



# MASSACHUSETTS WATER RESOURCES AUTHORITY

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## **ADMINISTRATION, FINANCE & AUDIT COMMITTEE MEETING**

*Chair:* J. Barrera  
*Vice-Chair:* H. Vitale  
*Committee Members:*  
J. Carroll  
K. Cotter  
J. Foti  
A. Pappastergion  
B. Swett  
J. Walsh

to be held on

Wednesday, September 17, 2014

Location: 100 First Avenue, 2nd Floor  
Charlestown Navy Yard  
Boston, MA 02129

Time: 10:00 a.m.

### **AGENDA**

#### **A. Information**

1. Internal Audit Department Activities Report
2. Fourth Quarter FY14 Orange Notebook
3. Delegated Authority Report – July and August 2014
4. FY2014 Year-End Financial Update and Summary
5. FY2014 Year-End Capital Improvement Program Spending Report

#### **B. Approvals**

1. Approval of the Sixty-Eighth Supplemental Resolution


#### **C. Contract Award**

1. eDiscovery Technical Consulting Services: PeopleSERVE PRS, Inc., WRA-3869Q, State Blanket Contract ITS53 Cat2b

#### **D. Contract Amendments/Change Orders**

1. Dental Insurance: Delta Dental of Massachusetts, Contract A591, Amendment 1


## STAFF SUMMARY

TO: Board of Directors  
FROM: Frederick A. Laskey, Executive Director   
DATE: September 17, 2014  
SUBJECT: Internal Audit Department Activities Report

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COMMITTEE: Administration, Finance & Audit

INFORMATION  
 VOTE

John A. Mahoney, Director, Internal Audit   
Preparer/Title

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### RECOMMENDATION:

For information only. Internal Audit annually presents to the Board the results of completed assignments and the objectives and status of active and planned assignments. Every quarter, Internal Audit utilizes the Orange Notebook to briefly discuss recently issued reports and to report on the status of open audit recommendations and cost savings. This staff summary includes a discussion of activities since Internal Audit's last report to the Board in September 2013.

### DISCUSSION:

In FY14, a total dollar impact of over \$1.5 million was recognized from 33 assignments, including internal audits, management advisory services, consultant incurred cost audits, consultant preliminary reviews, construction labor burden reviews, the true-up of HEEC 2013 billings, the verification of revenue reported by the operator of the Fore River Railroad, the review of W. B. Mason vendor billings, a financial review of NEFCO, the operator of the Pellet Plant, and a review of the MBE/WBE program.

Internal Audit's goal is to provide sufficient audit coverage to give reasonable assurance that internal management controls are functioning as intended and that only reasonable, allowable and allocable costs are paid to consultants, contractors and vendors. Audit coverage is provided through performance audits that analyze and evaluate MWRA programs and activities to determine if they are being carried out effectively and efficiently, compliance audits that focus on adherence to MWRA policies and procedures, contractual requirements, rules or regulations and management advisory services.

The development of the annual Work Plan assignments is based on Internal Audit's risk assessment of programs and management controls, and input from the Advisory Board and senior managers across the MWRA. The actual scheduling and completion of audit assignments is dependent on staff availability which can be impacted by control issues needing immediate attention, or by unscheduled special requests for management advisory services.

Attachment 1 lists assignments completed since IA's last report to the Board, assignments currently in process and additional assignments planned to commence in FY15.

## **INTERNAL AUDITS and MANAGEMENT ADVISORY SERVICES**

### FLEET SERVICES FOLLOW-UP

The purpose of this review was to follow-up on the progress made by Fleet Services in implementing the recommendations made by Internal Audit in its January 2012 Fleet Services Activities report.

Fleet Services has made substantial progress addressing many of the deficiencies noted in the report. Specifically, Fleet Services is utilizing Maximo to automatically generate preventative maintenance work orders, is now including work order numbers and vehicle plate on most non-stock documentation and is capturing the actual hours spent by mechanics to complete a work order. The recommendations that remain open are primarily focused on addressing the Lawson/Maximo interface and adhering to the manufacturers' recommended maintenance schedules.

