MASSACHUSETTS WATER RESOURCES AUTHORITY

# Board of Directors Report

on

# Key Indicators of MWRA Performance

for

Fourth Quarter FY2015

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

Frederick A. Laskey, Executive Director
Michael J. Hornbrook, Chief Operating Officer
September 16, 2015

# Board of Directors Report on Key Indicators of MWRA Performance
## Fourth Quarter FY2015

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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
Michael J. Hornbrook, Chief Operating Officer

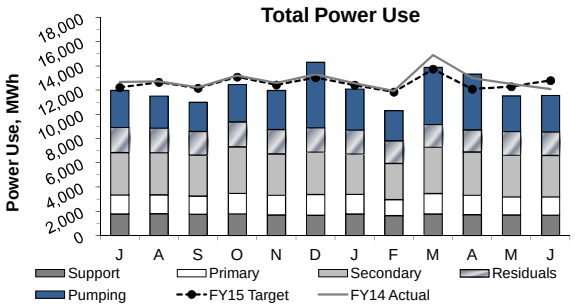
September 16, 2015

# OPERATIONS AND MAINTENANCE

# Deer Island Operations

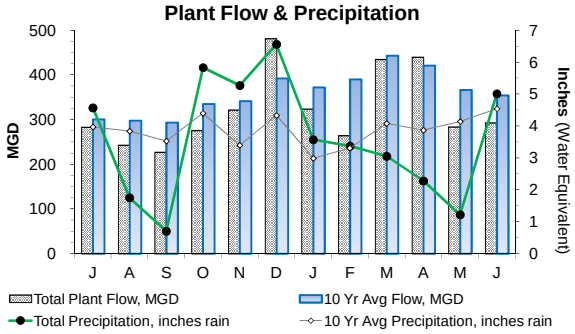
4th Quarter - FY15





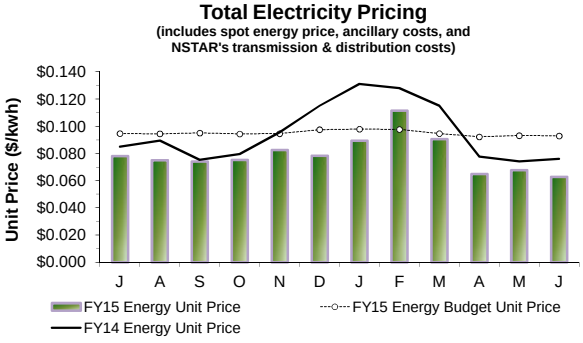

Total Power Use in the 4th Quarter was 1.9% below target as Total Plant Flow for the quarter was within 0.5% of the 3 year average plant flow for the same period. **Overall Total Power Use in FY15 was 3.1% below target as Total Plant Flow was 3.6% lower than the 3 year average plant flow.**

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

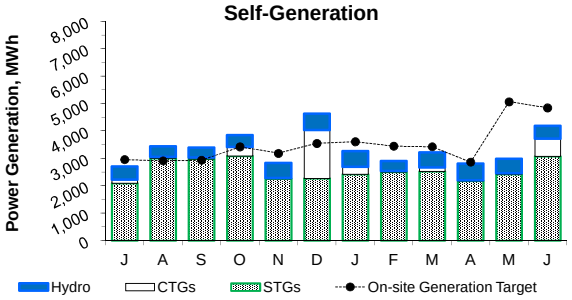



Total Plant Flow for the 4th Quarter was 11.1% below the 10 year average plant flow (338.5 MGD actual vs. 380.8 MGD expected) as precipitation for the 4th Quarter was 32% lower than target (8.51 inches actual vs.12.56 inches expected).

**Overall Total Plant Flow in FY15 was 10.2% below target as precipitation was 6.9% below target.**

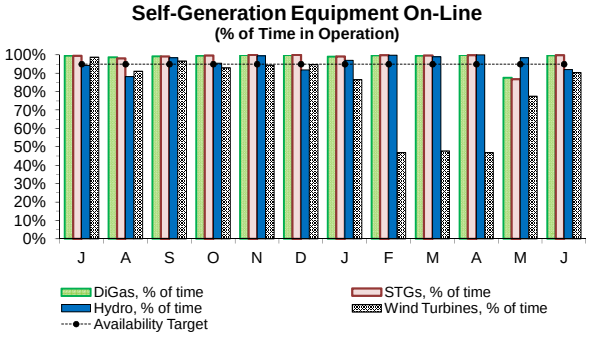



Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The Total Energy Unit Price in May was 27.3% lower, and in June, 32.3% lower than the FY15 budget estimates for these months. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges. **The Total Energy Unit Price for FY15 was 16.6% below budget.**

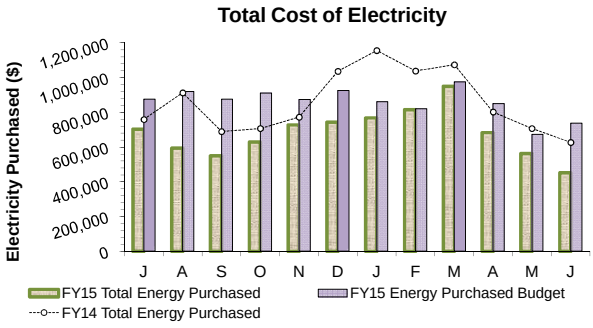



Power generated on-site during the 4th Quarter was 16.8% lower than target. While Hydro Turbine and STG power generation met or exceeded their targets (+1% and +16% respectively), generation by the CTGs, Solar Panels, and Wind Turbines fell below target. The Solar Panels generated 6% less power than expected and generation by the Wind Turbines was 11% below target as Wind Turbine #2 was out of service for much of the first half the quarter. The CTGs generated 82% less power than expected during the quarter as the target included five (5) days of 24 hour operation by both turbines for wet weather events, but their operation for this purpose was not necessary. The CTGs were however operated for a total of 52.4 hours in June during the Eversource (NSTAR) cross-harbor cable maintenance outage and for 2 hours on June 9 for an ISO-NE called demand response audit event. **Nonetheless, overall power generation for FY15 was 1.3% higher than target .**

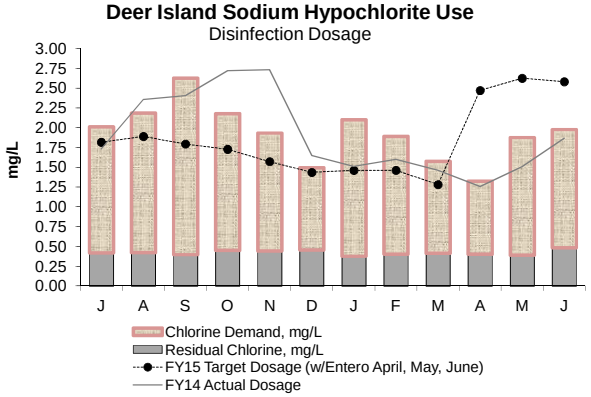
Note: Power generation by the Solar Panels and the Wind Turbines are not included in the graph (as the amounts generated cannot be seen within the current scale of this graph); a total of 284.1 MWh was generated by the Solar Panels and 379.5 MWh was generated by the Wind Turbines in the 4th Quarter.

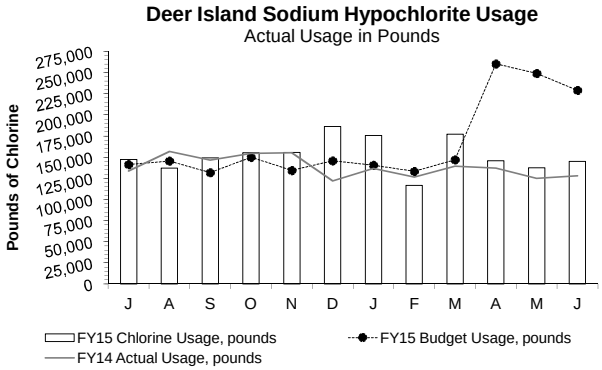



The DiGas, STGs, and Hydro Turbines, all exceeded the 95% availability target for the 4th Quarter. Wind Turbine availability fell below target as Wind Turbine #2 was offline from January 25 through May 12 awaiting repairs to the main power cable.




The cost of electricity Purchased during the 4th quarter was 14.2% lower than budgeted due to both lower than expected power usage and lower than expected energy prices in the quarter. **Fiscal year end costs are $2,111,451 (20.5%) lower than budgeted through June (actuals) as the Total Energy Unit Price and the Total Power Purchased were both lower than budgeted by 16.6% and 4.6%.**




The disinfection dosing rate in the 4th Quarter was 33% less than the target and the usage in pounds of chlorine was 42.0% lower than the target. The FY15 budget assumed DITP would be operating in compliance with a new NPDES permit during the last three months of FY15 which may have required disinfection treatment for *Enterococcus* bacteria (instead of disinfection treatment for fecal coliform bacteria) resulting in a need for higher disinfection dosing rates and sodium hypochlorite usage. However, a new NPDES permit for MWRA DITP has not yet been issued by the regulators. DITP maintained an average disinfection chlorine residual of 0.43 mg/L this quarter with an average dosing rate of 1.73 mg/L (as chlorine demand was 1.30 mg/L**). Overall for FY15, the sodium hypochlorite usage in pounds of chlorine was 8.9% lower than 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 | 1 | 1 | 0 | 98.5% | 11.82 |
| N | 4 | 4 | 0 | 99.5% | 9.99 |
| D | 5 | 5 | 0 | 94.5% | 72.22 |
| J | 1 | 1 | 0 | 99.98% | 1.73 |
| F | 0 | 0 | 0 | 100.0% | 0.00 |
| M | 4 | 4 | 0 | 99.2% | 36.05 |
| A | 2 | 2 | 0 | 99.9% | 3.66 |
| M | 1 | 1 | 0 | 100.0% | 1.08 |
| J | 2 | 2 | 0 | 99.6% | 7.01 |
| Total | 23 | 23 | 0 | 99.0% | 153.96 |

99.9% of all flows were treated at full secondary in the 4th Quarter. There were a total of five (5) separate secondary blending events in the quarter; all due to high plant flows resulting from heavy rain. The five (5) secondary blending events combined produced a total of 11.75 hours of blending and 40.03 Mgal of flow blended with secondary effluent. The Maximum Secondary Capacity for the quarter was 700 MGD.

**Secondary permit limits were met at all times during the 4th Quarter of FY15.**

## Deer Island Operations & Maintenance Report

**Environmental/Pumping:**

In the 4th Quarter, the plant achieved a maximum average hourly flow rate of 919.0 MGD during the late morning of June 28 as a result of a rain event that dropped a total of 1.63 inches of rain. Even though precipitation was above target in June, the lower than expected rainfall (in April and May) resulted in 32% lower than expected precipitation for the quarter. As a result, the Total Plant Flow was 11.1% lower than expected for the 4th Quarter.

Additionally, two (2) low flow records for the month of May were broken this quarter for Total Plant Flow and for North System Flow:

Total Plant Flow – 283.43 MGD in May 2015 (previous May record was 288.76 MGD in 2013)
North System Flow – 181.78 MGD in May 2015 (previous May record was 191.38 MGD in 2013)

## Deer Island Operations & Maintenance Report (continued)

**Environmental/Pumping (continued):**

The South System low flow record in May was not broken however. South System flow was 101.64 MGD in May while the record low flow from May 2013 stands at 97.39 MGD

MWRA performed three (3) four hour test shutdowns prior to construction activities, under the North Main Pump Station Valve Replacement contract, so that it can compare the actual behavior of the sewer system to hydraulic modeling results. All have been successful.

**Primary and Secondary Treatment:**

Progress on the major Primary and Secondary Scum Tip Tube Replacement Project continues. 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 90.0% complete for the primary clarifiers and 50.0% complete for the secondary clarifiers by the end of the 4th Quarter. The contract is currently on schedule and functional testing is on-going.

Annual turnaround maintenance was performed on Train #2 in the Cryogenic Oxygen Facility in early April. This turnaround maintenance is performed on roughly half of the components and systems in the Cryo Facility and allows the remaining half of the facility to continue to operate and produce oxygen uninterrupted. During this turnaround maintenance, the contractor calibrated all the instrumentation on Cold Box unit #2 as well as, several other components of the oxygen plant. The same turnaround maintenance will be completed on Train #1 in the fall.

In June, the contractor (J.F. White) completed replacement of the existing waste sludge centrifuge back drives and motors with new motors and VFDs. This project required a coordinated effort between Process Control and Engineering staff to ensure that the new equipment was installed correctly and integrated with the existing control system. The refitted machines are operating effectively and with increased electrical efficiency. No problems have been noted to date.

**Residuals Treatment:**

Module #2 Digester #1 was taken out of operation on June 23 and remained off-line for the remainder of June to prepare it for maintenance and to replace the digester's viewing port leaving seven (7) digesters in operation.

**Odor Control:**

Activated carbon media was changed out on carbon adsorber (CAD) units #3 and #7 in the East Odor Control (EOC); #2, #4, and #8 in the West Odor Control (WOC); and #2 in the North Pumping Odor Control (NPOC) Facilities during the 4th Quarter as part of routine practice to replace spent activated carbon before the carbon becomes ineffective.

**Energy and Thermal Power Plant:**

Solar power generation accounted for 2.67% (284.1 MWh) and Wind Turbine generation accounted for 3.57% (379.5 MWh) of the total power generated on-site in the 4th Quarter. Overall, total power generated on-site accounted for 29.2% of Deer Island's total power use for the quarter and 29.3% for FY15. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 27.2% of Deer Island's total electrical power use for the quarter and 26.9% for FY15.

The annual maintenance at the Thermal Power Plant began on April 27 and continued through May 8. Various maintenance activities on both Steam Turbine Generators (STGs), the two Zurn boilers, and the common systems were completed which included maintenance on various pumps, valves, and instruments throughout the power plant. One or both STGs were taken out of service for periods of time during this maintenance with both units being offline simultaneously starting on May 3 due to maintenance on the common systems that required a full Thermal Power Plant shutdown. On May 7, the boilers and STG systems were all returned to normal operation.

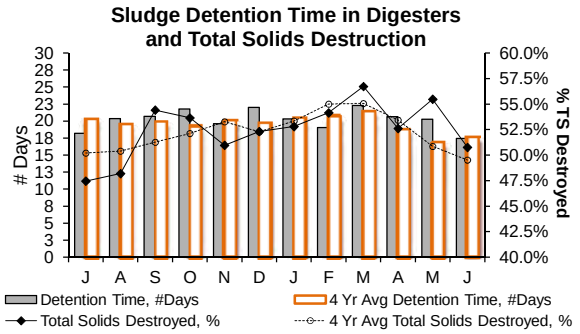
Additionally on May 13, the annual maintenance overhaul for CTG-1A began and continued through May 22. CTG-2B remained available for operation during the CTG-1A maintenance and CTG-1A could have been returned to operation within 2 hours had there been a need.

CTG-2B was operated from approximately 1:40 p.m. to 3:30 p.m. on June 9 for an ISO-NE declared Demand Response audit event.

DITP took delivery of 370,000 gallons of #2 fuel oil, a total of 39 tanker trucks, without incident over the course of five (5) days in June. This fuel oil is used for CTG operation and for boiler startup operations.

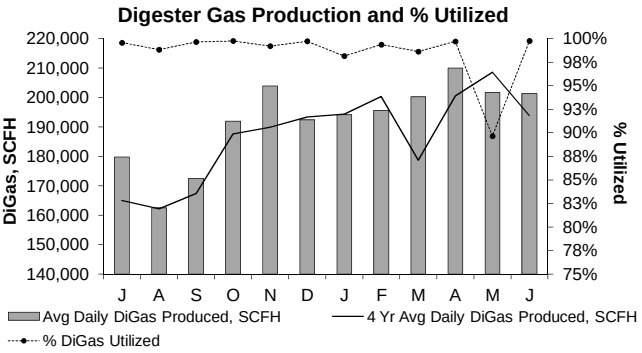
# Deer Island Operations and Residuals

4th Quarter - FY15



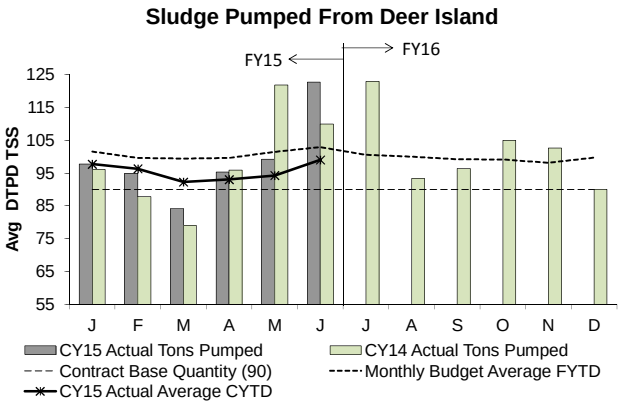

Total solids (TS) destruction following anaerobic sludge digestion averaged 52.9% during the 4th Quarter, slightly higher than the 4 year average of 51.3% for the same period. The sludge detention time in the digesters of 19.5 days was 10.4% higher than the 4 year average of 17.6 days as DI operated with an average of 7.9 digesters during the 4th Quarter compared to the 4 year average of 7.3 digesters. Overall in FY15, TS destruction was on target (+0.5%) as detention time in the digesters averaged 20.2 days operating with an average of 8 digesters.

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 significanty impacted by changes in the number of digesters and the resulting shifting around of sludge.

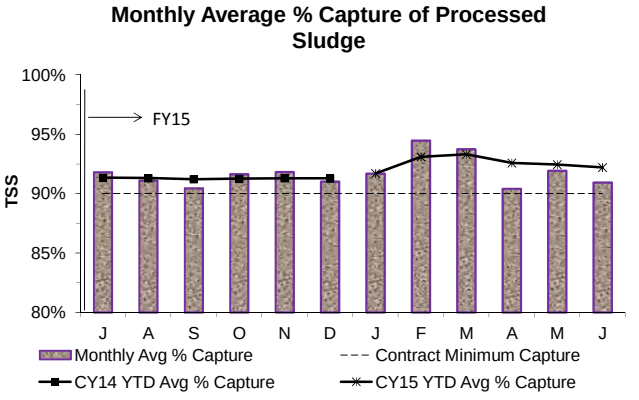



The Avg Daily DiGas Production in the 4th Quarter was 2.4% higher than the target 4 Year Avg Daily DiGas Production for the same period; 3.1% higher for FY15. On average, 95.7% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant and 98.3% of all the DiGas produced in FY15 was utilized at the Thermal Power Plant.
The annual Thermal Power Plant maintenance resulted in a drop in DiGas utilization in May, as both boilers were shut down from May 3-May 7. No DiGas could be utilized during that time period.

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




The average total quantity of sludge pumped in the 4th Quarter of FY15 was 105.7 DTPD - lower than FY15's average budget of 102.9 DTPD. The higher amount is due to higher sludge production as a result of warmer weather, higher solids destruction, and the emptying of Module #2, Digester #1 in June to allow for scheduled maintenance.



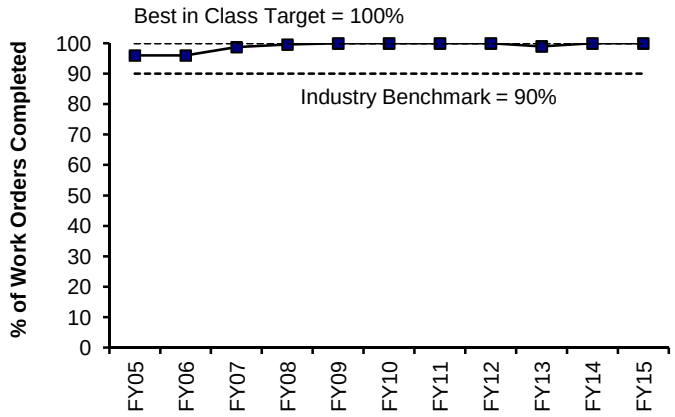

The contract requires NEFCo to capture at least 90% of the solids delivered to the Biosolids Processing Facility in Quincy. The CY15 YTD average capture is 92.55%

# Deer Island Yearly Maintenance Metrics

4th Quarter - FY15

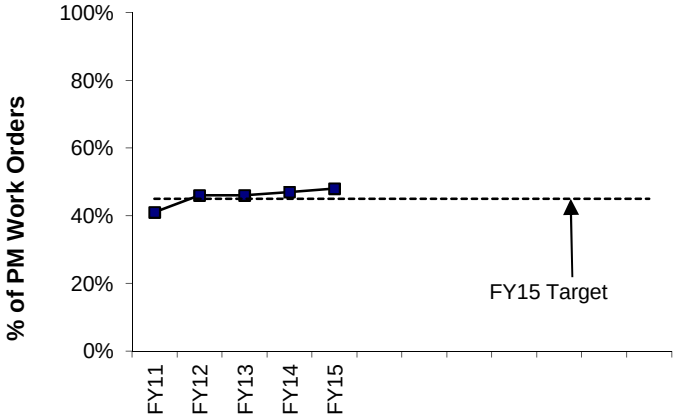
Proactive and Productivity Measures

### Preventive Maintenance



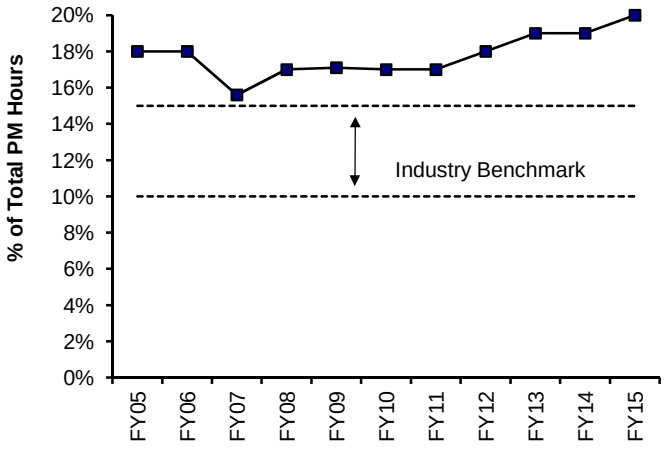

The industry benchmark is 90% for Preventive Maintenance (PM) completion. Upon reaching the 90% goal in FY05, the target goal was increased to the "Best in Class" Target of 100% PM completion. Since then, the percentage of PM work order completion has been at 99% or higher. Reliability-Centered Maintenance (RCM) and PM optimization efforts have continued since FY01. PM completion rate was 99.9% in FY15.

### Preventive Maintenance Kitting



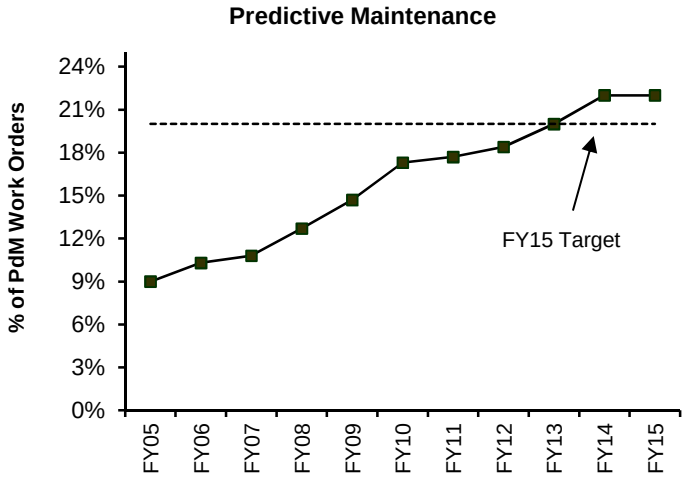

Preventive Maintenance (PM) inventory items were loaded into Maximo to assign spare parts for equipment to PM work orders. DITP reached the PM kitting goal of 100% in FY10. In FY11 a new graph (above) was developed to track kitting of all maintenance work orders in an effort to increase wrench time. Staff continues to fine-tune the process to "kit" al maintenance work orders. Kitting is considered a best practice by maintenance and reliability professionals. It entails staging parts necessary to complete maintenance work. Kitting allows maintenance staff to spend more time "turning the wrench" and less time waiting for parts at the stockroom window. Kitting for FY15 was 48%.

### Operations Light Maintenance PMs




The percentage of preventive maintenance work order hours completed by Operations staff (not maintenance staff) increased from less than 1% in January 2002 to the current level of 20% in FY15. DITP reached the industry benchmark range of 10-15% in April 2003 and has exceeded the goal through FY15. Operations completes approximately 600 PM work orders per month.

### Predictive Maintenance

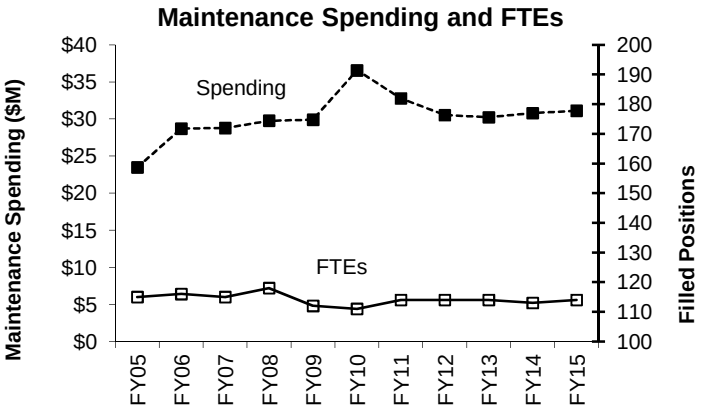



Predictive maintenance has steadily increased from 2% in FY03 to 22% in FY15, surpassing DITP's FY15 goal of 20%. The increase in predictive maintenance was achieved through the expanded use of lubrication, vibration, thermography, and acoustic ultrasonic testing techniques. The Condition Monitoring Group continually reviews and investigates new opportunities and initiatives to expand condition monitoring testing and analysis.

# Deer Island Yearly Maintenance Metrics

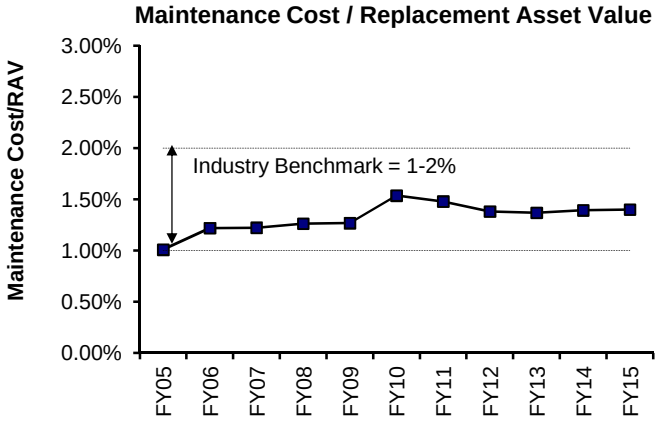
FY15

Overall Maintenance Program Measures

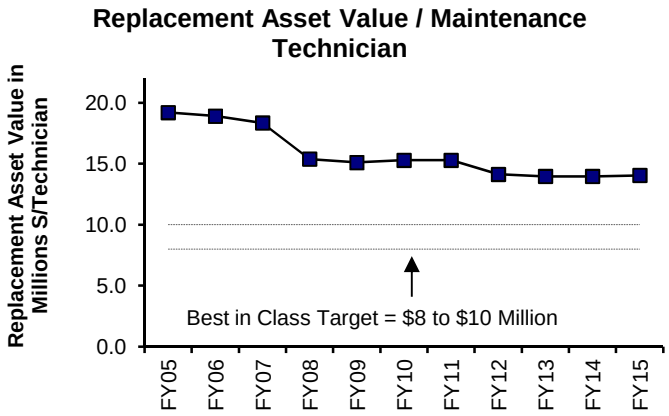



DITP's Maintenance staff is currently at 114 FTE's. Maintenance has been successful in meeting its goals through implementation of numerous maintenance efficiencies including: Operations staff performing light maintenance, cross-functional training and flexibility, and Reliability-Centered Maintenance.

