance from DCR equipment operators, repaired very wet section of the easement access road in Rutland, including 1,900 feet of roadway and 17 culvert crossings ranging in size from 36 inches to 6 inches. The majority of the materials (4,500 yards) were reclaimed tunnel spoils from Quabbin Shaft 5 and 7 in Rutland, reducing cost. This project will allow this section of the sewer line to be inspected by TV Inspections Crews and will enable staff to access the area for maintenance and inspection purposes.
- William A. Brutsch Water Treatment Facility: Staff supported the start up and completed reliability testing for the UV Treatment System, including a system shutdown for tie in work and having the UV equipment suppliers on site for testing and control system adjustment. Training for Operations and Maintenance Staff has been completed for all critical equipment. MWRA received DEP approval to operate the facility.

### Metro Water Operations & Maintenance

Water Pipeline Program: A 24" valve on Section 33 and a 6" valve on a branch line in Chelsea were replaced. Two blow off retrofits were completed: Section 33, Washington Avenue in Chelsea, and Section 14, Main Street in Malden. Another blow off site was started at Addams and Pearl Streets in Malden on Section 84. Work to replace the existing 24" culvert with new box culverts and wing walls at the Great Esker Park began. Former Meter 96 to Chelsea, which has been inactive for many years, was disconnected during an overnight shutdown of a small portion of the Chelsea water system on September 24. The work was completed and water service restored to area residents with no discolored water complaints. Another shutdown of the same area will occur in early October, to create a new emergency connection between MWRA Section 15 and the Chelsea water system. On September 28, a walker reported water surfacing off of Recreation Road in Weston, determined to be from Section 80, a 48" steel main. The surfacing water is flowing overland and not creating any issues. Repair of the leak will be coordinated with Wellesley and Needham, as their source of MWRA water during high demand season is Section 80.

- Valve Program: Main Line Valve Exercising was performed on Sections 5, 6, 28, 32, 37, 38, 41, 42, 68, 70, 90, 97A, 98, Loring Road Sleeve Valves 1 and 4, Clinton Road, Fisher Hill, Harvard Street, and the Warren and Cottage lines. Fire flow bypass valve maintenance was performed at Meters 11, 47, 121, 135, 192, and 194. Pressure Reducing Valve (PRV) preventative maintenance was performed at Meters 93, 106, 157, 171 and 175; Arlington Covered Reservoir, Deer Island Tank, Section 28, Section 100, Shafts 7, 7B, 9, 9A, Oak Hill flow control valve, WASM 16 and Nonantum Road. Modifications to the control piping to the off-line PRV at Nonantum Road were completed, in anticipation of using this site for level control for the new Spot Pond Tanks. The Watertown Pipeline was returned to service, along with Meters 92 to Watertown and 148 to Waltham on August 11. Staff operated valves on Section 64 to temporarily convert it from Fells service area to the Northern Intermediate High (NIH) service area, prior to its use as the discharge pipe for the new Spot Pond Pump Station. The line was tested at this increased hydraulic grade line from September 16 through the 19, then returned to its normal configuration in the Fells service area. Valve staff coordinated valve operations with Needham for a trial isolation of the St. Mary's Pump Station, in anticipation of the construction of a new pump station by the town.
- Lynn Interconnection Planning: MWRA Waterworks Staff met with Lynn Water and Sewer Commission (LWSC) Staff on July 23 to discuss potential water supply to the city. LWSC needs to take their Low Service Covered Reservoir out of service to replace the existing floating cover. Initial discussions concluded that the work would be done in the spring of 2015. Planning will continue over the next several months the specific details of potentially supplying the city with some or all of its normal water supply during the maintenance period.
- Melrose Water Main Isolations: Work being done by the Spot Pond Storage Tank Contractor on Ravine Road in Stoneham is required to maintain service to existing Melrose water mains. Excavation to install the new 48" piping revealed that the Melrose mains would need to be temporarily removed to successfully complete the new piping. Several meetings were held with Melrose Public Works and Water Department Staff to plan the isolation and temporary removal of the city's mains. A trial-run isolation was performed over night on July 14, which demonstrated that the mains could be isolated without service impacts. Additional isolations were performed on July 17 and 24 to remove the existing mains and install new valves. No discolored water or pressure complaints were received during any of the valve operations.
- Section 91 Leak in Revere: On August 21, the Revere Water Department notified MWRA that there was water surfacing in the Rumney Marsh. Section 91, a 48" ductile iron water main is located adjacent to a former rail bed which parallels the marsh, and crosses under Route 1. The on-call Valve Crew responded and isolated the main, stopping the flow of water. Service in the Northern High Service (NHS) area remained normal. The Revere Conservation Commission was notified regarding the leak and the need to repair the water main. Work began on August 25, with clearing to gain access to the site. Excavation and shoring work continued into September. The leak was repaired by replacing the stretch of pipe that had a corrosion hole at its bottom. The line was flushed, disinfected, sampled, and was then returned to service on September 22.
- Wellesley E. Coli Incident: On August 21, water quality sample results within the Wellesley water system yielded a positive *E. coli* sample, resulting in DEP requiring a boil water notice. MWRA staff assisted the town with valve operations and system investigations. Two subsequent rounds of sampling resulted in the order being lifted on August 23. It is believed that the cause was an tank access hatch that had been buried for years. The hatch was uncovered and was found to be corroded. The tanks were isolated, dewatered, repaired, and then disinfected and activated.



## Wastewater Operations & Maintenance

- July 16, 2014-Constellation Energy / ISO New England Demand Response Program: The Authority participates in the ISO-NE Demand Response Program at the Chelsea Creek, Columbus Park, Ward Street and Nut Island headworks. All four facilities were called upon for audit operation by Constellation requiring each facility to run on emergency facility generator power within 30 minutes of notification. All facilities maintained operations and returned to utility power within 90 minutes without issue.
- Nut Island Headworks Odor Control Chemical Systems: Maintenance Staff continued to install and test the rebuilt odor control chemical piping system and were assisted by Operations Staff during system testing.
- July 28, 2014-City of Revere-EF-2 Tornado Event: At approximately 9:30 a.m. during a thunder storm rain event a tornado touched down and swept through a section of Revere. The EOC was staffed prior to this time and monitoring the approaching weather conditions with anticipation of high system flows and possible CSO activations.
- August 13, 2014 - DEP Site-Visits CSO Facilities: DEP Regulators visited the Prison Point, Somerville Marginal and Cottage Farm CSOs for inspections regarding the facility operating conditions. Both Prison Point and Somerville Marginal facilities were staffed and activated during these visits due to an on-going rain event. There were no issues to report during the visit and resulted in continued positive dialogue with the DEP.
- CSO Evaluation Study: Staff worked with SCADA & Process Control Staff conducting an analysis of process control procedures at the three CSO facilities. This is part of the ongoing system optimization and provided recommendations that could be applied at all three facilities.
- North Main Pump Station Shutdown Planning Meetings: Staff from multiple departments attended a series of planning meetings in September in preparation for the North Main Pump Station contract equipment upgrades and modifications. Staff are providing wastewater system operating conditions, monitoring points, system modeling information and regulatory notification comments for this joint effort.
- Wastewater Operator Training Program: Wastewater Operations has implemented an Operator Training Program where in house staff are trained to become wastewater operators. Trainees shadowing Wastewater Operations staff one day a week at field facilities (pumping stations, headworks and CSOs) and/or at the Deer Island Treatment Plant. Trainees also attend wastewater exam training once per week. The program will culminate with the trainees taking the grade 2 wastewater operator's license examination in January 2015. The goal of the program is to have an adequate pool of internal candidates for future Wastewater Operator Positions.
- Nut Island Headworks Electrical and Conveyors Improvements: Operations Staff continues to work with Engineering and Construction Staff and the contractor on this project, coordinating facility operations with project work activities. The installation of cable trays, penetrations for electrical conduits, required equipment outages and the upgrade of the grit conveyors were completed. In September the contractor began switching over to the new power supply for ancillary equipment and continues work on the improvements to the screenings conveyors.
- Remote Headworks Upgrades: Operations Staff continues to work with Engineering & Construction and the contractor on the Remote Headworks Upgrades Project including reviewing possible screenings collection equipment layouts and review of proposed exterior facility façade options.
- Safety Awareness Orientation Training: Recently hired staff members attended the Authority's Safety Awareness Orientation Training Program. This program teaches new and existing staff the basic elements of the Authority's Safety Program with the intention of answering any questions regarding safety protocol, policy and procedures.
- Process Control Activities: Prepared description of staff responsibilities for Process Control and staffing needs to achieve objectives; continued development of Process book computer screens; coordinated with other process areas (DITP, CWTP, etc) on alarm management; assisted in the planning and analysis for the north main pump station shutdowns to support DITP equipment replacement; modified set points at Caruso to improve pump performance during high flows; working on headworks gate control adjustments to reduce flow oscillation during choking; supported Nut Island wet scrubber odor control chemical feed rehabilitation; developed alternate chemical pacing scheme for Prison Point CSO given problems with main flow meter; working to update MAXIMO data for instrumentation; provided logic adjustment for the Brookline Gate notification alarm, assisted with submittal reviews for Prison Point Pump Rehabilitation, coordinating fire alarm inventory, and supporting uninterrupted power supply criticality and replacement evaluation.

## TRAC

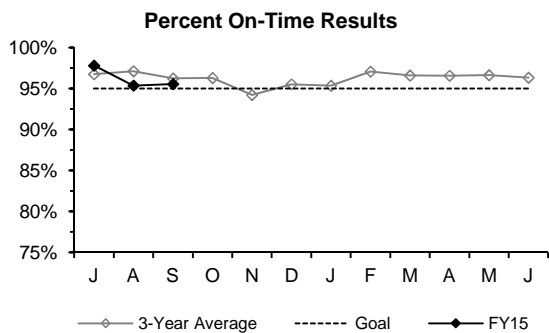
- Enforcement: TRAC and UMass Boston entered into a Settlement Agreement, effective August 5, 2014, to resolve violations related to the discharge of mercury. The Settlement Agreement requires UMass Boston to pay a \$ 16,000.00 administrative penalty, complete Supplemental Environmental Projects at cost of \$64,000.00, and pay stipulated penalties, for a period of two years, for reporting and discharge violations.
- Inspections and Permitting: On August 6, 2014, Wastewater Operations Staff requested that TRAC Staff investigate the source of large amounts of ramen noodle plastic packaging collecting on the Ward Street Pump Station screens. TRAC Staff contacted a number of potential sources and coordinated with community agencies, but the source of the packaging has not been determined.

## Environmental Quality

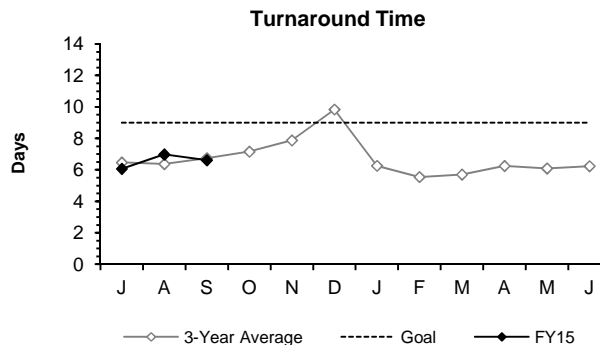
- Algae Program: Monitoring activity continues for nuisance taste and odor algae by both the Authority and MADCR. Frequency of sampling activity is being adjusted based upon monitoring results. Staff continued sampling to begin a preliminary investigation into algae taste and odor compounds in coordination with MADCR and with the support of UMASS-Amherst.
- Emergency Response Plan Training: As part of a multi-disciplinary team, Environmental Quality Water Staff helped present Emergency Response Plan Training to numerous client communities.
- Harbor and Outfall Monitoring: Three surveys were conducted during the quarter.
- Contingency Plan Thresholds: There was an exceedance of the contingency plan threshold for Phaeocystis. This was reported as required to EPA and others in the 5-day window.
- OMSAP Meeting: A meeting of the Outfall Monitoring Science Advisory Panel was held on September 23rd in Nahant.
- Community Support: ENQUAL provided support to BWSC to help address complaints about "brown water" observed in Boston's Inner Harbor in late August. Samples collected by BWSC in Fort Point Channel were inspected microscopically, and no apparent harmful algae or wastewater-derived solids were observed. ENQUAL also coordinated with Waltham to evaluate sample results from a Verizon Manhole, together with Inspection, TRAC and DLS Staff.

# Laboratory Services

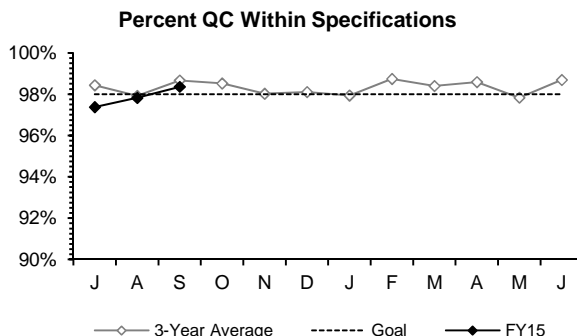
## 1st Quarter - FY15



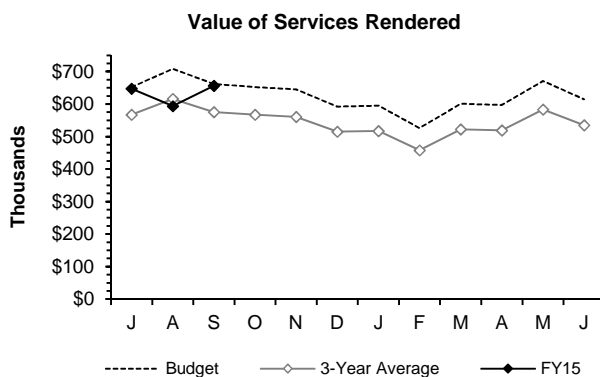
The Percent On-Time measurement was above the 95% goal, each month of the quarter.



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



Percent of QC tests meeting specifications was above or close to the 98% in-house goal each month of the quarter.



Value of Services Rendered was at the seasonally adjusted budget projection for two months of the quarter. The small shortage is due to retirements and hiring replacements.

### Highlights:

#### Quality Assurance:

Completed work with Internal Audit on a management advisory on Lab QA/QC. The final proficiency test samples (PT) were passed, closing out the DEP-required PT program for 2014. The minor issues identified in the May 2014 DEP certification audit of the Central Lab have been resolved to DEP's satisfaction.

#### Mobile Lab:

The x-ray fluorescence instrument on the mobile lab was used to identify some suspicious material found at an emergency reservoir as aquarium gravel. Successfully completed two more drills of the mobile lab with the ESU at water facilities.

**DITP:** Provided details on lab tests to a consultant who is performing verification of the MWRA 2013 green house gas report.

#### TRAC:

The new automated cyanide instrument was put into operation for all wastewater cyanide samples. In addition to being faster than the classical method, it is less prone to interferences.

#### ENQUAL Clean Water:

Working with ENQUAL on the impact on MWRA's NPDES permits of EPA's "sufficiently sensitive methods" rule. The intent of this rule is to make sure that the lab test methods used for NPDES permits are sensitive enough to determine whether contaminants are at concentrations higher than water quality criteria.

#### ENQUAL Drinking Water:

Tested extra Total Coliform Rule samples from Wellesley to help them clear their boil water order. Continued nitrification monitoring for Waltham and Hanscom AFB as part of on-going response to past coliform positive samples. Provided context to a news item regarding the presence of Lithium in tap water.

#### Outside Customers:

Tested extra beach samples and also samples from a persistent leak for Winthrop to identify the source.

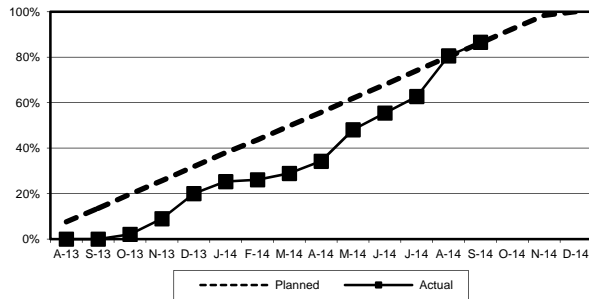
# CONSTRUCTION PROGRAMS

## Projects In Construction

1st Quarter - FY15

(Progress Percentages based on Construction Expenditures)

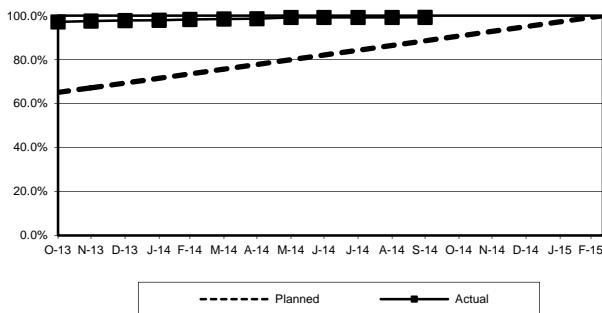
**Nut Island Headworks Electrical and Conveyor Improvements Progress – September 2014**



*Project Summary:* This project will replace the floor-slab-embedded electrical conduits in the bottom level of the headworks, as well as improvements to the grit and screenings conveyors.

*Status and Issues:* As of September the Contractor continued installing conduit for the existing equipment on the bottom level of the facility. They also began power feed cut-overs to the equipment in the pump and blower area and completed the grit conveyor modifications.

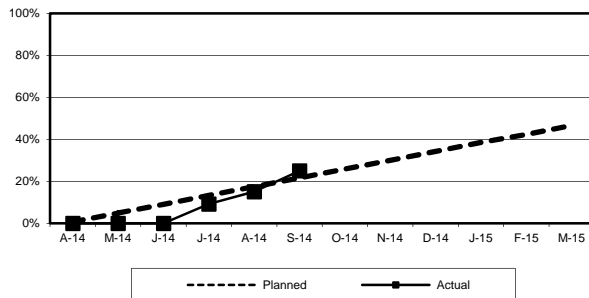
**UV Disinfection Facilities CWTP Progress – September 2014**



*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:* During September, the HVAC Contractor was called back to the site and directed to trouble-shoot new glitches found in the newly installed cooling water pumps inside the UV room for the air handling unit.

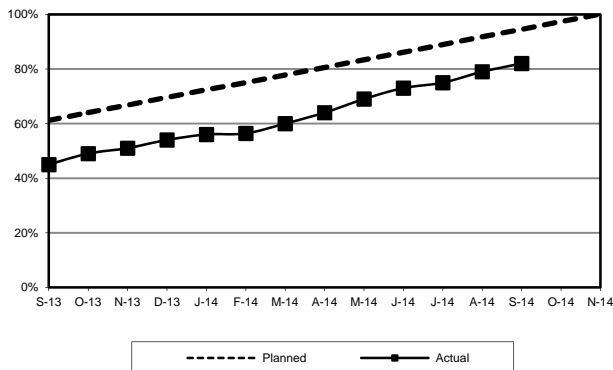
**Clinton Digester and Primary Clarifier Rehab Progress - September 2014**



*Project Summary:* This project involves the rehabilitation of the Plant's two digesters, as well as the replacement of the gas compressors, sludge collection equipment, isolation gates and repairs to the concrete.

*Status and Issues:* As of September, the Contractor removed the digester floating roof, and it is now on piers awaiting rehabilitation. Primary Clarifiers 3&4 have been poured and the forms have been stripped. The prep work is being done for the coating. The plug valves in the digester building are being replaced.

**Spot Pond Water Storage Facility Progress – September 2014**



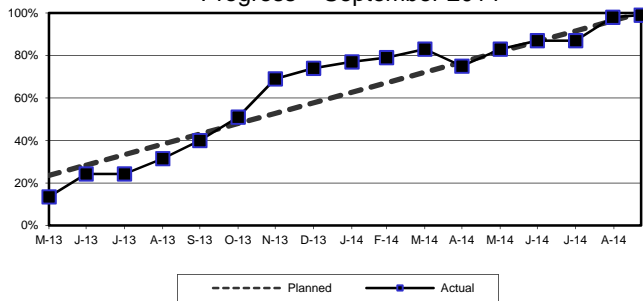
*Project Summary:* This is a design/build project for the construction of two, 10 million-gallon covered concrete storage tanks and a buried pump station, which will provide back-up redundancy for the Northern High and Northern Intermediate High distribution service areas.

*Status and Issues:* As of September, the Contractor completed filling Tank 1 and began leakage testing. They continued backfilling Tank 2 and installing bioengineered slopes. The Internal remedial work on Tank 2 continues including final concrete placements. At the pump station, they worked on the plumbing, mechanical piping, electrical conduits and HVAC installations.

## Projects In Construction 1st Quarter - FY15

(Progress Percentages based on Construction Expenditures)

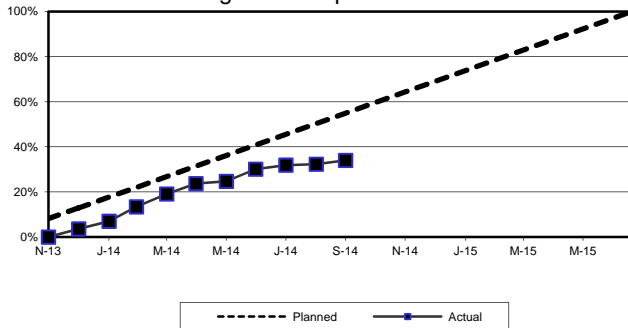
**Quabbin UV Disinfection  
Progress – September 2014**



*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:* During September, the Contractor completed the 30-day Reliability Testing and UV units were placed into continuous service on September 5th. DEP granted approval to operate the new UV system. Substantial Completion was declared on September 22<sup>nd</sup> and the Contractor demobilized from site and continued working on punch list items.