#### **Management Response**

The Fleet Services Planning/Scheduling Coordinator is developing Job Plan Reports that adhere to the maintenance requirements recommended by the manufacturer and MIS has committed to addressing the Lawson/Maximo interface with the next version of Maximo (7.5).

### DEPARTMENT OF LABORATORY SERVICES QUALITY ASSURANCE PROGRAM

At the request of the Chief Operating Officer (COO), Internal Audit conducted a management system review of the Quality Assurance (QA) Program established by the Department of Laboratory Services (DLS). IA did not perform a technical systems review of equipment maintenance, sampling and analyst procedures requiring technical scientific knowledge.

The DLS QA program is well documented. It contains the elements recommended by the Environmental Protection Agency (EPA). The QA Plan, Standard Operating Procedures and other procedural documents are available on-line.

Recommendations were made to update the Ethics Statement in the QA Plan to include EPA suggested language and to post the statement in conspicuous places, to develop a report that would assist the DLS managers in the re-certification of staff by identifying the number of tests each analyst performed over the past year, to increase the frequency of rolling audits and to have supervisors perform "methods and procedures" audits of each assigned analyst biannually.

#### **Management Response**

The DLS agreed with the recommendations.

## AACU MBE AND WBE GOAL SETTING AND REPORTING

At the request of the Affirmative Action and Compliance Unit (AACU), Internal Audit conducted a review of the methodology used to set and report on MBE/WBE contracting goals for construction, professional services and goods and other services.

IA staff found that the MWRA's FY14 goals for construction, professional services and goods and services are based on a 10 year old availability study that may no longer be relevant. MBE/WBE expenditures reported in the Orange and Yellow notebooks (ONB/YNB) were found to have been both over and under reported.

Recommendations were made to consider adopting the Department of Environmental Protection's (DEP's) disadvantaged DMBE/DWBE goals for construction and professional services, for which the DEP has EPA approval to use through October 1, 2016, to develop procedures to accurately capture MBE/WBE expenditures and to include more explanatory information on the ONB/YNB page.

### **Management Response**

The AACU agreed with the recommendations. Procedures are being implemented to accurately capture and report expenditures.

## REVIEW OF WSCAC and WAC

Internal Audit performed reviews of the Water Supply Citizens Advisory Committee (WSCAC) and Wastewater Advisory Committee (WAC) to determine if expenses reimbursed by the MWRA in FY13 were supported by each organization's financial records.

The WSCAC agreement authorized \$96,430 of expenses of which \$94,005 was spent. WSCAC complied with the provisions of the agreement and no costs were questioned.

The WAC agreement authorized \$58,500 of expenses of which \$49,472 was spent. The review found adjustments were needed for payroll, payroll taxes and health insurance premiums. After the adjustments an additional \$1,193.80 was due WAC with spending totaling \$50,666. The review also found that there was a general lack of funds in the WAC bank account impacting its ability to pay bills timely. In part, this was caused because the MWRA was reimbursing rather than advancing WAC funds for its expenses.

### **Management Response**

To improve WAC's ability to pay bills timely the MWRA is now advancing funds to WAC monthly with a true-up at the end of the fiscal year.

## CSO FINANCIAL ASSISTANCE AGREEMENTS

The Boston Water and Sewer Commission (BWSC), City of Cambridge and Town of Brookline have entered into Memoranda of Understanding and Financial Assistance Agreements with the MWRA to fund CSO projects required by the Federal Court Order in the Boston Harbor Case.

Internal Audit conducts periodic reviews to validate that the payments to these entities are deposited in the respective accounts from which withdrawals may be made for eligible design and construction costs and staff time (force account charges).

In FY14 a true-up of BWSC 2013 payments identified \$79,508 in avoided costs.

## OTHER MANAGEMENT ADVISORY SERVICES

Annually, management advisory services include calculating MWRA's fringe and indirect cost rates, verifying unemployment benefit calculations, and providing support and review services to the Fore River Railroad Corporation (FRRC).