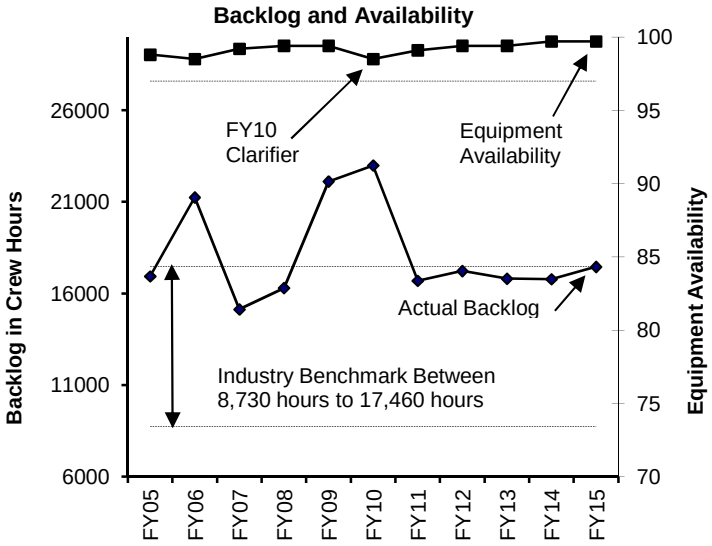
The Maintenance Spending graph shows actual annual maintenance spending and large asset replacements (equipment costs only). Maintenance budgeting continues to evaluate plant assets and requirements for replacement of obsolete equipment to ensure the plant operates at maximum efficiency. In FY15, overall spending increased slightly from FY14. CIP projects during FY15 included: Electrical equipment upgrades, North Main Pump Station VFD replacement, and the Primary/Secondary Scum Tip-Tube replacement project. The large spike in FY10 and FY11 is attributed to the Clarifier Rehabilitation project ($58M), which was on-going during that period.




The industry benchmark for annual maintenance spending is between 1% to 2% of replacement asset value. The plant's replacement asset value is calculated at approximately $2.4 billion dollars. DITP's current maintenance spending is within the industry benchmark. As the plant ages and equipment replacement is required, additional spending is expected to increase. DITP Maintenance CEB spending is $12.4 million coupled with CIP spending which funded Electrical Equipment upgrades, North Main Pump Station VFD replacement, and Primary/Secondary Scum Tip-Tube replacement projects.




DITP adopted a "best in class" target of $8-$10 Million/Technician for maintenance staffing. Even after a period of downward trending, DITP remains above this Best in Class target range. However, as the plant ages and additional equipment replacements are expected, DITP management will reassess staffing as needed.




The industry benchmark for equipment availability is 97% and for maintenance backlog, based on current staffing levels is between 8,730 to 17,460 hours.

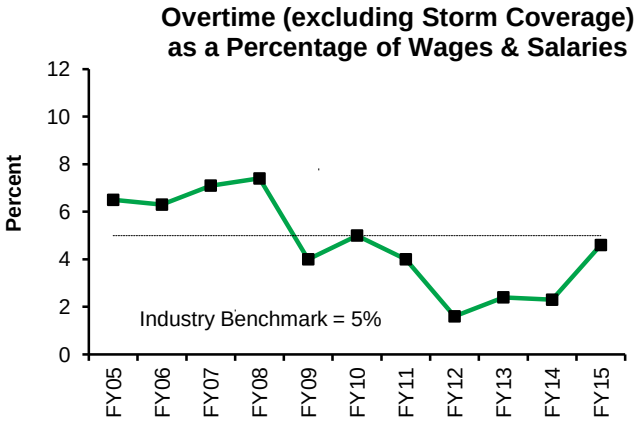
Over the last ten years, equipment availability exceeded this benchmark. In FY15 the availability was 99.7%, the highest availablility attained to date.

Total average backlog for FY15 was 17,454 hours, which is at the top of the industry benchmark. The increase in backlog is attributed to additional HVAC equipment replacements and maintenance work delayed due to staff dealing with extreme winter weather. Management continues to prioritize work and closely monitor DITP's backlog.

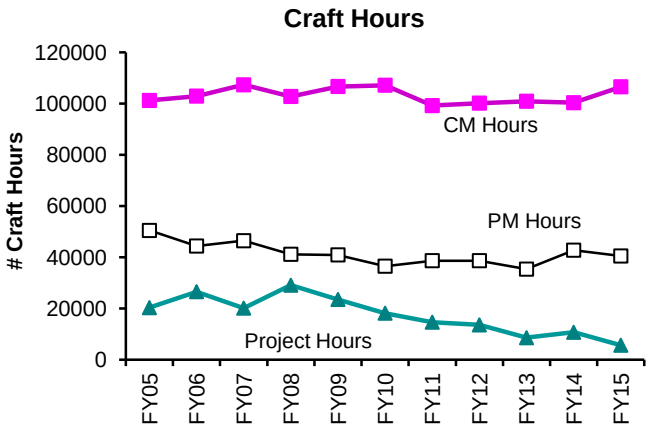
# Deer Island Yearly Maintenance Metrics

4th Quarter - FY15

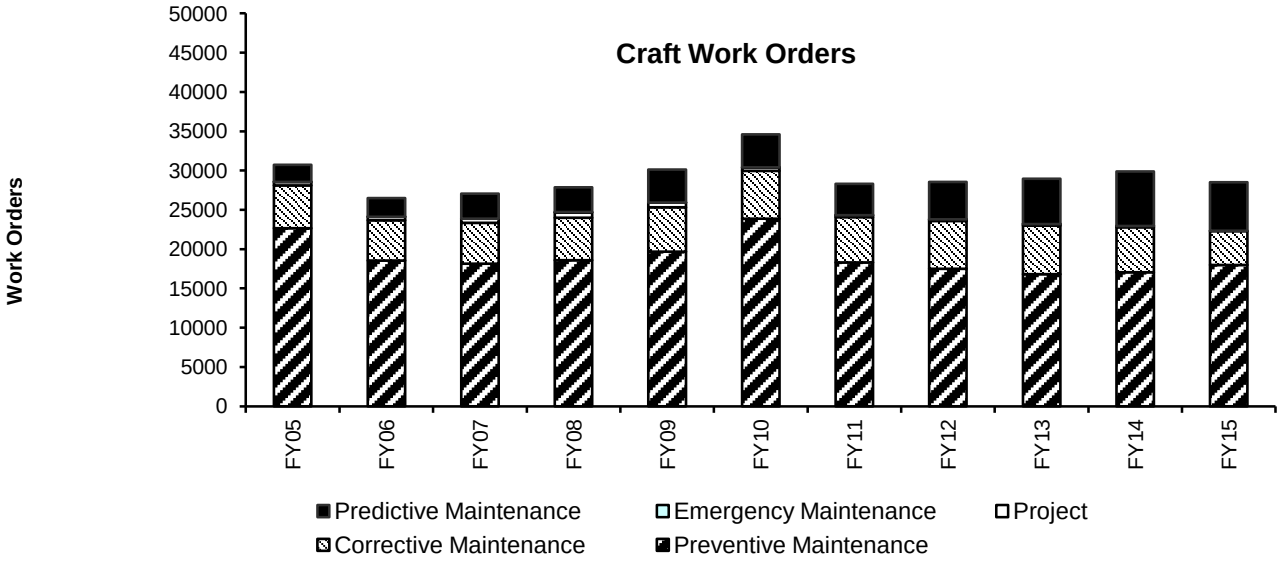
Overall Maintenance Program Measures (cont.)




Management continues its effort to keep overtime within the industry benchmark. DITP maintenance overtime was 4.5% for FY15. Management has taken steps to reduce overtime spending by limiting overtime to repair critical equipment and systems only. DITP has been on or under budget from FY09 through FY15. The increase in overtime over the last year was due to plant shutdowns, HVAC equipment replacements, and added maintenance due to extreme winter weather.




Continued optimization of the Preventive Maintenance (PM) program through the transfer of some light maintenance tasks from Maintenance to Operations staff (20% of PM hours at the end of FY15), elimination of duplicate work orders, increasing PM frequency due to equipment history and performance, completion of PM Optimization efforts, and Reliability-Centered Maintenance (RCM) recommendations resulted in a significant decrease of 4,658 hours in maintenance staff PM hours from FY05 to FY15. Corrective Maintenance (CM) hours increased from last year due to additional HVAC work. Project Maintenance hours decrease due to a number of CIP projects on-going during FY15.



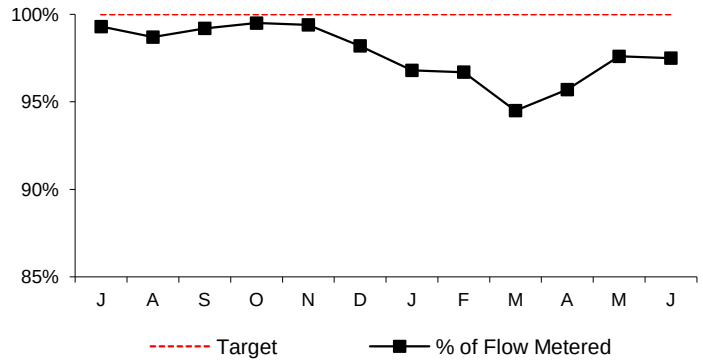

During FY15, the number of work orders decreased by 1,474 from the previous year due to the decrease in Condition Based Maintenance (CBM), Project work orders, and Corrective Maintenance (CM). The Planning department is streamlining work orders while ensuring all work by various trades is captured on one work order ensuring all costs are available for reporting and/or reimbursement if needed.

# Operations Division Metering

4th Quarter - FY15

## WATER METERS

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

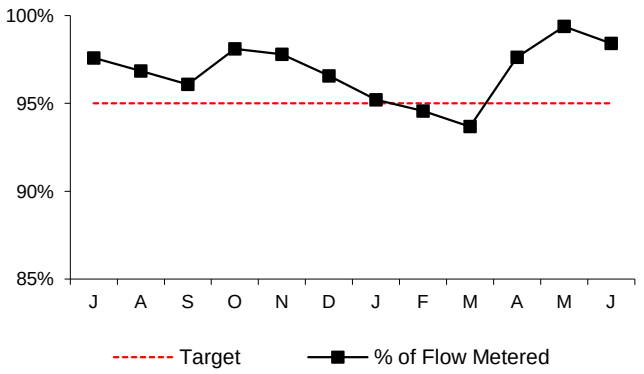



The target for revenue water deliveries calculated using meters is 100%. Estimates are generated for meters that are out of service due to instrumentation problems or in-house and capital construction projects. During the 4th Quarter of FY15, meter actuals accounted for 96.93% of flow; only 3.07% of total revenue water deliveries were estimated. The following is the breakdown of reasons for estimations:

In-house and Capital Construction Projects - 2.20%
Instrumentation Failure - 0.87

## WASTEWATER METERS

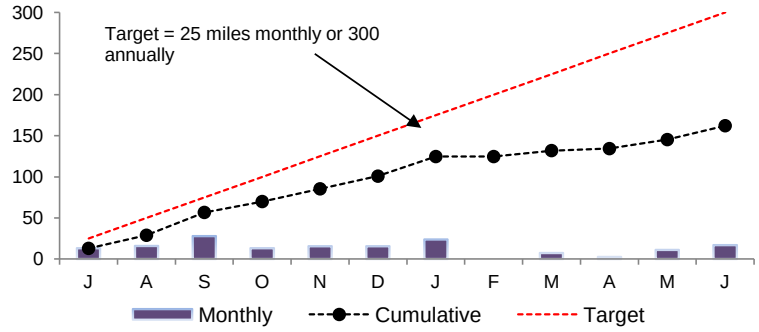
**Percent of Total Wastewater Transport Calculated Using Meters**




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 4th Quarter of FY15, meter actuals accounted for 98.5% of flow; 1.5% of wastewater transport was estimated.

## WATER DISTRIBUTION SYSTEM PIPELINES

**Miles Surveyed for Leaks**



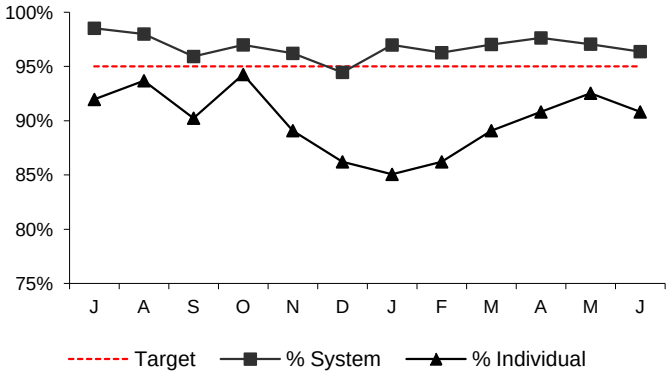

During the 4th Q of FY15, 30.24 miles of water mains were inspected.

The total inspected for the fiscal year is 162.17. Annual target not met due to record breaking snowfall totals during the Winter and early Spring; staffing turnover as well as extensive community assistance.

**Water Distribution System**

| Month | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Leaks Detected | 6 | 1 | 7 | 5 | 2 | 1 | 4 | 0 | 1 | 2 | 4 | 4 |
| Leaks Repaired | 8 | 1 | 1 | 4 | 7 | 3 | 1 | 0 | 1 | 2 | 3 | 4 |
| Backlog | 4 | 4 | 10 | 11 | 6 | 4 | 7 | 7 | 7 | 7 | 8 | 8 |
| | | | | | | | | | | | | |
| Avg. Lag Time | 12.9 | 22.4 | 24.5 | 31.9 | 38.7 | 41.4 | 43.0 | 48.6 | 53.7 | 56.7 | 57.3 | 57.1 |

**% Wastewater Meter Uptime**




During the 4th Quarter of FY15,out of a possible 1,520,064 data points, only 45,442 points were missed resulting in a system-wide up time of 97%. Of the 174 revenue meters installed, on average 15 experienced down time greater than the 5% target resulting in a 91.4% individual meter uptime.

For the 4th Quarter of FY15, down time for an individual meter is defined by any individual meter having less than 2,766 data points out of a potential 2,912 data points.

During the 4th Quarter of FY15, ten (10) new leaks were detected, of which, five (5) were repaired. The unrepaired leaks consist of two leaks on West Street in Hyde Park; and one each on Allandale Road, Brookline; Washington Street, Dedham ;and University Avenue, Norwood. The two leaks located on West Street were originally detected during May and the leaks located in Brookline, Dedham and Norwood were originally detected during June. Staff repaired four (4) other leaks during the 4th Quarter including: Fairbanks Street, Brighton originally detected back in October as well as two leaks on Morton Street, Dorchester originally detected during January.

At the end of the 4th Quarter there are eight leaks (8) leaks that need to be repaired: five (5) from the 4th Quarter, two (2) from the 3rd Quarter, and one (1) from the 4th Quarter of FY14. With the exception of the leak carried over from FY14, the remaining leaks have not been repaired due in large part to permitting issues. The remaining leak from FY14 is the second leak on the GE Bridge, Revere/Lynn line. This leak remains unrepaired due to an extensive coordination of resources including the rental of a barge.

Thirty seven (37) leaks were detected or surfaced during the year. Thirty (30) of them were repaired, with one to be repaired in early July. The remaining 6 leaks will be dealt with early in FY16. None of the remaining leaks are surfacing; they were all detected acoustically. Leak detection work was performed by MWRA Staff in several customer communities during the year. MWRA assisted Malden, Revere, and Swampscott with leak detection after the record winter.

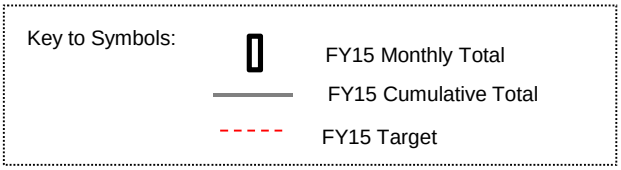
# Water Distribution System Valves

4th Quarter - FY15

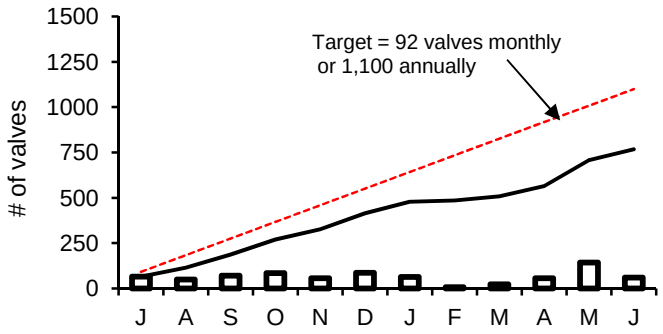
## Background

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 | 2,159 | 96.0% | 95% |
| Blow-Off Valves | 1,317 | 92.3% | 95% |
| Air Release Valves | 1,380 | 91.9% | 95% |
| Control Valves | 49 | 100.0% | 95% |

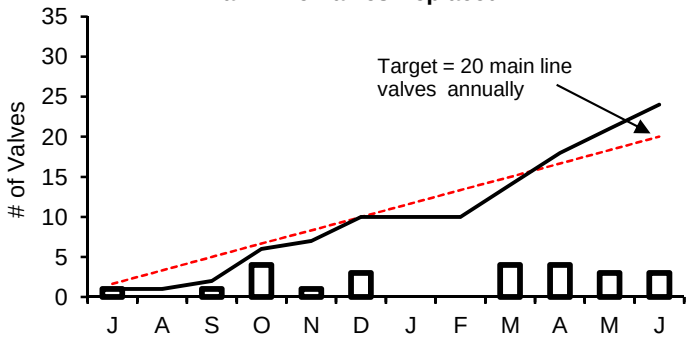



### Main Line Valves Exercised



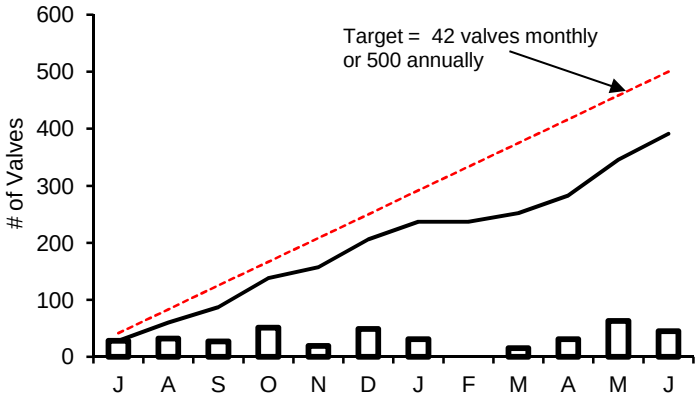

During the 4th Q of FY15 staff exercised 259 main line valves. The total for the fiscal year is 767. Annual target of 1,100 not met due to staffing turnover as well as CIP contract work, specifically Spot Pond Storage Tank.

### Main Line Valves Replaced



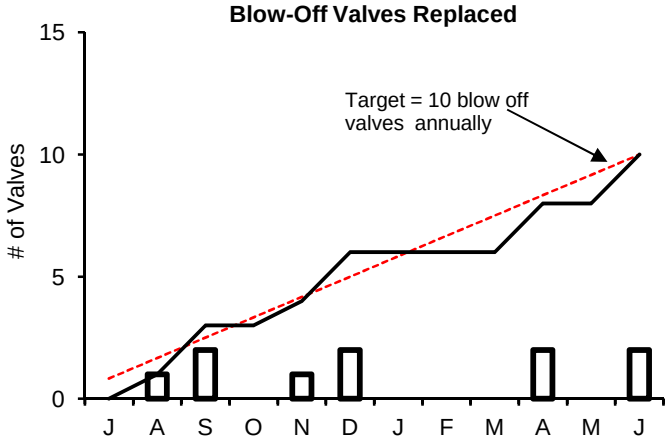

During the 4th Q of FY15 staff replaced ten main line valves. The total for the fiscal year to date is 24.

### Blow-Off Valves Exercised




During the 4th Q of FY15 staff exercised 139 blow off valves. The total for the fiscal year is 391. Annual target of 500 not met due to staffing turnover as well as CIP contract work, specifically Spot Pond Storage Tank.

### Blow-Off Valves Replaced



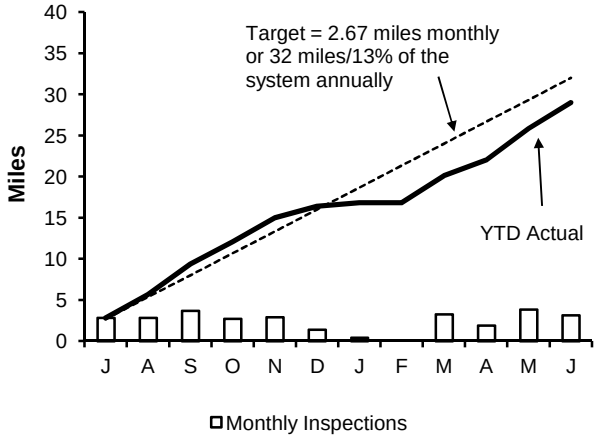

During the 4th Q of FY15, four blow-off valves were replaced. The total for the fiscal year to date is ten.

# Wastewater Pipeline and Structure Inspections and Maintenance

4th Quarter - FY 15

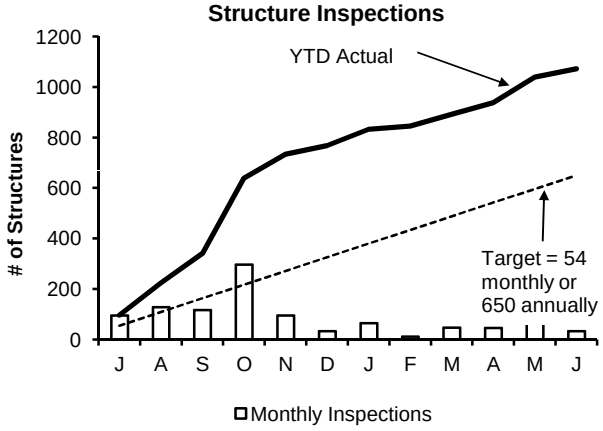
## Inspections

### Pipeline Inspections



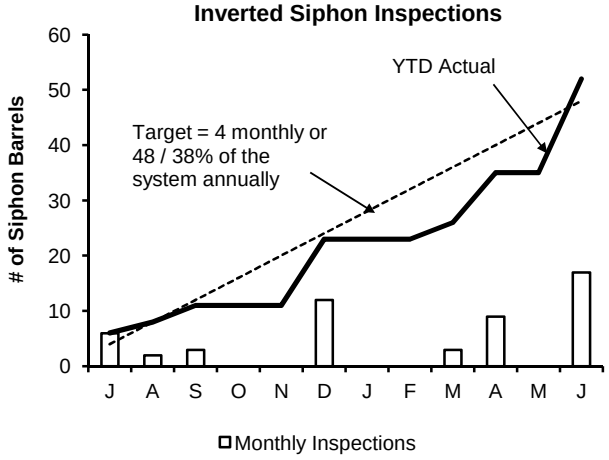

Staff internally inspected 8.91 miles of MWRA sewer pipeline during this quarter. Community Assistance was provided to the town of Waltham and Bedford this quarter. Staff inspected 0.08 miles and 0.85 miles respectively.

### Structure Inspections




Staff inspected the 36 CSO structures and performed 144 additional manhole/structure inspections during this quarter. The year to date total is 1,072 inspections.

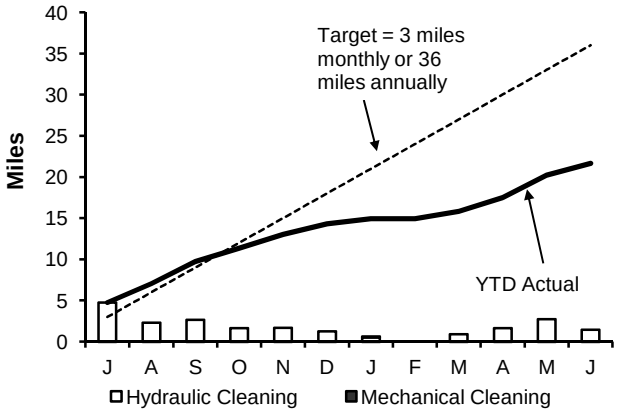
### Inverted Siphon Inspections




Staff inspected 26 siphon barrels during this quarter.Year to date total is 52 inspections.

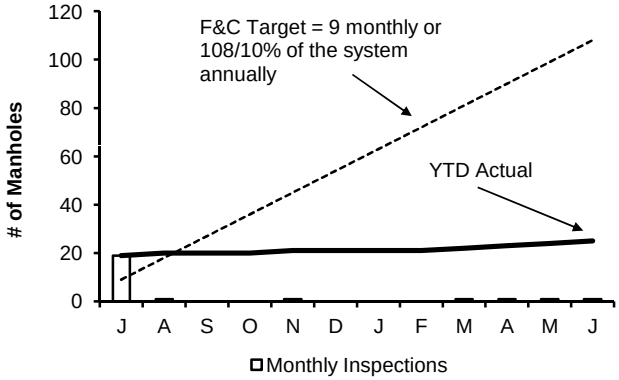
## Maintenance

### Pipeline Cleaning



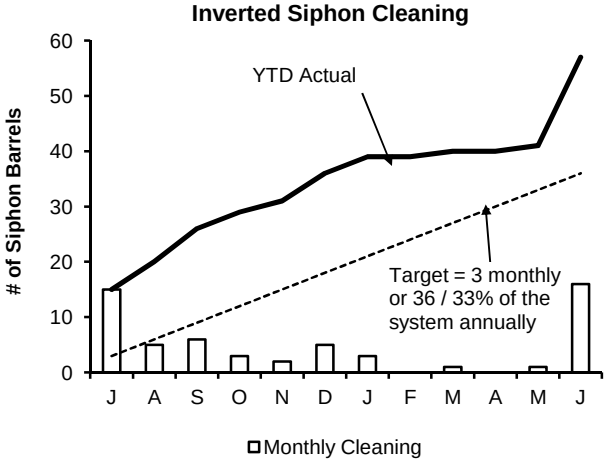

Staff cleaned and maintained 5.81 miles of the MWRA's sewer system and removed 41 yards of grit and debris during this quarter. The year to date total is 21.65 miles, and it was impacted significantly due to winter weather. Community Assistance was provided to the city of Everett this quarter. Staff cleared 600 linear feet of 8" diameter

### Manhole Rehabilitation




Staff replaced 3 frames & covers during this quarter. The year to date total is 25. Staff spent the majority of their time working on many projects at water and sewer facilities and water construction projects. Coordination and scheduling of staff will redirect their efforts on staying on target and meeting next years' goal.

### Inverted Siphon Cleaning

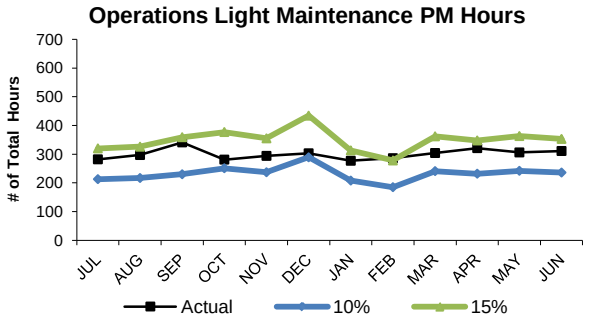



Staff cleaned 17 siphon barrels during this quarter.The year to date total is 57 barrels.

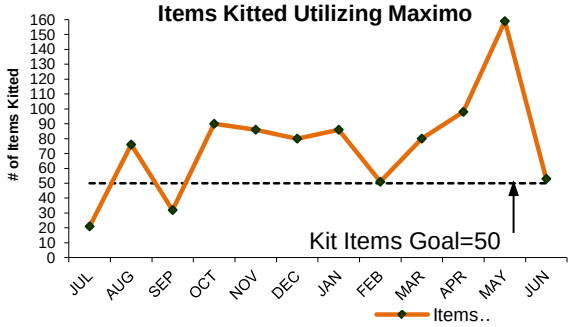
# Field Operations' Metropolitan Equipment & Facility Maintenance

4th Quarter, FY15

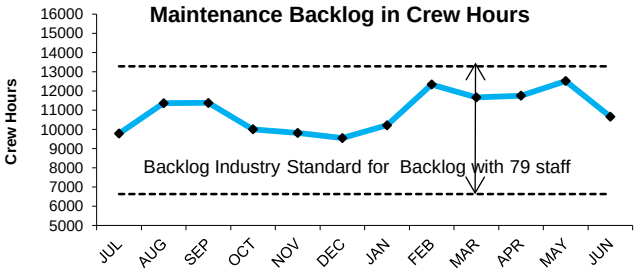
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus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



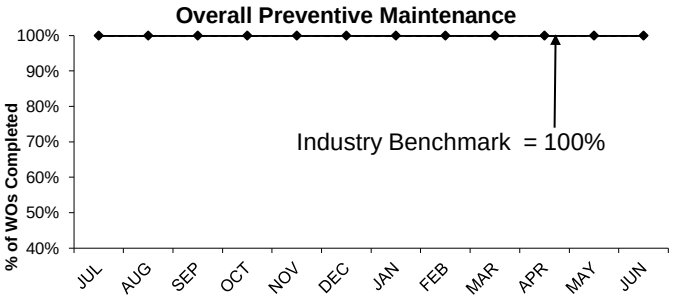

Operations staff averaged 313 hours of preventive maintenance during the 4th Quarter, an average of 13% of the total PM *hours* for the 4th Quarter, which is within the industry benchmark of 10% to 15%. Operations staff averaged 300 hours per month for FY15.