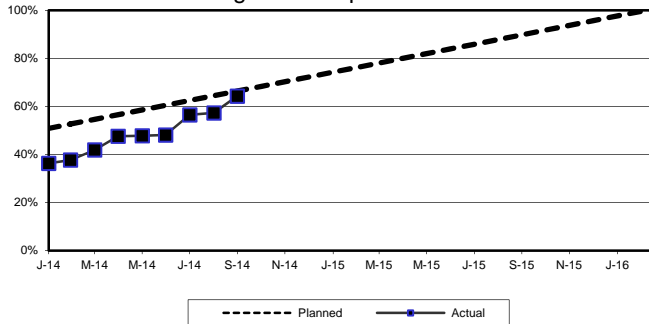
**Pump, Gear Box and Diesel Engine Upgrade  
Prison Point and Cottage Farm CSO Facilities  
Progress - September 2014**



*Project Summary:* This project involves the rebuilding of pumps right angle gear drives and engines as well as the installation of diesel oxidation catalysts at the Prison Point and Cottage Farm CSO facilities.

*Status and Issues:* During September, the Contractor made preparations for the removal of right angle gear number 1 at Prison Point. The gear manufacturer, Philadelphia Gear has begun the process of factory testing the new right angle gear in their Delaware facility.

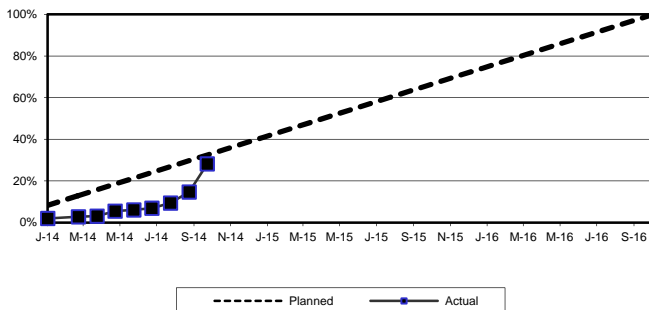
**North Main Pump Station VFDs & Motors  
Progress - September 2014**



*Project Summary:* This project involves the replacement of the existing 3500 HP variable frequency drives and synchronous motors for the RWW pumps at the North Main Pump Station.

*Status and Issues:* VFD's 6 & 7 successfully completed the 90 day demonstration run. Existing VFD 1 has been removed and new VFD 1 has been installed and work on the units internal connections continues. Existing Motor 1 has been removed and the new motor has been installed and connected to the existing wiring.

**Primary and Secondary Clarifier Scum Tip Tubes  
Progress - September 2014**



*Project Summary:* This project involves the replacement of the existing carbon steel tip tubes with 316 stainless steel in 48 primary and 54 secondary clarifiers to improve reliability and increase longevity.

*Status and Issues:* The Contractor, Walsh Construction, completed the installation of 29 of 188 scum skimmers. They continue with the installation of conduit for fiber optic cable from Primary Clarifier and Secondary Clarifier Area from control panel to site actuator.

## CSO CONTROL PROGRAM

1st Quarter - FY15

MWRA and the CSO communities have completed 32 of the 35 projects in the Long-Term CSO Control Plan. The three remaining CSO projects are in construction: Reserved Channel Sewer Separation by BWSC, CAM004 Sewer Separation by City of Cambridge, and Automated Gate/ Floatables Control at Outfall MWR003 and Rindge Ave. Siphon Relief, for which MWRA issued the notice to proceed on August 28, 2014. The following table reports on the progress of the three CSO projects not yet complete, as well as BWSC's continuing inflow removal work associated with the completed South Dorchester Bay Sewer Separation project.

| Project   |                         | Court Milestones in Schedule Seven<br>(Shaded milestones are complete.) |                       |   | Status as of September 30, 2014  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
|---|-------------------------|---|-----------------------|---|--|-------------|-------------------|----------|-----------------|-------------|------------------|----------|--------------|-------------|------------------|----------|--------------|-------------|------------------|----------|--------------|------------|------------------|----------|--------------|------------|-------------------|------------|---------|------------|----------------------|---------|---------|------------|----------------------|----------|----------|------------|----------------------|----------|--------------|
|   |                         | Commence Design   | Commence Construction | Complete Construction   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Reserved Channel Sewer Separation                     |                         | Jul 06  | May 09                | Dec 15  | <p>BWSC continues to make progress with the nine planned contracts for the Reserved Channel Sewer Separation project.</p> <table border="0"> <tr> <td>Contract 1</td> <td>CSO outfall rehab</td> <td>\$ 4.1 M</td> <td>Complete</td> </tr> <tr> <td>Contract 2</td> <td>Sewer separation</td> <td>\$ 5.9 M</td> <td>Complete</td> </tr> <tr> <td>Contract 3A</td> <td>Sewer separation</td> <td>\$11.8 M</td> <td>Complete</td> </tr> <tr> <td>Contract 3B</td> <td>Sewer separation</td> <td>\$12.8 M</td> <td>97% complete</td> </tr> <tr> <td>Contract 4</td> <td>Sewer separation</td> <td>\$11.4 M</td> <td>85% complete</td> </tr> <tr> <td>Contract 5</td> <td>Cleaning &amp; Lining</td> <td>ineligible</td> <td>Awarded</td> </tr> <tr> <td>Contract 6</td> <td>Downspout Disconnect</td> <td>\$ 0.7M</td> <td>Awarded</td> </tr> <tr> <td>Contract 7</td> <td>Pavement restoration</td> <td>\$ 1.2 M</td> <td>Complete</td> </tr> <tr> <td>Contract 8</td> <td>Pavement restoration</td> <td>\$ 5.7 M</td> <td>35% complete</td> </tr> </table> <p>The MWRA Board approved Amendment 14 to the BWSC MOU/FAA on May 14, 2014, increasing the total award amount to \$292.6 million. BWSC recently reported higher cost estimates and need for an additional amendment to the MOU/FAA totaling nearly \$4 million associated with contracts 3B and 4. BWSC plans to complete all work for the Reserved Channel sewer separation project by December 2015, in compliance with Schedule Seven.</p> | Contract 1  | CSO outfall rehab | \$ 4.1 M | Complete        | Contract 2  | Sewer separation | \$ 5.9 M | Complete     | Contract 3A | Sewer separation | \$11.8 M | Complete     | Contract 3B | Sewer separation | \$12.8 M | 97% complete | Contract 4 | Sewer separation | \$11.4 M | 85% complete | Contract 5 | Cleaning & Lining | ineligible | Awarded | Contract 6 | Downspout Disconnect | \$ 0.7M | Awarded | Contract 7 | Pavement restoration | \$ 1.2 M | Complete | Contract 8 | Pavement restoration | \$ 5.7 M | 35% complete |
| Contract 1  | CSO outfall rehab       | \$ 4.1 M  | Complete              |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Contract 2  | Sewer separation        | \$ 5.9 M  | Complete              |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Contract 3A   | Sewer separation        | \$11.8 M  | Complete              |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Contract 3B   | Sewer separation        | \$12.8 M  | 97% complete          |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Contract 4  | Sewer separation        | \$11.4 M  | 85% complete          |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Contract 5  | Cleaning & Lining       | ineligible  | Awarded               |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Contract 6  | Downspout Disconnect    | \$ 0.7M   | Awarded               |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Contract 7  | Pavement restoration    | \$ 1.2 M  | Complete              |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Contract 8  | Pavement restoration    | \$ 5.7 M  | 35% complete          |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Cambridge/<br>Alewife<br>Brook<br>Sewer<br>Separation | CAM004 Sewer Separation | Jan 97  | Jul 98                | Dec 15  | <p>Cambridge completed four initial construction contracts for this project more than a decade ago and is presently managing three additional sewer separation contracts (contracts 8A, 8B and 9) to complete the project. Cambridge may complete sewer separation work on Concord Lane under an additional (fourth) contract.</p> <table border="0"> <tr> <td>Contract 8A</td> <td>Sewer separation</td> <td>\$10.6M</td> <td>Subst. complete</td> </tr> <tr> <td>Contract 8B</td> <td>Sewer separation</td> <td>\$18.7M</td> <td>25% complete</td> </tr> <tr> <td>Contract 9</td> <td>Sewer separation</td> <td>\$ 7.1M</td> <td>15% complete</td> </tr> </table> <p>Cambridge recently completed the 60% design for Concord Lane and plans to meet with the property owner to review the design plans and negotiate the final right to entry for construction. Cambridge plans to commence construction in Concord Lane by Spring 2015 and complete all work for the CAM004 sewer separation project by December 2015, in compliance with Schedule Seven.</p>   | Contract 8A | Sewer separation  | \$10.6M  | Subst. complete | Contract 8B | Sewer separation | \$18.7M  | 25% complete | Contract 9  | Sewer separation | \$ 7.1M  | 15% complete |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
|   | Contract 8A             | Sewer separation  | \$10.6M               | Subst. complete   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Contract 8B   | Sewer separation        | \$18.7M   | 25% complete          |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| Contract 9  | Sewer separation        | \$ 7.1M   | 15% complete          |   |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |
| MWR003 Gate and Rindge Ave. Siphon Relief             | Apr 12                  | Aug 14  | Oct 15                | <p>MWRA issued the notice to proceed with construction on August 28, 2014. The contract completion date is October 28, 2015, in compliance with Schedule Seven.</p> |  |             |                   |          |                 |             |                  |          |              |             |                  |          |              |             |                  |          |              |            |                  |          |              |            |                   |            |         |            |                      |         |         |            |                      |          |          |            |                      |          |              |

| Other CSO Related Work   |   |                       |                       |  |
|--|---|-----------------------|-----------------------|--|
| Project  | Court Milestones in Schedule Seven<br>(Shaded milestones are complete.) |                       |                       | Status as of September 30, 2014  |
|  | Commence Design   | Commence Construction | Complete Construction |  |
| South Dorchester Bay Sewer Separation Post-Construction Inflow Removal | N/A   | N/A                   | N/A                   | BWSC has completed its investigation of alternatives for removing additional stormwater inflow from its Dorchester Interceptor or otherwise relieving hydraulic conditions in the interceptor during extreme storms following the closing of CSO regulators with completion of the South Dorchester Bay sewer separation project in 2007. On August 6, 2014, BWSC presented updated information on its ongoing evaluations. Meanwhile, BWSC continues with a construction contract to remove some of the remaining inflow sources from its sewer system. The contract amount is \$562,261, of which \$204,000 is eligible for MWRA funding under the BWSC CSO MOU and FAA. MWRA's FY15 CIP includes \$5.4 million for the inflow removal effort, of which approximately \$2.7 million is allocated to awarded design and construction contracts. |

## CIP Expenditures 1<sup>st</sup> Quarter - FY15

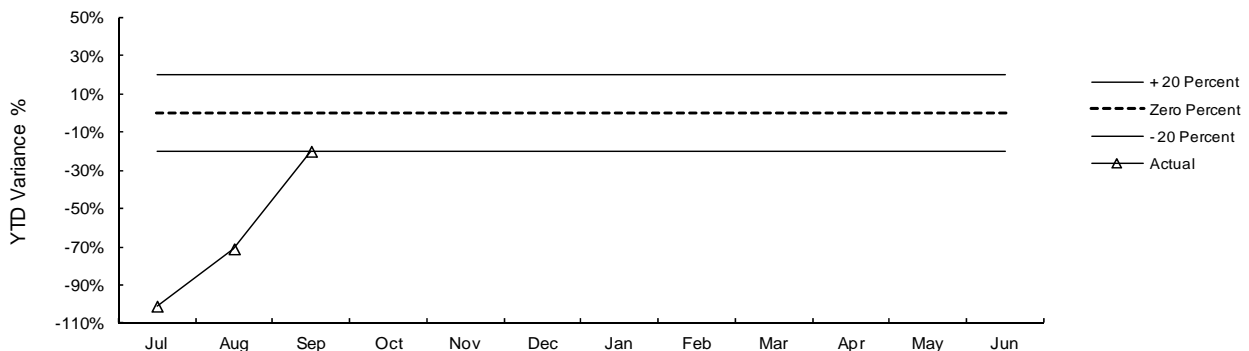
The Year-To-Date variances are highlighted below:

| FY15 Capital Improvement Program<br>Expenditure Variances through September by Program<br>(\$000) |                                  |                                  |                    |                     |
|---|----------------------------------|----------------------------------|--------------------|---------------------|
| Program   | FY15 Budget Through<br>September | FY15 Actual Through<br>September | Variance<br>Amount | Variance<br>Percent |
| Wastewater  | 13,120                           | 12,410                           | (710)              | -5%                 |
| Waterworks  | 7,397                            | 4,130                            | (3,266)            | -44%                |
| Business and<br>Operations Support  | 1,453                            | 837                              | (616)              | -42%                |
| Total   | 21,970                           | \$17,377                         | (\$4,592)          | -20%                |

Underspending within Wastewater is primarily due to less than anticipated community requests for grants and loans for the Infiltration/Inflow (I/I) Program and actual costs being lower than the estimated expenditures for Centrifuge Backdrive Replacement and Electrical Upgrade Construction 4 contracts. This was partially offset by progress on the Scum Skimmer and Clinton Digester Tank Rehabilitation contracts and the timing of reimbursement for the Brookline Sewer Separation project. Underspending in Waterworks is primarily due to timing of work for the Spot Pond Storage Facility Design/Build contract offset by contractor progress for the Quabbin Ultraviolet Disinfection Construction contract.

### CIP Expenditure Variance

*Total FY15 CIP Budget of \$137,600,000.*



### 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 9/27/2014   | \$59 million                 |
| Unused capacity under the debt cap:                                    | \$848 million                |
| Estimated date for exhausting construction fund without new borrowing: | Nov-14                       |
| Estimated date for debt cap increase to support new borrowing:         | Not anticipated at this time |
| Commercial paper outstanding:  | \$170 million                |
| Commercial paper capacity:   | \$350 million                |
| Budgeted FY15 capital spending*:                                       | \$125 million                |

\* Cash based spending is discounted for construction retainage.



# DRINKING WATER QUALITY AND SUPPLY

# Source Water – Microbial Results and UV Absorbance

## 1st Quarter – FY15

### 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 William A. Brutsch Water Treatment Facility (formerly Ware Disinfection Facility) raw water tap before being treated and entering the CVA system.

All samples collected during the 1st Quarter were below 20 cfu/100ml. **For the current six-month period, 0.0% 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.

In the wintertime when smaller water bodies near Wachusett Reservoir freeze up, many waterfowl will roost in the main body of the reservoir - which freezes later. This increased bird activity tends to increase fecal coliform counts. DCR has an active bird harassment program to move the birds away from the intake area.

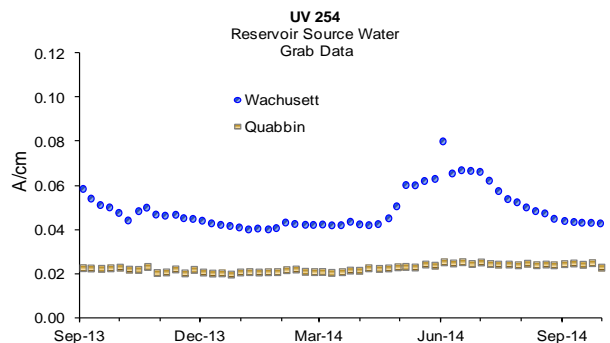
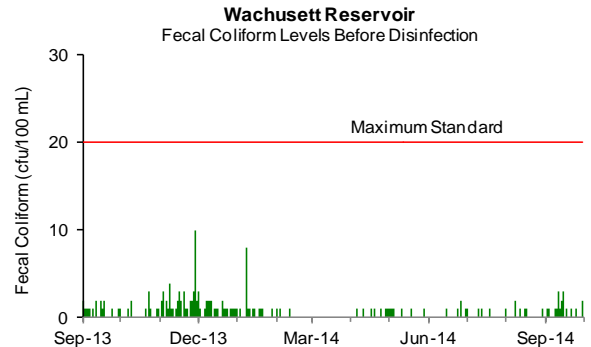
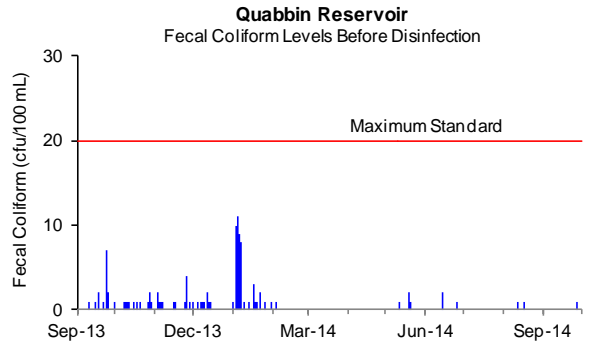
All samples collected during the 1st Quarter were below 20 cfu/100mL. **For the current six-month period, 0% of the samples exceeded a count of 20 cfu/100mL.**

### 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 disinfection by-products. UV-254 is impacted by tributary flows, water age, sunlight and other factors. Hurricanes can have a significant and long lasting impact.

Quabbin Reservoir UV-254 levels are currently around 0.023 A/cm.

Wachusett Reservoir UV-254 levels are currently around 0.043 A/cm.



## Source Water – Turbidity

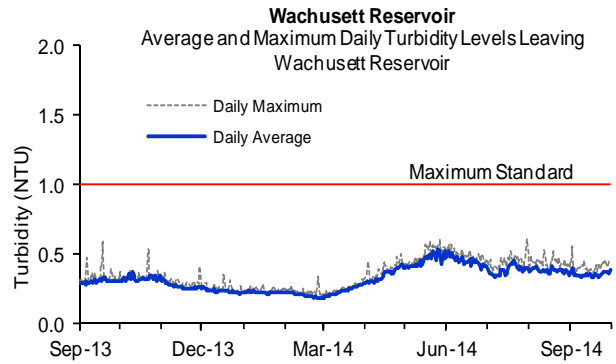
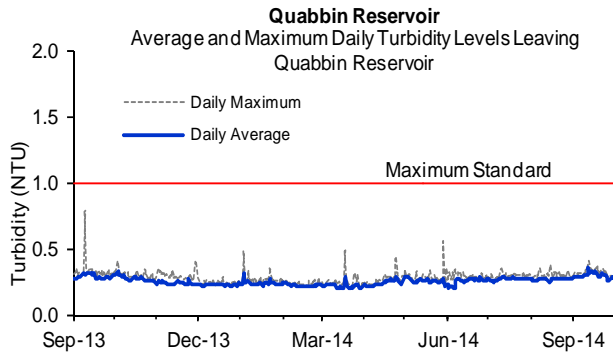
### 1st Quarter – FY15

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 disinfectant demand or may protect bacteria from disinfection effects, 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 William A. Brutsch Water Treatment Facility before chlorination. Turbidity of Wachusett Reservoir is monitored continuously at the Carroll Water Treatment Plant before ozonation.

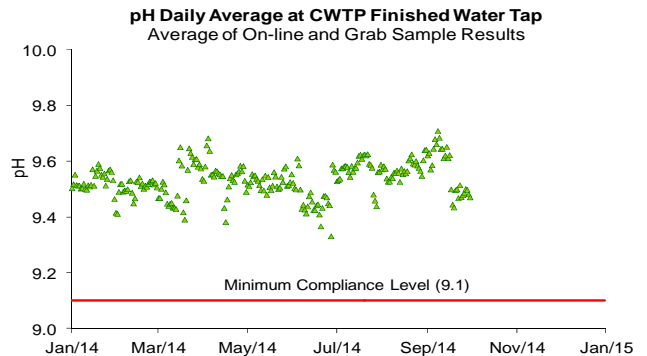
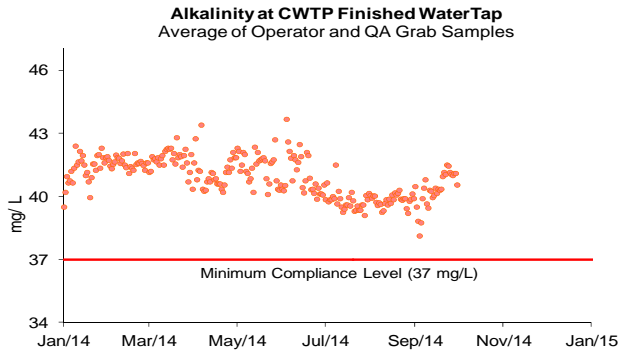
Maximum turbidity results at Quabbin and Wachusett were within DEP standards for the quarter



## 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 September 10 and 11, 2014. Distribution system sample pH ranged from 9.1 to 9.6 and alkalinity ranged from 38 to 41 mg/L. No sample results were below DEP limits for this quarter.