In FY14 numerous other management advisory services were also performed. Staff reviewed DITP shift change procedures and DITP electricity rates, surveyed a construction field office to verify compliance with the Resident Engineer's Manual, resolved unsupported charges billed by the Department of Unemployment Assistance, provided financial analyses services in support of the HEEC cable negotiations and the NEFCo (pellet plant) contract extension, reviewed the Bay State Fertilizer program, and performed numerous vendor financial capability reviews and analyses in support of Procurement (bidders and contract assignments/extensions), Law (TRAC fine) and Risk Management (insurance requirements).

In FY 2014, the annual savings resulting from the lease of the engine house to the FRRC, cancellation of the prior year Chelsea and Deer Island janitorial contracts and other advisory services totaled \$274,714.

## **ASSIGNMENTS IN PROGRESS**

### AACU IMPLEMENTATION OF EXPANDED AFFIRMATIVE ACTION REQUIREMENTS

At the request of the Affirmative Action and Compliance Unit (AACU), Internal Audit conducted a review of the new regulations requiring government contractors to undertake greater efforts to employ veterans and individuals with disabilities. The regulations implement the Vietnam Era Veterans' Readjustment and Assistance Act (VEVRAA) and Section 503 of the Rehabilitation Act of 1973.

Some of the requirements were effective on March 24, 2014 while others should be completed by the start of the new Affirmative Action Plan (January 2015). Some of the more notable revisions are:

- Establishment of a 7% utilization goal for the percentage of individuals with disabilities, and 8% benchmark for the percentage of qualified veterans that should be employed in the workforce
- Encouraging job applicants and new hires to self-identify as an individual with disabilities and/or qualified veterans
- Conducting a self-identification survey of all current employees regarding disability and veteran status
- Including a revised Equal Opportunity clause in contracts that address the disabled and protected veterans
- Assessing, improving and documenting the effectiveness of outreach and recruitment efforts

## RECORDS MANAGEMENT

In conjunction with an initiative by the Librarian/Records Manager to update departmental active record filing schemes, and to identify vital records, IA staff participated in several DRO/DRM training sessions presented by the Librarian/Records Manager. Departments then submitted active and vital record filing schemes to both the Librarian/Records Manager and IA.

Subsequently, IA opened a general review of records management across the Authority. IA staff met with the Librarian/Records Manager and various members of MIS staff. IA staff visited the Records Center in Marlborough MA and talked to staff on Deer Island responsible for the Boston Harbor Project files. Statistical information is being gathered on the current inventory of boxes at the Records Center.

## UNMATCHED RECEIPTS AND ACCRUALS

Internal Audit is conducting an audit of unmatched receipts and accruals on the MWRA's books. Purchase order 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.

The receiving process, however, is not error free and relies on the accuracy of receipt and purchase order data. Items that have been entered in the accounting system as received but are never invoiced by a vendor create liabilities that may not actually exist.

The purpose of the review is to determine the validity of these receipts, and if found not valid, to reverse the accruals, identify the reasons why they were recorded as received, and improve internal controls in the process.

## **CONTRACT AUDITS AND RELATED REVIEWS**

In FY14, a dollar impact of \$542,731 was recognized from the following contract audit assignments.

## CONSULTANT INCURRED COST AUDITS

Incurred cost audits determine if billed labor costs are supported by the consultant's time reports and project cost records, if other direct costs are supported by valid payments, if final indirect costs have been calculated in accordance with the contract, and that final rates have been properly applied to labor billings. The extent of fieldwork required to complete an assignment is based on a risk assessment that starts with an invoice analysis and a review of a consultant's annual cost disclosure submittals, and may include fieldwork conducted at the consultant's offices, or be limited to a desk review to verify that costs billed were supported.

In FY14, ten incurred cost assignments were completed. A total of \$144,201 was recovered and \$6,118 in billings was avoided.