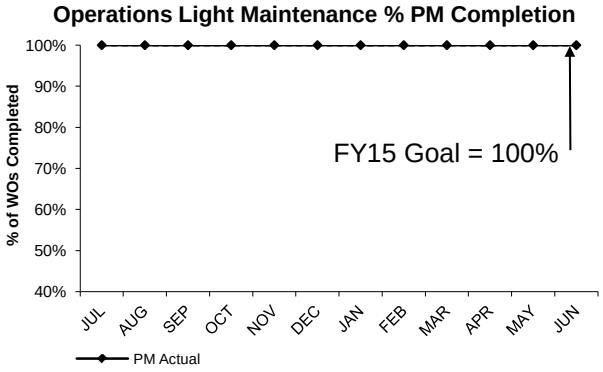

In an effort to more efficiently complete work, maintenance staff and work coordination staff have utilized the Lawson/Maximo interface to better kit stock and non stock material. The goal for FY15 is to "kit" 50 stock and non stock items total per month. An average of 103 items were kitted during the 4th Quarter with a monthly average of 76 for FY15.



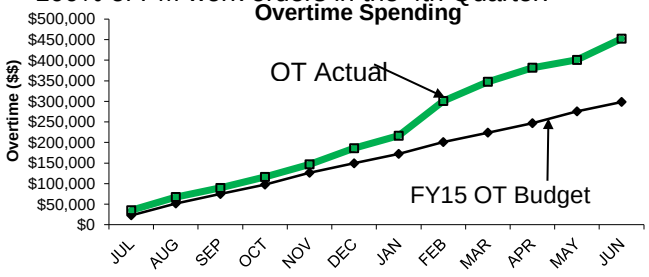

The 4th Quarter backlog average is 11,644 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6450 to 12,940 hours.




The Field Operations 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 4th Quarter.



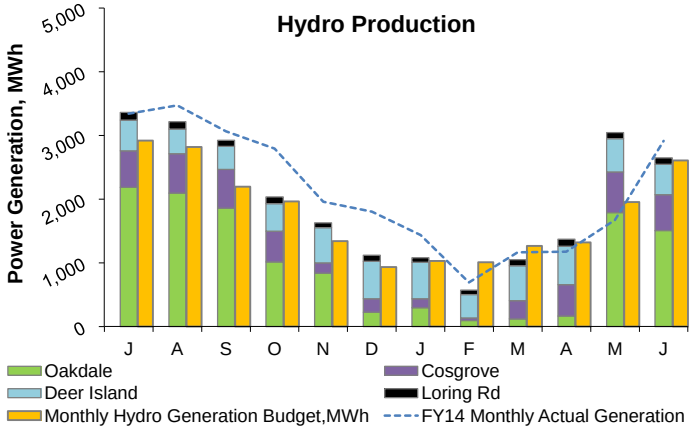

Wastewater Operators complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY15 PM goal is completion of 100% of all PM work orders assigned. Operations completed an average of 100% of PM work orders in the 4th Quarter.



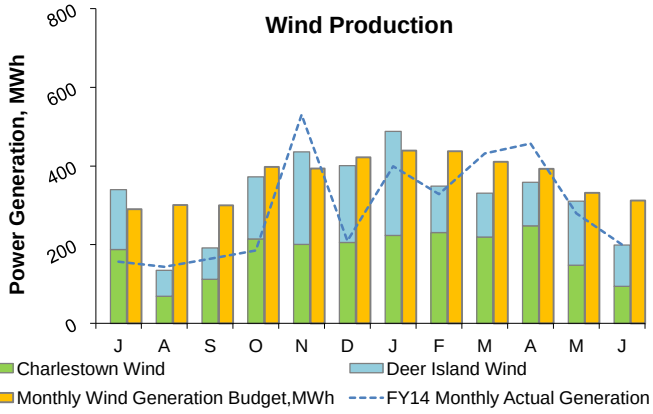

Maintenance overtime was $154k over budget for the FY15. Overtime was used for staging for weather events, critical maintenance repairs, and upgrades to the Chelsea Administration Building. The year end total of overtime spending was $452k for FY15.

# Renewable Electricity Generation: Savings and Revenue

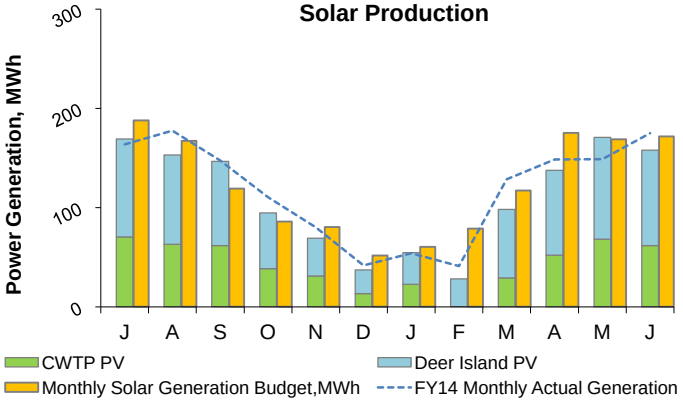
4th Quarter - FY15



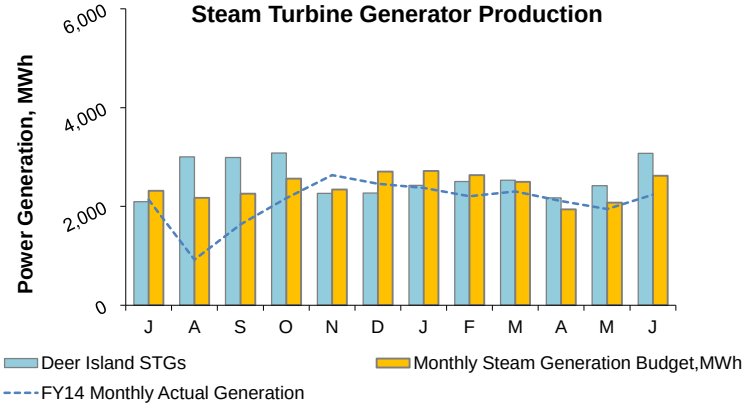

In the 4th Quarter, the renewable energy produced from all hydroelectric facilities totaled 7,059 MWh; 20% above budget. The total energy produced to date in FY15 is 24,038 MWh; 13% above budget. The total savings and revenue[2] to date in FY15 (actual through June[1]) is $1,190,829; 15% below budget[3], partly due to the fact that the actual electricity unit price for Deer Island has been 16.6% below the budgeted[3] estimate for the same period. The savings and revenue value does not include RPS REC revenue (see next page).



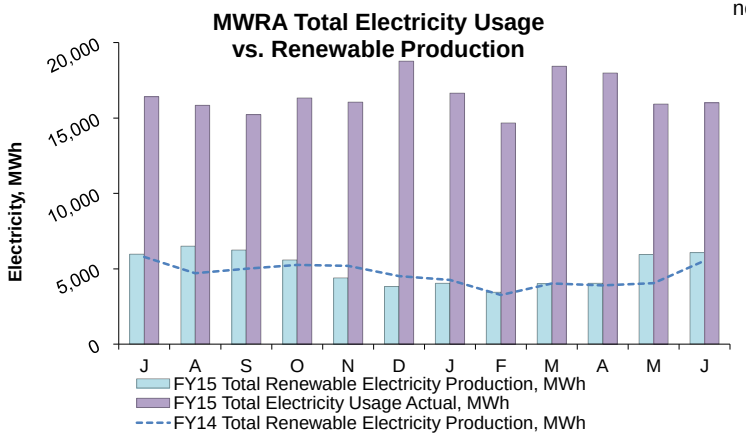

In the 4th Quarter, the renewable energy produced from all wind turbines totaled 869 MWh; 17% below budget; partly due to Charlestown Wind being off-line after grid power was lost due to a damaged main power cable. The total energy produced to date in FY15 is 3,913 MWh; 12% below budget. This is partly due to DI T2 wind turbine being off-line from the end of January to May 11th for repairs made on its main power cables. The total savings and revenue[2] to date in FY15 (actual through June[1]) is $586,961; which is 9% above budget[3]; partly due to limited Charlestown wind history data for creating a budget line. The savings and revenue value does not include RPS REC revenue (see next page).

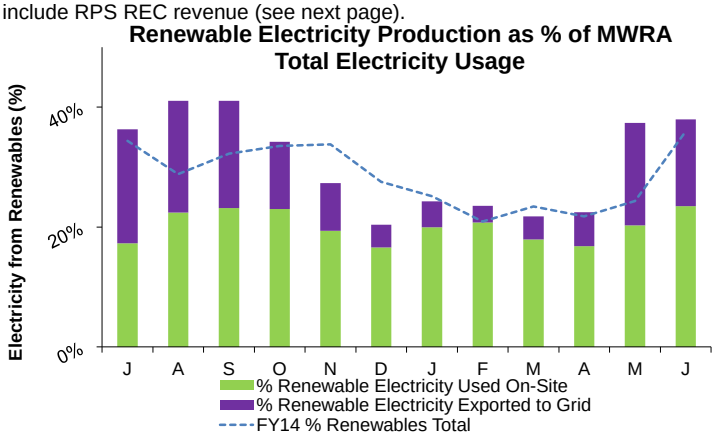



In the 4th Quarter, renewable energy produced from all solar PV systems totaled 466 MWh, 9% below budget; partly due to DI M/W solar being temporarily off-line for inverter repairs. The total energy produced to date in FY15 is 1,317 MWh; 10% below budget. The total savings and revenue[2] to date in FY15 (through June[1]) is $154,048; 6% below budget[3]. The savings and revenue value does not include REC revenue (see next page).




In the 4th Quarter, the renewable energy produced from all steam turbine generators totaled 7,665 MWh; 15% above budget. The total energy produced to date in FY15 is 30,814 MWh; 7% above budget. The total savings[2] to date in FY15 (through June[1]) is $2,429,699; 11% below budget[3], partly due to the fact that the actual electricity unit price for Deer Island has been 16.6% below the budgeted[3] estimate for the same period. The savings and revenue value does not include RPS REC revenue (see next page).



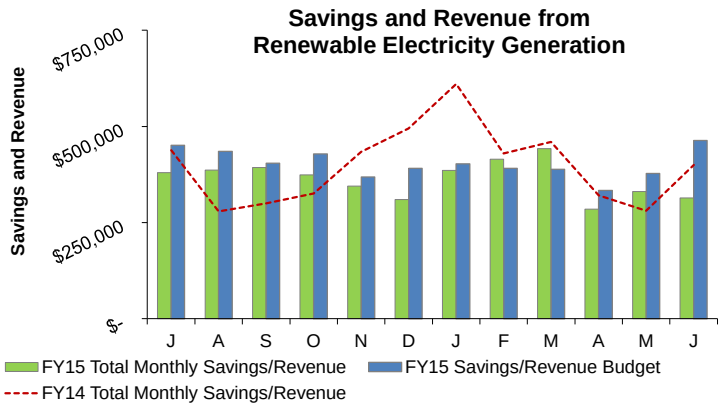

In the 12 months of FY15, MWRA's electricity generation by renewable resources totaled 60,081 MWh. MWRA's total electricity usage was approximately 198,361 MWh. The MWRA total electricity usage is the sum of all electricity purchased for Deer Island and FOD plus electricity produced and used on-site at these facilities. Approximately 97% of FOD electrical accounts are accounted for by actual billing statements; minor accounts that are not tracked on a monthly basis such as meters and cathodic protection systems are estimated based on this year's budget.

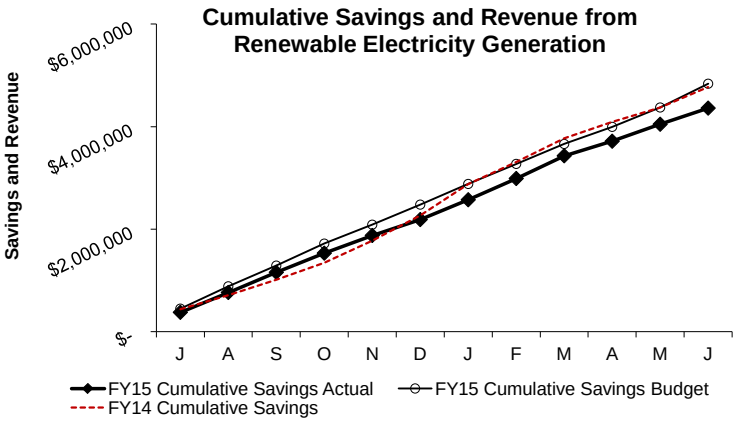
In the first 12 months of FY15, green power generation represented approximately 31% of total electricity usage. All renewable electricity generated on DI is used on-site (this accounts for more than 50% of MWRA renewable generation). Almost all renewable electricity generated off-DI is exported to the grid.

Notes:
1. Only the actual energy prices are being reported. Therefore, some of the data lags up to (2) months due to timing of invoice receipt.
2. Savings and Revenue: Savings refers to any/all renewable energy produced that is used on-site therefore saving the cost of purchasing that electricity, and revenue refers to any value of renewable energy produced that is sold to the grid.
3. Budget values are based on historical averages for each facility and include operational impacts due to maintenance work.

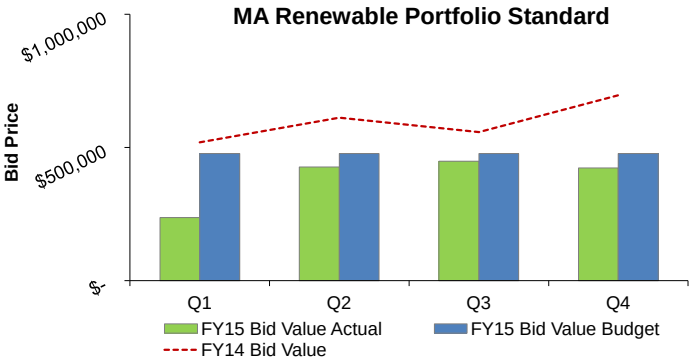
# Renewable Electricity Generation: Savings and Revenue

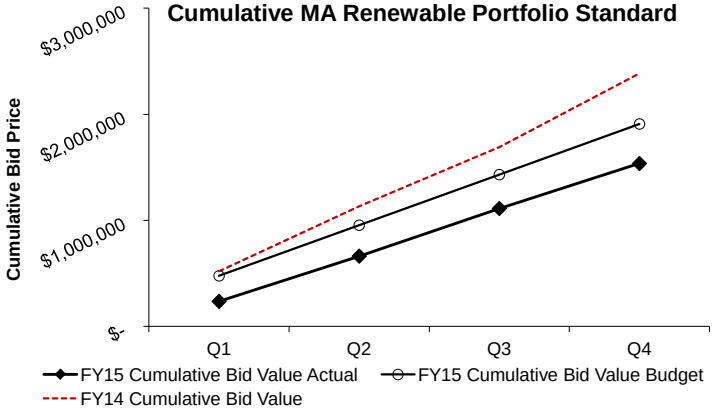
4th Quarter - FY15



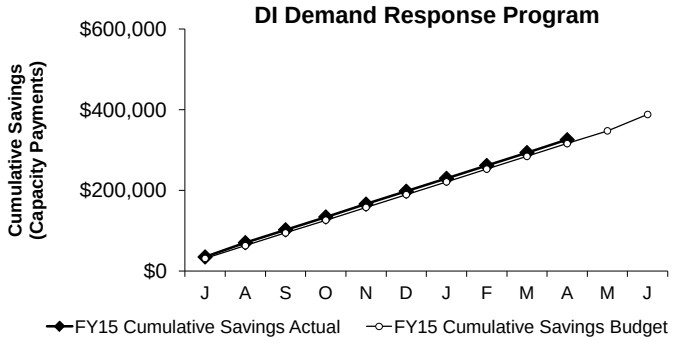



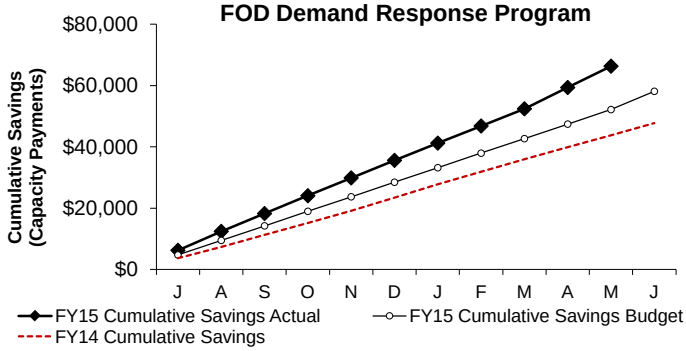

Savings and revenue from MWRA renewable electricity generation in the 12 months of FY15 (actual through June[1]) is $4,361,538; which is 10% below the budget[3], partly due to the fact that the actual electricity unit price for Deer Island has been 16.6% below the budgeted[3] estimate for the same period. Savings and revenue[2] 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 and RPS RECs).
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 (not included in charts above).




Bids were awarded during the 4th Quarter[1] from MWRA's renewable energy assets; 7,221 Q4 CY2014 Class I Renewable Energy Certificates (RECs), 2,255 Q4 CY2014 Class II RECs and 41 Q4 CY2014 Solar RECs were sold for a total value of $423,938 RPS revenue; which is 11% below the budget[3].
REC values reflect the bid value on the date that bids are accepted, even though the RECs were produced during Q4 of CY2014. Cumulative bid values reflects the total value of bids received to date.



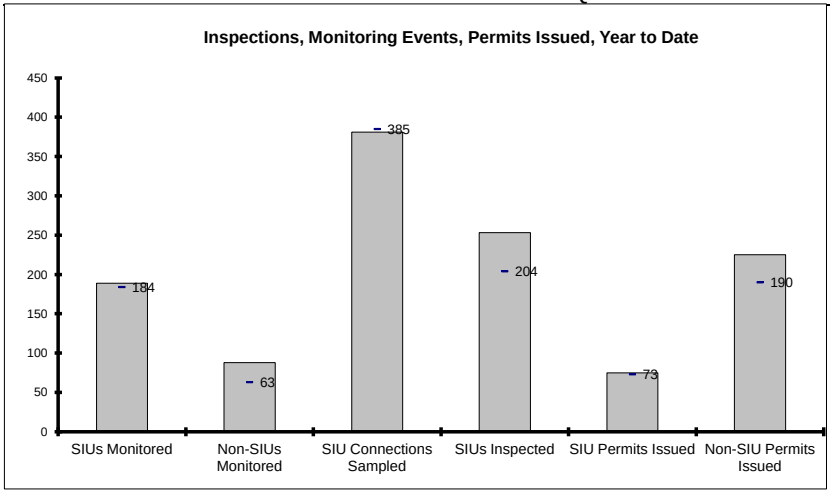




Deer Island, 2 Water, and 4 Wastewater facilites[4] participate in the ISO-New England Demand Response Programs. By agreeing to have its generators available to run and thus relieve the New England energy grid of some of MWRA's load during times of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates back-up generators during an ISO-NE called event, MWRA also receives energy payments from ISO-NE. Cumulative savings (Capacity Payments only) through May[1] for FOD total $66,293 and $325,482 for DI through April[1].

Notes:
1. Only the actual energy prices are being reported. Therefore, some of the data lags up to (2) months due to timing of invoice receipt.
2. Savings and Revenue: Savings refers to any/all renewable energy produced that is used on-site therefore saving the cost of purchasing that electricity, and revenue refers to any value of renewable energy produced that is sold to the grid.
3. Budget values are based on historical averages for each facility and include operational impacts due to maintenance work.
4. FOD Facilites include: CWTP, Loring Road, Chelsea Creek, Columbus Park, Ward St., and Nut Island.

# Toxic Reduction and Control

4th Quarter - FY15




EPA Required SIU Monitoring Events
for FY15: 184
YTD : **189**

Required Non-SIU Monitoring Events
for FY15: 63
YTD : **88**

SIU Connections to be Sampled
For FY15: 385
YTD: **381**

EPA Required SIU Inspections
for FY15: 204
YTD: **253**

SIU Permits due to Expire
In FY15: 73
YTD: **75**

Non-SIU Permits due to Expire
for FY15: 190
YTD: **225**

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.

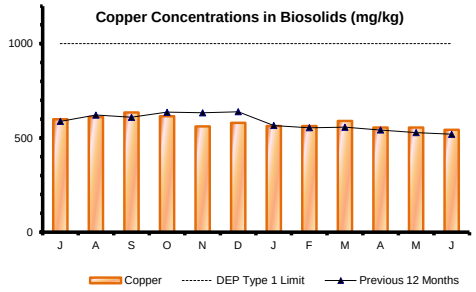
TRAC's annual monitoring and inspection goals are set at the beginning of each fiscal year but they can fluctuate due to the actual number of SIUs at any given time. During the course of the year, some SIUs do not discharge and cannot be monitored. TRAC also monitors one-third of the non-SIUs each year.

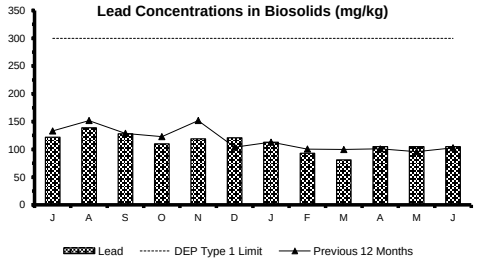
SIU and Non-SIU permits are issued with durations of two to five years, depending on the category of industry, varying the number of permits that expire in a given year.

**Number of Days to Issue a Permit**

| | 0 to 120 | | 121 to 180 | | 181 or more | | Total Permits Issued | |
|---|---|---|---|---|---|---|---|---|
| | 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 | 3 | 6 | 0 | 1 | 1 | 2 | 4 | 9 |
| Nov | 2 | 6 | 0 | 0 | 0 | 2 | 2 | 8 |
| Dec | 2 | 15 | 1 | 1 | 0 | 0 | 3 | 16 |
| Jan | 3 | 43 | 0 | 1 | 0 | 2 | 3 | 46 |
| Feb | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 6 |
| Mar | 16 | 22 | 2 | 3 | 0 | 3 | 18 | 28 |
| Apr | 5 | 11 | 1 | 0 | 1 | 5 | 7 | 16 |
| May | 13 | 22 | 2 | 2 | 0 | 1 | 15 | 25 |
| Jun | 15 | 24 | 0 | 1 | 1 | 1 | 16 | 26 |
| % YTD | 88% | 86% | 8% | 6% | 4% | 8% | 75 | 225 |

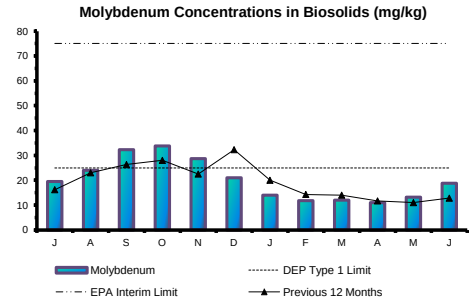
EPA requires MWRA to issue or renew 90% of SIU permits within 120 days of receipt of the application or the permit expiration date - whichever is later. EPA also requires the remaining 10% of SIU permits to be issued within 180 days. This goal was not achieved for this fiscal year. Contributing causes were TRAC personnel changes and the late payment of fees. In this the 4th Quarter of FY15, one hundred and five permits were issued, thirty-eight of which were SIUs. Thirty-three SIU and fifty-seven non-SIU permits were issued in the 120-day timeframe while three SIU and three non-SIU permits were issued in the 120-day to 180-day timeframe. The remaining two SIU and seven non-SIU permits were in the over 180-day timeframe mainly because of late payment of permit fees and delays while waiting for analytical data and for information from the industries to determine the appropriate permit




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.

Throughout the last seven-month period, the level of molybdenum has been below the DEP type 1 Limit. MWRA and its contractor (NEFCO) generally do not distribute product in Massachusetts between July and January under its approval of suitability.



**Field Operations Highlights**
**4th Quarter – FY15**

**Western Water Operations and Maintenance**

- John J. Carroll Water Treatment Plant: Several full plant shut downs were performed during the quarter, to allow critical maintenance functions to be performed as well as SCADA computer upgrades and operational improvements and testing. The shutdowns were also used as a learning opportunity for new staff and senior operators to gain experience doing plant startup and shutdowns. Staff also inspected one of the ozone generators as part of a multiyear inspection plan that will inspect all generators on a multiyear cycle.

- Hultman Aqueduct: Field staff reported a wet area that had not been present in the past. Engineering and Grounds Staff mobilized to expose the top of the pipe. A minor leak was noted at the top of the pipe not requiring repair. The site is being monitored.

- Brutsch Water Treatment Facility: Mechanical Maintenance Staff working with Instrumentation Technicians shutdown the Ultra Violet Treatment Reactors and performed the annual maintenance tasks including calibration and manual cleaning of the quartz sleeves.

**Metro Water Operations & Maintenance**

- Water Pipeline Program: Ten (10) valves were replaced during the quarter, bringing the fiscal year total to 24, compared to the annual goal of 20. Valves were replaced in Brookline (Meter 98/Fisher Avenue), Melrose, Revere, and Somerville. In addition to the valve installation at Meter 98, extensive piping, and subsurface work was performed during the replacement of this existing meter to Brookline. The total number of blow off sites retrofitted during the quarter was 4, bringing the annual total to 10, which is the annual goal. Blow-off retrofits were performed in Arlington, Brighton, Revere, and Weston.

- Valve Program: 767 mainline valves were exercised during the fiscal year, compared to the annual goal of 1100. 391 blow- off valves were exercised, compared to the annual goal of 375 blow-off valves. The main line valve total was affected by staffing issues, the record winter, and CIP support to the various construction contractors. In addition to valve exercising, Pressure Reducing Valve (PRV) Preventative Maintenance (PM) and fire flow bypass valve maintenance was performed at many locations. Several community meters were isolated at the request of the communities, including several meters to Boston to search for leaks, Meter 37 to Somerville for water main installation, and Meter 41 to Winthrop for a leak repair. The Meter 41 isolation required the emergency connection from Deer Island to be opened to supply the town with water. The CIP contract support included Valve Operations at Spot Pond for filling, flushing, pressure testing, and disinfection of several pipelines and the two storage tanks under construction; to the Section 36 contractor for similar activities; to the Mass DOT contractor for the Larz Anderson Bridge Project; and to a contractor for Tufts for the relocation of a portion of Section 65. The refilling of Chestnut Hill after the winter water elevation drawdown was completed on May 5. On May 26, water was begun to be added to the Blue Hills Open Reservoir to increase the low water elevation. The Blue Hills filling will end in early July. Reservoir level control management was performed at Fells and Spot Pond.

- Northern Low Service System Hydraulic Changes: The completion of the new Spot Pond Storage Tank will add 20 million gallons of storage to the Northern Low Service (NLS) Area. In order to take full advantage of the new storage tank, revisions to the overall configuration of the NLS Area were required beginning in June, and continuing through the summer. A meeting was held with the NLS communities prior to the operational changes.

**Operations Engineering**

o Worked with Planning and MIS to prepare a collection program to collect GPS data on all water appurtenances. The program utilized summer interns. Data collection was started in June and will continue to the end of August. As of July 1st the interns have collected information on 1,290 appurtenances.

o Continued coordination with the City of Lynn regarding updating an Emergency Action Plan (EAP) for city's temporary use of MWRA water. The City plans on replacing the cover to their low service finished water reservoir in the spring and will be supplied by the MWRA.

**Wastewater Operations & Maintenance--***Wastewater Operations*

- North Main Pump Station Shutdown Planning Meetings: Wastewater Operations Staff continues to assist with the North Main Pump Station contract equipment upgrades and modifications. Staff provided wastewater system operating conditions, monitoring points, system modeling information and regulatory notification comments, and developing operational control strategies for the shutdowns. The first trail 4-hour shutdown of the Chelsea Creek Headworks/Winthrop Terminal occurred on May 20 & 21, 2015. The second 4-hour trail shutdown consisted of the Columbus Park and Ward Street Headworks occurred on June 10 & 11, 2015. The third 4-hour trail shutdown consisted of the Chelsea Creek, Columbus Park, Ward Street Headworks and the Winthrop Terminal occurred on June 24 & 25, 2015.

**Metering**

- Meter Systems: Staff continues to work with Telog and MIS to improve functionality of the new web module. Staff continues to work on a new Scope of Services for the Wastewater Meter Replacement Contract. Notified Arlington, BWSC, Chelsea, Everett, Lexington, Milton, Newton, Norwood, Quincy, Saugus, Somerville, Waltham, Weston and Winchester of higher demands.

- Staff converted seventy-four (74) water meters to wireless communication and installed the new real time web module for use in both Water and Wastewater OCCs.

**TRAC-** Enforcement

- TRAC Management and Staff, as well as Law Division Attorneys, have been in detailed negotiations with several companies in various stages of non compliance. Several higher level enforcement matters are also in review. These cases involve violations of bypasses, submitting false information, Treatment Operator requirements, pH violations and violations of the Fats, Oils and Grease (FOG) Regulations contained in the MWRA Sewer Use Rules and Regulations.