## Treated Water – Disinfection Effectiveness

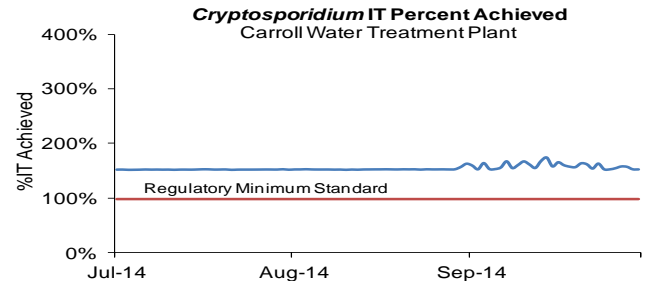
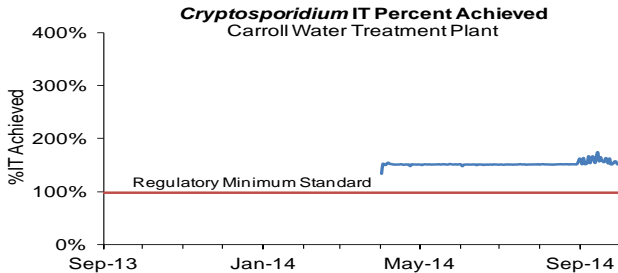
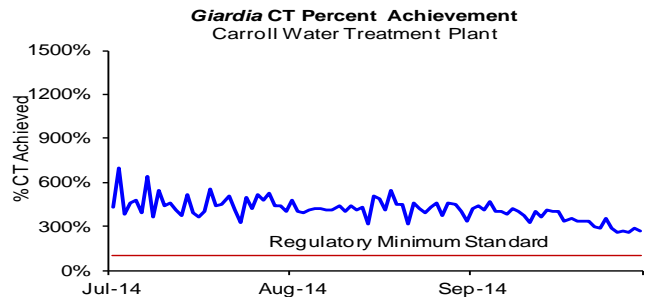
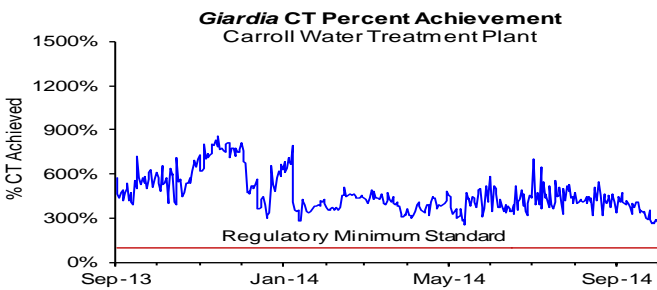
1st Quarter – FY15

At the Carroll Water Treatment Plant (CWTP), MWRA meets the required 99.9% (3-log) inactivation of *Giardia* using ozone (reported as CT: concentration of disinfectant x contact time) and the required 99% (2-log) inactivation of *Cryptosporidium* using UV (reported as IT: intensity of UV x time). MWRA calculates inactivation rates hourly and reports *Giardia* inactivation at maximum flow and *Cryptosporidium* inactivation at minimum UV dose. MWRA must meet 100% of required CT and IT.

CT achievement for *Giardia* assures CT achievement for viruses, which have a lower CT requirement. For *Cryptosporidium*, there is also an “off-spec” requirement. Off-spec water is water that has not reached the full required UV dose or if the UV reactor is operated outside its validated ranges. No more than 5% off-spec water is allowed in a month.

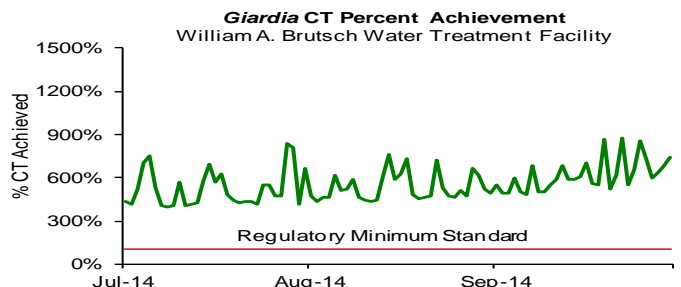
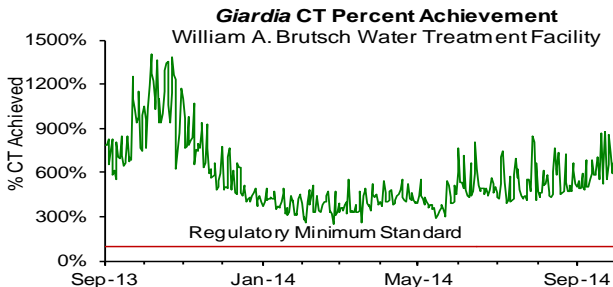
### Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 1.5 to 2.3 mg/L for the quarter.
- Giardia* 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.
- Cryptosporidium* IT was maintained above 100% during the month. Off-spec water was less than 5%.



### Quabbin Reservoir at William A. Brutsch Water Treatment 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 William A. Brutsch Water Treatment Facility is adjusted in order to achieve MWRA’s seasonal target of  $\geq 0.75$  mg/L (November 01 – May 31) and  $\geq 1.0$  mg/L (June 1– October 31) at Ludlow Monitoring Station. The chlorine dose at WDF was 1.6 mg/L for the quarter.



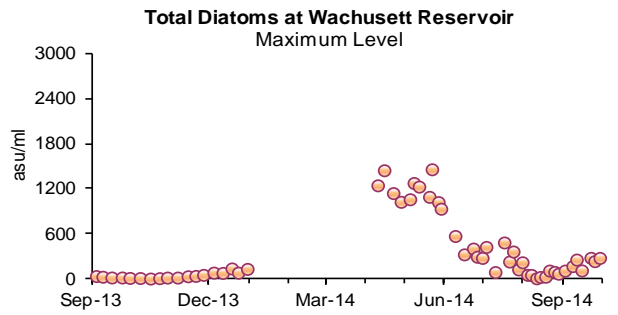
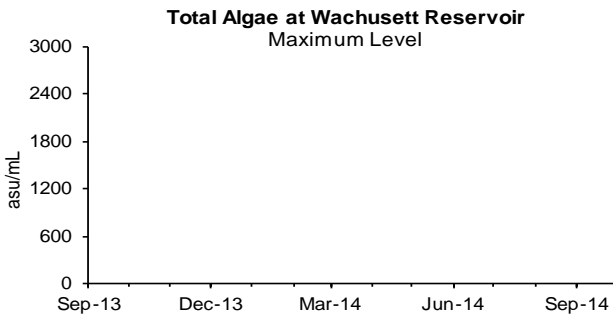
## Source Water - Algae

### 1st Quarter – FY15

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 algicide. 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 1st Quarter, there were four complaints which may be related to algae reported from local water departments.

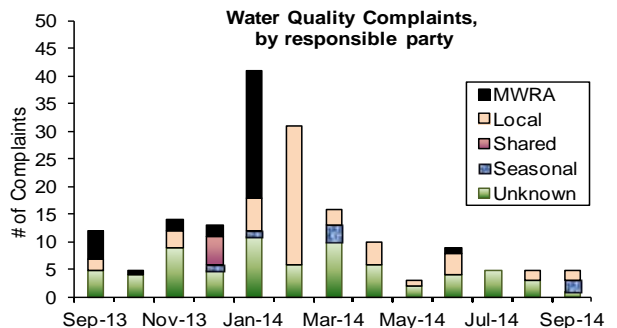
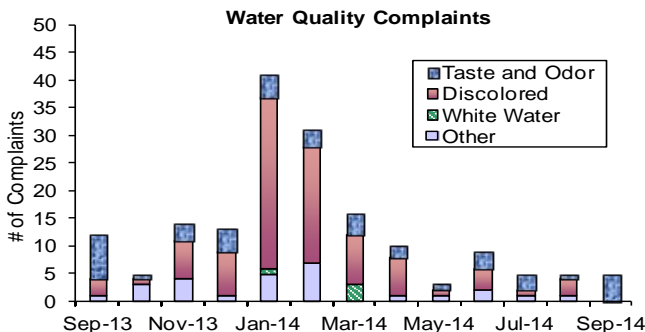


## Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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 15 complaints during the quarter compared to 51 complaints for 1st Quarter of FY14. Of these complaints, 4 were for “discolored water”, 9 were for “taste and odor”, and 2 were for “other”. Of these complaints, 4 were local community issues, 2 were seasonal in nature, and 9 were unknown in origin.



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

1<sup>st</sup> Quarter – FY15

While all communities collect bacteria samples and chlorine residual data for the Total Coliform Rule (TCR), data from the 43 systems that use MWRA's Laboratory are reported below.

The MWRA TCR program has 141 sampling locations. These locations include sites along MWRA's transmission system, water storage tanks and pumping stations, as well as a subset of the community TCR locations.

The TCR requires that no more than 5% of all samples in a month may be total coliform positive (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 whose presence likely 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 1<sup>st</sup> Quarter, 44 of the 6,123 community samples (0.72% system-wide) submitted to MWRA labs for analysis tested positive for coliform (Bedford – in July; Bedford, Wellesley – in August; Bedford, Hanscom AFB (Bedford) – in September). Twelve of the 1,982 MWRA samples (0.61%) tested positive for total coliform. Westboro Hospital did not violate the TCR since only one sample was positive in their system which collects fewer than 40 samples/ month. During a routine sampling in Wellesley, one sample indicated the presence of total coliform bacteria on August 19. Repeat samples showed the presence of total coliform, including one location with *E. coli*. Since the positive sample was located near a water storage tank, the town immediately removed the tank from service on August 21 and issued a Boil Order. All repeat samples collected afterwards were coliform free and the boil water order was lifted on August 23. Pierce Reservoir tank is undergoing repairs. No other MWRA or community sample tested positive for *E. coli*. Only 4.2% of the samples had any chlorine residuals 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) |             |
|---|--|-------------------------------|-------------------|-------------------------------|----------------------------------|----------------------------------|-------------|
| d | MWRA Locations                           | 378                           | 11 (2.91%)        | 0                             | No                               | 1.15                             | 2.49        |
|   | Communities in Program                   | 1604                          | 1 (0.06%)         | 0                             | No                               | 0.01                             | 1.93        |
|   | <b>Total: MWRA</b>                       | <b>1982</b>                   | <b>12 (0.61%)</b> | <b>0</b>                      | <b>No</b>                        | <b>0.01</b>                      | <b>2.04</b> |
|   | ARLINGTON                                | 168                           | 0 (0%)            | 0                             |                                  | 0.01                             | 1.32        |
|   | BELMONT                                  | 104                           | 0 (0%)            | 0                             |                                  | 0.17                             | 1.66        |
|   | BOSTON                                   | 795                           | 0 (0%)            | 0                             |                                  | 0.45                             | 1.99        |
|   | BROOKLINE                                | 238                           | 0 (0%)            | 0                             |                                  | 0.16                             | 1.91        |
|   | CHELSEA                                  | 169                           | 0 (0%)            | 0                             |                                  | 1.11                             | 1.92        |
|   | DEER ISLAND                              | 52                            | 0 (0%)            | 0                             |                                  | 1.01                             | 1.86        |
|   | EVERETT                                  | 169                           | 0 (0%)            | 0                             |                                  | 1.01                             | 1.13        |
|   | FRAMINGHAM                               | 216                           | 0 (0%)            | 0                             |                                  | 0.20                             | 1.96        |
|   | LEXINGTON                                | 116                           | 0 (0%)            | 0                             |                                  | 0.51                             | 2.10        |
|   | LYNNFIELD                                | 18                            | 0 (0%)            | 0                             |                                  | 0.25                             | 1.09        |
|   | MALDEN                                   | 235                           | 0 (0%)            | 0                             |                                  | 0.66                             | 1.95        |
|   | MARBLEHEAD                               | 72                            | 0 (0%)            | 0                             |                                  | 0.27                             | 1.91        |
|   | MEDFORD                                  | 221                           | 0 (0%)            | 0                             |                                  | 1.18                             | 1.88        |
|   | MELROSE                                  | 117                           | 0 (0%)            | 0                             |                                  | 0.02                             | 0.98        |
|   | MILTON                                   | 96                            | 0 (0%)            | 0                             |                                  | 1.29                             | 1.82        |
|   | NAHANT                                   | 30                            | 0 (0%)            | 0                             |                                  | 0.09                             | 1.46        |
|   | NEWTON                                   | 276                           | 0 (0%)            | 0                             |                                  | 0.11                             | 1.84        |
|   | NORWOOD                                  | 99                            | 0 (0%)            | 0                             |                                  | 0.04                             | 1.47        |
|   | QUINCY                                   | 300                           | 0 (0%)            | 0                             |                                  | 0.07                             | 1.51        |
|   | READING                                  | 130                           | 0 (0%)            | 0                             |                                  | 0.01                             | 1.25        |
|   | REVERE                                   | 195                           | 0 (0%)            | 0                             |                                  | 1.00                             | 1.97        |
|   | SAUGUS                                   | 112                           | 0 (0%)            | 0                             |                                  | 1.42                             | 1.85        |
|   | SOMERVILLE                               | 273                           | 0 (0%)            | 0                             |                                  | 1.07                             | 1.75        |
|   | SOUTHBOROUGH                             | 30                            | 0 (0%)            | 0                             |                                  | 0.08                             | 1.76        |
|   | STONEHAM                                 | 91                            | 0 (0%)            | 0                             |                                  | 0.86                             | 1.91        |
|   | SWAMPSCOTT                               | 53                            | 0 (0%)            | 0                             |                                  | 0.16                             | 1.31        |
|   | WALTHAM                                  | 234                           | 6 (2.56%)         | 0                             | No                               | 0.56                             | 2.09        |
|   | WATERTOWN                                | 130                           | 0 (0%)            | 0                             |                                  | 0.63                             | 2.01        |
|   | WESTBORO HOSPITAL                        | 18                            | 1 (5.56%)         | 0                             | No                               | 0.08                             | 0.41        |
|   | WESTON                                   | 48                            | 0 (0%)            | 0                             |                                  | 0.14                             | 1.77        |
|   | WINTHROP                                 | 72                            | 0 (0%)            | 0                             |                                  | 0.11                             | 1.47        |
|   | <b>Total: Fully Served</b>               | <b>4877</b>                   | <b>7 (0.14%)</b>  |                               |                                  |                                  |             |
|   | BEDFORD <sup>b</sup>                     | 119                           | 31 (26.05%)       | 0                             | Yes                              | 0.07                             | 1.23        |
|   | CANTON                                   | 87                            | 0 (0%)            | 0                             |                                  | 0.02                             | 0.77        |
|   | HANSCOM AFB                              | 33                            | 2 (6.06%)         | 0                             | Yes                              | 0.04                             | 1.22        |
|   | MARLBORO                                 | 126                           | 0 (0%)            | 0                             |                                  | 0.71                             | 2.43        |
|   | NEEDHAM                                  | 123                           | 0 (0%)            | 0                             |                                  | 0.06                             | 0.86        |
|   | NORTHBORO                                | 48                            | 0 (0%)            | 0                             |                                  | 0.03                             | 1.56        |
|   | WAKEFIELD                                | 148                           | 0 (0%)            | 0                             |                                  | 0.25                             | 1.30        |
|   | WELLESLEY                                | 142                           | 4 (2.82%)         | 1                             | Yes                              | 0.02                             | 0.86        |
|   | WILMINGTON                               | 86                            | 0 (0%)            | 0                             |                                  | 0.11                             | 1.59        |
|   | WINCHESTER                               | 91                            | 0 (0%)            | 0                             |                                  | 0.12                             | 1.50        |
|   | WOBURN                                   | 195                           | 0 (0%)            | 0                             |                                  | 0.02                             | 1.11        |
| c | SOUTH HADLEY FD1                         | 48                            | 0 (0%)            | 0                             |                                  | 0.15                             | 0.57        |
|   | <b>Total: CVA &amp; Partially Served</b> | <b>1246</b>                   | <b>37 (2.97%)</b> |                               |                                  |                                  |             |
|   | <b>Total: Community Samples</b>          | <b>6123</b>                   | <b>44 (0.72%)</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.

(e) Sample collection period extended until October 7, 2014 by DEP.

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

1st Quarter – FY15

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. For the MetroBoston system, effective Q2 2013, under the Stage 2 DBP Rule, compliance is based on locational running annual averages (LRAA). Sampling locations have increased from 16 to 32 each quarter. Data prior to Q1 2013 reports the running annual average, and since Q1 2013, the maximum LRAA is reported (in addition to min and max values).

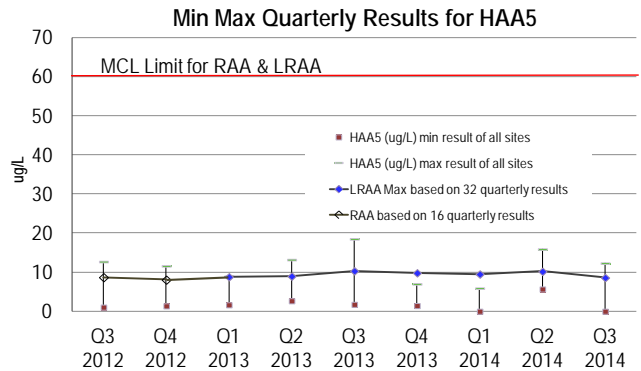
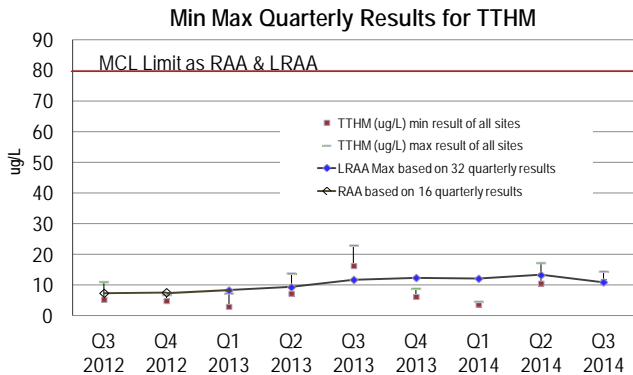
For the CVA communities, effective Q3 2013, under the Stage 2 DBP Rule, compliance is based on a LRAA for each community. Sampling locations have increased from 12 to 14 each quarter. Prior to Q3 2013, the running annual average is reported, and since Q3 2013, the maximum LRAA is reported (in addition to min and max values). The chart below combines all three CVA communities data.

Partially served and CVA communities are responsible for their own compliance monitoring and reporting, and must be contacted directly for their individual results.

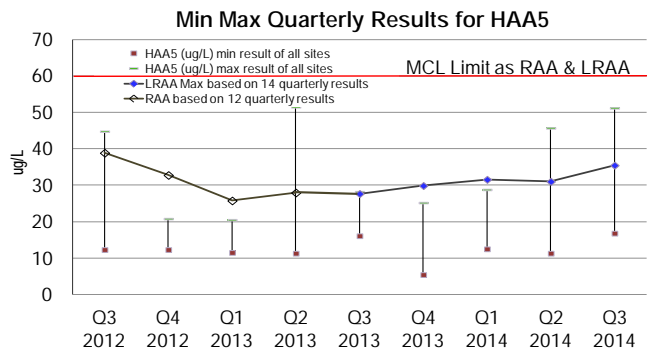
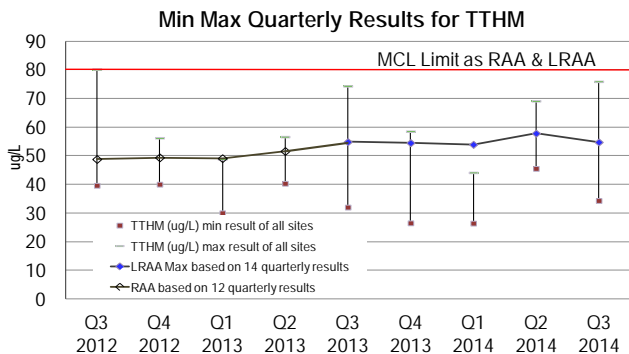
Bromate is tested monthly per DEP requirements for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA's RAA MCL standard for bromate is 10 µg/L.

The RAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remain below current standards. The LRAA for TTHMs = 11.0 µg/L; HAA5s = 8.6 µg/L. The current RAA for Bromate = 0.0 µg/L. CVA's DBP levels continue to be below current standards.

## MetroBoston Disinfection By-Products



## CVA Disinfection By-Products



# Water Supply and Source Water Management

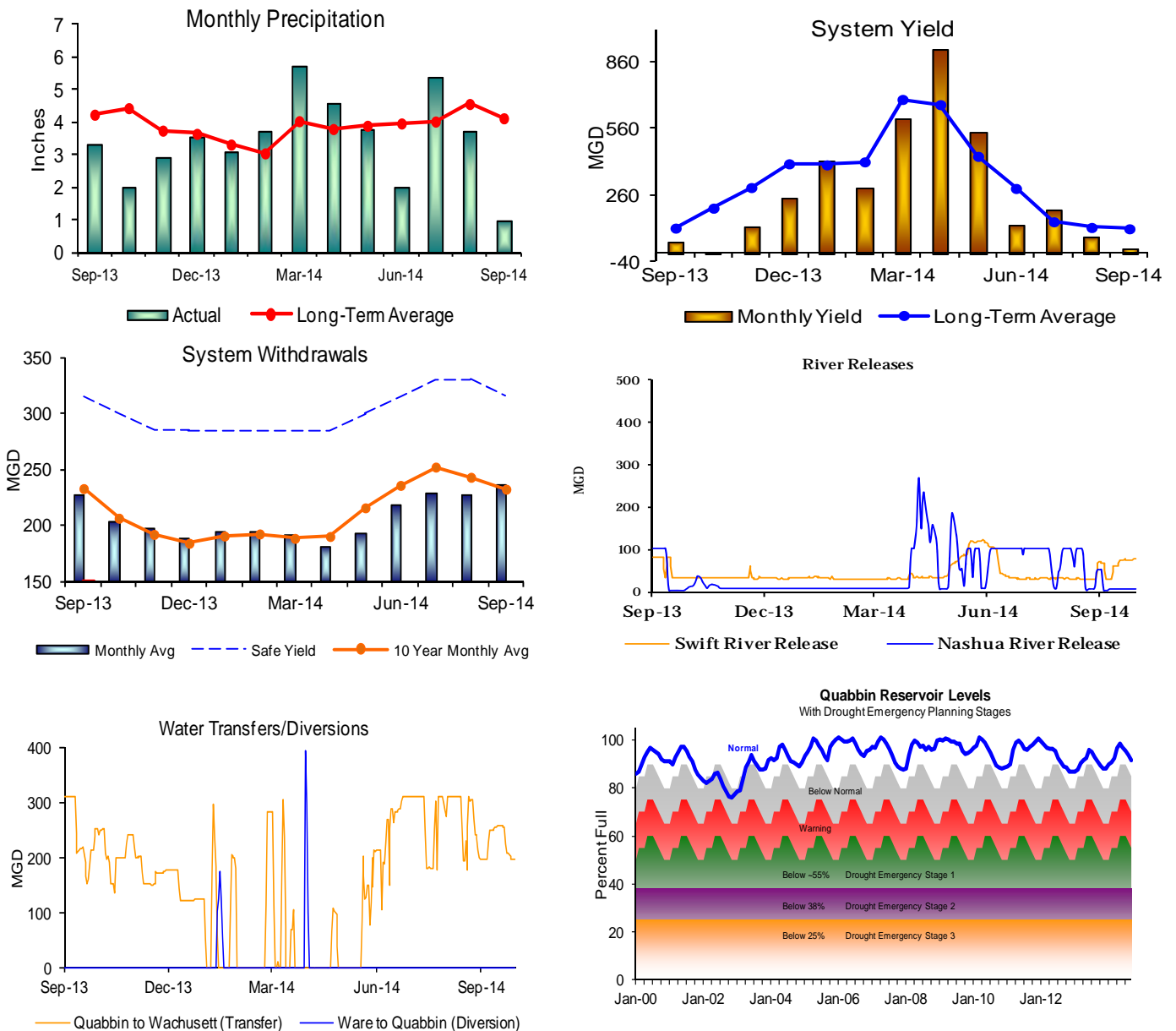
1st Quarter – FY15

## 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 within the normal operating range for this period of the year. The volume of the Quabbin Reservoir was at 91.5% as of September 30, 2014; a 5.2% decrease for the quarter, which represents a decrease of 21.4 billion gallons of storage. Yield and precipitation for the quarter were below their quarterly long term averages. Monthly withdrawal continues to be below its long-term average.