## CONSULTANT PRELIMINARY REVIEWS

Internal Audit reviews and accepts provisional indirect cost rates proposed by consultants for billing both new and active contracts. If a new contract has been awarded, Internal Audit will review the supporting documentation for proposed direct labor, indirect costs, and other direct costs, and notify Procurement and the project manager of any issues, including any unsupported proposed costs that might be available for re-allocation to another cost element. Approved provisional indirect cost rates are reported to project managers and Procurement as a reference source for reviewing invoices and pricing contract amendments.

In FY14, four consultant preliminary reviews were completed. A total of \$143,906 in unsupported proposed costs was identified for potential reallocation.

## CONSTRUCTION LABOR BURDEN REVIEWS

These reviews establish accurate labor burden rates to be used in the pricing of future change orders. Typical adjustments to contractor proposed rates include the application of effective versus statutory FICA, FUTA and SUTA rates, applying appropriate experience modifications and other adjustments to workers compensation rates, and determination of the basis for general liability and bond premium.

In FY14, seven labor burden rate reviews were completed with an estimated \$208,564 in cost savings.

## HARBOR ELECTRIC ENERGY CORPORATION (HEEC) 2013 TRUE-UP

The purpose of this assignment was to verify the capacity and operations and maintenance (O&M) charges billed under the HEEC agreement for CY 2013. The capacity charge uses a complex formula to determine the annual payment for the use of the cross-harbor cable. The major variable cost in the formula is the effective interest rate charged on the net value of the cable after accumulated depreciation. The effective interest rate takes into account the interest

paid on HEEC's bonds less the interest earned on the debt service reserve. The O&M charge includes the labor costs and materials needed to maintain the cable and insurance for the cable.

In FY14, savings of \$39,942 were recognized from earlier negotiated changes to both the gross investment base and effective interest rate calculations used in the capacity charge calculation.

#### LICENSE FEE AND MAINTENANCE OF THE FORE RIVER RAILROAD

The Fore River Transportation Company (FRTC) is the licensed operator of the railroad. This assignment verified that the \$2,203,179 in license fees received from January 2010 through December 2012 agreed to the accounting records of the operator.

The Operator is also responsible for executing an annual maintenance plan. The license provides for the Operator to pay the first \$65,000 in maintenance expenses. If expenses are less than \$65,000, the difference is payable to the Fore River Railroad Corporation (FRRC). If expenses exceed \$65,000, the Operator is reimbursed for the additional costs. The Operator expended \$187,120 on maintenance FY12.

Recommendations were implemented to more closely monitor maintenance activities, including requiring the Operator to prepare a more comprehensive annual maintenance plan, and for the Fore River Railroad Corporation (FRRC) to document the approval of both planned and emergency maintenance projects. Staff will also use a recently completed track inspection report as the basis for annual maintenance plans and ensure that the Operator obtains written quotes for all projects greater than \$5,000.

#### OPERATION AND MAINTENANCE OF THE PELLETIZING PLANT

The New England Fertilizer Company (NEFCo) has operated the Pellet Plant since 2001. The contract expires in December 2015. This assignment reviewed the financial results from operations from January 2010 through December 2012. The results were combined with prior review information to present a comprehensive report on operations since contract inception.