- Staff is continually reviewing all enforcement matters including recent issuances of Notices of Noncompliance, Notices of Violation, and Demand Letters for a Stipulated Penalties as required by a Settlement Agreement.

- During the month of April TRAC issued 5 Notices of Noncompliance, 16 Notices of Violation, and 1 Return to Permit Letter.

**TRAC-**Monitoring

- TRAC monitoring management and staff attended a National Pretreatment & Pollution Prevention Workshop (NACWA) during the quarter. Topics included a National Pretreatment Program update, panel discussions on new proposed dental amalgam rule, protecting personnel from pathogens, emerging contaminants and wipes along with roundtable discussions on other pretreatment issues. Another staff also participated as a trainer in the Biennial Sampler Training Program for the MWRA water communities. Annual safety trainings for Keolis and MBTA for all staff and roadway safety training for newer staff was conducted.

- TRAC completed the Clinton Landfill monitoring. This is a bi-annual requirement. The samples collected from the 7 landfill monitoring wells are analyzed at the Central Lab for a list of parameters. The results, along with a primary and secondary leachate report, are submitted to DEP and the Clinton Conservation Commission.

- TRAC began monthly sampling of Framingham, Needham, Wellesley, Ashland and Natick Municipal sites. There are 14 sites that are sampled monthly from April to November. Municipalities are permitted for Sulfide, Sulfate, BOD, pH and temperature. Grab samples are collected at each site using a peristaltic pump. Municipalities collect self monitoring samples and submit their results to the MWRA.

- TRAC presented the Annual SIU Meetings. The 3 days of meetings were attended by representatives of many of our significant industrial users. TRAC presented its enforcement statistics and sampling protocols for the SIU's. Other presenters included Dave Duest, Director of Wastewater Treatment, who spoke on the Organic Waste ban. TURA Representatives spoke about their programs to reduce the use of toxic chemicals, and the EPA Regional Pretreatment Coordinator spoke about pretreatment on the National Level. John Feeney (Sampling Associate) presented at Annual SIU meetings on May 5-7, 2015.

- In all of this quarter, the, level of molybdenum was below the DEP Type 1 Limit. MWRA and its contractor (NEFCO) generally do not distribute product in Massachusetts between July and January under its approval of suitability.

**Environmental Quality –** *Water*

Algae:

- 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 for algae taste and odor compounds in coordination with MADCR and with the support of UMASS-Amherst. Algal toxin and taste and odor compound sampling was performed on 06/15 at Cosgrove Intake. Results showed no presence of two algal toxins and one taste and odor compound, specifically Cylindrospermopsin, Microcystin, and 2-Methylisoborneol (MIB). Low levels of Geosmin, a typical taste and odor compound were present.

Community Support:

- On April 24th and 30th, Environmental Quality – Water staff provided training associated with MWRA's biennial Drinking Water Sampler Program. The biennial Drinking Water Sampler Program aims to provide training to MWRA's fully-served and partially-served drinking water communities. Training topics include the importance of total coliform sampling, chlorine residual testing, and water complaint tracking.

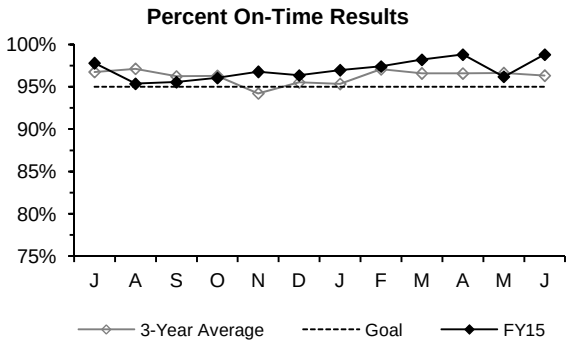
- Environmental Quality - Water Staff assisted Marlborough, Southborough, Waltham, and Newton with local system water quality complaints.

**Environmental Quality—***Wastewater*

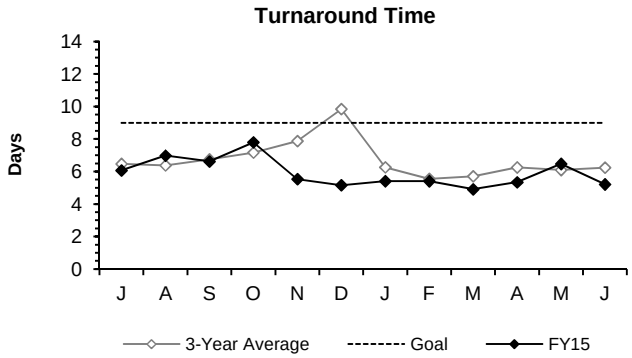
- Ambient Monitoring: Conducted Third Annual Water Column Survey. Conducted sampling for population health and toxic contaminant body burdens in winter flounder as required by Ambient Monitoring Plan. Held Annual Monitoring Review Meeting to begin work on annual overview report. Submitted reports on computer modeling of Massachusetts Bay for Calendar 2012 and 2013. Posted Contingency Plan quarterly reports. Conducted fourth annual water column survey. Received draft submissions on three permit-required reports evaluating results of Ambient Monitoring in 2014. Conducted fifth water column survey for 2015. Continued to track the development of the annual red tide bloom in Maine waters, which was weak this year and thus did not trigger rapid response monitoring by MWRA.

- Enterococcus/Disinfection Data Analysis: Staff analyzed historical wastewater bacteria data to better understand disinfection rates and treatment needs with newly proposed recreational water quality limits.

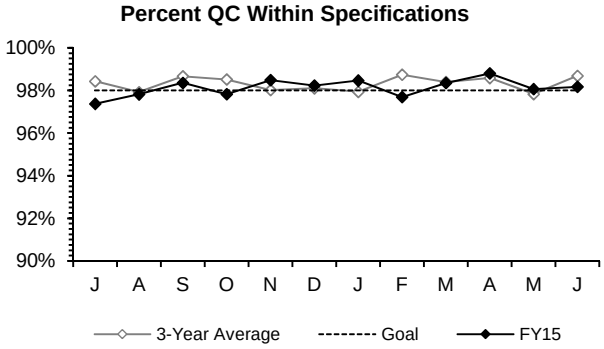
## Laboratory Services
4th Quarter - FY15



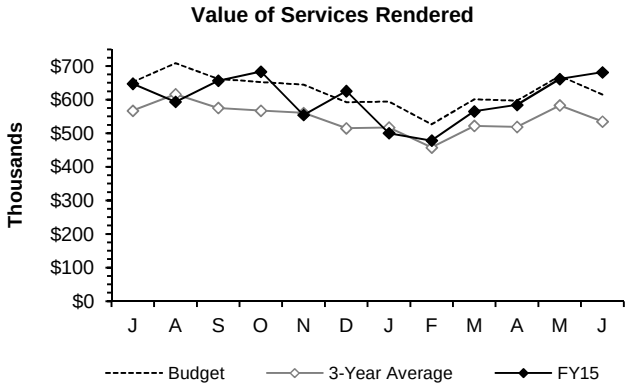

The Percent On-Time measurement was above the 95% goal each month of the quarter.




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




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




Value of Services Rendered was near or above the seasonally adjusted budget projection each month of the quarter. For the fiscal year we were 4% below budget, while staffing has averaged 6% below budget

**Highlights:**
Lab Services has met or exceeded its on-time results and turnaround time goals each month for the past 18 months.

Delaney and Blodget published a paper in the June issue of "Water Environment Research entitled, "Total Cyanide Field Spikes for Industrial Wastewater Samples Verify Successful Sample Integrity, Preservation, Pre-Treatment and Testing". This approach has resulted in more reliable cyanide results on TRAC samples.

**Quality Assurance:**
The every other year DEP certification audit of the Southboro Laboratory found no deficiencies. Also, the four Lab Services DEP-certified labs passed annual proficiency test samples on 148 out of 152 drinking water parameters and 226 out of 227 wastewater chemistry parameters on the first try. For microbiology methods all parameters were acceptable on the first try. All together Lab Services received a passing score of 98.8% for

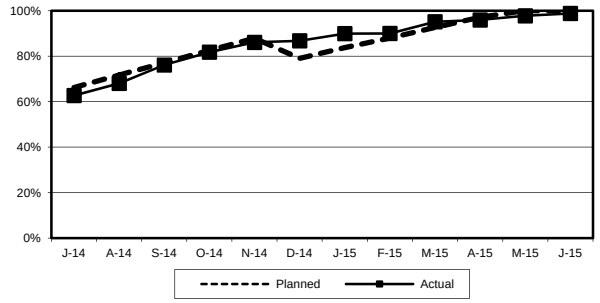
# CONSTRUCTION PROGRAMS

# Projects In Construction

4th Quarter FY15

(Progress Percentages based on Construction Expenditures)

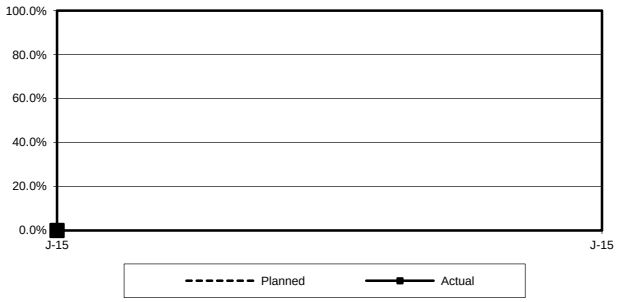
## Nut Island Headworks Electrical and Conveyor Improvements Progress – June 2015




*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 June, the Contractor completed the majority of the punch list issues and demobilized.

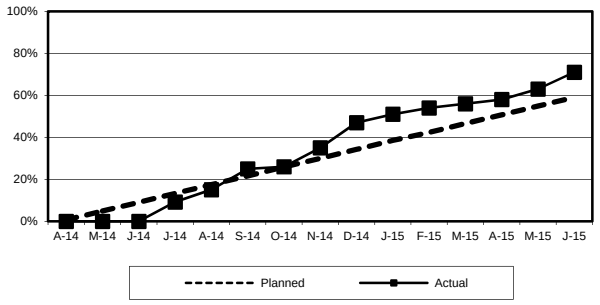
## Upgrades to Chelsea Screen House Progress – June 2015




*Project Summary:* This project involves the replacement of two dry side screens, seven gates and the rehabilitation of two wet side screens. Also, a SCADA system will be added to the wet side to allow for remote wet weather operation.

*Status and Issues:* This contract was awarded at the June 24th BOD meeting to WES Construction Corp.

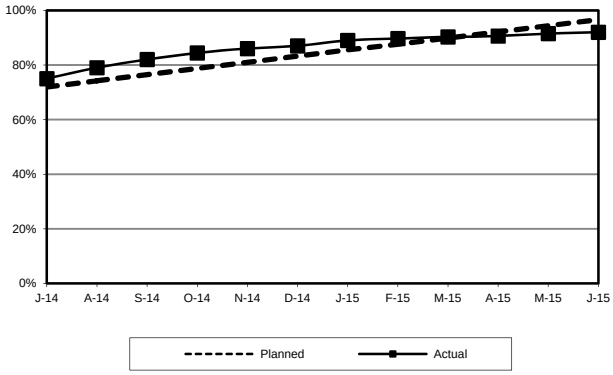
## Clinton Digester and Primary Clarifier Rehab Progress – June 2015




*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 June, the final coat of paint was put on the top of the digester floating cover. Work began on the removal of the walls of Clarifier's 1 & 2, after which the Contractor began installing formwork for the new walls. The sludge transfer and re-circulating pumps were installed in the digester building basement.

## Spot Pond Water Storage Facility Progress – June 2015




*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.

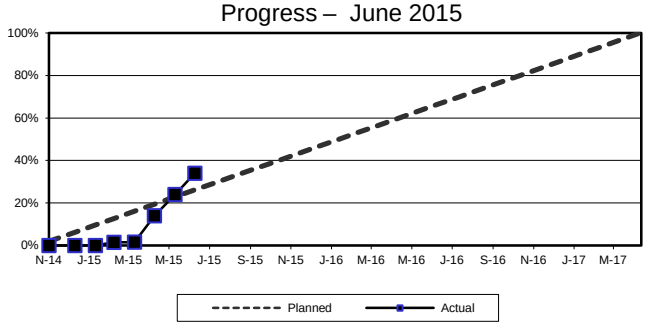
*Status and Issues:* As of June, the concrete roof decks on Tank's 1 & 2 were 100% complete. The LS and HS yard piping is 100% complete and the NIH piping is 99% complete. Work on the plumbing, electrical conduits and HVAC in the pump station is on-going. The tank waterproofing was completed and the installation of stone backfill is on-going.

# Projects In Construction

4th Quarter FY15

(Progress Percentages based on Construction Expenditures)

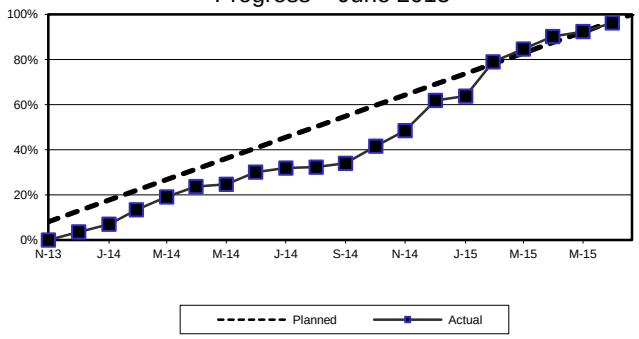
Water Mains: Section 36, W11C and S9-A
Progress – June 2015




*Project Summary:* This project includes the replacement of Section 36 in Arlington; the installation of a new water main (Section W11C); and the replacement of an inoperable 48-inch butterfly valve on Shaft 9-A pipeline in Medford.

*Status and Issues:* As of June, the 8" PVC sewer main was completed on lower Robbins Road. The installation of Section 36 on lower Robbins Road to Gray Street and the tee for the air release valve was completed. In addition, work continued on W11C, town water and sewer on Brunswick Road.

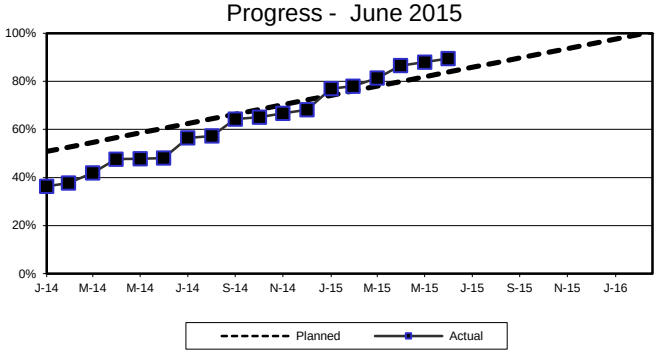
Pump, Gear Box and Diesel Engine Upgrade
Prison Point and Cottage Farm CSO Facilities
Progress - June 2015




*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 June, raw wastewater pumps 1, 2 & 4 were performance tested. Right angle drive #2 was rehabilitated and witness tested at the manufacturer. The flexxor coupling on the vertical shaft of raw wastewater pump 3 failed and was replaced.

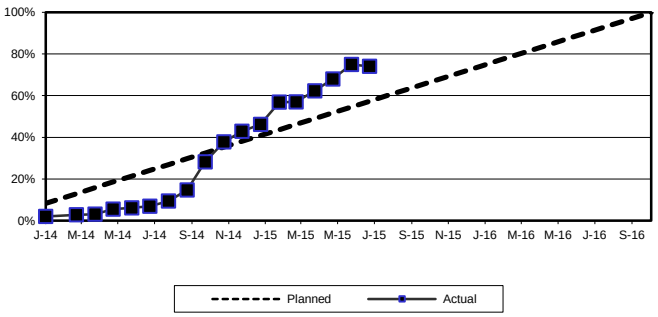
North Main Pump Station VFDs & Motors
Progress - June 2015




*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:* During June, the installation of VFD #5 and Motor #5 were completed. The VFD and Motor completed the 10 day operational test and are now on-line. To date, 7 new motors and VFD's have been installed and are operational.

Primary and Secondary Clarifier Scum Tip Tubes
Progress - June 2015




*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:* Through June, approximately 117 of 196 scum skimmers or 59.7% have been completed. The receipt of scum skimmer materials is on-going.

# CSO CONTROL PROGRAM

4th 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 by MWRA. The following table reports on the progress of the three CSO projects not yet complete, as well as BWSC's inflow removal work associated with the completed South Dorchester Bay Sewer Separation project.

| Project | | Court Milestones in Schedule Seven (**Shaded** milestones are complete.) | | | Status as of June 30, 2015 |
|---|---|---|---|---|---|
| | | Commence Design | Commence Construction | Complete Construction | |
| Reserved Channel Sewer Separation | | Jul 06 | May 09 | Dec 15 | BWSC continues to make progress with the nine planned contracts for the Reserved Channel Sewer Separation project.<br>Contract 1 — CSO outfall rehab — $ 4.1 M — Complete<br>Contract 2 — Sewer separation — $ 5.9 M — Complete<br>Contract 3A — Sewer separation — $11.8 M — Complete<br>Contract 3B — Sewer separation — $14.8 M — Complete<br>Contract 4 — Sewer separation — $13.9 M — Subst. Compl.<br>Contract 5 — Cleaning & Lining — Ineligible — Underway<br>Contract 6 — Downspout Discon. — $ 0.2M — Underway<br>Contract 7 — Pavement restoration — $ 1.2 M — Complete<br>Contract 8 — Pavement restoration — $ 4.8 M — Underway<br>BWSC expects to complete all eligible work for the Reserved Channel sewer separation project by December 2015, in compliance with Schedule Seven. |
| Cambridge/ Alewife Brook Sewer Separation | CAM004 Sewer Separation | Jan 97 | Jul 98 / Sep 12 | Dec 15 | Cambridge completed four initial construction contracts for this project more than a decade ago and is presently managing four additional sewer separation contracts (contracts 8A, 8B, 9 and Concord Lane) to complete the project.<br>Contract 8A — Sewer separation — $11.2M — Subst. complete<br>Contract 8B — Sewer separation — $18.2M — 90% complete<br>Contract 9 — Sewer separation — $ 6.7M — 76% complete<br>Concord Lane — Sewer separation — $1.8M — NTP 3/27/15<br>Cambridge expects to complete all work for the CAM004 sewer separation project by December 2015, in compliance with Schedule Seven. On July 31, 2015, MWRA received a request from Cambridge to increase the MOU/FAA award amount (MWRA share) by $5.4 million. |
| | MWR003 Gate and Rindge Ave. Siphon Relief | Apr 12 | Aug 14 | Oct 15 | MWRA issued the notice to proceed with construction on August 28, 2014. The contractor was more than 85% complete as of June 30, 2015 and plans to complete all work by October 31, 2015, in compliance with Schedule Seven. |
| South Dorchester Bay Sewer Separation Post-Construction Inflow Removal | | N/A | N/A | N/A | As previously reported, BWSC has completed its investigation of alternatives for removing additional stormwater inflow from its Dorchester Interceptor. 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 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

4th Quarter – FY15

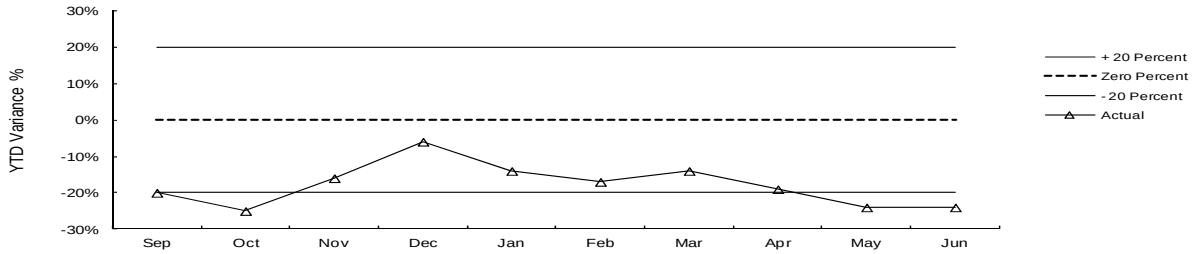
The Year-To-Date variances are highlighted below:

| FY15 Capital Improvement Program<br>Expenditure Variances through June by Program - ($000) | | | | |
|---|---|---|---|---|
| **Program** | **FY15 Budget Through June** | **FY15 Actual Through June** | **Variance Amount** | **Variance Percent** |
| **Wastewater** | 82,639 | 75,387 | (7,252) | -9% |
| **Waterworks** | 45,168 | 22,706 | (22,462) | -50% |
| **Business and Operations Support** | 9,418 | 5,524 | (3,894) | -41% |
| **Total** | $137,225 | $103,617 | (33,608) | -24% |

Underspending within Wastewater is primarily due timing of work for Butterfly Valve Replacement, North Main Pump Station VFDs, Electrical Equipment Upgrade Construction 4, Gravity Thickener Rehabilitation, Centrifuge Backdrive Replacement, Chelsea Headworks Upgrades Design, Prison Point/Cottage Farm Diesel Engine Upgrades and Pump & Gearbox Rebuilds contracts, and delay in awards for Alewife Brook Pump Station and Chelsea Screenhouse Construction contracts. This was offset by greater than anticipated community requests for grants and loans for the infiltration/inflow (I/I) Program, contractor progress on Scum Skimmer Replacement, updated cost estimates as a result of increase in scope for Reserved Channel Sewer Separation, updated cost estimates for the Cambridge Sewer Separation, and award greater than budget for the MWR003 Gate & Siphon Construction 2 contract. Underspending in Waterworks is primarily due to timing of work and weather delays for the Spot Pond Storage Facility Design/Build contract, updated schedules for Wachusett Aqueduct Pump Station, Carroll Treatment Plant CP-7 Existing Facilities Modifications, Storage Tank Roof Drainage, less than anticipated spending on Sudbury Aqueduct Massachusetts Environmental Policy Act Review, design for the Southern Extra High, WASM 3, CWTP Ultraviolet, and timing of Watershed Land purchases. This was partially offset by contractor progress and award greater than budget for Section 36/W11/S9-A11 Valve 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 6/30/2015 | $70 million |
| Unused capacity under the debt cap: | $846 million |
| Estimated date for exhausting construction fund without new borrowing: | Oct-15 |
| Estimated date for debt cap increase to support new borrowing: | Not anticipated at this time |
| Commercial paper outstanding:<br>Commercial paper capacity: | $130 million<br>$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

4th Quarter – FY15

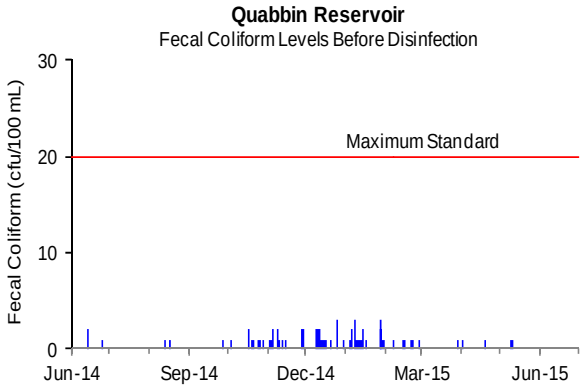
## Source Water – Microbial Results

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 4th 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.**

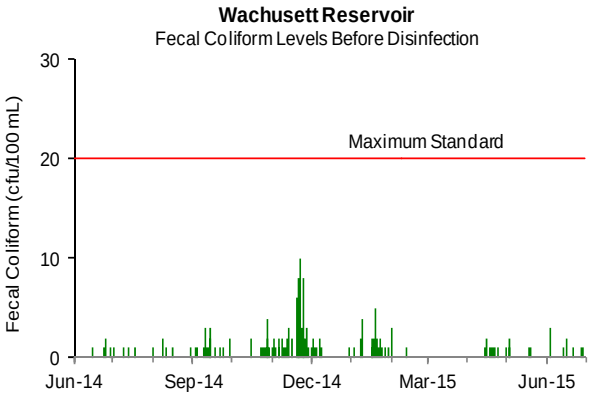



### Sample Site: Wachusett Reservoir

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 4th Quarter were below 20 cfu/100mL. **For the current six-month period, 0% of the samples exceeded a count of 20 cfu/100mL.**

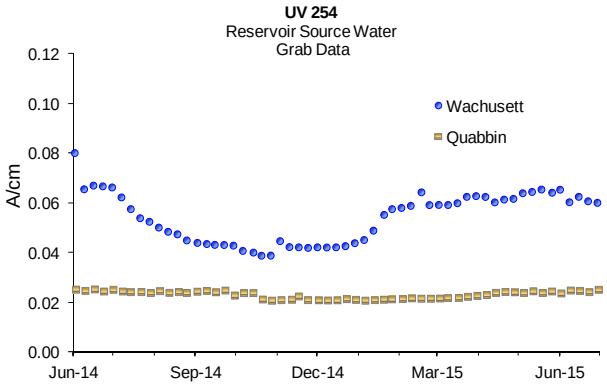



## Source Water – UV Absorbance

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.

Quabbin Reservoir UV-254 levels are currently around 0.025 A/cm.

Wachusett Reservoir UV-254 levels are currently around 0.060 A/cm.



## Source Water – Turbidity

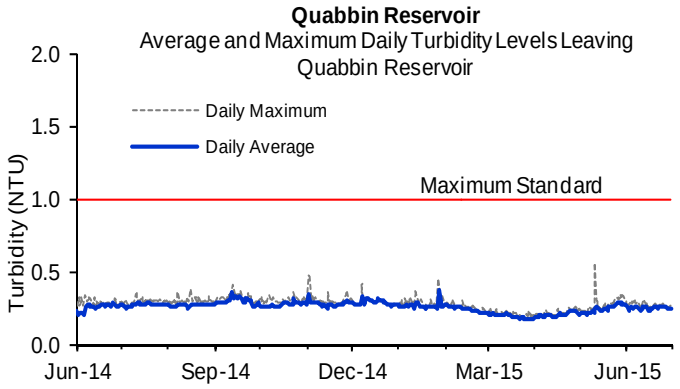
4th Quarter – FY15

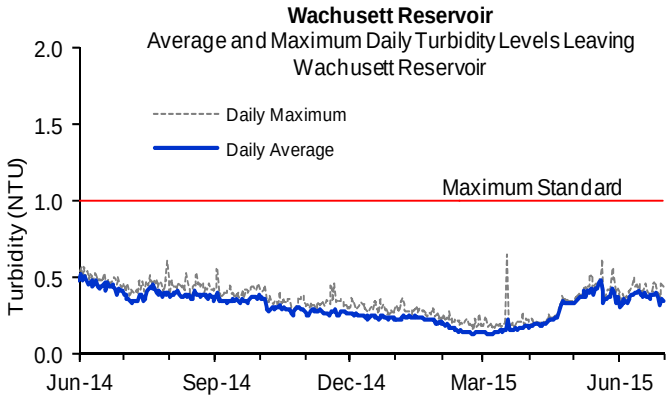
Turbidity is a measure of suspended and colloidal particles including clay, silt, organic and inorganic matter, algae and microorganisms. The effects of turbidity depend on the nature of the matter that causes the turbidity. High levels of particulate matter may have a higher disinfectant demand or may 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



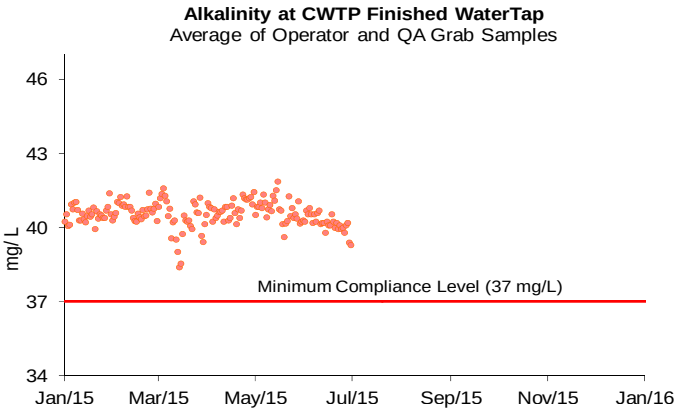



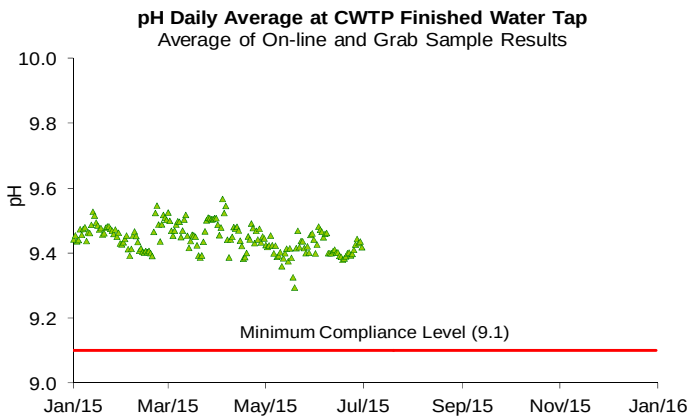

## Treated Water – pH and Alkalinity Compliance

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.