# WASTEWATER QUALITY

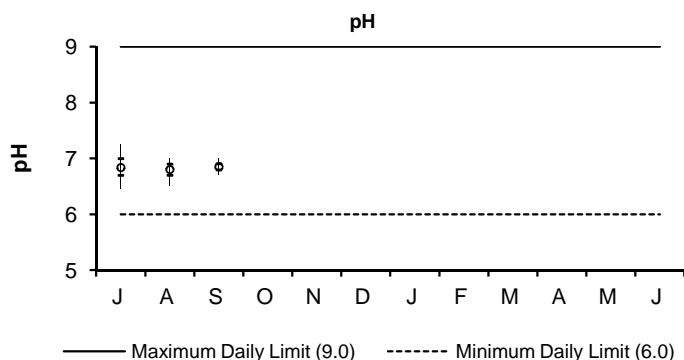
# NPDES Permit Compliance: Deer Island Treatment Plant

## 1st Quarter - FY15

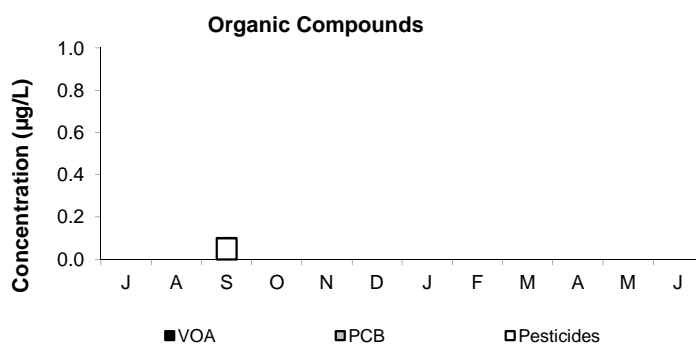
### NPDES Permit Limits

| Effluent Characteristics |                            | Units     | Limits   | July       | August  | September | 1st Quarter Violations | FY15 YTD Violations |
|--------------------------|----------------------------|-----------|----------|------------|---------|-----------|------------------------|---------------------|
| Dry Day Flow:            |                            | mgd       | 436      | 265.0      | 263.5   | 262.3     | 0                      | 0                   |
| cBOD:                    | Monthly Average            | mg/L      | 25       | 4.2        | 4.1     | 4.7       | 0                      | 0                   |
|                          | Weekly Average             | mg/L      | 40       | 7.5        | 5.0     | 5.2       | 0                      | 0                   |
| TSS:                     | Monthly Average            | mg/L      | 30       | 6.8        | 5.9     | 5.8       | 0                      | 0                   |
|                          | Weekly Average             | mg/L      | 45       | 11.0       | 8.1     | 6.5       | 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    | 45         | 57      | 11        | 0                      | 0                   |
|                          | Weekly Geometric Mean      | col/100mL | 14000    | 8          | 8       | 6         | 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  | 6.5-7.3    | 6.5-7.0 | 6.7-7.0   | 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     | 50         | 100     | 100       | 0                      | 0                   |
|                          | Inland Silverside          | %         | ≥1.5     | 100        | 50      | 100       | 0                      | 0                   |

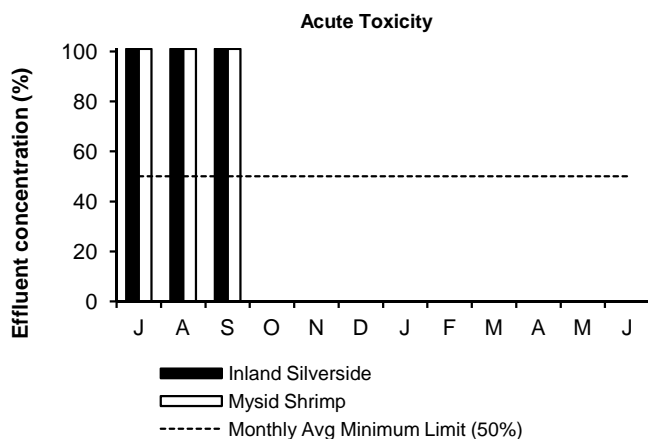
There have been no permit violations in FY15 at the Deer Island Treatment Plant.



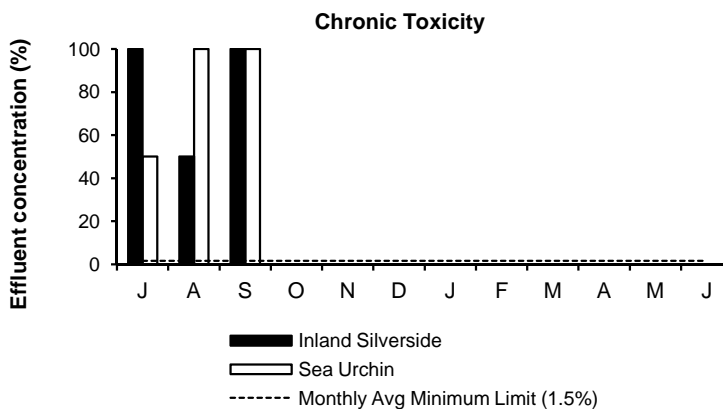
pH is a measure of the alkalinity or acidity of the effluent. Fluctuations in pH do not have an adverse effect on marine environments. Because of the pure oxygen used in the activated sludge reactor, the effluent pH tends to be at the lower pH range. pH measurements for the 1st Quarter were within the daily permit limits.



An important wastewater component monitored in the effluent is organic compounds, such as volatile organic acids, pesticides, and polychlorinated biphenyls, which are all sampled monthly. The secondary treatment process has significantly reduced organic compounds in the effluent stream. In the 1st Quarter, hexachlorobenzene was detected in the effluent in September. All other organic compounds were below the detection limit for the quarter.



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 1st 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 1st Quarter for both the inland silverside and sea urchin.

# NPDES Permit Compliance: Clinton Wastewater Treatment Plant

1st Quarter - FY15

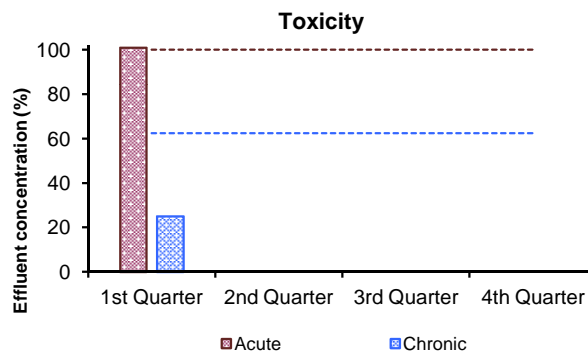
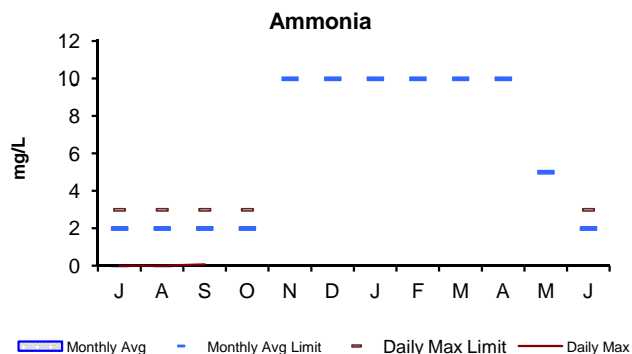
## NPDES Permit Limits

| Effluent Characteristics                    |                  | Units     | Limits  | July    | August  | September | 1st Quarter Violations | FY15 YTD Violations |
|---|------------------|-----------|---------|---------|---------|-----------|------------------------|---------------------|
| Flow:                                       |                  | mgd       | 3.01    | 2.37    | 2.32    | 2.29      | 0                      | 0                   |
| BOD:  | Monthly Average: | mg/L      | 20      | 2.3     | 2.0     | 2.2       | 0                      | 0                   |
|   | Weekly Average:  | mg/L      | 20      | 2.9     | 2.3     | 2.5       | 0                      | 0                   |
| TSS:  | Monthly Average: | mg/L      | 20      | 2.6     | 1.8     | 2.9       | 0                      | 0                   |
|   | Weekly Average:  | mg/L      | 20      | 3.1     | 2.2     | 4.7       | 0                      | 0                   |
| pH:   |                  | SU        | 6.5-8.3 | 7.0-7.6 | 7.2-7.5 | 6.8-7.6   | 0                      | 9                   |
| Dissolved Oxygen: Daily Minimum:            |                  | mg/L      | 6       | 7.0     | 6.4     | 6.6       | 0                      | 0                   |
| Fecal Coliform: Daily Geometric Mean:       |                  | col/100mL | 400     | 6       | 9       | 17        | 0                      | 0                   |
| Monthly Geometric Mean:                     |                  | col/100mL | 200     | 3       | 3       | 4         | 0                      | 0                   |
| TCR: Monthly Average:                       |                  | ug/L      | 50      | 0       | 0.4     | 0.4       | 0                      | 0                   |
| Daily Maximum:                              |                  | ug/L      | 50      | 7       | 6.7     | 12.5      | 0                      | 0                   |
| Total Ammonia Nitrogen: June 1 - October 31 |                  |           |         |         |         |           |                        |                     |
| Monthly Average:                            |                  | mg/L      | 2.0     | 0.00    | 0.00    | 0.01      | 0                      | 0                   |
| Daily Maximum:                              |                  | mg/L      | 3.0     | 0.00    | 0.00    | 0.08      | 0                      | 0                   |
| Copper: Monthly Average:                    |                  | ug/L      | 20      | 9.0     | 7.6     | 6.7       | 0                      | 0                   |
| Phosphorus: May 1 - Oct 31                  |                  |           |         |         |         |           |                        |                     |
| Monthly Average:                            |                  | mg/L      | 1.0     | --      | 0.00    | 0.00      | 0                      | 0                   |
| Acute Toxicity: Daily Minimum:              |                  | %         | ≥100    | *N/A    | *N/A    | > 100     | 0                      | 0                   |
| Chronic Toxicity: Daily Minimum:            |                  | %         | ≥62.5   | *N/A    | *N/A    | 25        | 1                      | 1                   |

There has been one permit violation in FY15 at the Clinton Treatment Plant.

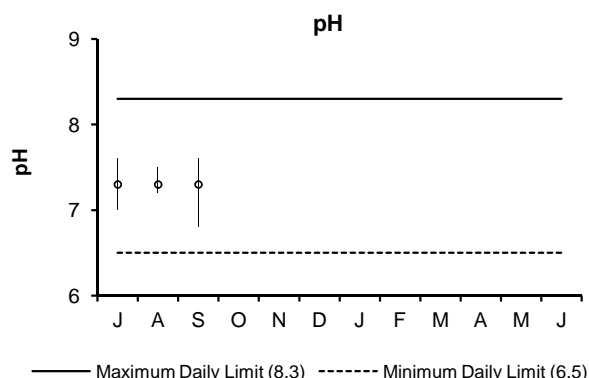
**1st Quarter:** There was one permit violation in the 1st Quarter of FY15. In September 2014, the chronic toxicity was 25%, which is below the permit minimum of 62.5%.

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

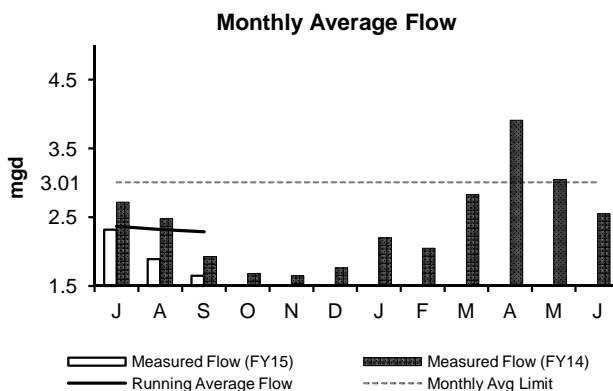


The 1st Quarter's monthly average and daily maximum concentrations were below the permit limits. The monthly average and daily maximum limits for the 1st Quarter are 10.0 mg/L and 35.2 mg/L respectively. The permit limits are most stringent from June to October when warm weather conditions are most conducive 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. The chronic toxicity was below the permit minimum, possibly due to the river control samples performing better than is typical. Therefore there was a permit violation in September 2014.



pH is a measure of the alkalinity or acidity of the effluent. All daily pH results for the 1st 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 1st Quarter were below the NPDES permit limit.

# COMMUNITY FLOWS AND PROGRAMS

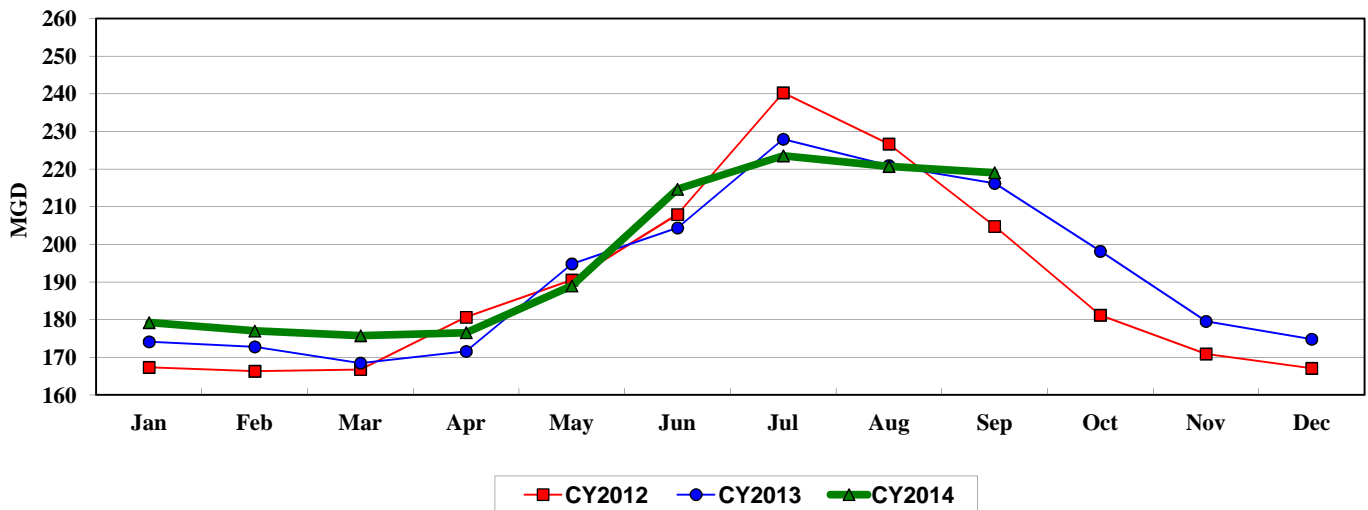
## Total Water Use: MWRA Core Customers Water Supplied 1st Quarter - FY15

### MWRA Water Supplied: All Revenue Customers

| MGD    | Jan     | Feb     | Mar     | Apr     | May     | Jun     | Jul     | Aug     | Sep     | Oct     | Nov     | Dec     | Average |
|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| CY2012 | 167.323 | 166.293 | 166.754 | 180.645 | 190.542 | 207.946 | 240.313 | 226.681 | 204.802 | 181.186 | 170.881 | 167.060 | 189.307 |
| CY2013 | 174.117 | 172.782 | 168.462 | 171.569 | 194.838 | 204.384 | 227.963 | 220.962 | 216.216 | 198.168 | 179.548 | 174.814 | 192.133 |
| CY2014 | 179.212 | 176.987 | 175.736 | 176.536 | 188.974 | 214.660 | 223.544 | 220.734 | 219.070 | 0.000   | 0.000   | 0.000   | 197.428 |

| MG     | Jan       | Feb       | Mar       | Apr       | May       | Jun       | Jul       | Aug       | Sep       | Oct       | Nov       | Dec       | Total      |
|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| CY2012 | 5,187.018 | 4,822.495 | 5,169.362 | 5,419.336 | 5,906.792 | 6,238.376 | 7,449.711 | 7,027.100 | 6,144.072 | 5,616.755 | 5,126.421 | 5,178.864 | 69,286.302 |
| CY2013 | 5,397.612 | 4,837.906 | 5,222.328 | 5,147.061 | 6,039.966 | 6,131.507 | 7,066.855 | 6,849.826 | 6,486.467 | 6,143.217 | 5,386.450 | 5,419.236 | 70,128.430 |
| CY2014 | 5,555.575 | 4,955.629 | 5,447.807 | 5,296.068 | 5,858.182 | 6,439.790 | 6,929.849 | 6,842.752 | 6,572.085 | 0.000     | 0.000     | 0.000     | 53,897.738 |

### MWRA Water Supplied: All Revenue Customers



The September 2014 Community Water Use Report recently distributed to communities served by the MWRA waterworks systems. 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 2014 water use will be used to allocate the FY16 water utility rate revenue requirement.

September 2014 water supplied of 219.1 mgd (for revenue generating users) is up 2.9 mgd or 1.3% compared to September 2013. This includes 0.389 mgd supplied to the Town of Hudson and 1.2 mgd supplied to the Dedham-Westwood Water District (DWWD). DWWD has been experiencing delays in work on one of their wells, creating a local supply deficit.

The City of Cambridge used MWRA water from September 2013 to June 2014.

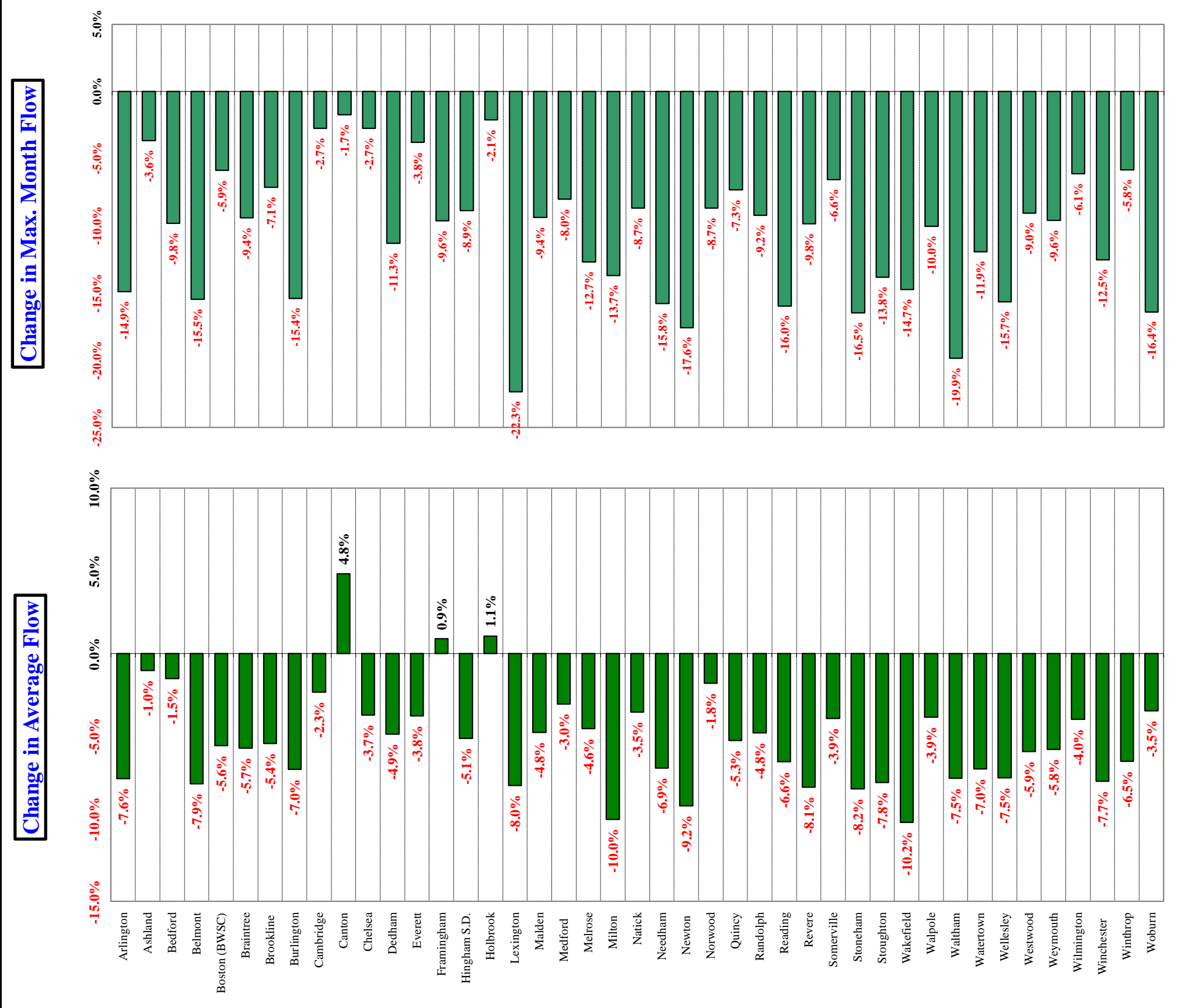
Including the water supplied to Cambridge, Hudson and DWWD, annual system-wide consumption for CY14 remains higher than CY13 with 197.4 mgd being supplied to MWRA customers **through September**. This is 2.6 mgd higher than CY13, and is an increase of 1.4%.