**Status of Internal Audit Assignment FY 14 and FY 15**

<u>COMPLETED</u>	<u>IN PROCESS</u>	<u>PLANNED TO START IN FY15</u>	<u>Requestor</u>
<b>Internal Audit/Management Advisory</b>	<b>Date</b>		
Construction Cost Estimates	Aug-13	Cambridge CSO FAA Eligibility	Tracking Licenses and Certifications
Bay State Fertilizer	Sep-13	Expanded Affirmative Action Requirements	Purchasing Unit
Review of WAC	Nov-13	Records Management	Scheduling and Planning
Review of WSCAC	Nov-13	Unmatched Receipts and Accruals	BWSC FAA 2014
Fleet Services (Follow-Up)	Dec-13		SCADA
MBE/WBE Program	Mar-14		
BWSC FAA 2013	May-14		
Laboratory Services Quality Assurance	Jun-14		
<b>Reviews of Agreements and Contracts</b>			
NEFCO Financial Review	Jul-13		HEEC 2014 True-up
Fore River Transportation Company	Sep-13		Leases - Chelsea, CNY and Marlborough
W. B. Mason	Dec-13		
HEEC 2013 True-up	Jun-14		
<b>Consultant Incurred Cost</b>			
Black & Veatch	Sep-13	Dewberry	AECOM
CH2M Hill	Sep-13	GZA Geo Environmental	Arcadis
Viscom	Sep-13	Jacobs Engineering	Aztec Technologies
Bryant Associates	Oct-13	Kleinfelder/SEA	Baker Wohl
Stantec	Oct-13		Beta Group
Green International	Mar-14		Black & Veatch
PBQD	Mar-14		CDM
GEI Consultants	Apr-14		Corr Tech
Keville	Apr-14		FST
Brown & Caldwell	May-14		Shaw
			Stantec
<b>Consultant Preliminary Reviews</b>			<b>EST NTP</b>
WASM MEPA/Des/CA/RI (6539)	Nov-13		DI Clarifier Phase 2 Design (7394) \$3M
So. Extra High Sect 111 (6453)	Apr-14		DI North Main (6598) \$2.2M
DITP HVAC Auto/Unit Replacement (7111)	May-14		DI Fire Alarm (6904) \$2.1M
DITP Electrical Upgrade (7416)	Jun-14		NHS Sec 53 Connect Des/CA/RI (7402) \$1.6M
			DI VFD Replacements Design (7130) \$1.3M
<b>Construction Labor Burden Reviews</b>			
DITP Scum Skimmers (7396)	Dec-13	CSO MWR003 Gate, Siphon (7409) \$2.6M	DI Thermal (7401) \$1M
Gillis P.S. Improvements (7260)	Aug-13	DI Cryo Chillers Replacement (7398) \$3.2M	CWTP Existing Facilities Mods CP7 \$6.3M
NI Electrical & Conveyors (7313)	Aug-13		DI Digester Pump Replace (6821) \$4.7M
Upgrade Prison Pt./Cottage Farm (7452)	Nov-13		WASM Sect 36/C/S 9-A11 Valve (7448) \$10.5M
Clinton Rehabilitation (7277)	May-14		DI Fuel System Mods (7061A) \$3.9
NIH (7066)	Jun-14		DI Gravity Thickeners Rehab (7428) \$5.8M
DITP Valve & Piping (7275)	Jun-14		Wachusett Aqueduct Pump Sta (7157) \$50.6M
			Chelsea Screenhouse Upgrades (7431) \$3.3M
			Alewife Brook PS Rehab (6797) \$10.4M
			DI WTF VFD Replacement (6875) \$4.1M
			Caruso Pump Sta Improvements (7362) \$2.4M


**STAFF SUMMARY**

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director  
**DATE:** September 17, 2014  
**SUBJECT:** FY14 Fourth Quarter Orange Notebook

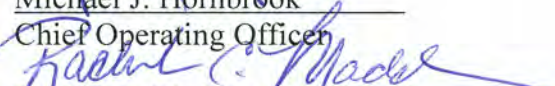


COMMITTEE: Administration, Finance & Audit

X INFORMATION  
       VOTE

  
Michael J. Hornbrook  
Chief Operating Officer

Stephen Estes-Smargiassi, Director, Planning  
Preparer/Title

  
Rachel C. Madden, Director  
Administration and Finance

**RECOMMENDATION:**

For information only. The Board of Directors Report on Key Indicators of MWRA Performance (the Orange Notebook) is prepared at the close of each quarter of the fiscal year.

**DISCUSSION:**

The Orange Notebook presents performance indicators for operational, financial, workforce, and customer service parameters tracked by MWRA management each month. Significant outcomes for the quarter and for the fiscal year are noted below.

Staff also plan to provide the Board with a short presentation on a few of the indicators and respond to any Board questions.