Each CVA community provides its own corrosion control treatment. See the CVA report: www.mwra.com/water/html/awqr.htm.

Distribution system samples were collected on June 10 and 11, 2015. Distribution system sample pH ranged from 9.1 to 9.6 and alkalinity ranged from 40 to 42 mg/L. No sample results were below DEP limits for this quarter.



# Treated Water – Disinfection Effectiveness

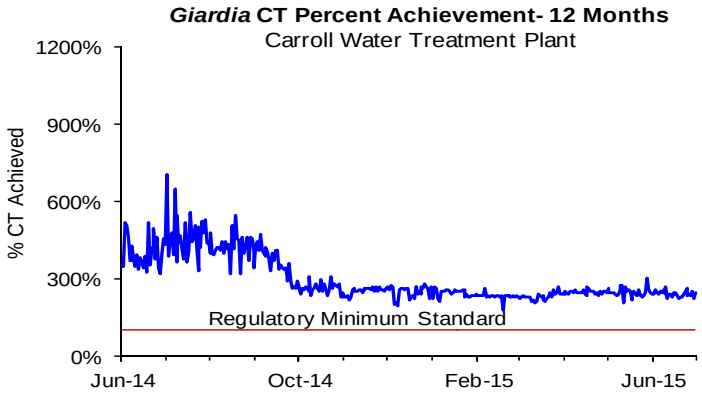
4th Quarter – FY15

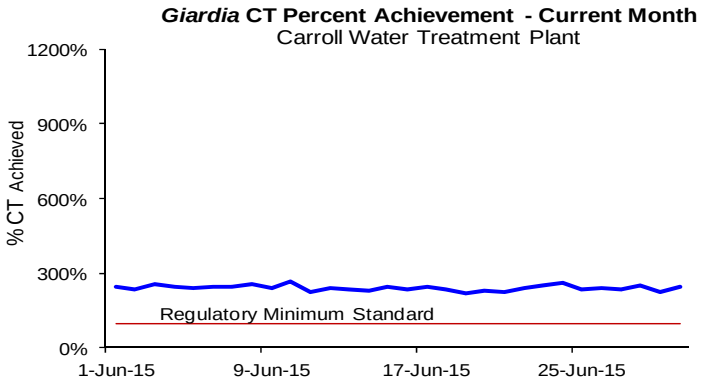
At the Carroll Water Treatment Plant (CWTP), MWRA meets the required 99.9% (3-log) inactivation of *Giardia* using ozone (reported as CT: concentration of disinfectant x contact time) and the required 99% (2-log) inactivation of *Cryptosporidium* using UV (reported as IT: intensity of UV x time). MWRA 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:

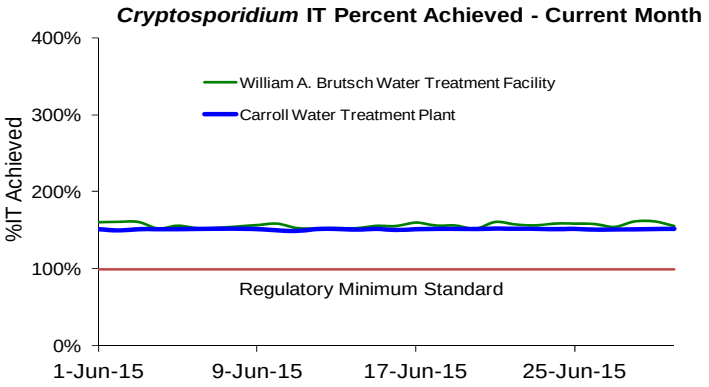
- Ozone dose at the CWTP varied between 1.5 to 2.1 mg/L for the quarter.
- *Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system this quarter, as well as every day for the last fiscal year.
- *Cryptosporidium* IT was maintained above 100% during the month. Off-spec water was less than 5%.

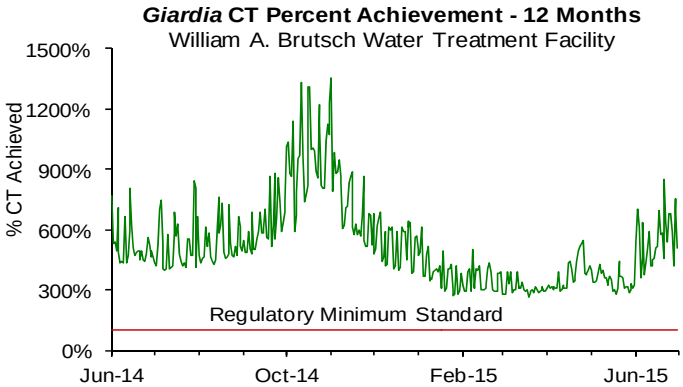


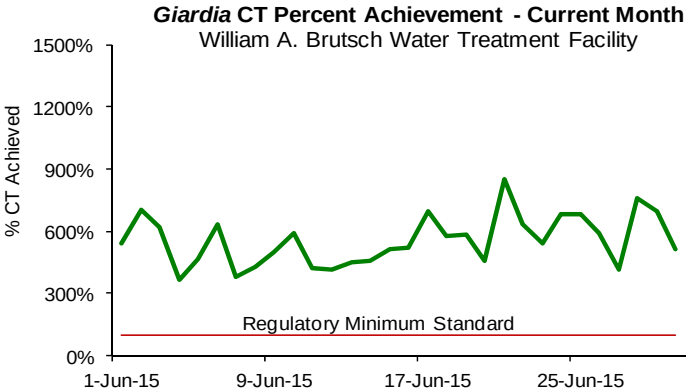




## Quabbin Reservoir (CVA Supply) at:
## William A. Brutsch Water Treatment Facility

- The chlorine dose at WABWTF is adjusted in order to achieve MWRA's seasonal (June 1 – October 31) target of ≥1.0 mg/L at Ludlow Monitoring Station.
- The chlorine dose at WABWTF varied between 1.3 to 1.7 mg/L for the quarter.
- *Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system for the quarter.
- *Cryptosporidium* IT was maintained above 100% during the month. Off-spec water was less than 5%.
- The WABWTF UV treatment process officially went on-line for regulatory compliance on October 1.



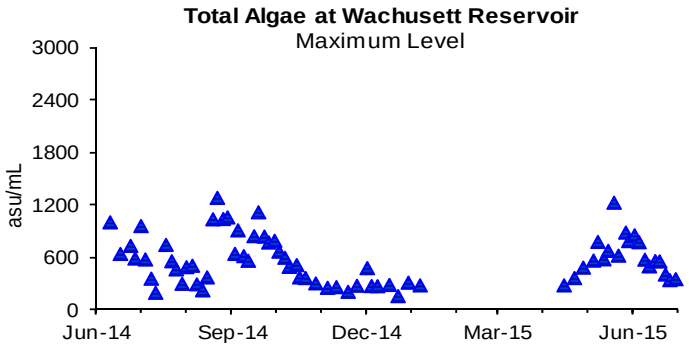
## Source Water - Algae

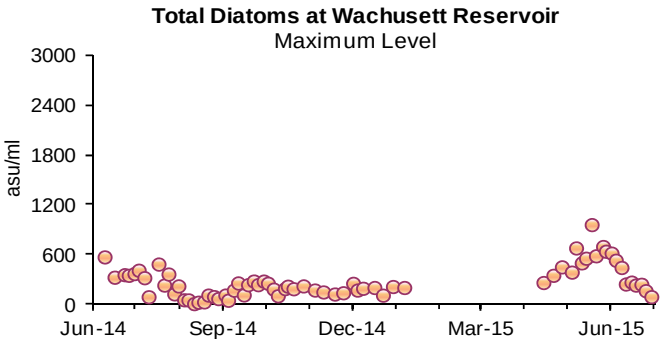
4th Quarter – FY15

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 algaecide. 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 4th Quarter, no complaints which may be related to algae were reported from local water departments.



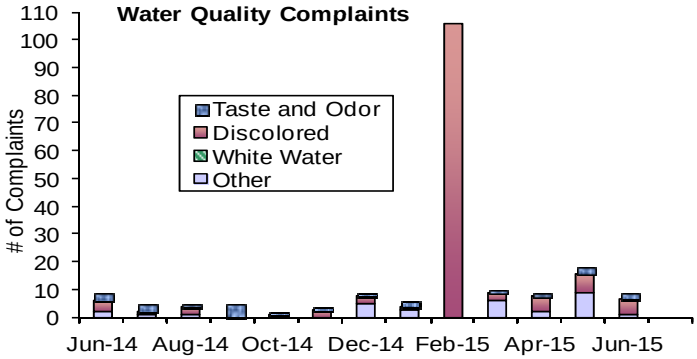



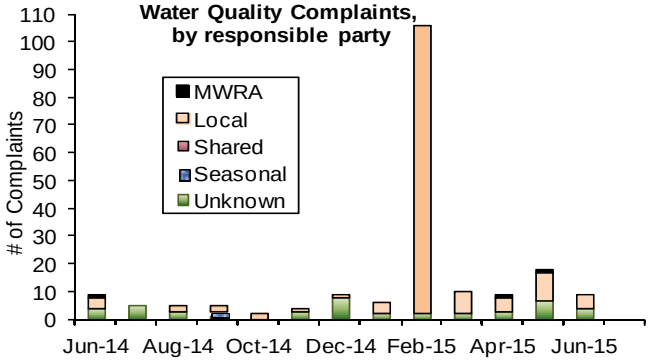

## Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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 36 complaints during the quarter compared to 22 complaints for 4th Quarter of FY14. Of these complaints, 19 were for “discolored water”, 5 were for “taste and odor”, and 12 were for “other”. Of these complaints, 20 were local community issues, 2 were MWRA related and 14 were unknown in origin.



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

4th Quarter – FY15

While all communities collect bacteria samples and chlorine residual data for the Total Coliform Rule (TCR), data from the 44 systems that use MWRA's Laboratory are reported below.

The MWRA TCR program has 142 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 4th Quarter, twelve of the 6,261 community samples (0.19% system-wide) submitted to MWRA labs for analysis tested positive for coliform (Deer Island, Revere, and Hanscom AFB - April; Hanscom AFB - May; Belmont, Medford, Reading, Bedford, Hanscom AFB, Wakefield - June). Hanscom AFB violated the TCR In April. Five of the 1,987 MWRA samples (0.25%) tested positive for total coliform. Deer Island confirmed for *E.coli* in April. Repeat samples did not confirm for total coliform or *E.coli*. Only 3.5% 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) |
|---|---|---|---|---|---|---|---|---|
| MWRA | d | MWRA Locations | 375 | 0 (0%) | 0 | | 1.81 | 2.30 |
| | d | Shared Community/MWRA sites | 1612 | 5 (0.31%) | 1 | No | 0.06 | 1.97 |
| | | *Total: MWRA* | 1987 | 5 (0.25%) | 1 | No | 0.06 | 2.03 |
| Fully Served | | ARLINGTON | 169 | 0 (0%) | 0 | | 0.17 | 1.75 |
| | | BELMONT | 107 | 1 (0.93%) | 0 | No | 1.05 | 1.95 |
| | | BOSTON | 780 | 0 (0%) | 0 | | 1.47 | 2.05 |
| | | BROOKLINE | 222 | 0 (0%) | 0 | | 0.74 | 1.98 |
| | | CHELSEA | 169 | 0 (0%) | 0 | | 1.71 | 2.21 |
| | | DEER ISLAND | 58 | 1 (1.72%) | 1 | No | 1.68 | 1.95 |
| | | EVERETT | 169 | 0 (0%) | 0 | | 1.01 | 1.15 |
| | | FRAMINGHAM | 218 | 0 (0%) | 0 | | 0.53 | 2.03 |
| | | LEXINGTON | 117 | 0 (0%) | 0 | | 1.48 | 2.18 |
| | | LYNNFIELD | 18 | 0 (0%) | 0 | | 0.74 | 1.36 |
| | | MALDEN | 234 | 0 (0%) | 0 | | 0.56 | 2.03 |
| | | MARBLEHEAD | 72 | 0 (0%) | 0 | | 0.21 | 1.74 |
| | | MEDFORD | 224 | 1 (0.45%) | 0 | No | 1.26 | 1.89 |
| | | MELROSE | 117 | 0 (0%) | 0 | | 0.10 | 1.69 |
| | | MILTON | 112 | 0 (0%) | 0 | | 0.00 | 1.80 |
| | | NAHANT | 30 | 0 (0%) | 0 | | 1.11 | 1.80 |
| | | NEWTON | 276 | 0 (0%) | 0 | | 0.87 | 2.01 |
| | | NORTHBOROUGH | 48 | 0 (0%) | 0 | | 0.97 | 1.90 |
| | | NORWOOD | 99 | 0 (0%) | 0 | | 0.33 | 1.81 |
| | | QUINCY | 299 | 0 (0%) | 0 | | 0.09 | 1.76 |
| | | READING | 123 | 1 (0.81%) | 0 | No | 0.14 | 1.60 |
| | | REVERE | 201 | 2 (1.00%) | 0 | No | 1.12 | 2.00 |
| | | SAUGUS | 112 | 0 (0%) | 0 | | 1.41 | 1.84 |
| | | SOMERVILLE | 273 | 0 (0%) | 0 | | 1.03 | 1.80 |
| | | SOUTHBOROUGH | 30 | 0 (0%) | 0 | | 0.20 | 2.04 |
| | | STONEHAM | 91 | 0 (0%) | 0 | | 1.32 | 2.00 |
| | | SWAMPSCOTT | 54 | 0 (0%) | 0 | | 0.55 | 2.00 |
| | | WALTHAM | 216 | 0 (0%) | 0 | | 1.17 | 2.04 |
| | | WATERTOWN | 130 | 0 (0%) | 0 | | 1.20 | 2.00 |
| | | WESTBORO HOSPITAL | 15 | 0 (0%) | 0 | | 0.05 | 0.79 |
| | | WESTON | 48 | 0 (0%) | 0 | | 0.16 | 2.22 |
| | | WINTHROP | 72 | 0 (0%) | 0 | | 0.21 | 1.77 |
| | | *Total: Fully Served* | *4903* | *6 (0.12%)* | | | | |
| CVA&Partially Served | b | BEDFORD | 55 | 1 (1.82%) | 0 | No | 1.07 | 1.66 |
| | b | CANTON | 87 | 0 (0%) | 0 | | 0.02 | 0.85 |
| | b | HANSCOM AFB | 36 | 4 (11.11%) | 0 | Yes | 0.79 | 1.74 |
| | b | MARLBOROUGH | 126 | 0 (0%) | 0 | | 1.01 | 2.07 |
| | b | NEEDHAM | 123 | 0 (0%) | 0 | | 0.06 | 0.88 |
| | b | PEABODY | 250 | 0 (0%) | 0 | | 0.04 | 1.12 |
| | b | WAKEFIELD | 148 | 1 (0.68%) | 0 | No | 0.42 | 1.37 |
| | b | WELLESLEY | 112 | 0 (0%) | 0 | | 0.08 | 0.97 |
| | b | WILMINGTON | 87 | 0 (0%) | 0 | | 1.45 | 2.04 |
| | b | WINCHESTER | 91 | 0 (0%) | 0 | | 0.14 | 1.34 |
| | b | WOBURN | 195 | 0 (0%) | 0 | | 0.10 | 1.19 |
| | c | SOUTH HADLEY FD1 | 48 | 0 (0%) | 0 | | 0.20 | 0.49 |
| | | *Total: CVA & Partially Served* | *1358* | *6 (0.44%)* | | | | |
| | | *Total: Community Samples* | *6261* | *12 (0.19%)* | | | | |

(a) The number of samples collected depends on the population served and the number of repeat samples required.
(b) These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.
(c) Part of the Chicopee Valley Aqueduct System. Free chlorine system.
(d) MWRA total coliform and chlorine residual results include data from 125 community pipe locations as described above. In most cases these community results are accurately indicative of MWRA water as it enters the community system; however, some are clearly strongly influenced by local pipe conditions. Residuals in the MWRA system are typically between 1.0 and 2.8 mg/L.

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

4th 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).

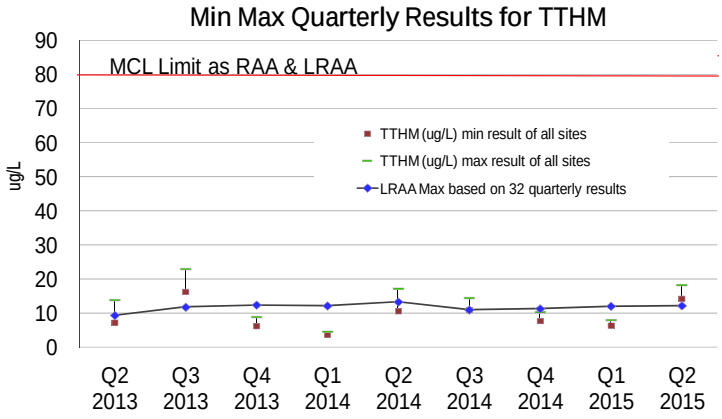
For the CVA communities, effective Q3 2013, under the Stage 2 DBP Rule, compliance is based on a LRAA for each community. Sampling locations have increased from 12 to 14 each quarter. Prior to Q3 2013, the running annual average is reported, and since Q3 2013, the maximum LRAA is reported (in addition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

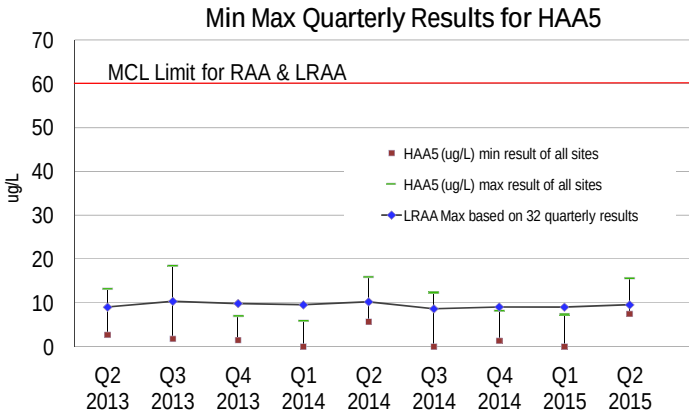
Partially served and CVA communities are responsible for their own compliance monitoring and reporting, and must be contacted directly for their individual results.

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 ug/L.

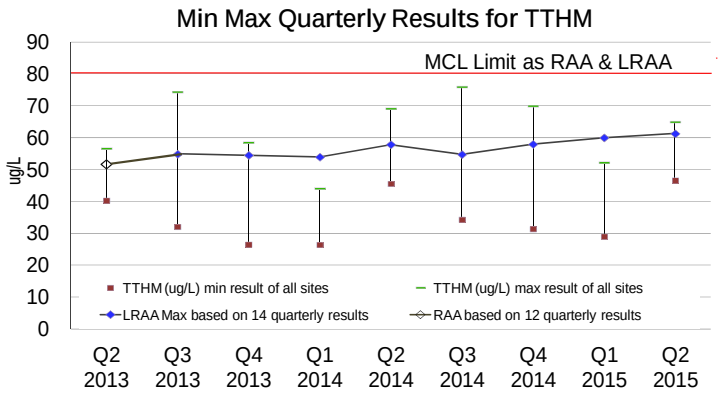
The RAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remain below current standards. The LRAA for TTHMs = 12.2 ug/L; HAA5s = 9.5 ug/L. The current RAA for Bromate = 0.0 ug/L. CVA's DBP levels continue to be below current standards.

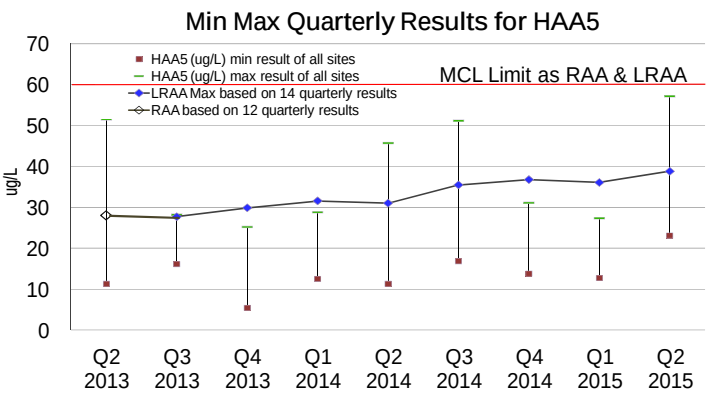
## MetroBoston Disinfection By-Products




## CVA Disinfection By-Products



# Water Supply and Source Water Management

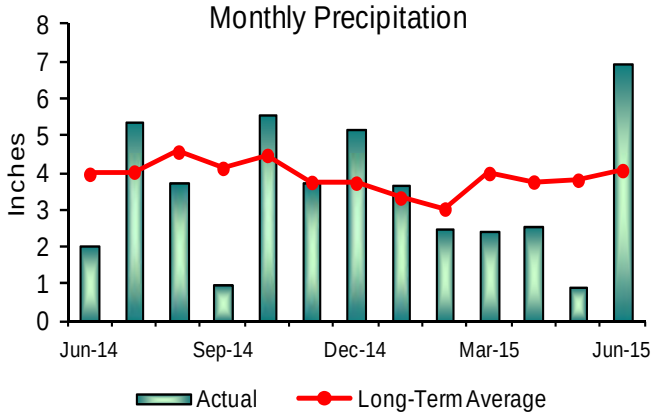
4th Quarter – FY15

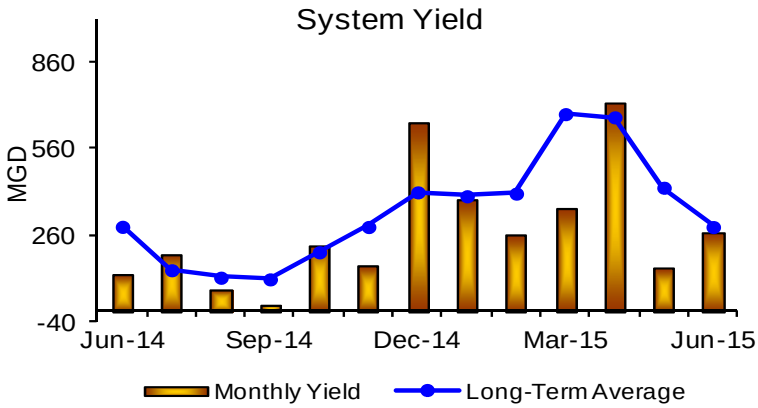
**Background**

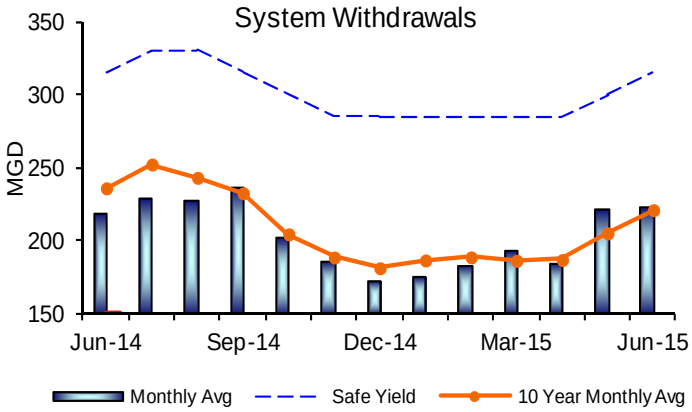
A reliable supply of water in MWRA's reservoirs depends on adequate precipitation during the year and seasonal hydrologic inputs from watersheds that surround the reservoirs. Demand for water typically increases with higher summer temperatures and then decreases as temperatures decline. Quabbin Reservoir 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.

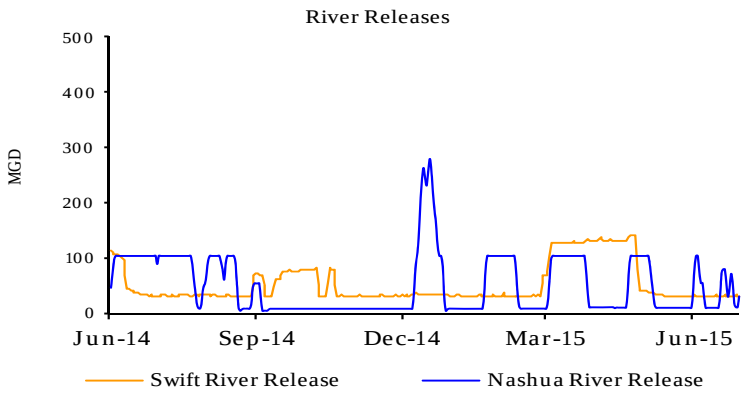
**Outcome**

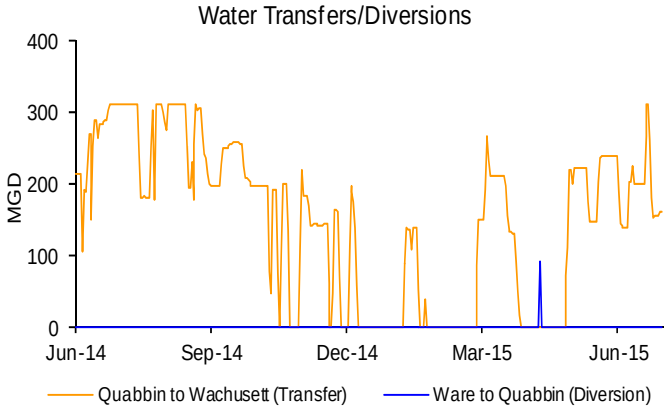
Quabbin Reservoir level remains within the normal operating range for this period of the year. The volume of the Quabbin Reservoir was at 95.5% as of June 30, 2015; a 0.6% increase for the quarter, which represents an increase of 2.4 billion gallons of storage. Yield and precipitation for the quarter were below their respective quarterly long term averages. System withdrawal continues to be below its long-term average.