Excluding MWRA water provided to Cambridge, Hudson and DWWD, annual system-wide consumption through September has dropped 0.2 mgd or 0.1%.

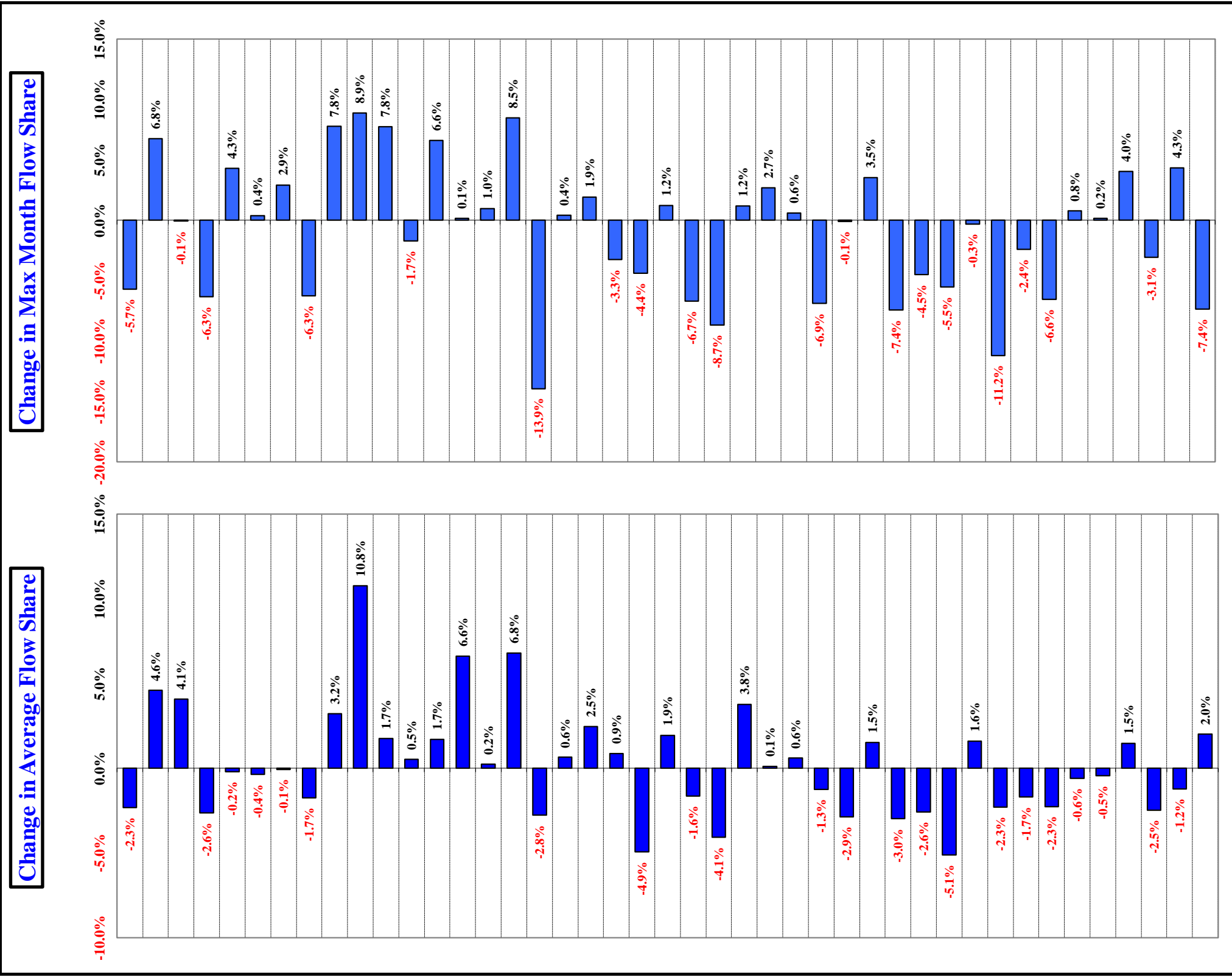
# Community Wastewater Flows

## 1st Quarter - FY15

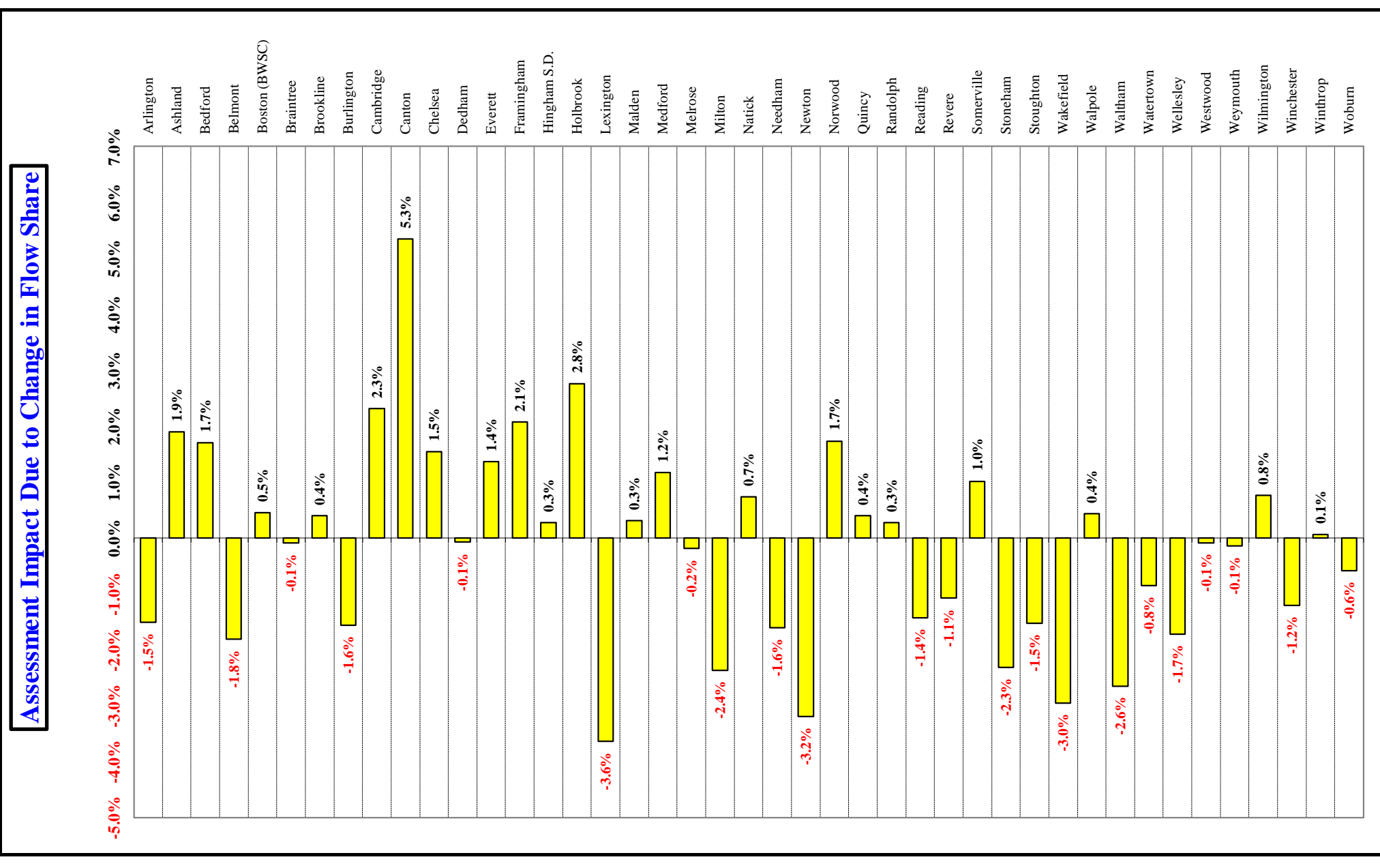
The flow components of FY2016 sewer assessments will be calculated using a 3-year average of CY2012 to CY2014 wastewater flows compared to FY2015 assessments that used a 3-year average of CY2011 to CY2013 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2012 to CY2014 flow share compared to CY2011 to CY2013 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.



### How Projected CY2014 Community Wastewater Flows Could Effect FY2016 Sewer Assessments

**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 CY2011 to CY2014 average wastewater flows as of 09/30/14. Flow data is preliminary and subject to change pending additional MWRA and community review.  
<sup>3</sup> CY2011 to CY2013 wastewater flows based on actual meter data. CY2014 flows based on actual meter data for January to August and projected flows for September to December.  
<sup>4</sup> Represents ONLY the impact on the total BASE assessment resulting from the changes in average and maximum wastewater FLOW SHARES.

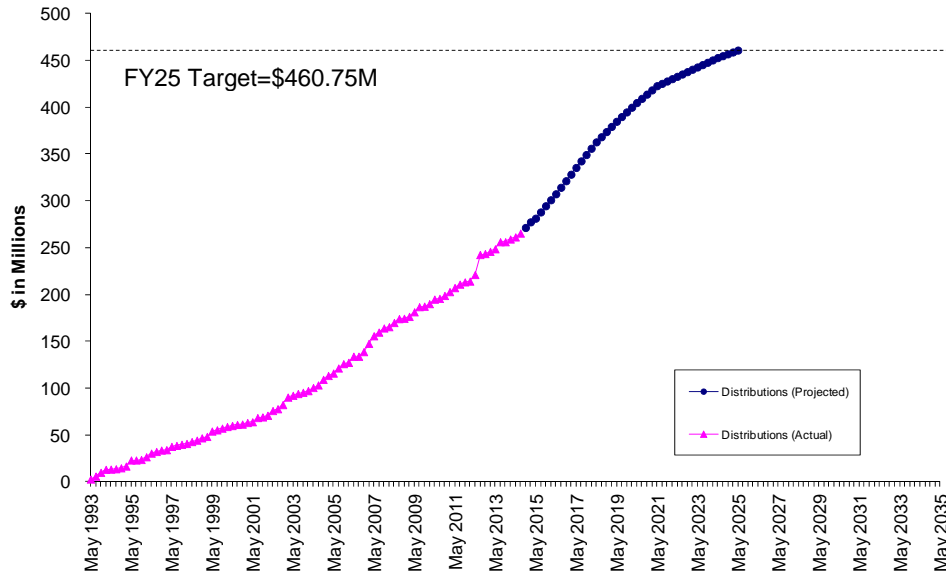
# Community Support Programs

## 1<sup>st</sup> Quarter – FY15

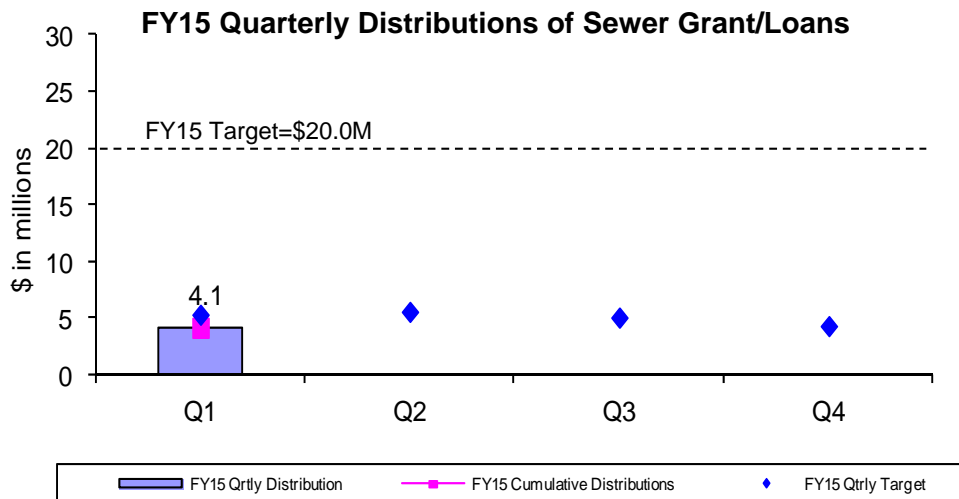
### Infiltration/Inflow Local Financial Assistance Program

MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$460.75 million in grants and interest-free loans (average of about \$14 million per year from FY93 through FY25) 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. Phase 1-8 funds (total \$300.75 million) were distributed as 45% grants/55% loans with interest-free loans repaid to MWRA over a five-year period. Phase 9 and 10 funds (total \$160 million) are distributed as 75% grants and 25% loans with interest-free loans repaid to MWRA over a ten-year period.

#### I/I Local Financial Assistance Program Distribution FY93-FY25



During the 1<sup>st</sup> Quarter of FY15, \$4.1 million in financial assistance (45% grants and 55% interest-free loans) was distributed to fund local sewer rehabilitation projects in Newton and Quincy. Total grant/loan distribution for FY15 is \$4.1 million. From FY93 through the 1<sup>st</sup> Quarter of FY15, all 43 member sewer communities have participated in the program and more than \$265 million has been distributed to fund 461 local I/I reduction and sewer system rehabilitation projects. Distribution of the remaining funds has been approved through FY25 and community loan repayments will be made through FY36. All scheduled community loan repayments have been made.



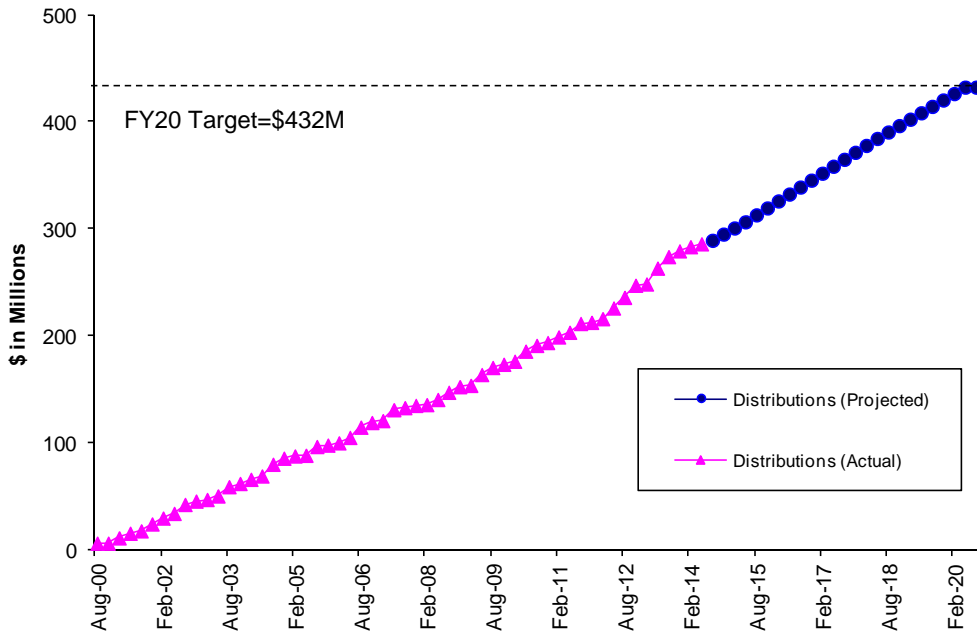
# Community Support Programs

## 1<sup>st</sup> Quarter – FY15

### Water Local Pipeline and Water System Assistance Programs

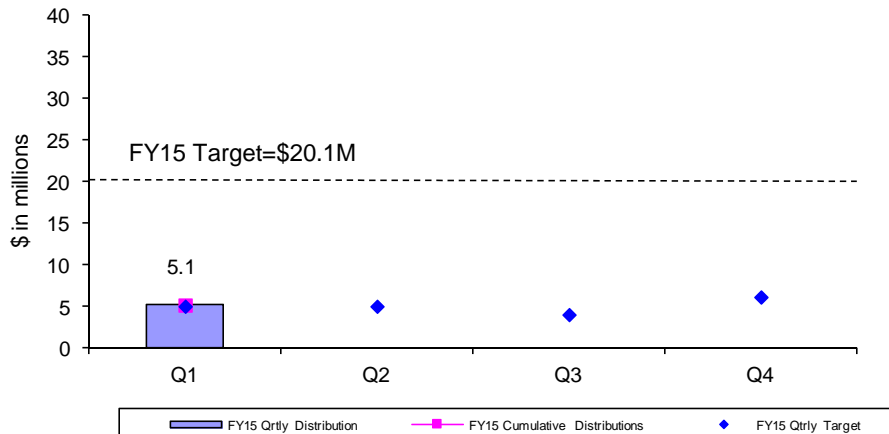
MWRA's Local Pipeline and Water System Assistance Programs (LPAP and LWSAP) provide \$432 million in interest-free loans (an average of about \$22 million per year from FY01 through FY20) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution 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. The Phase 1 - LPAP concluded in FY13 with \$222 million in loan distributions. The Phase 2 - LWSAP continues through FY20.

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



During the 1<sup>st</sup> Quarter of FY15, \$5.1 million in interest-free loans was distributed to fund local water projects in Bedford, Lynnfield, Melrose, Norwood, Saugus, Somerville, Waltham and Weston. Total loan distribution for FY15 is \$5.1 million. From FY01 through the 1st Quarter of FY15, more than \$290 million has been distributed to fund 335 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.

### FY15 Quarterly Distributions of Water Loans



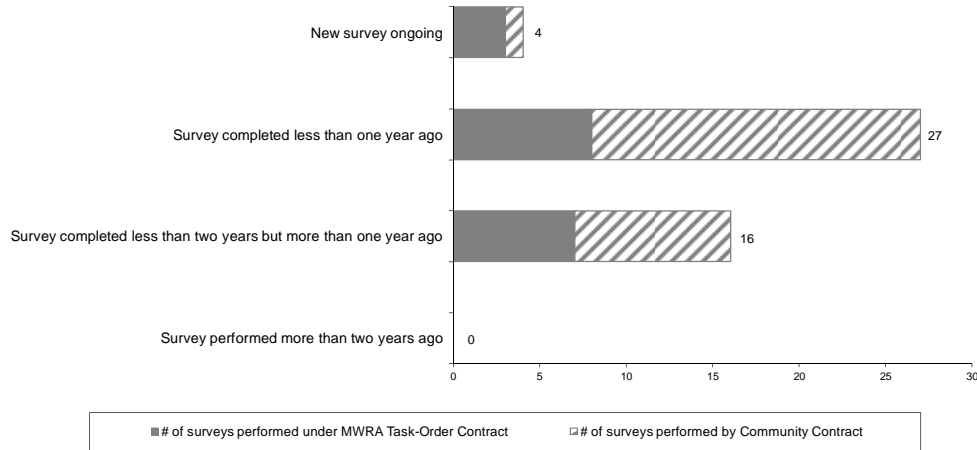


# Community Support Programs

## 1<sup>st</sup> Quarter – FY15

### 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 1<sup>st</sup> Quarter of FY15, 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.

|   | Annual Target | Q1     | Q2 | Q3 | Q4 | Annual Total |
|---|---------------|--------|----|----|----|--------------|
| Educational Brochures                               | 100,000       | 18,484 |    |    |    | 18,484       |
| Low-Flow Fixtures (showerheads and faucet aerators) | 10,000        | 6,382  |    |    |    | 6,382        |
| Toilet Leak Detection Dye Tablets                   | -----         | 5,041  |    |    |    | 5,041        |

## BUSINESS SERVICES

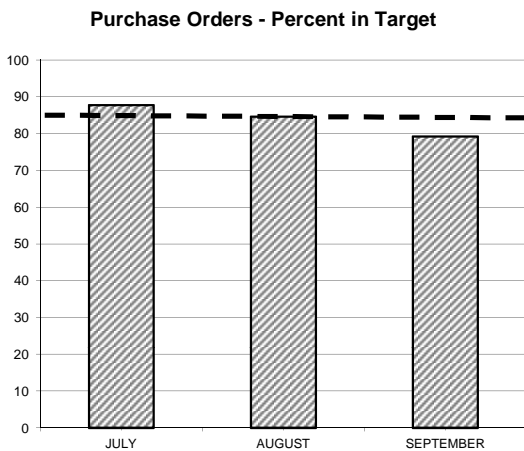
## Procurement: Purchasing and Contracts

1st Quarter, FY15

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

**Outcome:** Processed 84% of purchase orders within target; Average Processing Time was 6.71 days vs. 8.42 days in Qtr 1 of FY14. Processed 62% (8 of 13) contracts within target timeframes; Average Processing Time was 118 days vs. 205 days in Qtr 1 of FY14.

### Purchasing



|               | No.  | TARGET  | PERCENT IN TARGET |
|---------------|------|---------|-------------------|
| \$0 - \$500   | 1106 | 3 DAYS  | 83.0%             |
| \$500 - \$2K  | 918  | 7 DAYS  | 89.6%             |
| \$2K - \$5K   | 153  | 10 DAYS | 63.3%             |
| \$5K - \$10K  | 92   | 25 DAYS | 76.0%             |
| \$10K - \$25K | 64   | 30 DAYS | 79.6%             |
| \$25K - \$50K | 16   | 60 DAYS | 50.0%             |
| Over \$50K    | 22   | 90 DAYS | 90.9%             |

The Purchasing Unit processed 2371 purchase orders, 36 more than the 2407 processed in Qtr 1 of FY14 for a total value of \$8,165,078 versus a dollar value of \$9,951,080 in Qtr 1 of FY14.

The purchase order processing target was not met for the \$0 - \$500 category due to end user price clarifications; the \$2k - \$5k due to end user confirmations; the \$5k - \$10k due to insurance issues and vendor sourcing; the \$10k-\$25k due to end user confirmation and specification development and the \$25k - \$50k due to contract expiration timeframes.

### Contracts, Change Orders and Amendments

Five contracts were not processed within target timeframes. Reasons included: a contract held until services were needed; multiple revisions to specifications; bid withdrawal by a low bidder; delays in receipt of insurance certificates from successful bidders; and a lengthy qualification process of an apparent low bidder.

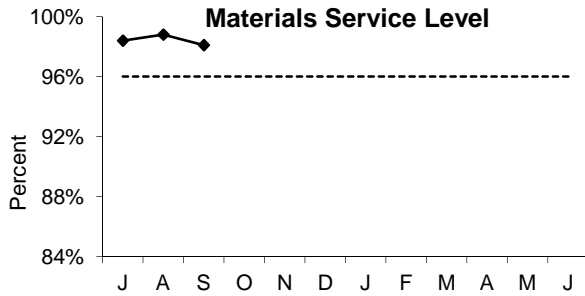
Procurement processed thirteen contracts with a value of \$7,334,622 and five amendments with a value of \$1,427,513.

Twenty three change orders were executed during the period. The dollar value of all non-credit change orders during Q1 FY15 was \$877,162 and the value of credit change orders was (\$341,825).

Staff reviewed 57 proposed change orders and 15 draft change orders.

## Materials Management

1st Quarter, FY15



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 7,945 (98.5%) of the 8,070 items requested in Q1 from the inventory locations for a total dollar value of \$1,149,678.

## 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 FY15 goal is to reduce consumable inventory from the July '14 base level (\$7.7 million) by 2.0% (approximately \$154,987), to \$7.5 million by June 30, 2015 (see chart below).

Items added to inventory this quarter include:

- Deer Island – pressure switches, pilot mixer and tubing for I&C; sealants for HVAC; fluorescent lamps for Electrical.
- Chelsea – brake adapters, trailer connector, sensors, shocks, air flow sensors, brake calipers, compressor, probes, battery gloves and fuses for VMM; submersible pump, circuit breaker, mechanical seals, pipe straps and air filters for Work Order Coordination Group; calibrators for Metering.
- Southboro – gaskets, mortar and grout bags for Maintenance; oil, rotors, brake pads and gas caps for Fleet Services.

Property Pass Program:

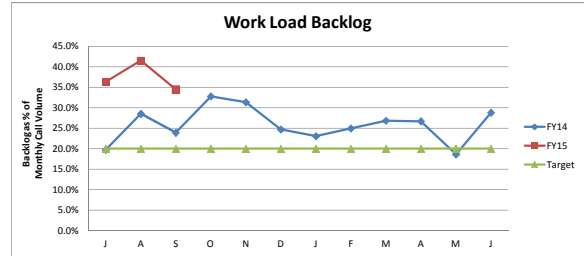
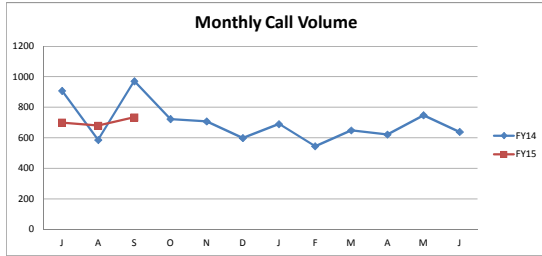
- Audits were conducted at HVAC, Metering and Chelsea grounds tool bags during Q1.
- Numerous obsolete monitors, computers, printers, scanners, keyboards, mice, fax machines and servers have been received into property pass as surplus. Disposition is being handled as part of our ongoing recycling efforts.
- Scrap revenue received for Q1 amounted to \$29,811.
- Revenue received from online vehicle auction held during Q1 amounted to \$17,899.

| Items                              | Value of Cumulative New Adds | Current Value w/o Cumulative New Adds | Reduction / Increase To Base |
|------------------------------------|------------------------------|---------------------------------------|------------------------------|
| <b>Consumable Inventory Value</b>  | 41,044                       | 7,883,028                             | 133,671                      |
| <b>Spare Parts Inventory Value</b> | 31,304                       | 7,963,556                             | 604,864                      |
| <b>Total Inventory Value</b>       | 72,348                       | 15,846,584                            | 738,535                      |

**Note:**

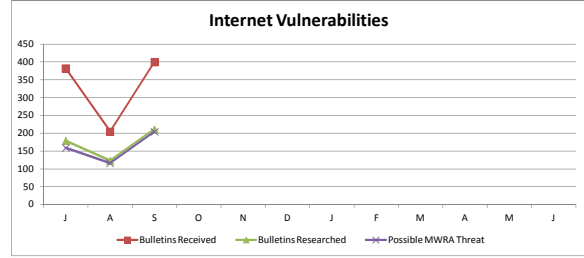
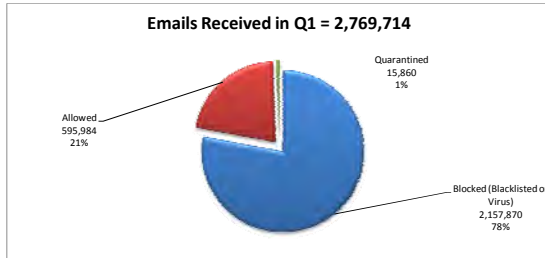
New adds are items added at an inventory location for the first time for the purpose of servicing a group/department to meet their business needs/objectives.

## MIS Program 1st Quarter FY15



### Performance:

**Call Volume:** Peaked in September. FY15-Q1 call volume decreased by 14% from FY14-Q1 last year. **Call Backlog:** Peaked in August. FY15-Q1 backlog average is 17% above the targeted benchmark of 20%. (Rise in backlog is due to a 20% reduction in TSA and Helpline staff due to vacations and sick time and an increase in project work, the Windows7/PC rollout.)



### Information Security:

During Q1, staff pushed security fixes and updates to desktops and servers throughout the quarter in order to protect against 220 vulnerabilities.

LANDesk Antivirus quarantined 29 distinct viruses from 31 MWRRA computers. MWRRA's systems are current with anti-virus providers' signatures for all known malware.

### Infrastructure:

**Windows 7 Upgrade Project:** Rollout is almost complete with some remote sites and unique cases remaining. A total of 878 PCs were upgraded, 436 in-lace upgrades and 442 replaced. This brings all PCs that have access to the internet up to Windows 7.

**Citrix Mobile Application Design and Development:** Access to several in house applications were made available in the internal App Store. A pilot program of fifteen (15) iPhones was implemented for testing, user feedback and proof of concept. New control policies impacting logins and PIN numbers were set up for Executive, user and test groups. An IntraSystems consultant worked onsite with IT staff to successfully upgrade WorxHome to v9. IT staff training was held onsite.

### Applications/Training/Records Center:

**Strategic Sourcing and Contract Management:** Training was held for Contract Managers and Deputy Contract Managers who manage professional services and construction contracts. The production Landmark application environment, Strategic Sourcing, Contract Management and Supplier Portal modules system were successfully upgraded. Staff worked on the data migration of open and closed contracts including mapping 15-yr-old Mitchell-Humphries accounts that were never migrated to Lawson. Conversion accounts were provided by the users to assist in the conversion. Contract adjustments and retainage routines were incorporated into the contract card report for legacy contracts. Staff reviewed fixes that will be delivered in the Landmark Procurement 9.1.1 Critical Update 3 (CU3) patch and are scheduling an install of the new patch.

**Miscellaneous Lawson Support:** (1) FY End Support - Loaded mutual aid donation files for union employees. Received sick buy back file from Payroll and processed for eligible employees. (2) Union Contract Implementation and Non-Union pay rate increases - Worked with HR on pay increases and retro payments for all Non-Union and Unit 2 and 9 employees. (3) Business Continuity/Disaster Recovery Support - MIS and Treasury Staff ran a successful 'live' payroll check run at Deer Island using the new C-Series software. This run was the first live full run using the upgraded software and is part of our periodically scheduled tasks for testing/ensuring business continuity. (4) New Affirmative Action Reports - The U.S. Department of Labor requires six new reports; two are due by November 30th, 2014; the rest are due in 2015. Staff completed the reports due in November and the Affirmative Action Department is reviewing them. The completed reports focus on veteran and handicapped applicants. The specifications were forwarded to Infor/Lawson as an enhancement request to include in a future release.

**Community Contacts Upgrade:** The application was rolled out initially in 2010 to manage community contact information and send email notifications with attachments to specific community contacts. The contact information is uploaded daily to the MWRRA Reverse 911 database for emergency notifications via phone calls. Rolled out the new version following signoff from users. Enhancements included adding additional new reports, streamlining the attachment process, automating screen resolution changes for various devices, and improving the application navigation allowing for "bread crumb" forward and backward navigation.

**Tellog:** Installed the latest versions for TELOG Enterprise and Real time modules in production. Work, including system design and business rules, on a new Web and SQL Server reporting application began. This project will eliminate an unsupported legacy reporting tool and use current MWRRA standard database programming tools allowing for efficient maintenance and support.

**Electronic Laboratory Notebook (ELN):** The ELN project kicked off at DITP. ELN is integrated with the Laboratory Information Management System (LIMS) and will replace all paper based logbooks with an electronic equivalent. ELN is being implemented at all Department of Laboratory Services locations.

**PIMS:** The client server installs for PIMS has been eliminated by moving all TRAC users onto the Remote Desktop Connection server. This change fixed many issues TRAC users were having trying to log onto PIMS.

**Library & Records Center:** The Library completed 40 research requests, cataloged 69 books and reports, and provided 54 articles and standards as needed. New services evaluated for automatically generating and emailing staff topic based articles (143 YTD). The Records Center added 245 boxes, conducted 2 training sessions for 5 staff, and attended 2 Records Conservation Board Meetings.

**IT Training:** 153 staff attended 13 classes and 13 workshops. 13% of the workforce has attended at least one class year-to-date. 107 staff attended Windows 7 training held at the Chelsea, Charlestown, Southborough, CWTP, and Deer Island facilities. Information Technology Infrastructure Library (ITIL - the most widely accepted approach to IT service management in the world) training was offered in Q1 to a third round of MWRRA staff to support standardization of IT services at the MWRRA.

# Legal Matters

## 1st Quarter- FY15

### PROJECT ASSISTANCE

#### COURT AND ADMINISTRATIVE ORDER

- **Boston Harbor Litigation and CSO:** Filed quarterly compliance and progress report with Court on September 15, 2014; Filed update re: progress between Cambridge and owners of Fresh Pond Mall regarding access to site to complete sewer separation project.
- **NPDES:** Reviewed and edited draft SOP for proposed gates at influent channels to Clinton Wastewater Treatment Plant; drafted comments on the United States Environmental Protection Agency's and Army Corps of Engineers' proposed rule related to the definition of "waters of the United States" under the Clean Water Act.

#### REAL ESTATE, CONTRACT AND OTHER SUPPORT

- **Fox Point CSO Facility:** Conveyed Fox Point CSO facility to IBEW Local 103 Educational Corporation and recorded Release of Easement located on IBEW land abutting the Fox Point CSO facility.
- **Fore River Railroad/Fore River:** Drafted legislation for release of easement by MWRA in the Fore River Shipyard as it relates to an easement swap between Quincy Shipyard and MWRA/FRRC for railroad purposes; completed agreement between Fore River Railroad and Railpod regarding track inspection.
- **Deer Island PPA:** Finalized a Consent to an assignment from Broadway Electric Company Inc. to Nexamp Deer Island I, LLC; reviewed the assignment and assumption agreement; revised the Letter of Credit required to provide de-commissioning security.
- **Watershed Acquisition:** Reviewed and approved the proposed acquisition of a fee interest in the DeNubila Property - W0034 in Princeton, MA., and for a WPR on the Lockhart/Block property in Petersham, # W-00110. Finalized approval of Capa Corp. watershed parcel acquisition.
- **Great Esker Park:** Recorded Order of Conditions DEP File #81-1150 for Great Esker Park; Recorded Chapter 91 license for Great Esker Park in Weymouth related to Order of Conditions for IPS/Great Esker Park.
- **Waste Water Energy Recovery Pilot Program:** Provided staff with drafts of Pilot Program Agreements with Wentworth Institute of Technology and Huber Technologies, Inc. for the Waste Water Energy Pilot Program.
- **Miscellaneous Licenses:** Drafted amendment extending license for dog park located on a parcel of land which is part of the Columbus Park Headworks property; drafted a License for Entry for the Petrilli and Shapiro cancer walk/runs at Deer Island.
- **Dept of Homeland Security Regulations:** Reviewed and determined that "public water systems" are not subject to the Dept. of Homeland Security - Chemical Facility Anti-Terrorism Standards at 6 CFR 27.
- **TRAC Regulations:** Drafted guidance on requirements for the "Small Business Impact Statement" for submittal to the Secretary of State.
- **Annual Audit:** Completed review of litigation contingencies and provided reports of pending and completed cases for FY 2014 to A&F for KPMG.
- **Charlestown Wind Turbine:** Had communications with AMSC and U.S. District Court (Wisc.) re: Sinovel assertions regarding Charlestown Wind Turbine software change-over; completed all licensing and related agreements with AMSC re: software change-over.
- **Construction Contractor Claim:** Reviewed and made a recommendation on two (2) construction contractor claims.

#### MISCELLANEOUS

- Reviewed and approved forty-seven (47) Section 8(m) Permits.
- Finalized contract for four (4) donated Toyota vehicles.

## LABOR, EMPLOYMENT AND ADMINISTRATIVE

### New Matters

One demand for arbitration was filed.

A Charge was filed at the Massachusetts Commission Against Discrimination alleging that the MWRA discriminated against an employee on the basis of race, gender, national origin, retaliation and age.

A Charge was filed at the Massachusetts Commission Against Discrimination alleging that the MWRA discriminated against an employee on the basis of gender and retaliation.

A Charge was filed at the Massachusetts Commission Against Discrimination alleging that the MWRA discriminated against an employee on the basis of disability.

### Matters Concluded

Received an arbitrator's decision in favor of MWRA finding that the MWRA did not violate Article 13 of a collective bargaining agreement when it did not supply the grievant with a non-selection form.

The Superior Court found that an arbitrator's decision concerning a promotional process provided a remedy that was beyond the arbitrator's authority. The court returned the case to the arbitrator for consideration of the appropriate remedy.

## LITIGATION/TRAC

### New Matters

During the First Quarter of FY 2015, no new lawsuits were received.

### Significant Developments

Dow v. MWRA: MWRA served a Motion for Summary Judgment in March, 2014. Dow responded with a Cross-Motion for Summary Judgment and a Motion to Compel Production of Documents. The Court heard oral argument on the Motion to Compel on July 14, 2014, and on July 24, 2014, the Court ruled granting it in part and denying it in part. The Court has postponed oral argument on the Summary Judgment Motion; it is now scheduled for Monday, November 24, 2014.

Salvador Tejada v. Patnod Trucking, Barletta Co., Inc., and MWRA: Salvador Tejada was a truck driver for Patnod Trucking, a subcontractor to Barletta Engineering on MWRA Contract 6975, the Hultman Aqueduct Interconnections Project. Mr. Tejada was injured when the dump truck he was driving overturned at the work site. Mr. Tejada has alleged medical expenses of more than \$37,134.58, lost wages and compensation, permanent disability and pain and suffering. Barletta's insurer, Travelers, has accepted MWRA's tender of its defense in this matter. MWRA has filed cross-claims against co-defendant Patnod Trucking for indemnification and for failure to obtain required insurance. The entire case has been stayed as a result of the bankruptcy of co-defendant Patnod Trucking. The Superior Court has scheduled a status conference for October 20, 2014.

### Matters Concluded

No cases closed during the First Quarter FY 2015.

### Significant Claims Not in Suit:

Agostinho Braiani – Personal Injury Claim: This matter is a former Risk Management matter not yet in litigation concerning a personal injury claim arising out of a motor vehicle accident. The motor vehicle accident occurred on May 19, 2013 in the Deer Island parking lot, where an MWRA employee, driving an MWRA vehicle, struck a parked vehicle while backing up. Claimant Agostinho Braiani, an employee of SJ Services, the cleaning contractor for Deer Island, was standing beside the SJ Services vehicle when it was hit and he allegedly sustained injuries when the SJ Services vehicle struck him. Risk Management recently received a package of medical documents along with a demand for \$250,000 for personal injuries.

Antonio Rosa – Personal Injury Claim: This matter is a former Risk Management matter concerning a personal injury claim arising out of a motor vehicle accident. The accident occurred when an MWRA truck, operated by an MWRA employee, struck Antonio Rosa who was on a bicycle at the intersection of Griffin Way and Eastern Avenue, Chelsea, MA on November 22, 2013. No demand has been received nor litigation threatened, but Mr. Rosa does have legal representation and the MWRA has received a notice of lien from a medical provider.

### Subpoenas

During the First Quarter of FY 2015, two new subpoenas were received and no subpoenas were pending at the end of the First Quarter FY 2015.

**Public Records**

During the First Quarter of FY 2015 three public records request were received and four public records requests were closed.

**SUMMARY OF PENDING LITIGATION MATTERS**

| TYPE OF CASE/MATTER  | As of Sept 2014 | As of June 2014 | As of March 2014 |
|--|-----------------|-----------------|------------------|
| Construction/Contract/Bid Protest (other than BHP)   | 4               | 4               | 5                |
| Tort/Labor/Employment  | 5               | 5               | 5                |
| Environmental/Regulatory/Other   | 1               | 1               | 1                |
| Eminent Domain/Real Estate   | 0               | 0               | 0                |
| <b>total – all defensive cases</b>   | <b>10</b>       | <b>10</b>       | <b>11</b>        |
| Affirmative cases not in suit:   | 0               | 0               | 1                |
| Other Litigation matters (restraining orders, etc.)<br><u>MWRA v. Thomas Mercer</u>  | 1               | 1               | 1                |
| <b>total – all pending lawsuits</b>  | <b>11</b>       | <b>11</b>       | <b>13</b>        |
| Significant claims not in suit:<br><u>Deer Island Submarine Power Cable</u><br><u>Braiani, Agostinho</u><br><u>Rosa, Antonio</u> | 3               | 0               | 0                |
| Bankruptcy   | 1               | 0               | 1                |
| Wage Garnishment   | 15              | 16              | 17               |
| TRAC/Adjudicatory Appeals  | 1               | 1               | 4                |
| Subpoenas  | 0               | 0               | 0                |
| <b>TOTAL – ALL LITIGATION MATTERS</b>  | <b>31</b>       | <b>28</b>       | <b>35</b>        |

**TRAC/MISC.****New Appeals**

There were no new TRAC appeals received in the 1st Quarter FY 2015.

**Settlement by Agreement of Parties****Cookies by Design: MWRA Docket No. 13-17**

An Appeal was received from the Petitioner on July 2, 2013 appealing the Enforcement Order and PAN in the amount of \$1,000 and issued by TRAC on May 13, 2013 for failure to submit its Group Permit Compliance Report by July 2, 2012. In September 2013, it was reported that the parties had settled in principle. By mid-April 2014, no settlement papers had been filed by the parties and a Scheduling Order was issued on April 17, 2014. On July 15, 2014 TRAC counsel submitted a status report stating that a revised proposed settlement had been sent to the Petitioner. A hearing on the merits was scheduled for September 30, 2014. The Petitioner did not appear as both parties had signed a Settlement Agreement prior to the hearing date.

**Stipulation of Dismissal**

No cases were dismissed by Stipulation of Dismissal, fine waived.

**Notice of Dismissal  
Fine paid in full  
Tentative  
Decisions**

No cases were dismissed by Joint Stipulation of Dismissal with Prejudice, fine paid in full.

No Tentative Decisions were issued in the 1st Quarter FY 2015.

**Final Decisions**

No Final Decisions were issued during the 1st Quarter FY 2015.



## INTERNAL & CONTRACT AUDIT PROGRAM

### 1st Quarter FY15

### Highlights

A final report was issued on Affirmative Action's implementation of the U. S. Department of Labor's Office of Federal Contract Compliance Programs (OFCCP) expansive new regulations requiring government contractors to undertake greater efforts to employ veterans and individuals with disabilities. The following are some of the recommendations made to ensure compliance with the new regulations.