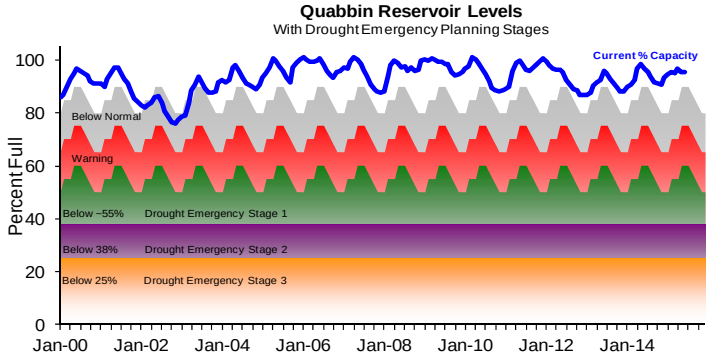


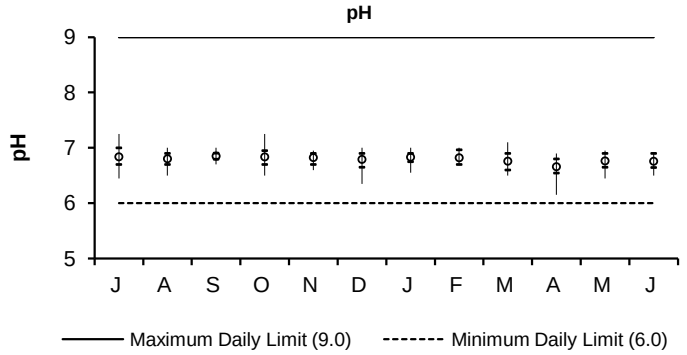
# WASTEWATER QUALITY

# NPDES Permit Compliance: Deer Island Treatment Plant

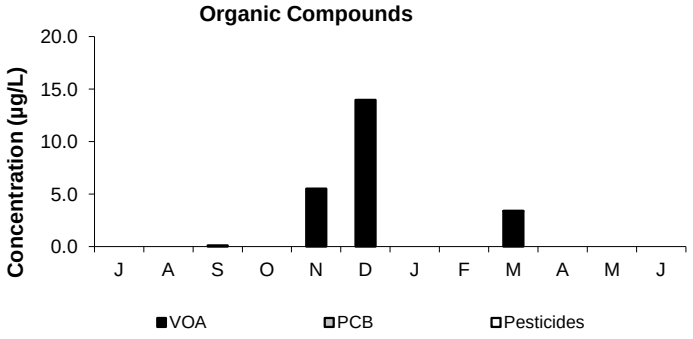
4th Quarter - FY15

**NPDES Permit Limits**

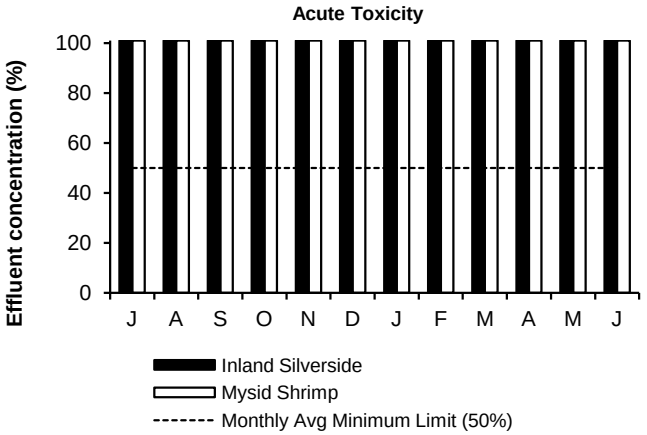
| *Effluent Characteristics* | | *Units* | *Limits* | *April* | *May* | *June* | *4th Quarter Violations* | *FY15 YTD Violations* |
|---|---|---|---|---|---|---|---|---|
| Dry Day Flow: | | mgd | 436 | 276.2 | 273.7 | 273.9 | 0 | 0 |
| cBOD: | Monthly Average | mg/L | 25 | 7.3 | 5.7 | 4.9 | 0 | 0 |
| | Weekly Average | mg/L | 40 | 10.0 | 6.6 | 5.3 | 0 | 0 |
| TSS: | Monthly Average | mg/L | 30 | 13.1 | 8.4 | 7.3 | 0 | 0 |
| | Weekly Average | mg/L | 45 | 23.0 | 11.2 | 8.0 | 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 | 26 | 9 | 8 | 0 | 0 |
| | Weekly Geometric Mean | col/100mL | 14000 | 11 | 6 | 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 | 6.2-6.9 | 6.5-7.0 | 6.5-6.9 | 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 | 50 | 100 | 0 | 0 |
| | Inland Silverside | % | ≥1.5 | 100 | 25 | 50 | 0 | 0 |



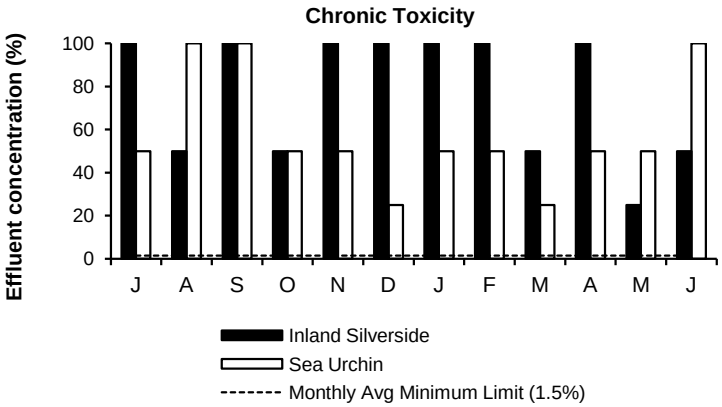

pH is a measure of alkalinity or acidity. Fluctuations in effluent pH are unlikely to impact on marine environments, which have significant buffering capacity. Because of the pure oxygen used in the activated sludge process, effluent pH tends to be at the lower end of the permit-required range. All pH measurements for the 4th 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 significantly reduces organic compounds in the effluent stream. In the 4th Quarter, no organic compounds were detected in the effluent .




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 4th 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% dillution water must show no observed effect on the growth and reproduction of the test species. Chronic toxicity permit limits were met for the 4th Quarter for both the inland silverside and sea urchin.

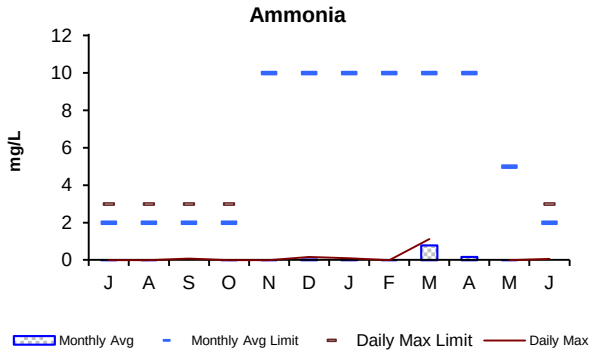
# NPDES Permit Compliance: Clinton Wastewater Treatment Plant

4th Quarter - FY15

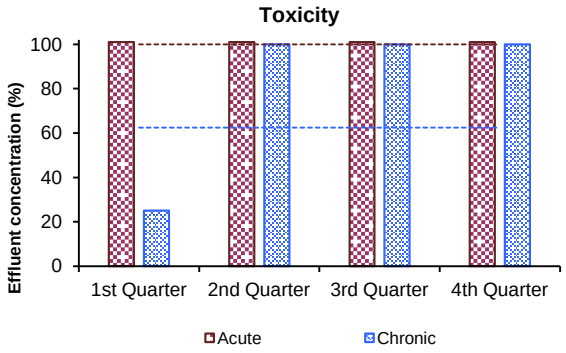
**NPDES Permit Limits**

| *Effluent Characteristics* | | *Units* | *Limits* | *April* | *May* | *June* | *4th Quarter Violations* | *FY15 YTD Violations* |
|---|---|---|---|---|---|---|---|---|
| Flow: | Running Average: | mgd | 3.01 | 2.62 | 2.58 | 2.59 | 0 | 0 |
| BOD: | Monthly Average: | mg/L | 20 | 3.1 | 4.7 | 3.0 | 0 | 0 |
| | Weekly Average: | mg/L | 20 | 5.9 | 6.1 | 4.3 | 0 | 0 |
| TSS: | Monthly Average: | mg/L | 20 | 5.0 | 5.1 | 3.7 | 0 | 0 |
| | Weekly Average: | mg/L | 20 | 7.3 | 7.2 | 5.3 | 0 | 0 |
| pH: | | SU | 6.5-8.3 | 7.1-7.4 | 7.2-7.7 | 7.2-7.7 | 0 | 0 |
| Dissolved Oxygen: | Daily Minimum: | mg/L | 6 | 9.5 | 7.9 | 7.5 | 0 | 0 |
| Fecal Coliform: | Daily Geometric Mean: | col/100mL | 400 | 4 | 11 | 3 | 0 | 0 |
| | Monthly Geometric Mean: | col/100mL | 200 | 3 | 3 | 14 | 0 | 0 |
| TCR: | Monthly Average: | ug/L | 50 | 0.22 | <20 | 0.6 | 0 | 0 |
| | Daily Maximum: | ug/L | 50 | 0.00 | <20 | 6.7 | 0 | 0 |
| Total Ammonia Nitrogen: | November 1 - March 31 | | | | | | | |
| | Monthly Average: | mg/L | 2.0 | <0.1 | <0.1 | 0.01 | 0 | 0 |
| | Daily Maximum: | mg/L | 3.0 | <0.1 | <0.1 | 0.07 | 0 | 0 |
| Copper: | Monthly Average: | ug/L | 20 | 4.8 | 5.1 | 3.0 | 0 | 0 |
| Phosphorus: | May 1 - Oct 31 | | | | | | | |
| | Monthly Average: | mg/L | 1.0 | *N/A | 0.36 | 0.17 | 0 | 0 |
| Acute Toxicity: | Daily Minimum: | % | ≥100 | *N/A | *N/A | >100 | 0 | 0 |
| Chronic Toxicity: | Daily Minimum: | % | ≥62.5 | *N/A | *N/A | 100 | 0 | 1 |

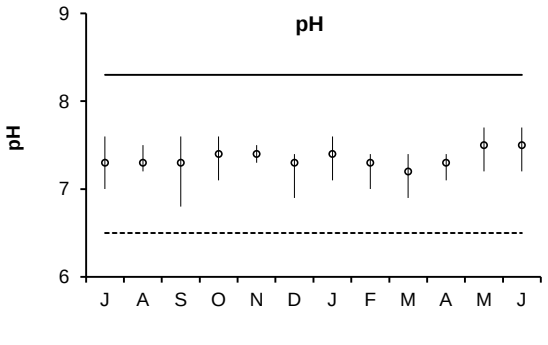
There has been one permit violation in FY15 at the Clinton Treatment Plant.
**1st Quarter:** There was one permit violation in the 1st Quarter of FY15. In September 2014, the chronic toxicity was 25%, which is below the permit minimum of 62.5%.
**2nd Quarter**: There were no permit violations in the second quarter of FY15.
**3rd Quarter**: There were no permit violations in the third quarter of FY15.
**4th Quarter**: There were no permit violations in the fourth quarter of FY15
*Toxicity testing at the Clinton Treatment Plant is conducted on a quarterly basis.



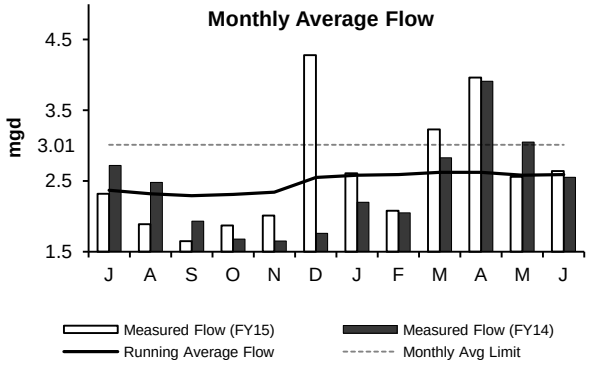

The 4th Quarter's monthly average and daily maximum ammonia concentrations were below the permit limits. The monthly average and daily maximum limits for the 4th Quarter are 2.0 mg/L and 3.0 mg/L. The permit limits are most stringent from June to October when warm weather conditions are most conducive to potential eutrophication.




Acute and chronic toxicity testing simulates the short- and long-term toxic effects of chemicals in wastewater effluent on aquatic animals. For permit compliance, the effluent concentration that causes mortality to the daphnid in acute and chronic testing must be at least >100% and 62.5%, respectively. Toxicity limits were met during the 4th Quarter.




pH is a measure of the alkalinity or acidity of the effluent. All daily pH results for the 4th 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. April high flow did not cause the running annual average to exceed permit limits.

# COMMUNITY FLOWS AND PROGRAMS

# Total Water Use: MWRA Core Customers
4th Quarter - FY15

Massachusetts Water Resources Authority

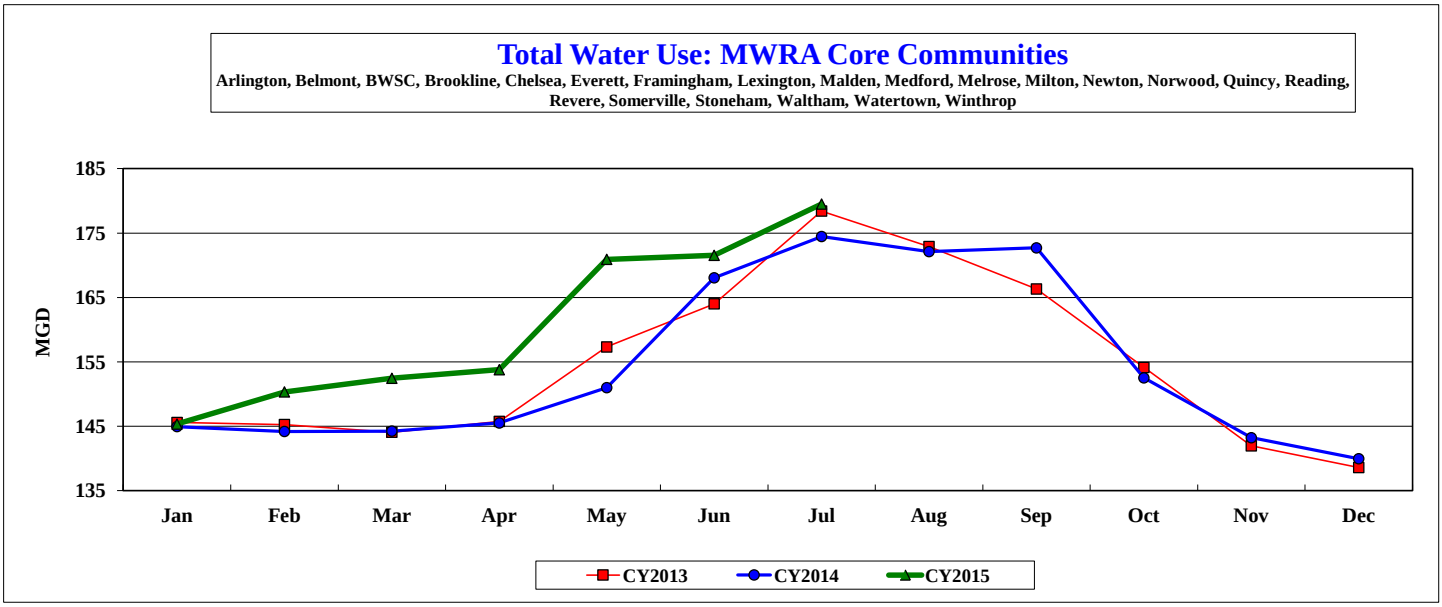
**Water Supplied: MWRA Fully Served Communities***

* Receive 100% MWRA Water Service

| YTD CHANGES (CY15 vs. CY14) |
|---|
| Water Supplied |
| 4.8% |

| MGD | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | YTD Average | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CY2013 | 145.587 | 145.271 | 144.080 | 145.758 | 157.315 | 164.013 | 178.420 | 172.908 | 166.315 | 154.128 | 141.960 | 138.594 | 147.661 | 154.605 |
| CY2014 | 144.952 | 144.193 | 144.251 | 145.510 | 150.994 | 168.049 | 174.461 | 172.119 | 172.696 | 152.513 | 143.221 | 139.960 | 153.295 | 154.461 |
| CY2015 | 145.345 | 150.338 | 152.453 | 153.782 | 170.918 | 171.543 | 179.502 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 160.679 | 160.679 |

| MG | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | YTD Total | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CY2013 | 4,513.200 | 4,067.590 | 4,466.466 | 4,372.748 | 4,876.772 | 4,920.403 | 5,531.005 | 5,360.137 | 4,989.458 | 4,777.974 | 4,258.813 | 4,296.408 | 22,296.776 | 56,430.974 |
| CY2014 | 4,493.498 | 4,037.400 | 4,471.778 | 4,365.293 | 4,680.819 | 5,041.483 | 5,408.299 | 5,335.689 | 5,180.887 | 4,727.900 | 4,296.634 | 4,338.762 | 32,498.570 | 56,378.442 |
| CY2015 | 4,505.697 | 4,209.455 | 4,726.042 | 4,613.460 | 5,298.464 | 5,146.293 | 5,564.560 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 34,063.971 | 34,063.971 |



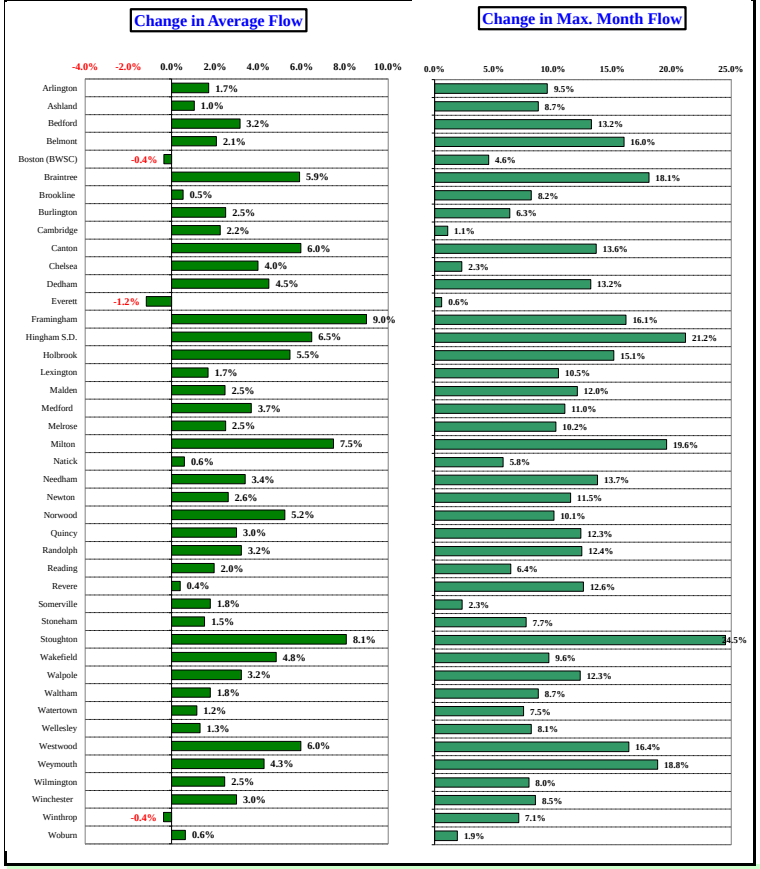

Water Use Report recently distributed to communities served by the MWRA waterworks systems. Each community's annual water use relative to the system as a whole is the primary factor in allocating the annual water rate revenue requirement to MWRA water communities. Calendar year 2015 water use will be used to allocate the FY17 water utility rate revenue requirement.

July 2015 water supplied of 228.3 mgd (for revenue generating users) is up 4.7 mgd or 2.1% compared to July 2014. System-wide year to date consumption for CY15 remains higher than CY14 with 195.8 mgd being supplied to MWRA customers **through July**. This is 4.9 mgd higher than CY14, and is an increase of 2.5%.

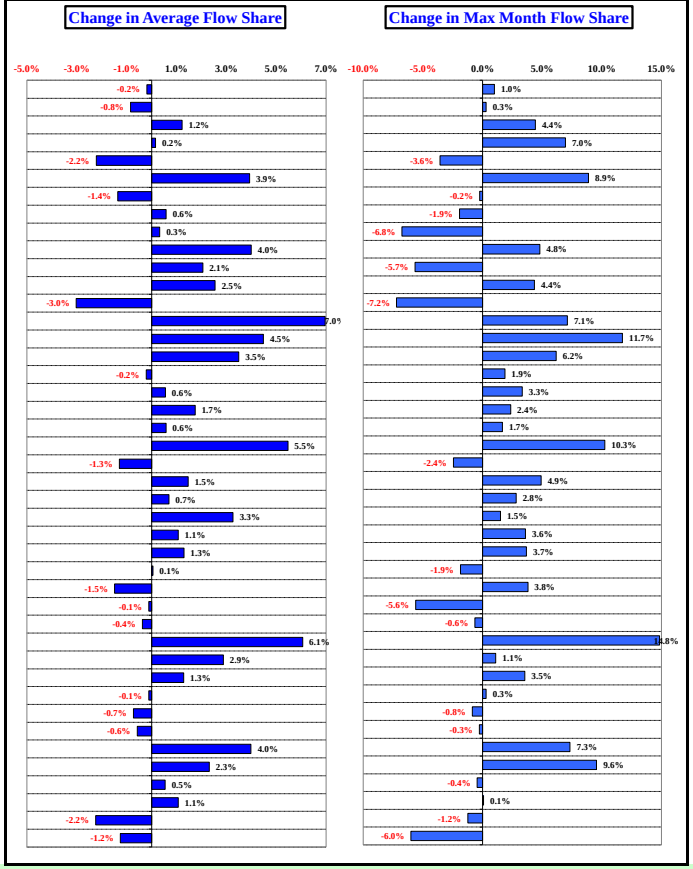
# Community Wastewater Flows
Q4 FY15

## How Projected CY2015 Community Wastewater Flows Could Effect FY2017 Sewer Assessments [1,2,3]

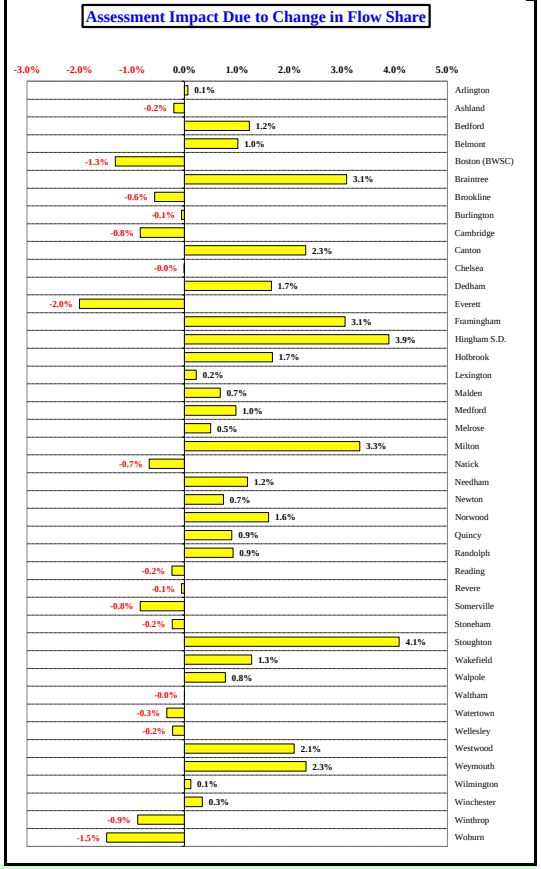
**The flow components of FY2017 sewer assessments will be calculated using a 3-year average of CY2013 to CY2015 wastewater flows compared to FY2016 assessments that will use a 3-year average of CY2012 to CY2014 wastewater flows.**




**But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2013 to CY2015 flow share compared to CY2012 to CY2014 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. [4]**




**Notes:**

[1] **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.**

[2] **Based on CY2012 to CY2015 average wastewater flows as of 08/05/15. Flow data is preliminary and subject to change pending additional MWRA and community review.**

[3] **CY2012 to CY2014 wastewater flows based on actual meter data. CY2015 flows based on actual meter data for January to June and projected flows for July to December.**

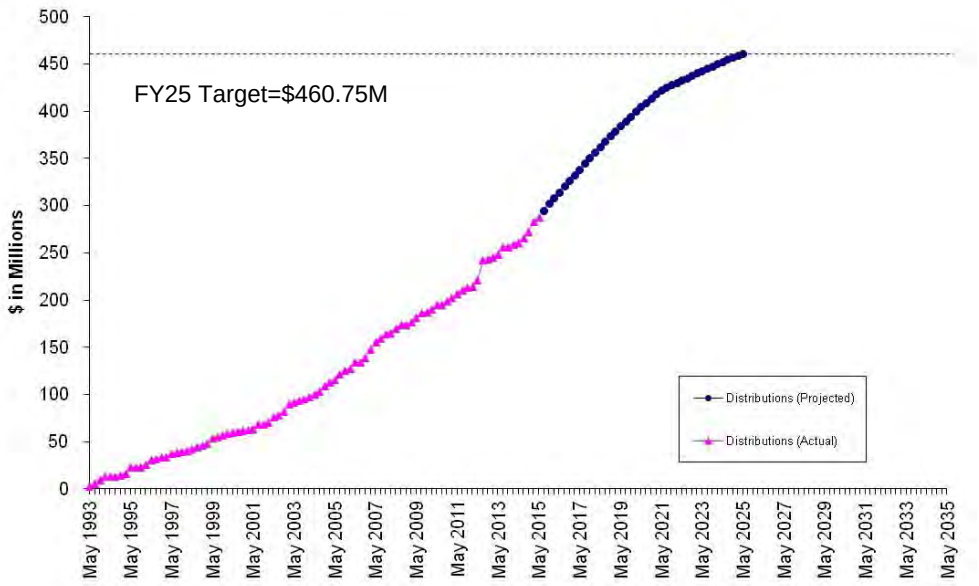
[4] **Represents ONLY the impact on the total BASE assessment resulting from the changes in average and maximum wastewater FLOW SHARES.**

# Community Support Programs
4th Quarter – FY15

## Infiltration/Inflow Local Financial Assistance Program

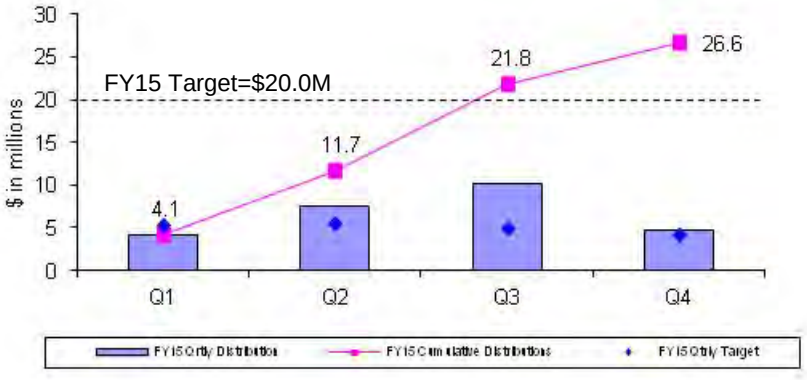
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides $460.75 million in grants and interest-free loans (average of about $14 million per year from FY93 through FY25) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned 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 4th Quarter of FY15, $4.8 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Arlington, Framingham, Lexington, Norwood, Wakefield and Woburn. Total grant/loan distribution for FY15 is $26.6 million. From FY93 through the 4th Quarter of FY15, all 43 member sewer communities have participated in the program and more than $287 million has been distributed to fund 481 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.

## FY15 Quarterly Distributions of Sewer Grant/Loans



# Community Support Programs

4th Quarter – FY15

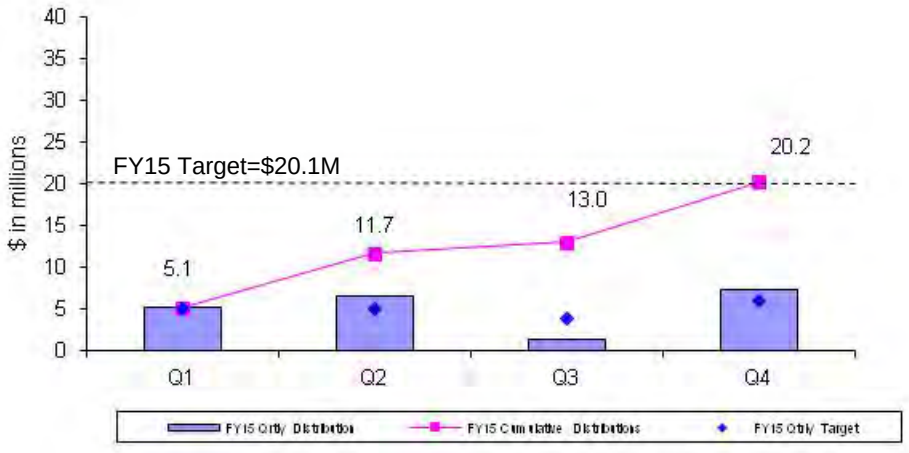
## Water Local Pipeline and Water System Assistance Programs

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 4th Quarter of FY15, $7.3 million in interest-free loans was distributed to fund local water projects in Belmont, Chelsea, Framingham, Quincy, Revere and Winthrop. Total loan distribution for FY15 is $20.2 million. From FY01 through the 4th Quarter of FY15, more than $305 million has been distributed to fund 348 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.

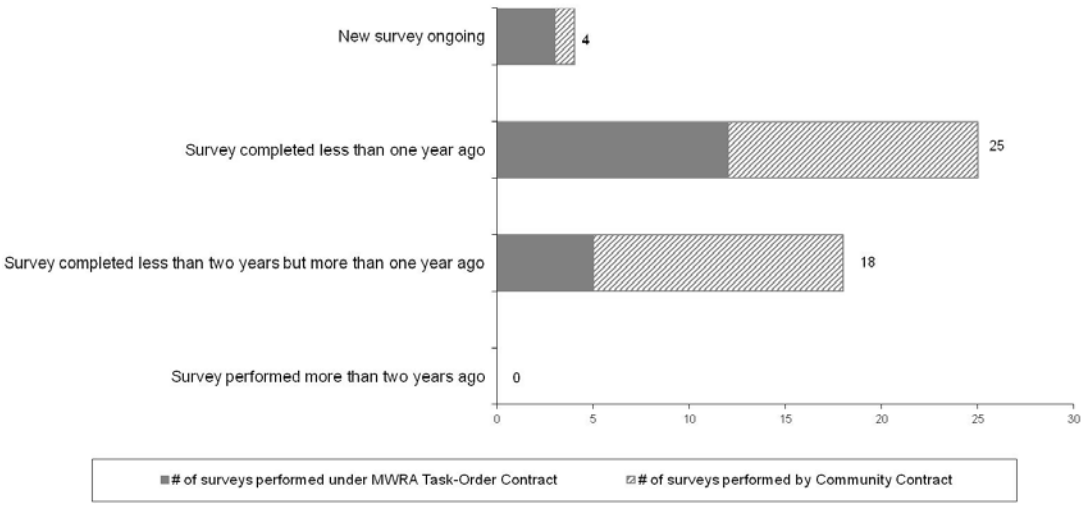
## FY15 Quarterly Distributions of Water Loans



# Community Support Programs
4th 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 4th 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 | 806 | 62,026 | 48,068 | 129,384 |
| Low-Flow Fixtures (showerheads and faucet aerators) | 10,000 | 6,382 | 1,886 | 2,301 | 3,149 | 13,718 |
| Toilet Leak Detection Dye Tablets | ------ | 5,041 | 2,207 | 1,679 | 2,932 | 11,859 |

# BUSINESS SERVICES

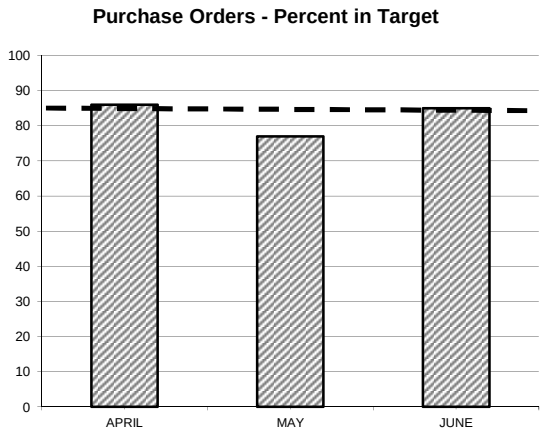
# Procurement: Purchasing and Contracts

4th Quarter, FY15

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

**Outcome:** Processed 83% of purchase orders within target; Average Processing Time was 6.23 days vs. 7.07 days in Qtr 4 of FY14. Processed 94% (16 of 17) of contracts within target timeframe; Average Processing Time was 74 days vs. 105 days in Qtr 4 of FY14.