- Adjust contract language to incorporate revised EEO clauses
- Electronically post the EEO IS THE LAW poster on the Intranet and Internet where job announcements and application forms are posted
- Expand the distribution of job announcements to additional organizations
- Conduct a disability self-identification survey of all current employees
- Ensure disability and veteran self-identification forms are furnished to applicants at both the pre- and post offer stages

### Status of Open Audit Recommendations (23 recommendations closed in the 1st 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 |
|---|--|------------------------|
| Warehouse Practices (9/30/10)                             | 1                                      | 9                      |
| Facility Card Access Controls (2/22/11)                   | 2                                      | 18                     |
| DITP Data Center Access Controls (10/14/11)               | 2                                      | 20                     |
| Chelsea Facility Physical Security (12/31/12)             | 3                                      | 29                     |
| Hardware Equipment Management (5/22/13)                   | 9                                      | 27                     |
| Follow-Up Report on Fleet Services Activities (12/31/13)  | 4                                      | 13                     |
| MBE/WBE Program Contracting Goals (3/14/14)               | 5                                      | 5                      |
| Dept. of Lab Services Quality Assurance Program (7/11/14) | 4                                      | 0                      |
| Bay State Fertilizer Follow-Up (9/30/14)                  | 1                                      | 4                      |
| Expanded Affirmative Action Requirements (9/30/14)        | <u>7</u>                               | <u>9</u>               |
| <b>Total Recommendations</b>                              | <b>38</b>                              | <b>134</b>             |

### Audit Savings

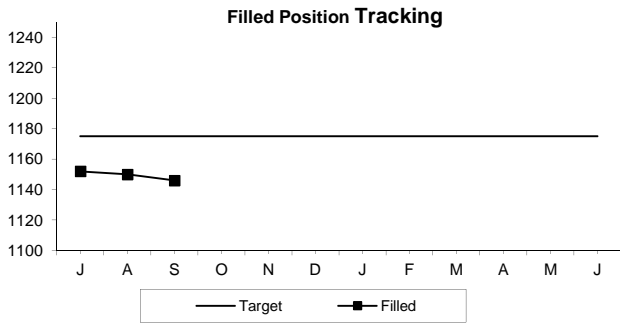
The Internal Audit Department's target is to achieve at least \$1 million in cost savings each year. Cost savings vary each year based upon many factors. In some cases, cost savings for one year may be the result of work in prior years.

| Savings               | FY11               | FY12               | FY13               | FY14               | FY15 (1Q)        | TOTAL              |
|-----------------------|--------------------|--------------------|--------------------|--------------------|------------------|--------------------|
| Consultants           | \$520,176          | \$259,245          | \$587,314          | \$294,225          | \$65,381         | \$1,726,341        |
| Contractors & Vendors | \$3,129,538        | \$435,760          | \$2,153,688        | \$415,931          | \$22,637         | \$6,157,554        |
| Internal Audits       | \$152,478          | \$407,350          | \$391,083          | \$923,370          | \$43,322         | \$1,917,603        |
| <b>Total</b>          | <b>\$3,802,192</b> | <b>\$1,102,355</b> | <b>\$3,132,085</b> | <b>\$1,633,526</b> | <b>\$131,340</b> | <b>\$9,801,498</b> |

## OTHER MANAGEMENT

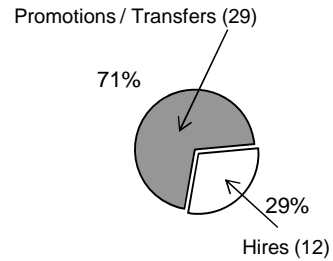
# Workforce Management

## 1st Quarter - FY15



FY15 Target for Filled Positions = 1175  
 Filled Positions as of September 2014 = 1146

### Positions Filled by Hires/Promotions FY15-YTD

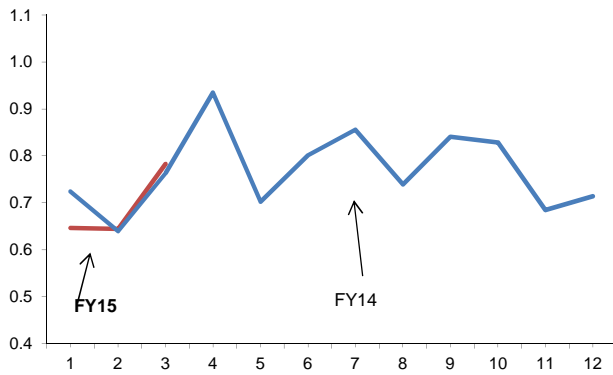


|      | Pr/Trns   | Hires    | Total |
|------|-----------|----------|-------|
| FY12 | 42 (61%)  | 27 (39%) | 69    |
| FY13 | 82 (64%)  | 47 (36%) | 129   |
| FY14 | 111 (69%) | 51 (31%) | 162   |
| FY15 | 29 (71%)  | 12 (29%) | 41    |

(To Date)

In Q1 of FY15, the average quarterly sick leave usage has decreased 9.14% from the same time last year.

### Average Monthly Sick Leave Usage Per Employee

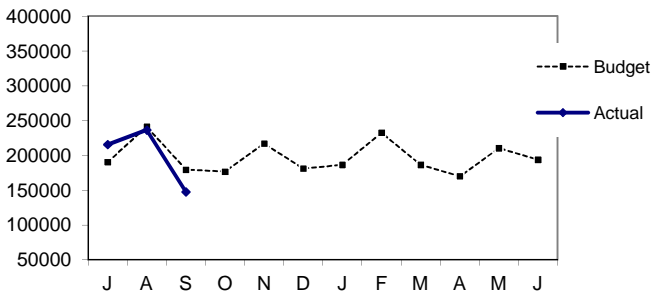


Average monthly sick leave for the 1st Quarter of FY15 decreased as compared to the 4th Quarter of FY14 (9.23 to 8.30 days).

|             | Number of Employees | YTD  | Annualized Total | Annual FMLA % | FY14  |
|-------------|---------------------|------|------------------|---------------|-------|
| A&F         | 178                 | 2.35 | 9.40             | 15.4%         | 10.18 |
| Aff. Action | 6                   | 1.98 | 7.90             | 0.0%          | 11.78 |
| Executive   | 5                   | 0.99 | 3.95             | 0.0%          | 4.37  |
| Int. Audit  | 8                   | 1.57 | 6.27             | 0.0%          | 7.46  |
| Law         | 16                  | 2.63 | 10.50            | 11.7%         | 10.35 |
| OEP         | 6                   | 5.00 | 20.00            | 0.0%          | 16.14 |
| Operations  | 925                 | 2.08 | 8.32             | 23.5%         | 8.98  |
| Pub. Affs.  | 12                  | 1.49 | 5.95             | 13.5%         | 12.21 |
| MWRA Avg    | 1156                | 2.07 | 8.30             | 22.1%         | 9.23  |

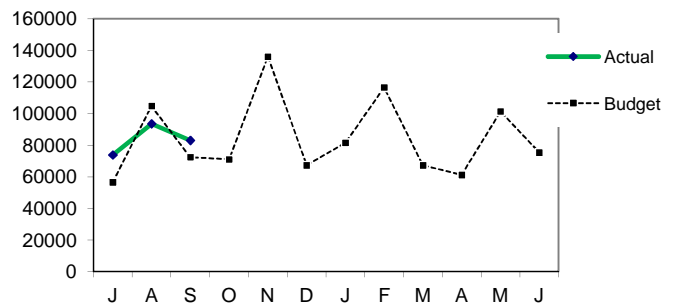
Percent of sick leave usage attributable to Family and Medical Leave Act (FMLA) leave is 22.1% for FY15.

### Field Operations Current Month Overtime \$



Total Overtime for Field Operations for the first quarter of FY15 was \$599,687 which is (\$11k) under budget. Emergency overtime was \$240k, which was (\$60k) under budget mainly due to lack of rain events, which totaled \$170k for the quarter. Coverage overtime was \$198k, which was \$32k over budget, due mainly to higher than budgeted shift coverage requirements. Planned overtime was \$161k or \$16k over budget, mainly for off hours work, planned operations, and maintenance work completion.

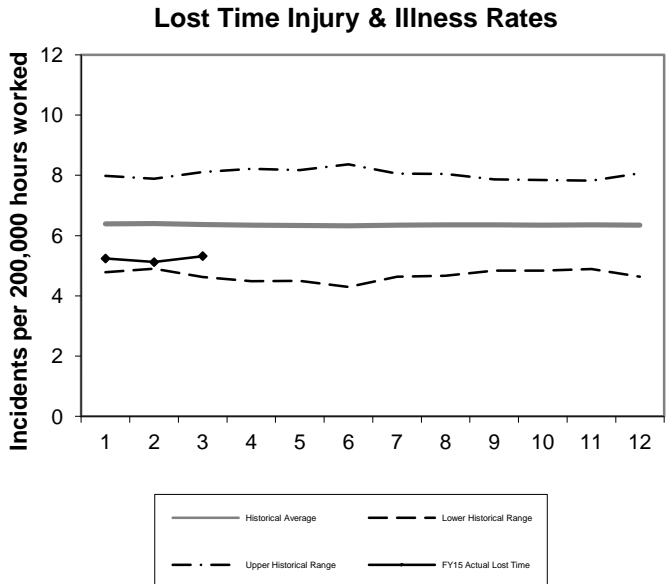
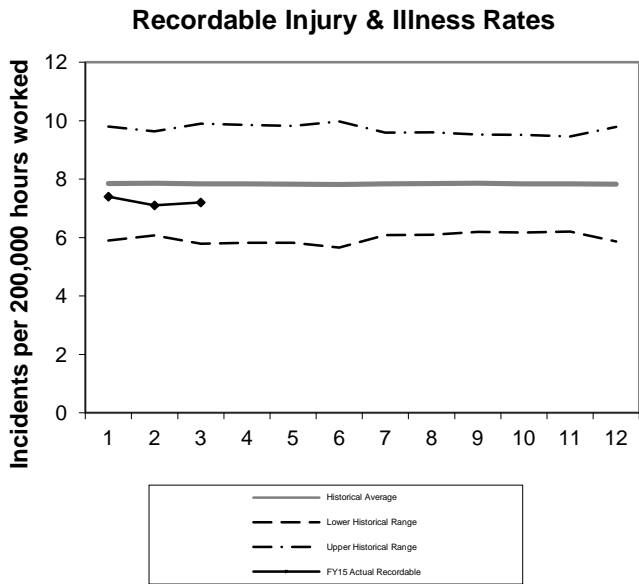
### Deer Island Treatment Plant Current Month Overtime \$



Deer Island's total overtime for the first quarter of FY15 was \$251k which is \$17k over budget. Shift coverage overtime was \$114k, which was \$36k over budget mainly due minimum staffing requirements resulting from 3 vacant operator positions. Maintenance overtime was \$96k or \$23k over budget, mainly for off hours work, planned operations, and maintenance work completion. These items are partially offset by lower than budgeted storm coverage requirements, (\$39k).

# Workplace Safety

## 1st Quarter FY15



- 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 FY14. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively. FY15 actual incident rates can be expected to fall within this historical range.

### Workers Compensation Claims Highlights - First Quarter FY15

|                    | New        | Closed | Open Claims                   |
|--------------------|------------|--------|-------------------------------|
| Lost Time          | 11         | 15     | 70                            |
| Medical Only       | 20         | 21     | 24                            |
| Report Only        | 21         | 21     |                               |
|                    |            |        |                               |
|                    | <b>New</b> |        | <b>YTD Light Duty Returns</b> |
| Light Duty Returns | 4          |        | 4                             |

#### Highlights/Comments:

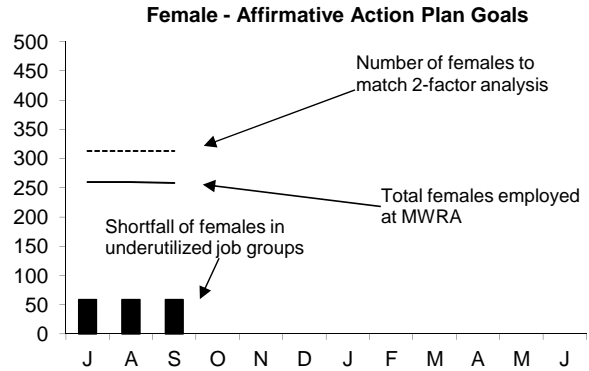
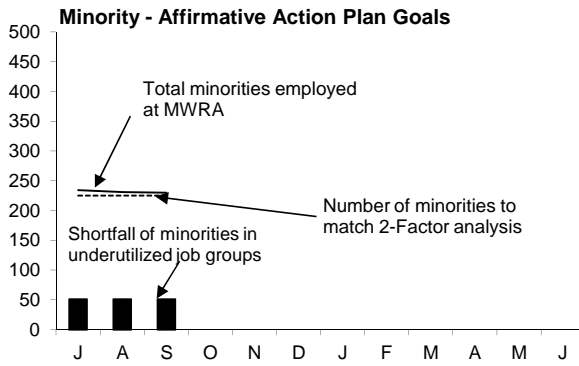
##### Light Duty Returns

**July** none  
**August** 2 employees returned to work light duty from IA  
**Sept** 2 employees returned to work light duty from IA  
 1 employee went to LD from regular duty due to revised limitations, not considered 'return'

##### Regular Duty Returns

**July** 2 employees returned to a work full duty from IA  
 1 employee returned to work full duty from light duty  
**August** 2 employees returned to work full duty from IA  
**Sept** none

## MWRA Job Group Representation Q1, FY15



### Highlights:

At the end of Q1 FY15, 10 job groups or a total of 51 positions are underutilized by minorities as compared to 9 job groups or a total of 41 positions at the end of Q1 FY14; for females 12 job groups or a total of 58 positions are underutilized by females as compared to 14 job groups or a total of 72 positions at the end of Q1 FY14. During Q4, 3 minorities and 1 females were hired. During this same period, 8 minorities and 4 females terminated.

### Underutilized Job Groups - Workforce Representation

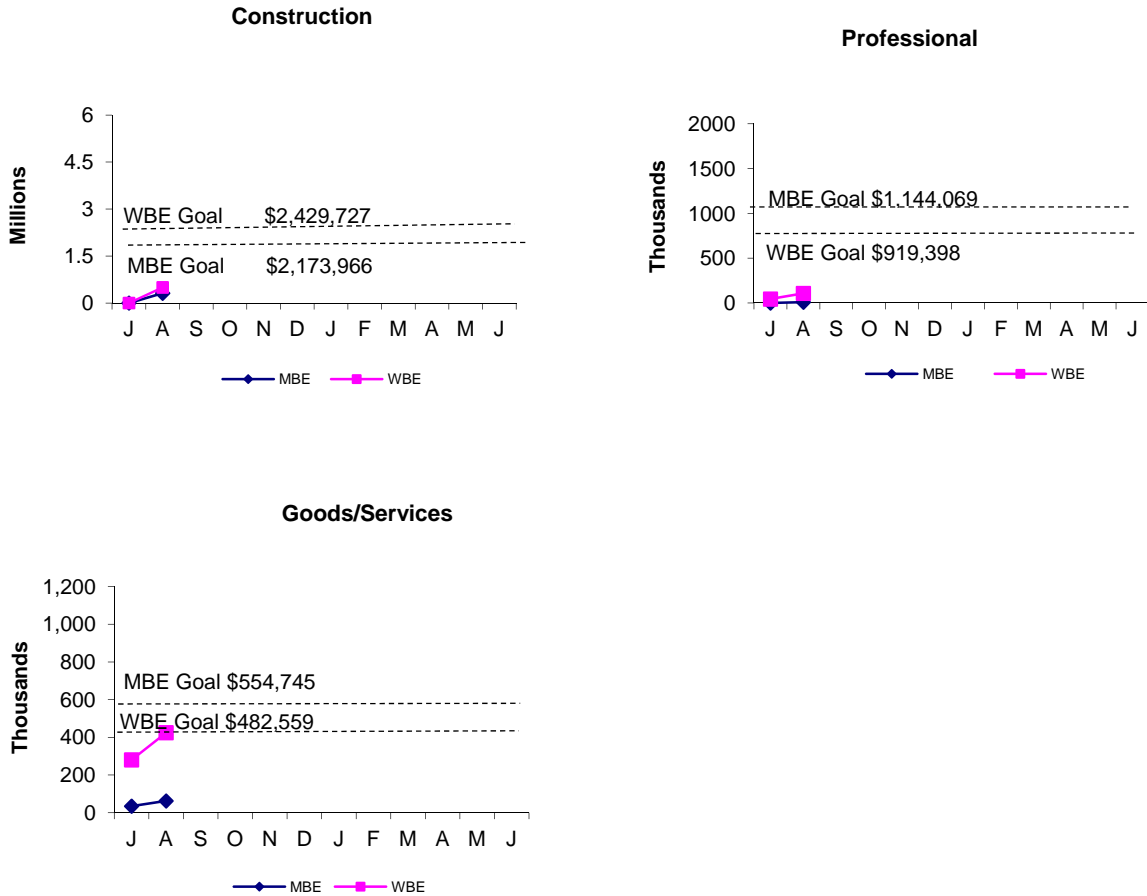
| Job Group         | Employees<br>as of<br>9/30/2014 | Minorities<br>as of<br>9/30/2014 | Achievement<br>Level | Minority<br>Over or Under<br>Under utilized | Females<br>As of<br>9/30/2014 | Achievement<br>Level | Female<br>Over or Under<br>Under utilized |
|-------------------|---------------------------------|----------------------------------|----------------------|---|-------------------------------|----------------------|---|
| Administrator A   | 20                              | 2                                | 2                    | 0   | 5                             | 6                    | -1  |
| Administrator B   | 20                              | 0                                | 3                    | -3  | 3                             | 6                    | -3  |
| Clerical A        | 41                              | 17                               | 11                   | 6   | 35                            | 16                   | 19  |
| Clerical B        | 34                              | 7                                | 11                   | -4  | 12                            | 2                    | 10  |
| Engineer A        | 81                              | 18                               | 21                   | -3  | 13                            | 16                   | -3  |
| Engineer B        | 52                              | 15                               | 12                   | 3   | 7                             | 13                   | -6  |
| Craft A           | 116                             | 13                               | 22                   | -9  | 0                             | 3                    | -3  |
| Craft B           | 147                             | 28                               | 27                   | 1   | 3                             | 5                    | -2  |
| Laborer           | 67                              | 23                               | 16                   | 7   | 3                             | 3                    | 0   |
| Management A      | 100                             | 13                               | 23                   | -10   | 33                            | 45                   | -12                                       |
| Management B      | 45                              | 8                                | 11                   | -3  | 12                            | 19                   | -7  |
| Operator A        | 66                              | 5                                | 7                    | -2  | 1                             | 4                    | -3  |
| Operator B        | 61                              | 7                                | 16                   | -9  | 3                             | 2                    | 1   |
| Para Professional | 54                              | 12                               | 16                   | -4  | 24                            | 38                   | -14                                       |
| Professional A    | 36                              | 4                                | 8                    | -4  | 24                            | 14                   | 10  |
| Professional B    | 161                             | 42                               | 42                   | 0   | 75                            | 73                   | 2   |
| Technical A       | 49                              | 15                               | 8                    | 7   | 5                             | 7                    | -2  |
| Technical B       | 6                               | 1                                | 1                    | 0   | 0                             | 2                    | -2  |
|                   |                                 |                                  |                      |   |                               |                      |   |
|                   |                                 |                                  |                      |   |                               |                      |   |
| <b>Total</b>      | <b>1156</b>                     | <b>230</b>                       | <b>257</b>           | <b>24/-51</b>                               | <b>258</b>                    | <b>274</b>           | <b>42/-58</b>                             |

### AACU Candidate Referrals for Underutilized Positions

| Job Group      | Title                                 | # of Vac | Requisition<br>Int. / Ext. | Promotions/<br>Transfers | AACU Ref.<br>External | Position<br>Status |
|----------------|---------------------------------------|----------|----------------------------|--------------------------|-----------------------|--------------------|
| Clerical A     | Administrative Coordinator I          | 1        | Int                        | 1                        | 0                     | P = WF             |
| Clerical A     | Secretary I                           | 1        | Int/Ext                    | 0                        | 0                     | NH = WF            |
| Craft B        | Facility Specialist                   | 1        | Int                        | 0                        | 0                     | Vol Demo = WM      |
| Craft B        | Toolmaker                             | 1        | Int                        | 1                        | 0                     | P = WM             |
| Craft B        | Electrician                           | 1        | Int/Ext                    | 0                        | 1                     | NH = WM            |
| Engineer A     | Manager, Western Maintenance          | 1        | Int                        | 1                        | 0                     | P = WM             |
| Engineer A     | Sr. Staff Engineer, Structural        | 1        | Int/Ext                    | 0                        | 0                     | NH=WF              |
| Engineer A     | Program Manager, Process Control      | 1        | Int                        | 1                        | 0                     | P = AF             |
| Engineer B     | Project Manager Environmental Data    | 1        | Int                        | 1                        | 0                     | P = AF             |
| Engineer B     | Project Manager                       | 1        | Int/Ext                    | 0                        | 1                     | In Progress        |
| Laborers       | Building & Grounds Worker             | 1        | Int/Ext                    | 0                        | 1                     | In Progress        |
| Management A   | Manager, IT Security, Arch. & Eng.    | 1        | Ext                        | 0                        | 0                     | NH = AF            |
| Operator A     | Sr. Transmission & Treatment Operator | 1        | Int                        | 1                        | 0                     | P = WM             |
| Operator A     | Transmission & Treatment Operator     | 1        | Int/Ext                    | 1                        | 0                     | P = WM             |
| Operator A     | Area Supervisor                       | 1        | Int                        | 1                        | 0                     | P = BM             |
| Professional B | Sr. Laboratory Technician             | 1        | Int/ Ext                   | 0                        | 1                     | In Progress        |
| Professional B | Source Coordinator                    | 1        | Int                        | 1                        | 0                     | P = WM             |
| Professional B | Sampling Associate                    | 2        | Int/Ext                    | 1                        | 0                     | P=WF               |
| Professional B | Regional Inspector                    | 1        | Int                        | 1                        | 0                     | T = WM             |
| Professional B | Financial Planner                     | 1        | Int/Ext                    | 0                        | 0                     | NH = WM            |
| Professional B | Chemist II                            | 1        | Int/Ext                    | 1                        | 0                     | P=WF               |
| Professional B | Chemist III                           | 2        | Int/Ext                    | 1                        | 1                     | NH=WM; P=HM        |
| Professional B | Microbiologist II                     | 1        | Int                        | 1                        | 0                     | P = WM             |
| Technical A    | Communication & Control Technician    | 2        | Int                        | 2                        | 0                     | P=HM & AM          |
| Technical A    | Systems Administrator III             | 1        | Int/Ext                    | 0                        | 1                     | In Progress        |

## MBE/WBE Expenditures First Quarter FY 2015

**Background:** MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. MBE/WBE percentage goals are the results from a 2002 Availability Analysis, and MassDEP's 2010 Availability Analysis. As a result of the Availability Analyses, the category of Non-Professional Services is included in Goods/Services. Consistent with contractor reporting requirements, MBE/WBE expenditure data is available through August.