## Purchasing




| | No. | TARGET | PERCENT IN TARGET |
|---|---|---|---|
| $0 - $500 | 1047 | 3 DAYS | 74.8% |
| $500 - $2K | 1138 | 7 DAYS | 93.5% |
| $2K - $5K | 170 | 10 DAYS | 57.6% |
| $5K - $10K | 117 | 25 DAYS | 84.6% |
| $10K - $25K | 78 | 30 DAYS | 88.4% |
| $25K - $50K | 18 | 60 DAYS | 50.0% |
| Over $50K | 43 | 90 DAYS | 79.0% |

The Purchasing Unit processed 2611 purchase orders, 26 more than the 2585 processed in Qtr 4 of FY14 for a total value of $10,878,750 versus a dollar value of $14,260,418 in Qtr 4 of FY14.

The purchase order processing target was not met for the $0 - 500 due to item and price confirmations; $2k - $5k due to price confirmation and vendor sourcing; $5k - $10k due to end user confirmations; $25k - $50k due to staff summary requirements and the $50k and over due to vendor sourcing.

## Contracts, Change Orders and Amendments

One contract was not processed within the target timeline due to extensive addenda and negotiations, and to obtain insurance certificates and satisfactory backup information from the consultant.

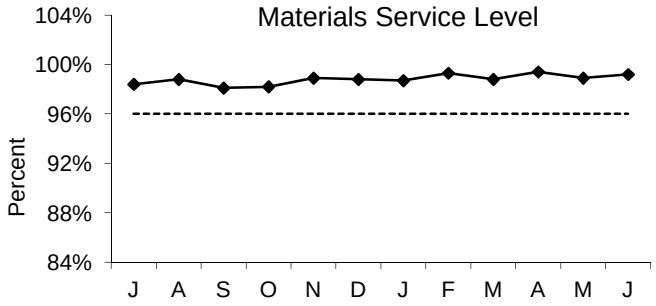
Procurement processed seventeen contracts with a value of $7,750,154 and one amendment with a value of $68,394.

Thirty one change orders were executed during the period. The dollar value of all non-credit change orders during Q4 FY15 was $880,630 and the value of credit change orders was $293,504.

Staff reviewed 31 proposed change orders and 22 draft change orders.

# Materials Management

4th Quarter, FY15




The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 9,528 (99.2%) of the 9,608 items requested in Q4 from the inventory locations for a total dollar value of $1,659,315.

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). This goal has been achieved.

Items added to inventory this quarter include:

- Deer Island – solder wire, terminals, power supply and electronic modules for Core; socket relays, connectors, filters, contact board and carbon potentiometer for I&C; carrier module for HVAC; spark guard screen, helmet filters and silver flux for Welding shop.
- Chelsea – brake adapters, A/C compressor, v-belts, trailer hitch, shocks, wear sensors, brake rotors, air flow sensor, starter, relay blower, belt pulley and headlight bulbs for Fleet Services; Probe, submersible pump, mechanical seal, pressure guage, pressure switch, drive belt and fuses for Work Order Coordination Group.
- Southboro – gaskets, mortar, grout bags, and plastic tubs for Maintenance; brake rotors, brake pads and gas caps for Fleet Services.

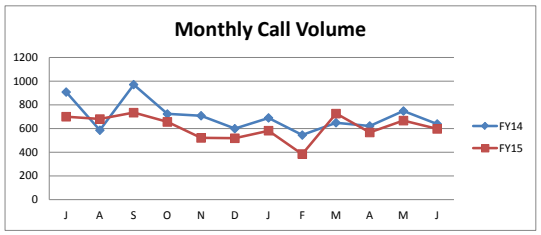
Property Pass Program:

- Several audits were conducted for Chelsea plumbers and vehicles during Q4.
- Numerous obsolete battery jumpers, monitors, computers, printers, scanners, power supplies, fax machines, cellphones and docking stations have been received into Property Pass as surplus. Disposition is being handled as part of our ongoing recycling efforts.
- Scrap revenue received for Q4 amounted to $13,775. Year to date revenue received amounted to $63,684.
- Revenue received from online auctions held during Q4 amounted to $257,035. Year to date revenue received amounted to $385,510.

| **Items** | Base Value July-14 | Current Value w/o Cumulative New Adds | Reduction / Increase To Base |
|---|---|---|---|
| Consumable Inventory Value | 7,749,357 | 7,500,346 | -249,011 |
| Spare Parts Inventory Value | 7,358,692 | 8,015,423 | 656,731 |
| Total Inventory Value | 15,108,049 | 15,515,769 | 407,720 |

**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.

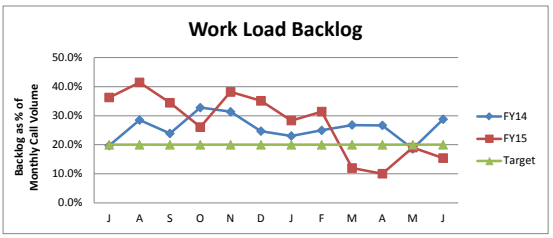
**MIS Program**
4th Quarter FY15

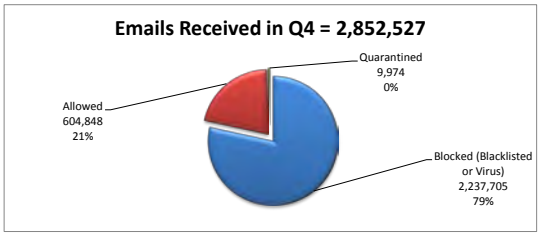



**Performance and Backlog**

Call Volume: Peaked in May. FY15-Q4 call volume decreased by 9% from FY14-Q4 last year.

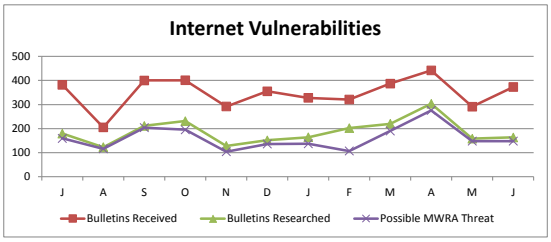
Call Backlog: Peaked in May. FY15-Q4 backlog average is 3% below the targeted benchmark of 20%.




**Information Security**

During Q4, pushed security fixes/updates to desktops/ servers to protect against 217 vulnerabilities. LANDesk Antivirus quarantined 8 distinct viruses from 8 PCs. PCs are current with anti-virus providers' signatures for all known malware.




## Infrastructure:

Citrix Mobile Application Design and Development: The Netscaler SOW has been completed and scheduled for July implementation. The Citrix blade servers are ready for build out of the production environment and is also scheduled in July. MIS completed testing of iOS 8.3 and informed the user community to install the update in April. 180 iPhone/iPads are being managed with XenMobile, nine Blackberry devices to be replaced. Application testing with Citrix Receiver is underway.

Distributed Antenna System (DAS) Implementation: Completed implementation for Deer Island. This implementation includes five buildings: Winthrop, Disinfection, Main Switch, North and South Pump, and will enhance the Verizon cellular signal strength within the facilities to improve communications.

## Applications/Training/Records Center:

Strategic Sourcing and Contract Management: Prepared a Construction Chapter 30 contract mock event for members of the Utility Contractors of New England (UCANE). The first live Non-professional Services (NPS) sourcing event was awarded in Sourcing after the Staff Summary was approved and signed. Trained Procurement staff on how to move the awarded event from Sourcing into the Contract Management (CM) module where the official Contract Document was generated, signed and activated. The second live NPS contract sourcing event was awarded and then moved to the CM module and is pending final contract signatures. A third live NPS event is awaiting award. Completed Chapter 30 and 149 contract design and configurations; continued working on Professional Services Contract design and configurations.

Miscellaneous Lawson Support: Supported new state-mandated sick leave plan for temp employees which will go live week ending 7/3/15. MWRA active temporary employees have been enrolled into this plan and will be restricted to using specific sick pay codes within the time entry system. Implemented changes to split the Administration and Finance Divisions into two distinct divisions; changes affect sub-cost centers, tables, and reports. Developed detailed user documentation for HR staff on how to send monthly remittance files to Aflac, Continental America, and Colonial Life. Continued to evaluate 3rd party time entry products.

Project Management: Updated, presented, and published MIS Department's Project Management SOP. Scheduled and completed Project Portfolio Management (PPM) demos from three vendors for MIS and Operations staff. Began developing "Use Cases" for PPM. Developed summary reports, PowerPoint presentations, and rolled-up Master Project Plan for new IT Steering Committee that was presented at the first two monthly meetings this quarter.

Lawson Talent Acquisition (LTA): Staff began reviewing Talent Acquisition applications to automate the employment application process. The review included Infor/Lawson Talent Acquisition and 3rd party applicant tracking solutions. The Infor/Lawson module will require an upgrade to the current HR System. The third party products appear to offer a quick inexpensive interim solution until the Infor/Lawson fully integrated solution could be procured and implemented.

Learning Management System (LMA): The MWRA online training web site was upgraded this quarter to take advantage on the latest features including single sign-on process that accepts the user's current network login credentials.

Document Management Initiatives: Worked with e-Vault consultant on best practices for a policies and completed two draft default policies on Enterprise Vault Mailbox policy and Vault Desktop policy for review by team members. Conducted three training session to Department Records Managers on the new Active Records Filing Scheme Application. This application will be used to collect data for sizing the storage capacity and defining business policies based on record types.

Maximo Upgrade Project: Maximo is a computerized maintenance management system that is used to manage maintenance activities for Water and Wastewater assets. This project was approved by the Board of Directors for $2,625,904 and awarded to Total Resource Management and will upgrade the installed version of the Maximo software from 5.2 to 7.6. The kick-off meeting was held in June.

PI/Telog: An update to the Telog Enterprise system was applied. This update provides real-time access of Telog meters to OCC operators and metering staff. Over 150 PI flow, pressure, and gradient tags have been updated to support the migration of Telog meters to wireless communications.

Electronic Laboratory Notebook (ELN): This application is used to replace the physical log books used by laboratory staff which contain information about sample state and other relevant information that is not currently stored in the Laboratory Information Management System (LIMS). Published three sample ELN logs for user review: 1) Buffered Distilled Rinse Water Prep, 2) pH of Glassware, and 3) Total Iron Calibration.

Library & Records Center: The Library completed 56 research requests (199 YTD) (e.g. health Railroad regulations and spill control, cathodic protection at shafts, historic land deals along aqueducts, old and new water contamination risks – ebola, fluoride, photosynthetic dyes, micro-beads, estrogens, etc.), added 81 books (197 YTD) and 11 Reports (110 YTD), distributed 181 articles ( 588 YTD) and 53 requested books & reports (861 YTD), and supported 151 staff searches using commercial databases or document repositories [i.e. TechStreet, ASCE, State Library system, etc.] (181 YTD). The Records Center added 234 boxes (749 YTD), conducted 1 training sessions, and attended 3 Records Conservation Board Meetings.

IT Training: For the quarter, 179 staff attended 20 classes and 5 workshops. 43% of the workforce has attended at least one class year-to-date. Information Security Awareness training was offered (86% of all staff have been trained). Lawson Time Entry sessions were conducted. MWRA 911, Communicator! NXT, and Community Contacts Tracking classes were presented. In FY15, 97 classes were taught to 676 students.

# Legal Matters
## 4th Quarter - FY 2015

## PROJECT ASSISTANCE

COURT AND ADMINISTRATIVE ORDER

- **NPDES:** Reviewed 2014 CSO Discharge Estimates and Rainfall Analyses Report which was submitted in April 2015 in accordance with the water quality variances for CSO discharges to the Lower Charles River/Charles Basin and Alewife Brook/ upper Mystic River. Reviewed NPDES requirements for the dosing of alum in the Chestnut Hill Reservoir. Reviewed National Pollutant Discharge Elimination System Pesticide General Permit as it relates to MWRA's standby drinking water reservoirs and algae control. Reviewed MWRA's requirements relative to Nut Island's emergency discharge outfalls.

- **Boston Harbor Litigation and CSO:** Reviewed and filed quarterly compliance and progress report.

- **Administrative Consent Order (DITP power outages):** Reviewed and submitted updated semi-annual *Consultant's Deer Island Energy Recommendations Tracking Sheet* to DEP and EPA.

REAL ESTATE, CONTRACT AND OTHER SUPPORT

- **Licenses:** Drafted a license with the U.S Department of the Interior, Fish & Wildlife Service ("USFWS") to enable USFWS to track and study the Northeastern American Eider on Deer Island; drafted license for Northborough Rotary Club Road Race on portion of Wachusett Aqueduct in Northborough. Drafted license agreement that will give March Fourth, LLC. access to the east side of March Fourth's Building 11 through MWRA's property on the south and east sides of Building 11.

- **Watershed Acquisition:** Completed the review of W-1140, Wachusetts Watershed in Holden from the Grady Realty Trust.

- **OPEB:** Completed OPEB Trust document for Board approval.

- **MOA:** Completed Deer Island Fish Pier MOA for Board approval.

- **Spot Pond:** Drafted notice of MWRA's intent to extend the License for Entry for an additional six (6) months.

- **Somerville MOA:** Finalized the MOA with the City of Somerville relative to Contract 7335 – Section 4 Webster Avenue Pipeline and Utility Bridge Replacement Project whereby Somerville will pay the MWRA $100,000 for the MWRA to install a water main for Somerville.

- **Contractor Claims:** Reviewed and made recommendations on two (2) construction contract claims.

- **Watershed Acquisition:** Reviewed the materials and finalized the acquisition of a WPR on W-001152, property of Clouthier in New Salem, MA.

- **Electrical Inspection Services:** Finalized Amendment 4 with the Department of Public Safety to provide electrical inspection services for an additional two years, until June 30, 2017 at a reduced rate.

- **City of Marlborough:** Drafted a License with the City of Marlborough in order to facilitate Marlborough's granting of permanent easements on Marlborough land needed for the security gate system at JJCWTP.

- **AECOM Settlement Agreement:** Drafted a Settlement Agreement with AECM for the disposition of claims on eight (8) consulting contracts and seven (7) construction contracts.

- **McLaughlin Fish Hatchery:** Completed funding MOA with MA fisheries agencies, inclusive of requirements of MA Comptroller's Office.

MISCELLANEOUS

- Reviewed and approved fifty-four (54) Section 8(m) Permits.

## LABOR, EMPLOYMENT AND ADMINISTRATIVE

**New Matters**

Three demands for arbitration were filed.

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

**Matters Concluded**

Received a dismissal from the MCAD for lack of probable cause of a charge of discrimination on the basis of disability.

## LITIGATION/TRAC

**New Matters**

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

**Significant Claim Not in Court**

Mark Poli- Personal Injury Claim
Mr. Mark Poli alleges that on December 31, 2012, while walking his dog at or near the entrance gate to the Nut Island facility, he slipped and fell on ice, and sustained serious injuries, including a leg fracture. Mr. Poli's claimed damages include medical expenses, permanent scarring, lost wages, and pain and suffering. A settlement demand was made in October 2013, and MWRA denied liability.

**Significant Developments**

Western Surety Company, as Assignee and Subrogee of Interstate Engineering Corp. v. MWRA
In Western Surety Company, as Assignee and Subrogee of Interstate Engineering Corp. v. MWRA, plaintiff's Motion to Enforce Settlement Agreement was denied by the court on June 30, 2015.

**(**Former Employee**)** v. United Elevator: Obtained Board approval of settlement of MWRA workers' compensation lien upon plaintiff's settlement funds.

**Significant Matters Concluded**

Dow v. MWRA: This was an action by a general contractor for alleged breach of contract and quantum meruit damages against MWRA under MWRA Contract No. 6394. Plaintiff alleged that it furnished additional work ordered by MWRA totaling $488,723.49. On December 18, 2014, the Superior Court issued a decision on the parties' Summary Judgment Motions. The Court granted the plaintiff Summary Judgment ($374,102.94) on its first claim for reimbursement of police detail costs. The Superior Court granted summary judgment for MWRA on Plaintiff's second and third claims for the failure to perfect them in accordance with the contract documents. Both parties appealed and the matter was resolved by MWRA's Board-approved payment to Dow of $355,000.

**Subpoenas**

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

**Public Records**

During the Fourth Quarter of FY 2015 seven public records requests were received and four public records requests were closed.

**SUMMARY OF PENDING LITIGATION MATTERS**

| TYPE OF CASE/MATTER | As of Jun 2015 | As of Mar 2015 | As of Dec 2014 |
|---|---|---|---|
| Construction/Contract/Bid Protest (other than BHP) | 3 | 4 | 4 |
| Tort/Labor/Employment | 3 | 3 | 5 |
| Environmental/Regulatory/Other | 1 | 1 | 1 |
| Eminent Domain/Real Estate | 0 | 0 | 0 |
| **total – all defensive cases** | **7** | **8** | **10** |
| Affirmative cases not in suit: | 0 | 0 | 0 |
| Other Litigation matters (restraining orders, etc.)<br>MWRA v. Thomas Mercer | 1 | 1 | 1 |
| **total – all pending lawsuits** | **8** | **9** | **11** |
| Significant claims not in suit:<br>Deer Island Submarine Power Cable<br>Braiani, Agostinho<br>Rosa, Antonio<br>Gonzalez, Dora<br>Poli, Mark<br>(Former Employee) v. United Elevator | 6 | 4 | 4 |
| Bankruptcy | 1 | 1 | 1 |
| Wage Garnishment | 15 | 15 | 15 |
| TRAC/Adjudicatory Appeals | 1 | 1 | 1 |
| Subpoenas | 0 | 0 | 0 |
| **TOTAL – ALL LITIGATION MATTERS** | **31** | **30** | **32** |

## TRAC/MISC.

**New Appeals** There were no new TRAC appeals received in the 4th Quarter FY 2015.

**Settlement by Agreement of Parties** No cases were settled by Agreement of Parties in the 4th Quarter FY 2015.

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

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

**Tentative Decisions** No Tentative Decisions were issued in the 4th Quarter FY 2015.

**Final Decisions** No Final Decisions were issued during the 4th Quarter FY 2015.

# INTERNAL AUDIT AND CONTRACT AUDIT PROGRAM

4th Quarter FY15

## Highlights

A report was issued on Unmatched Receipts and Accruals. Purchase orders receipt accruals are established when an item or service is received. In the normal course of business, these accruals are cleared once an invoice is received and paid. In Lawson, the Received not Invoiced (RNI) report (PO135) reflects the quantity and dollar value of purchase order line items not yet matched to an invoice. Many line items are errors or are invalid entries and do not represent a true liability of the Authority. A number of recommendations were made to improve the process and reduce the number of line items:

- Establish time limit to resolve RNI line items
- Archive present backlog of RNI line items beyond a certain time period
- Modify and distribute receiving adjustment log report
- Conduct a training course for receivers

## Status of Open Audit Recommendations (5 recommendations closed in the 4th 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 |
|---|---|---|
| DITP Data Center Physical Security Controls (10/14/11) | 2 | 20 |
| Physical Security at the Chelsea Facility (12/31/12) | 2 | 30 |
| 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) | 4 | 6 |
| Bay State Fertilizer Follow-Up (9/30/14) | 1 | 4 |
| Expanded Affirmative Action Requirements (9/30/14) | 1 | 15 |
| 8(m) Permit Fee (11/17/14) | 2 | 4 |
| Records Management (12/5/14) | 7 | 1 |
| AVL Tracking System, Contract A586 (4/22/15) | 4 | 1 |
| Unmatched Receipts and Accruals (6/30/15) | 9 | 3 |
| **Total Recommendations** | **45** | **124** |

## Audit Savings

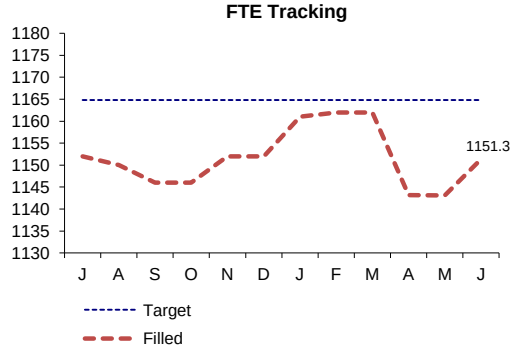
The Internal Audit Department's target is to achieve at least $1 million in cost savings each year. Cost savings vary each year based upon many factors. In some cases, cost savings for one year may be the result of work in prior years.

| Savings | FY11 | FY12 | FY13 | FY14 | FY15 (4Q) | TOTAL |
|---|---|---|---|---|---|---|
| Consultants | $520,176 | $259,245 | $587,314 | $294,225 | $87,605 | $1,748,565 |
| Contractors & Vendors | $3,129,538 | $435,760 | $2,153,688 | $415,931 | $1,116,220 | $7,251,137 |
| Internal Audits | $152,478 | $407,350 | $391,083 | $923,370 | $543,471 | $2,417,752 |
| Total | $3,802,192 | $1,102,355 | $3,132,085 | $1,633,526 | $1,795,275 | $11,417,454 |

# OTHER MANAGEMENT

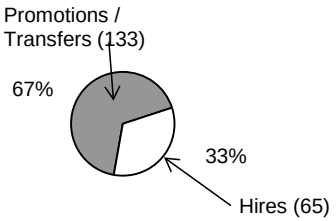
# Workforce Management
4th Quarter FY15

**FTE Tracking**



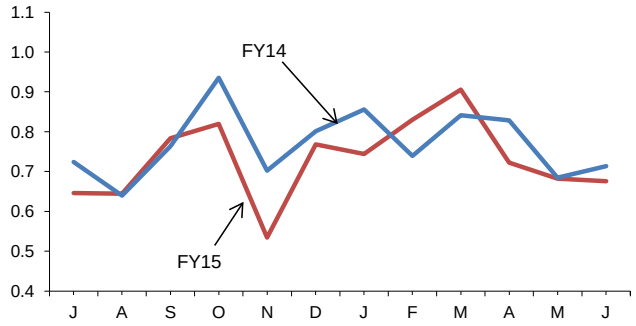

FY15 Target for FTE's = 1164.8
FTE's as of June 2015 = 1151.3

**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 | 133 (67%) | 65 (33%) | 198 |

**Average Monthly Sick Leave Usage**
Per Employee



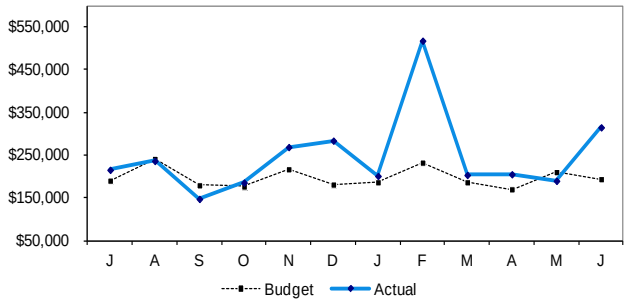

Average monthly sick leave for the 4th Quarter of FY15 decreased as compared to the 4th Quarter of FY14 (9.23 to 8.32 days)

In Q4 of FY15, the average quarterly sick leave usage has decreased 9.86% from the same time last year.

| | Number of Employees | YTD | Annualized Total | Annual FMLA % | FY14 |
|---|---|---|---|---|---|
| A&F | 179 | 9.61 | 9.61 | 26.6% | 10.18 |
| Aff. Action | 5 | 16.89 | 16.89 | 55.2% | 11.78 |
| Executive | 6 | 7.20 | 7.20 | 53.9% | 4.37 |
| Int. Audit | 7 | 5.56 | 5.56 | 4.3% | 7.46 |
| Law | 15 | 11.30 | 11.30 | 13.1% | 10.35 |
| OEP | 5 | 13.28 | 13.28 | 37.4% | 16.14 |
| Operations | 941 | 8.53 | 8.53 | 21.0% | 8.98 |
| Pub. Affs. | 14 | 7.26 | 7.26 | 13.7% | 12.21 |
| **MWRA Avg** | **1172** | **8.76** | **8.76** | **22.8%** | **9.23** |

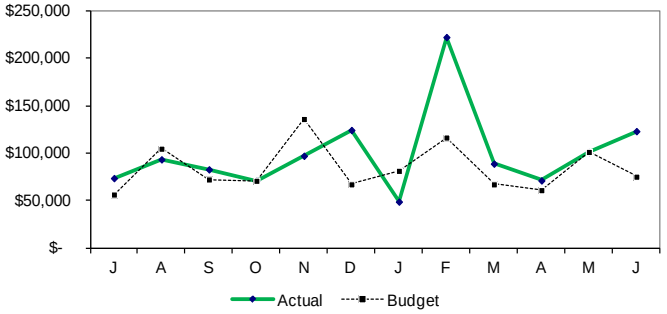
Percent of sick leave usage for FY15, attributable to Family and Medical Leave Act (FMLA) is 22.8% .

**Field Operations**
**Current Quarter Overtime $**




Total overtime for Field Operations for the Fourth Quarter of FY15 was $710,401 which is $136k over budget. Emergency overtime was $282k, which was ($3k) under budget mainly due a relatively dry quarter. Coverage overtime was $165k, which was $21k over budget, reflecting the month's shift coverage requirements. Planned overtime was $263k or $181k over budget, mainly for maintenance off hours work - $97k, and planned operations, $61k, $34k of which was for trial shutdowns in support of the North Main Pump Station rehab project. YTD, Field Operations has spent $2,971,525 on overtime which is $606k over budget.

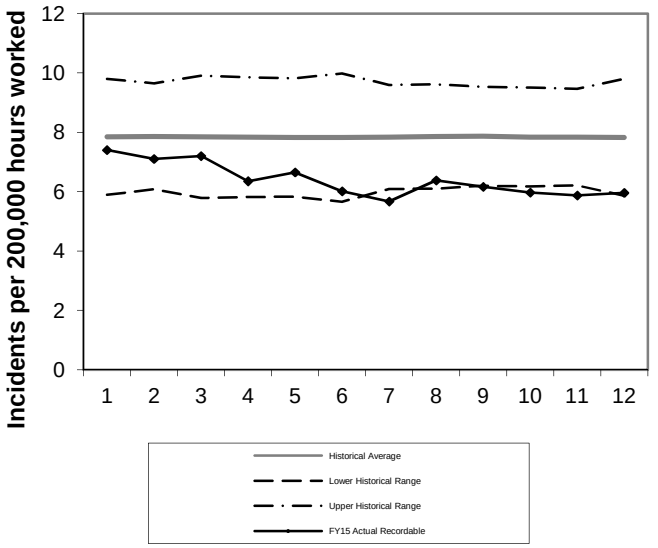
**Deer Island Treatment Plant**
**Current Quarter Overtime $**



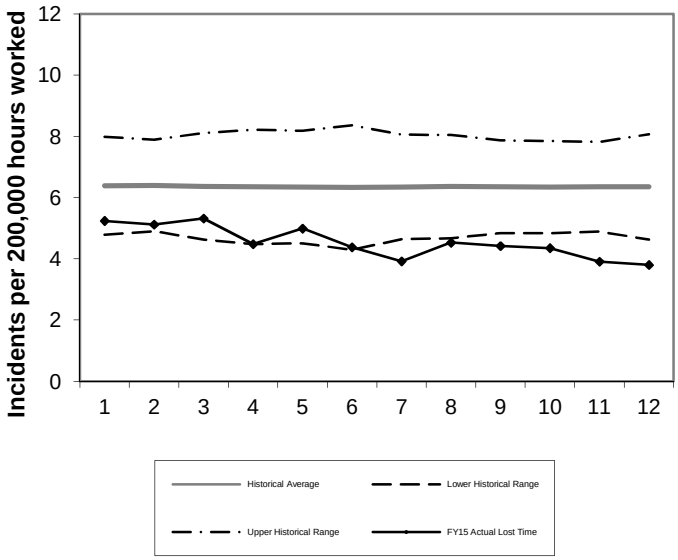

Total overtime for Deer Island for the Fourth Quarter of FY15 was $296,084, which is $58k or 24.4% over budget. The variance is primarily due higher planned/unplanned maintenance overtime due to repair of critical systems and equipment and for trial shutdowns in support of the North Main Pump Station rehab project , $101k, This was partially offset by lower than budgeted wet weather/high plant flow coverage overtime, ($47k). YTD, Deer Island spent $1,200,367 on overtime, which was $189K over budget.