FY15 spending and percentage of goals achieved, as well as FY14 performance are as follows:

|                          | MBE               |              |                |              | WBE               |              |                |               |
|--------------------------|-------------------|--------------|----------------|--------------|-------------------|--------------|----------------|---------------|
|                          | FY15 Year-to-Date |              | FY14           |              | FY15 Year-to-Date |              | FY14           |               |
|                          | Amount            | Percent      | Amount         | Percent      | Amount            | Percent      | Amount         | Percent       |
| Construction             | 313,639           | 14.4%        | 1,053,966      | 25.5%        | 500,261           | 20.6%        | 3,407,380      | 165.9%        |
| Professional Svc.        | 9,225             | .8%          | 584,242        | 44.5%        | 107,764           | 11.7%        | 457,558        | 43.4%         |
| <u>Goods &amp; Svcs.</u> | <u>62,070</u>     | <u>11.2%</u> | <u>359,270</u> | <u>45.8%</u> | <u>424,341</u>    | <u>87.9%</u> | <u>966,425</u> | <u>141.6%</u> |
| Total                    | 384,934           | 9.9%         | 1,997,478      | 32.1%        | 1,032,366         | 26.9%        | 3,890,658      | 102.6%        |

FY15 MBE/WBE dollar totals do not include MBE and WBE payments to prime contractors and consultants.

# MWRA FY15 CEB Expenses

## 1<sup>st</sup> Quarter - FY15

|                                   | September 2014<br>Year-to-Date<br>(\$000) |                   |                   |              |                   |              |
|-----------------------------------|---|-------------------|-------------------|--------------|-------------------|--------------|
|                                   | Budget                                    | Actual            | Variance          | %            | FY15<br>Budget    | %            |
| <b>EXPENSES</b>                   |   |                   |                   |              |                   |              |
| WAGES AND SALARIES                | \$ 21,900                                 | \$ 21,193         | \$ (707)          | -3.2%        | \$ 96,555         | 21.9%        |
| OVERTIME                          | 896                                       | 931               | 35                | 3.9%         | 3,621             | 25.7%        |
| FRINGE BENEFITS                   | 4,598                                     | 4,532             | (65)              | -1.4%        | 18,299            | 24.8%        |
| WORKERS' COMPENSATION             | 550                                       | 757               | 207               | 37.6%        | 2,200             | 34.4%        |
| CHEMICALS                         | 2,916                                     | 2,898             | (18)              | -0.6%        | 10,220            | 28.4%        |
| ENERGY AND UTILITIES              | 5,070                                     | 4,512             | (558)             | -11.0%       | 23,472            | 19.2%        |
| MAINTENANCE                       | 5,653                                     | 7,468             | 1,815             | 32.1%        | 27,973            | 26.7%        |
| TRAINING AND MEETINGS             | 29  | 48                | 20                | 68.8%        | 361               | 13.3%        |
| PROFESSIONAL SERVICES             | 1,395                                     | 1,477             | 82                | 5.8%         | 5,957             | 24.8%        |
| OTHER MATERIALS                   | 761                                       | 842               | 81                | 10.7%        | 5,953             | 14.1%        |
| OTHER SERVICES                    | 6,039                                     | 5,979             | (59)              | -1.0%        | 22,538            | 26.5%        |
| <b>TOTAL DIRECT EXPENSES</b>      | <b>\$ 49,806</b>                          | <b>\$ 50,637</b>  | <b>\$ 831</b>     | <b>1.7%</b>  | <b>\$ 217,149</b> | <b>23.3%</b> |
| INSURANCE                         | \$ 532                                    | \$ 454            | \$ (78)           | -14.7%       | \$ 2,128          | 21.3%        |
| WATERSHED/PILOT                   | 6,867                                     | 6,748             | (119)             | -1.7%        | 27,467            | 24.6%        |
| BEC <sub>o</sub> PAYMENT          | 835                                       | 830               | (5)               | -0.5%        | 3,198             | 26.0%        |
| MITIGATION                        | 401                                       | 365               | (37)              | -9.1%        | 1,606             | 22.7%        |
| ADDITIONS TO RESERVES             | 121                                       | 121               | -                 | 0.0%         | 483               | 25.0%        |
| RETIREMENT FUND                   | 7,808                                     | 7,808             | -                 | 0.0%         | 12,629            | 61.8%        |
| <b>TOTAL INDIRECT EXPENSES</b>    | <b>\$ 16,564</b>                          | <b>\$ 16,326</b>  | <b>\$ (238)</b>   | <b>-1.4%</b> | <b>\$ 47,512</b>  | <b>34.4%</b> |
| STATE REVOLVING FUND              | \$ 18,909                                 | \$ 18,909         | \$ -              | 0.0%         | \$ 78,461         | 24.1%        |
| SENIOR DEBT                       | 53,194                                    | 53,194            | -                 | 0.0%         | 220,836           | 24.1%        |
| CORD FUND                         | 219                                       | 219               | -                 | 0.0%         | 877               | 25.0%        |
| DEBT SERVICE ASSISTANCE           | (854)                                     | (854)             | -                 | 0.0%         | (854)             | 100.0%       |
| CURRENT REVENUE/CAPITAL           | 2,550                                     | 2,550             | -                 | 0.0%         | 10,200            | 25.0%        |
| SUBORDINATE MWRA DEBT             | 24,799                                    | 24,799            | -                 | 0.0%         | 99,686            | 24.9%        |
| LOCAL WATER PIPELINE CP           | 1,037                                     | 1,037             | -                 | 0.0%         | 4,148             | 25.0%        |
| CAPITAL LEASE                     | 804                                       | 804               | -                 | 0.0%         | 3,217             | 25.0%        |
| VARIABLE DEBT                     | -   | (2,912)           | (2,912)           | ---          | -                 | 0.0%         |
| BOND REDEMPTION SAVINGS           | (1,686)                                   | (1,686)           | -                 | 0.0%         | (6,746)           | 25.0%        |
| DEFAUNANCE ACCOUNT                | -   | -                 | -                 | ---          | -                 | ---          |
| <b>TOTAL DEBT SERVICE</b>         | <b>\$ 98,972</b>                          | <b>\$ 96,060</b>  | <b>\$ (2,912)</b> | <b>-2.9%</b> | <b>\$ 409,825</b> | <b>23.4%</b> |
| <b>TOTAL EXPENSES</b>             | <b>\$ 165,342</b>                         | <b>\$ 163,023</b> | <b>\$ (2,319)</b> | <b>-1.4%</b> | <b>\$ 674,485</b> | <b>24.2%</b> |
| <b>REVENUE &amp; INCOME</b>       |   |                   |                   |              |                   |              |
| RATE REVENUE                      | \$ 162,579                                | \$ 162,579        | \$ -              | 0.0%         | \$ 650,316        | 25.0%        |
| OTHER USER CHARGES                | 2,135                                     | 2,120             | (16)              | -0.7%        | 8,260             | 25.7%        |
| OTHER REVENUE                     | 944                                       | 1,394             | 449               | 47.6%        | 6,180             | 22.6%        |
| RATE STABILIZATION                | -   | -                 | -                 | ---          | -                 | ---          |
| INVESTMENT INCOME                 | 2,382                                     | 2,310             | (72)              | -3.0%        | 9,729             | 23.7%        |
| <b>TOTAL REVENUE &amp; INCOME</b> | <b>\$ 168,041</b>                         | <b>\$ 168,403</b> | <b>\$ 361</b>     | <b>0.2%</b>  | <b>\$ 674,485</b> | <b>25.0%</b> |

As of September 2014, total expenses were \$163.0 million, \$2.3 million or 1.4% less than budget and total revenue was \$168.4 million, \$361,000 or 0.2% higher than budget, for a net variance of \$2.7 million.

### Expenses –

- **Direct Expenses** are \$50.6 million, \$831,000 or 1.7% more than budget.
- **Maintenance** is \$1.8 million or 32.1% higher than budget. Material purchases are greater than budget by \$1.4 million and services are overspent by \$422,000 mainly due to timing.
- **Wages & Salaries** are underspent by \$707,000 or 3.2% due to lower headcount and the salary mix differential between staff retiring at higher rates and new hires coming on board at lower rates.
- **Utilities** are under budget by \$558,000 or 11.0% due to lower Electricity of \$492,000 mainly due to lower flows and pricing, Water use of \$43,000, and Diesel Fuel of \$32,000.
- **Workers Compensation** expenses are higher than budget by \$207,000 or 37.6%, due to higher Compensation Payments of \$133,000, Administrative and Legal costs of \$37,000, and Medical Expenses of \$37,000.
- **Professional Services** are higher than budget by \$82,000 or 5.8% due to timing of MIS initiatives of \$52,000 and higher Security of \$32,000.
- **Other Materials** are over budget by \$81,000 or 10.7% mainly due to timing of Work Clothes, Other Materials, and Computer Hardware.
- **Other Services** are lower than budget by \$59,000 or 1.0% due to timing of remediation activities of \$63,000, Grit of \$31,000 and Sludge Pelletization of \$17,000 mainly due to lower quantities.
- **Overtime** is overspent by \$35,000 or 3.9% due to some nominal overspending in several departments.
- **Chemicals** are underspent by \$18,000 or 0.6% due to lower Liquid Oxygen of \$83,000 due to lower dosing, Soda Ash of \$72,000 due to lower flows, and Nitrazyme of \$51,000 due to system modifications by the Town of Framingham offset by higher spending for Ferric Chloride of \$76,000 for struvite control, Hydrogen Peroxide of \$67,000 for lower flows which require increased pretreatment for hydrogen sulfide gas, Polymer of \$50,000 for sludge thickening, and Hydrofluosilicic Acid of \$46,000 due to delay in anticipated regulatory dosing change.
- **Indirect Expenses** are \$16.3 million, \$238,000 or 1.4% under budget mainly for lower Watershed Reimbursement expenses of \$119,000 due to FY14 overaccrual and lower Insurance expenses of \$78,000 mostly related to lower premiums.
- **Debt Service Expenses** totaled \$96.1 million, \$2.9 million or 2.9% less than budget. The lower Debt Service variance is the result of favorable short-term interest rates.

### Revenue and Income –

- **Total Revenue / Income** for September is \$168.4 million, \$361,000 or 0.2% higher than budget due to Non-Rate Revenue of \$434,000 offset by lower Investment Income of \$72,000. The higher Non-Rate Revenue is due to \$421,000 for the Disposal of Equipment mainly for the surplus of the Fox Point CSO facility, \$333,000 for the sale of unbudgeted emergency water for the Town of Hudson, and \$70,000 for higher permit fees offset by lower Energy revenue of \$436,000 due to the timing of Renewable Portfolio Standard (RPS) sales.

# Cost of Debt

## 1<sup>st</sup> Quarter - FY15

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.

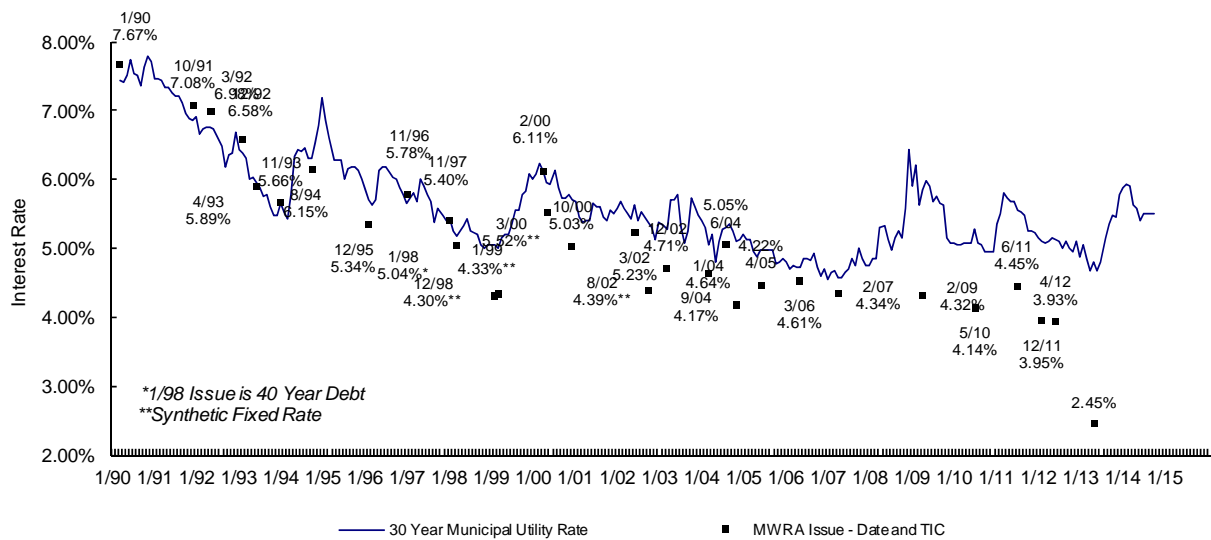
### Average Cost of MWRA Debt

|  |           |
|--|-----------|
| Fixed Debt (\$3,941)                     | 4.33%     |
| Variable Debt (\$484.3)                  | 0.63%     |
| SRF Debt (\$974.1)                       | 1.24%     |
| <br>Weighted Average Debt Cost (\$5,399) | <br>3.44% |

### Most Recent Senior Fixed Debt Issue March 2013

|                         |       |
|-------------------------|-------|
| 2013 Series A (\$170.6) | 2.45% |
|-------------------------|-------|

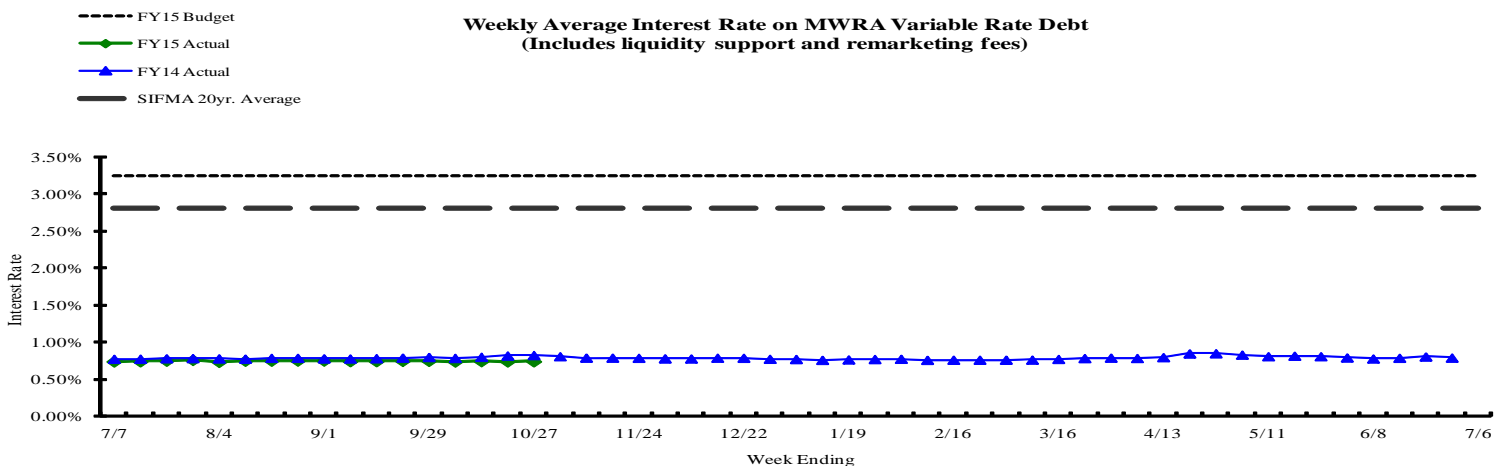
### MWRA Fixed Rate Debt vs. 30 Year Municipal Utility Interest Rate



### Weekly Average variable Interest Rates vs. Budget

MWRA currently has ten variable rate debt issues with \$1.0 billion outstanding, excluding commercial paper. Of the ten 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 September, SIFMA rates fluctuated with a high of 0.06% and a low of 0.05%. 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.

### Weekly Average Interest Rate on MWRA Variable Rate Debt (Includes liquidity support and remarketing fees)

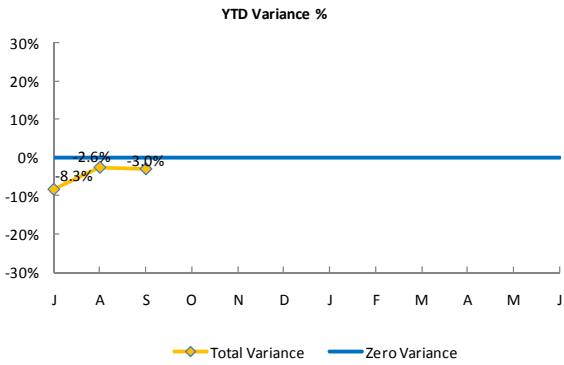




# Investment Income

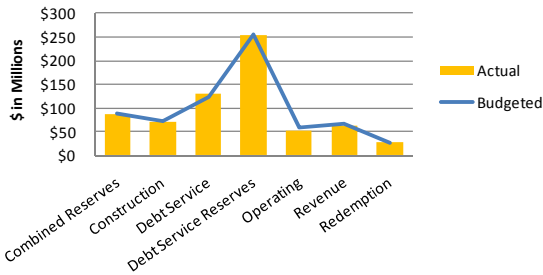
## 1<sup>st</sup> Quarter - FY15

### Year To Date

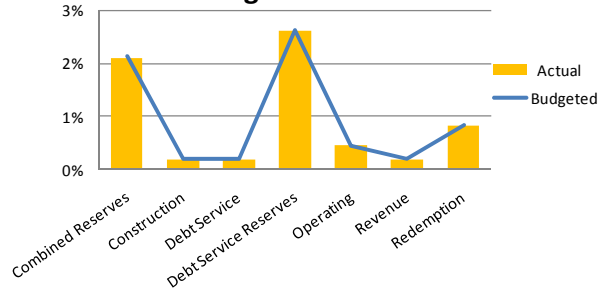


|                       | YTD BUDGET VARIANCE |               |               |              |
|-----------------------|---------------------|---------------|---------------|--------------|
|                       | (\$000)             |               |               |              |
|                       | BALANCES IMPACT     | RATES IMPACT  | TOTAL         | %            |
| Combined Reserves     | (\$1)               | (\$11)        | (11)          | -2.4%        |
| Construction          | (\$1)               | (\$2)         | (3)           | -9.2%        |
| Debt Service          | \$3                 | (\$5)         | (2)           | -3.7%        |
| Debt Service Reserves | (\$17)              | (\$28)        | (45)          | -2.7%        |
| Operating             | (\$7)               | \$2           | (6)           | -8.6%        |
| Revenue               | (\$2)               | (\$2)         | (4)           | -12.7%       |
| Redemption            | \$0                 | (\$1)         | (1)           | -2.1%        |
| <b>Total Variance</b> | <b>(\$25)</b>       | <b>(\$47)</b> | <b>(\$72)</b> | <b>-3.0%</b> |

### YTD Average Balances Budgeted vs. Actual

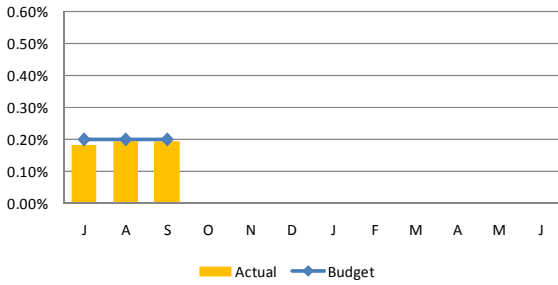


### YTD Average Interest Rate Budgeted vs. Actual

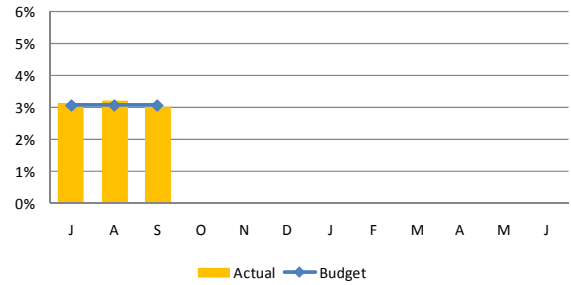


### Monthly

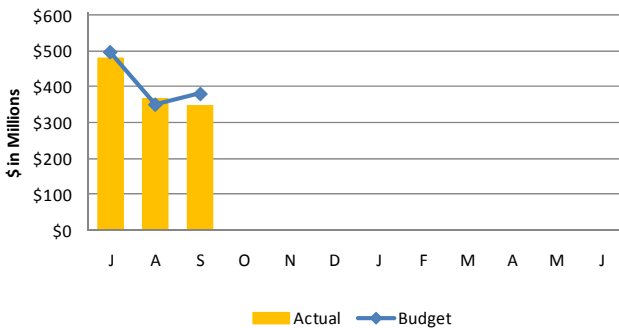
#### Short-Term Interest Rates



#### Long-Term Interest Rates



#### Short-Term Average Balances



#### Long-Term Average Balances