# Workplace Safety
4th Quarter - FY15

**Recordable Injury & Illness Rates**




**Lost Time Injury & Illness Rates**




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 - Fourth Quarter FY15**

| | New | Closed | Open Claims |
|---|---|---|---|
| Lost Time | 1 | 14 | 58 |
| Medical Only | 18 | 22 | 23 |
| Report Only | 15 | 15 | |
| | | | |
| | **New** | | **YTD Light Duty Returns** |
| Light Duty Returns | 1 | | 8 |

**Highlights/Comments:**

**Light Duty Returns**

**April** 1 employee returned to light duty from workers' compensation

**May** 1 employee who is on light duty received a few days of workers' compensation

**June** 1 employee returned to light duty from being on workers' compensation

**Regular Duty Returns**

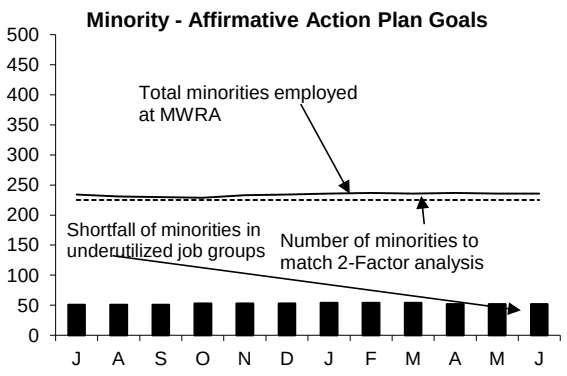
**April** 1 employee returned to full duty from workers' compensation
1 employee returned to full duty from light duty
1 employee returned to full duty for 1 week from light duty, then returned to light duty

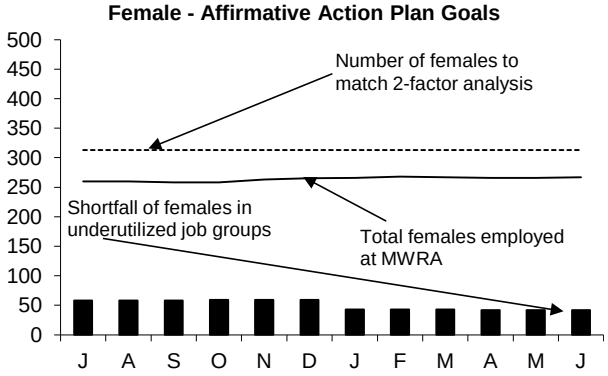
**May** 1 employee returned to full duty from light duty

**June** 2 employees returned to full duty from light duty

# MWRA Job Group Representation

4th Quarter, FY15




**Highlights:**

At the end of Q4 FY15, 11 job groups or a total of 52 positions are underutilized by minorities as compared to 10 job groups or a total of 55 positions at the end of Q4 FY14; for females 11 job groups or a total of 42 positions are underutilized by females as compared to 13 job groups or a total of 63 positions at the end of Q4 FY14. During Q4, 1 minority and 1 female were hired. During this same period, 2 minorities and 2 females terminated.

## Underutilized Job Groups - Workforce Representation

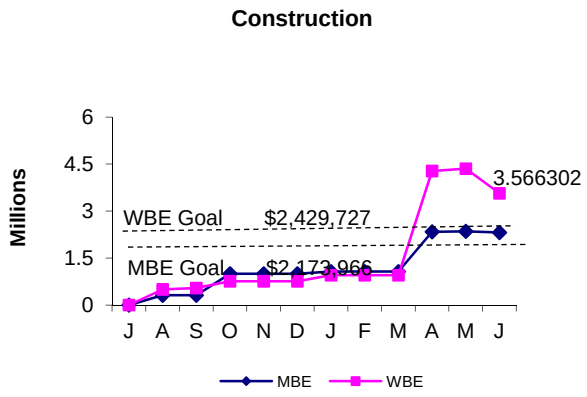
| Job Group | Employees as of 6/30/2015 | Minorities as of 6/30/2015 | Achievement Level | Minority Over or Under Underutilized | Females As of 6/30/2015 | Achievement Level | Female Over or Under Underutilized |
|---|---|---|---|---|---|---|---|
| Administrator A | 21 | 2 | 3 | -1 | 6 | 7 | -1 |
| Administrator B | 19 | 0 | 5 | -5 | 1 | 3 | -2 |
| Clerical A | 41 | 16 | 6 | 10 | 35 | 37 | -2 |
| Clerical B | 34 | 8 | 9 | -1 | 13 | 15 | -2 |
| Engineer A | 80 | 18 | 21 | -3 | 14 | 33 | -19 |
| Engineer B | 56 | 16 | 11 | 5 | 10 | 12 | -2 |
| Craft A | 111 | 13 | 21 | -8 | 0 | 5 | -5 |
| Craft B | 149 | 31 | 36 | -5 | 3 | 6 | -3 |
| Laborer | 68 | 21 | 16 | 5 | 2 | 3 | -1 |
| Management A | 102 | 14 | 23 | -9 | 36 | 20 | 16 |
| Management B | 44 | 7 | 11 | -4 | 10 | 6 | 4 |
| Operator A | 67 | 5 | 8 | -3 | 1 | 5 | -4 |
| Operator B | 68 | 9 | 19 | -10 | 4 | 3 | 1 |
| Para Professional | 56 | 14 | 8 | 6 | 26 | 20 | 6 |
| Professional A | 33 | 4 | 7 | -3 | 21 | 14 | 7 |
| Professional B | 162 | 42 | 36 | 6 | 78 | 69 | 9 |
| Technical A | 54 | 15 | 10 | 5 | 5 | 6 | -1 |
| Technical B | 7 | 1 | 1 | 0 | 1 | 0 | 1 |
| | | | | | | | |
| **Total** | **1172** | **236** | **251** | **37/-52** | **266** | **264** | **44/-42** |

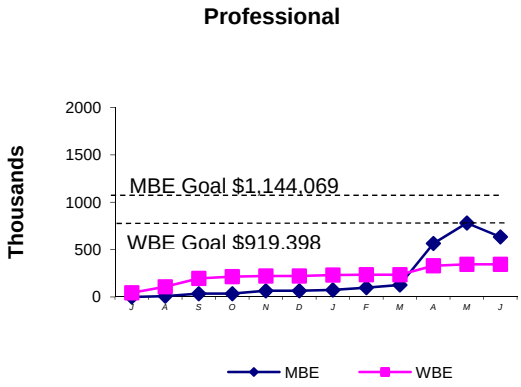
## AACU Candidate Referrals for Underutilized Positions

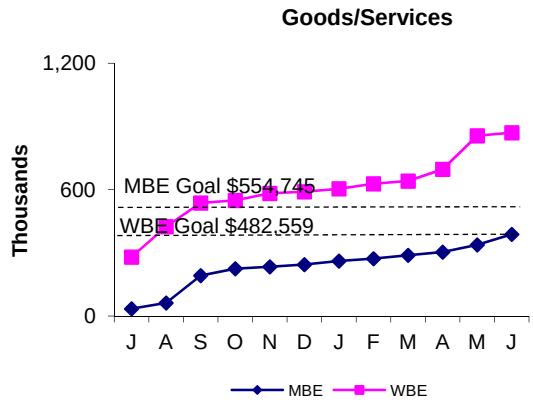
| Job Group | Title | # of Vac | Requisition Int. / Ext. | Promotions /Transfers | AACU Ref. External | Position Status |
|---|---|---|---|---|---|---|
| Craft A | Jr. Instrument Technician | 1 | Int/Ext | 1 | 0 | Promo = WM |
| Craft A | WDS General Foreman Valves | 1 | Int | 1 | 0 | Promo = WM |
| Clerical A | Administrative Coordinator | 1 | Int | 0 | 0 | Rehire = WF |
| Clerical B | Mesenger/Courier | 2 | Int/Ext | 0 | 0 | NH = BF & WM |
| Engineer A | Assets Manager | 1 | Int/Ext | 1 | 0 | Promo = WM |
| Engineer B | Technical Assistant | 1 | Int | 1 | 0 | Promo = WF |
| Laborers | Building & Grounds Worker | 2 | Int/Ext | 0 | 0 | (2) NH = WM |
| Laborers | OMC Laborer | 7 | Int/Ext | 0 | 2 | (7) NH = WM |
| Management A | Prog Manager, Trades | 1 | Int | 1 | 0 | Promo = WM |
| Management A | Payroll Manager | 1 | Int | 1 | 0 | Promo = AF |
| Management A | Senior Program Manager | 1 | Int | 0 | 0 | NH = WM |
| Management B | Area Manager, Electrical | 1 | Int | 1 | 0 | Promo = WM |
| Operator A | Transmission & Treatment Oprtr | 1 | Int/Ext | 1 | 0 | Promo = WM |
| Operator A | Area Supervisor | 1 | Int | 1 | 0 | Promo = WM |
| Operator B | Operator | 3 | Int | 3 | 0 | WM |
| Professional A | Assit. Manager, Worker's Comp | 1 | Int | 0 | 0 | In Progress |
| Professional A | Laboratory Supervisor I | 1 | Int | 1 | 0 | Promo = WM |
| Professional B | Senior Financial Analyst | 1 | Int | 1 | 0 | Promo = AM |
| Professional B | IT Asset & Configuration Mngr | 1 | Int | 1 | 0 | Promo = HF |
| Professional B | Deputy Payroll Manager | 1 | Int | 1 | 0 | Promo = WF |
| Professional B | Environmental Scientist | 1 | Int | 1 | 0 | Promo = WF |
| Technical A | Sr. Instrument Technician | 1 | Int | 1 | 0 | Promo = WM |
| Technical A | Sr. Fields Service Technicnian | 1 | In/Ext | 0 | 0 | NH = WM |

# MBE/WBE Expenditures
4th Quarter FY15

**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 June.




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 | 2,314,979 | 106.5% | 1,053,966 | 25.5% | 3,566,302 | 146.8% | 3,407,380 | 165.9% |
| Professional Svc. | 633,926 | 55.4% | 584,242 | 44.5% | 345,476 | 37.6% | 457,558 | 43.4% |
| Goods & Svcs. | 387,847 | 69.9% | 359,270 | 45.8% | 870,175 | 180.3% | 966,425 | 141.6% |
| Total | 3,336,752 | 86.2% | 1,997,478 | 32.1% | 4,781,953 | 124.8% | 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
## 4th Quarter- FY15

| | June 2015 Year-to-Date | | | | | |
|---|---|---|---|---|---|---|
| | Period 12 YTD Budget | Period 12 YTD Actual | Period 12 YTD Variance | % | FY15 Approved | % Expended |
| **EXPENSES** | | | | | | |
| WAGES AND SALARIES | $ 96,554,749 | $ 94,350,655 | $ (2,204,094) | -2.3% | $ 96,554,749 | 97.7% |
| OVERTIME | 3,620,600 | 4,521,867 | 901,267 | 24.9% | 3,620,600 | 124.9% |
| FRINGE BENEFITS | 18,299,405 | 18,325,579 | 26,174 | 0.1% | 18,299,405 | 100.1% |
| WORKERS' COMPENSATION | 2,200,000 | 2,307,123 | 107,123 | 4.9% | 2,200,000 | 104.9% |
| CHEMICALS | 10,219,580 | 9,749,142 | (470,438) | -4.6% | 10,219,580 | 95.4% |
| ENERGY AND UTILITIES | 23,472,354 | 21,073,529 | (2,398,825) | -10.2% | 23,472,354 | 89.8% |
| MAINTENANCE | 27,972,607 | 28,322,686 | 350,079 | 1.3% | 27,972,607 | 101.3% |
| TRAINING AND MEETINGS | 361,019 | 369,657 | 8,638 | 2.4% | 361,019 | 102.4% |
| PROFESSIONAL SERVICES | 5,957,201 | 4,950,866 | (1,006,335) | -16.9% | 5,957,201 | 83.1% |
| OTHER MATERIALS | 5,952,729 | 6,060,042 | 107,313 | 1.8% | 5,952,729 | 101.8% |
| OTHER SERVICES | 22,538,498 | 22,378,137 | (160,361) | -0.7% | 22,538,498 | 99.3% |
| **TOTAL DIRECT EXPENSES** | **$ 217,148,742** | **$ 212,409,283** | **$ (4,739,457)** | **-2.2%** | **$ 217,148,742** | **97.8%** |
| INSURANCE | $ 2,128,155 | $ 2,161,628 | $ 33,473 | 1.6% | $ 2,128,155 | 101.6% |
| WATERSHED/PILOT | 27,466,790 | 27,167,900 | (298,890) | -1.1% | 27,466,790 | 98.9% |
| BECo PAYMENT | 3,198,174 | 2,690,025 | (508,149) | -15.9% | 3,198,174 | 84.1% |
| MITIGATION | 1,605,967 | 1,459,902 | (146,065) | -9.1% | 1,605,967 | 90.9% |
| ADDITIONS TO RESERVES | 482,953 | 482,953 | - | 0.0% | 482,953 | 100.0% |
| RETIREMENT FUND | 12,629,475 | 12,645,475 | 16,000 | 0.1% | 12,629,475 | 100.1% |
| **TOTAL INDIRECT EXPENSES** | **$ 47,511,514** | **$ 46,607,883** | **$ (903,631)** | **-1.9%** | **$ 47,511,514** | **98.1%** |
| STATE REVOLVING FUND | $ 78,460,635 | $ 75,066,883 | $ (3,393,752) | -4.3% | $ 78,460,635 | 95.7% |
| SENIOR DEBT | 220,835,626 | 240,678,003 | 19,842,377 | 9.0% | 220,835,626 | 109.0% |
| CORD FUND | 876,506 | 730,421 | (146,085) | -16.7% | 876,506 | 83.3% |
| DEBT SERVICE ASSISTANCE | (853,660) | (853,660) | - | 0.0% | (853,660) | 100.0% |
| CURRENT REVENUE/CAPITAL | 10,200,000 | 10,200,000 | - | 0.0% | 10,200,000 | 100.0% |
| SUBORDINATE MWRA DEBT | 99,686,106 | 99,686,106 | - | 0.0% | 99,686,106 | 100.0% |
| LOCAL WATER PIPELINE CP | 4,148,453 | 263,758 | (3,884,695) | -93.6% | 4,148,453 | 6.4% |
| CAPITAL LEASE | 3,217,060 | 3,217,060 | - | 0.0% | 3,217,060 | 100.0% |
| VARIABLE DEBT | - | (13,016,491) | (13,016,491) | --- | - | 0.0% |
| BOND REDEMPTION SAVINGS | (6,745,598) | (6,745,598) | - | 0.0% | (6,745,598) | 100.0% |
| DEFEASANCE ACCOUNT | - | - | - | --- | - | --- |
| **TOTAL DEBT SERVICE** | **$ 409,825,128** | **$ 409,226,482** | **$ (598,646)** | **-0.1%** | **$ 409,825,128** | **99.9%** |
| **TOTAL EXPENSES** | **$ 674,485,384** | **$ 668,243,648** | **$ (6,241,734)** | **-0.9%** | **$ 674,485,384** | **99.1%** |
| **REVENUE & INCOME** | | | | | | |
| RATE REVENUE | $ 650,315,784 | $ 650,315,784 | $ - | 0.0% | $ 650,315,784 | 100.0% |
| OTHER USER CHARGES | 8,259,693 | 8,274,428 | 14,735 | 0.2% | 8,259,693 | 100.2% |
| OTHER REVENUE | 6,180,450 | 10,014,309 | 3,833,859 | 62.0% | 6,180,450 | 162.0% |
| RATE STABILIZATION | - | - | - | --- | - | --- |
| INVESTMENT INCOME | 9,729,457 | 9,688,997 | (40,460) | -0.4% | 9,729,457 | 99.6% |
| **TOTAL REVENUE & INCOME** | **$ 674,485,384** | **$ 678,293,518** | **$ 3,808,133** | **0.6%** | **$ 674,485,384** | **100.6%** |

As of June 2015, total expenses were $668.2 million, $6.2 million or 0.9% lower than budget and total revenue was $677.6 million, $3.2 million or 0.5% higher than budget, for a net positive variance of $9.4 million.

**Expenses –**

**Direct Expenses** are $212.4 million, $4.7 million or 2.2% lower than budget.

- **Utilities** are underspent by $2.4 million or 10.2% due to lower Electricity of $1.4 million mainly due to lower commodity, transmission, and distribution costs and lower flows which resulted in less pumping demand at Deer Island, Diesel Fuel of $921k mainly due to lower pricing at Deer Island and Field Operations, and Water use of $128k.
- **Wages & Salaries** are underspent by $2.2 million or 2.3% due to lower headcount and the salary mix differential between staff retiring at higher rates and new hires coming on board at lower rates. At the end of June, the Full Time Equivalent (FTE) positions were 1,151, 14 positions less than the 1,165 budgeted FTE's. Throughout FY15, the average number of Full Time Equivalents was 1,144, 21 positions fewer than budgeted.
- **Overtime** is overspent by $901k or 24.9% due to higher wet weather events, especially snow removal, North Main Pump Station and Winthrop Terminal Facility Butterfly Valve work, and coverage.
- **Professional Services** are underspent by $1.0 million or 16.9% mainly due to the timing of initiatives such as the Mystic River Modeling project, dam safety work, Harbor Monitoring initiatives, and as-needed engineering for maintenance projects.
- **Chemicals** are underspent by $470k or 4.6% mainly due to lower than budgeted Sodium Bisulfite of $268k and Liquid Oxygen of $166k due to better water quality, Sodium Hypochlorite of $238k due to lower pricing and timing of deliveries, and Nitrazyme of $106k due to Framingham system improvements. Underspending is offset by overspending for Hydrogen Peroxide of $164k due to increased need for pretreatment of hydrogen sulfide gas due to lower flows and Ferric Chloride of $134k due to struvite control.
- **Other Services** are lower than budget by $160k or 0.7% due to lower Grit and Screenings of $105k and Sludge of $75k primarily due to lower quantities, Permit Fees of $90k, Printing of $63k, Other Services of $63k, and Memberships of $55k. Underspending offset by higher Telecommunication expenses of $235k due to security data lines in support of enhanced security system and Space Lease Rentals of $91k for Charlestown Navy Yard carpet and painting upgrades.
- **Maintenance** is over budget by $350k or 1.3%. Materials are overspent by $2.0 million and services are underspent by $1.6 million.
- **Other Materials** are over budget by $107k or 1.8% mainly due to Equipment and Furniture, Vehicle, Work Clothes, and Lab and Testing purchases offset by lower Vehicle Expenses mostly related to lower gasoline pricing

**Indirect Expenses** of $46.6 million are $904k or 1.9% lower than budget mainly due Harbor Electric Energy Company (HEEC) of $508k mainly for lower than planned maintenance projects for the Deer Island cable, Watershed Reimbursement expenses of $299k mainly due to an FY14 overaccrual and lower Payment in Lieu of Taxes (PILOT), and lower Mitigation payments of $146k.

**Debt Service Expenses** totaled $409.2 million, which was $599k lower than budget after the $26.5 million defeasances executed in FY15.

**Revenue and Income –**

**Total Revenue / Income** for June is $678.3 million, $3.8 million or 0.6% higher than budget. Higher non-rate Revenue of $3.2 million is comprised of $2.1 million for prior period adjustments for Watershed expenses, MDC Radio's, and miscellaneous professional services, $648k for energy rebates, $425k for the sale of emergency water for the Town of Hudson, $372k payment received for the sale of the Fox Point CSO Facility, $118k for Harbor Electric Energy Company (HEEC) 2014 true-up, $117k for higher permit, monitoring, and penalty fees, and a variety of other smaller items.

# Cost of Debt
## 4th 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.

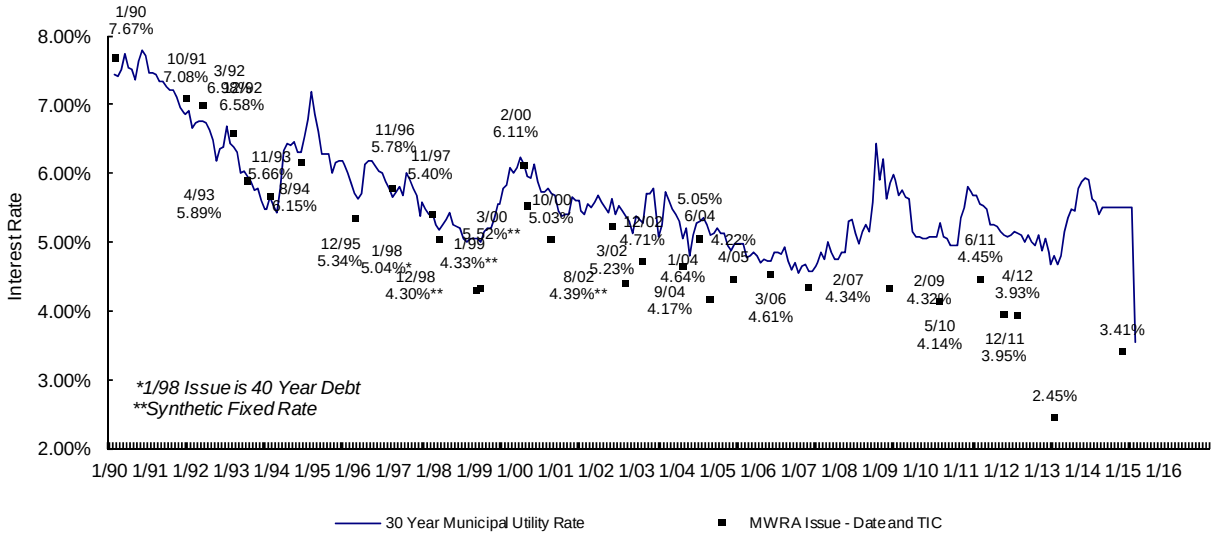
**Average Cost of MWRA Debt**

| | |
|---|---|
| Fixed Debt ($3,927) | 4.25% |
| Variable Debt ($484.2) | 0.63% |
| SRF Debt ($1,037) | 1.30% |
| | |
| Weighted Average Debt Cost ($5,449) | 3.36% |

**Most Recent Senior Fixed Debt Issue**
**November 2014**

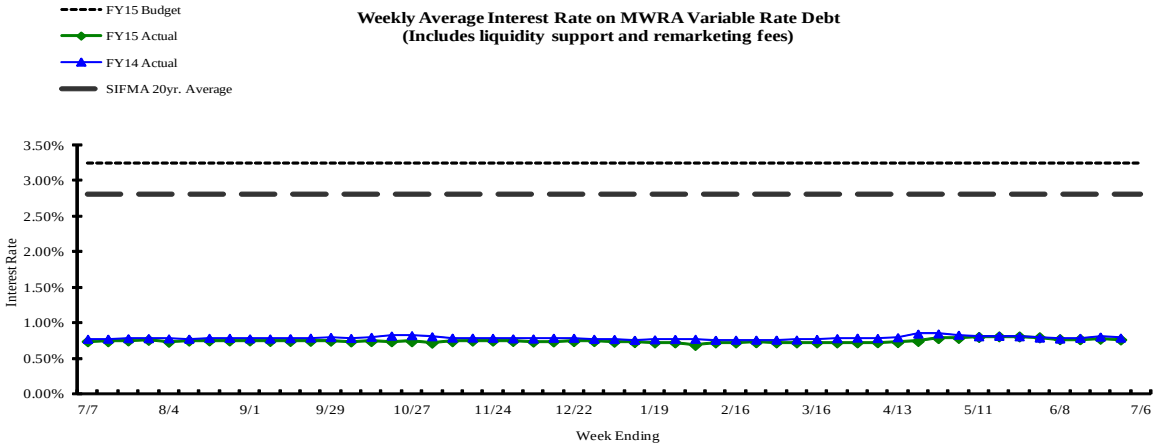
| | |
|---|---|
| 2014 Series D-F ($243.9) | 3.41% |

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




## Weekly Average variable Interest Rates vs. Budget

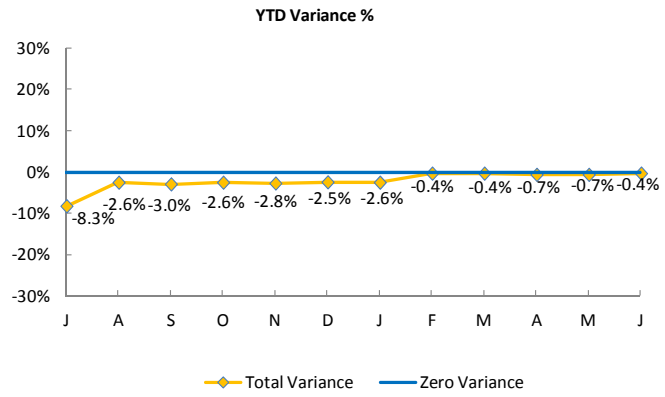
MWRA currently has ten variable rate debt issues with $1.0 billion outstanding, excluding commercial paper. Of the ten outstanding series, five have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In May, SIFMA rates fluctuated with a high of 0.11% and a low of 0.10%. MWRA's issuance of variable rate debt, although consistently less expensive in recent years, results in exposure to additional interest rate risk as compared to fixed rate debt.



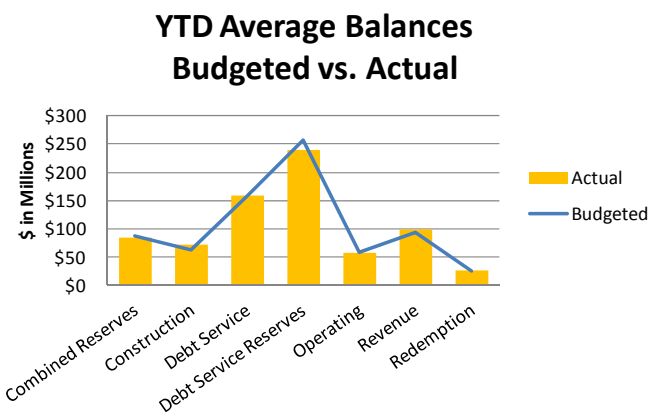
# Investment Income

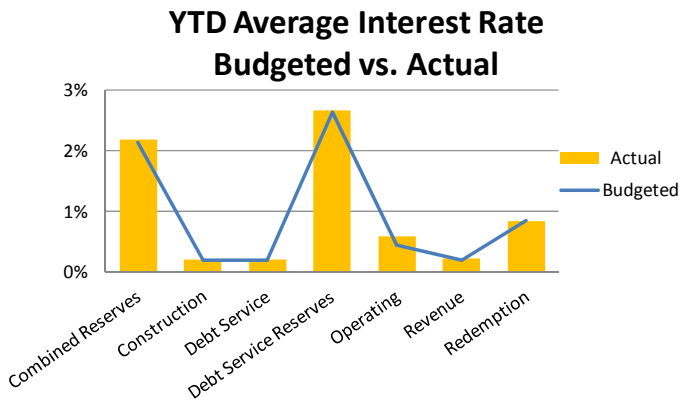
4th Quarter – FY15

## Year To Date




| | YTD BUDGET VARIANCE ($000) | | | |
|---|---|---|---|---|
| | BALANCES IMPACT | RATES IMPACT | TOTAL | % |
| Combined Reserves | ($56) | $45 | (10) | -0.6% |
| Construction | $21 | ($1) | 20 | 15.6% |
| Debt Service | $4 | $4 | 8 | 2.6% |
| Debt Service Reserves | ($206) | $32 | (174) | -2.6% |
| Operating | $1 | $78 | 79 | 30.4% |
| Revenue | $34 | $5 | 39 | 20.8% |
| Redemption | $0 | ($2) | (2) | -0.8% |
| Total Variance | ($201) | $161 | ($40) | -0.4% |




## Monthly