Workforce Management

Staff have reported to the Board several times over the past few years about the on-going retirements of staff and MWRA's succession planning efforts. Staff turnover has increased over the past couple of years, and promotions and hirings are up. During FY14, 162 positions were filled by promotion or outside hiring, substantially more than last year (129) and more than twice the two previous years (69 and 78). Overall staffing numbers are down slightly over the course of the year, ending FY14 at 1,162, slightly below the target of 1,175 filled positions. (Page 42)

Energy Tracking

Production of green energy, cost-effective use of energy, and demand reduction have become increasingly important focuses for staff. For FY15, beginning with the First Quarter Orange Notebook, staff will be reorganizing the energy material and adding some new indicators, including tracking total revenue and savings from power generation. In FY14, energy savings and revenue related to self-generation, including the estimated value of the FY14 renewable

energy certificates (RECs) exceeded \$7.5 million (does not include avoided fuel costs and demand response programs), and green electrical power averaged 27% of total power use system wide. The Orange Notebook includes a number of indicators throughout related to energy production and demand management.

### Water Maintenance

Staff were able to only achieve approximately two-thirds of the target for main line valve exercising due, mainly due to the need for Valve staff to provide support on other MWRA construction projects and unanticipated community assistance response. Other factors impacting valve exercising was the particularly cold and snowy winter, compounded further, by an extended vacancy of a Valve Foreman. The Valve Program's Availability targets of 95% for main line, blow-off, and control valves were met. The air release valve availability target was not met (93.1% vs. 95%). With recent hirings, staff anticipate meeting valve exercising goals during FY15. (Pages 9 and 14)

Staff continue to focus on improving productivity in the leak detection program. Only approximately one-half of the target miles were inspected during the year. New staff were hired early in FY14; additional staff resources are being added early in FY15; and inspection targets are being re-examined based on priority. (Page 8)

### Wastewater Maintenance

Staff used the opportunity of drier weather during the year to refocus efforts from cleaning interceptors to cleaning siphons. The extended dry weather facilitated easier cleaning of the siphon barrels, allowing staff to clean almost three times the fiscal year target of 36. Siphon cleaning is more critical for system hydraulics. Therefore, although only approximately 17.5 miles of interceptors were cleaned vs. the target of 36 miles, the trade-off of increased siphons was acceptable given the opportunity presented by the weather. (Page 10)

### Deer Island Maintenance

With the close of the fiscal year, the Deer Island maintenance pages take a long-term look at maintenance trends. Clear continued progress toward more efficient use of staff resources is apparent, as both MWRA targets and industry benchmarks are being met or exceeded. (Pages 5, 6, and 7) The plant is currently significantly better than industry benchmarks on measures such as replacement asset value per maintenance technician and maintenance cost per replacement asset value, but staff anticipate that MWRA will move closer to those benchmarks as the plant continues to age and requires more maintenance. (Page 6)

### Water and Wastewater Flows

In FY14, total wastewater flow at Deer Island was 16.3% lower than target: 301.7 mgd vs. the target of 360.2 mgd as precipitation was approximately 19% lower than target (targets based on the 12-year average). Total plant flows were down 13.2% and pumping energy use was down 13.8% when compared to the budget targets which were based on a shorter 4-year average.

Consequently, total power use was 5.9% below budget. Several low-flow records were set, including a monthly low-flow record of 219.7 mgd in October 2013, which was 22.3 mgd less than the 241.9 mgd record set in August 2007. (Pages 2 and 1)

Total water use by communities increased 4.3 mgd or 2.4% over FY13. Netting out the one-time emergency sales to Hudson and water use by Cambridge during MWRA and Cambridge construction projects, use would have been down by 1.6 mgd or 0.9%. (Page 31) Emergency water sales to Hudson provided FY14 revenues of \$538,000. (Page 46)

MASSACHUSETTS WATER RESOURCES AUTHORITY

# Board of Directors Report

on

## Key Indicators of MWRA Performance

for

Fourth Quarter FY2014

Q1	Q2	Q3	Q4



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

# Board of Directors Report on Key Indicators of MWRA Performance

## Fourth Quarter FY2014

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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.

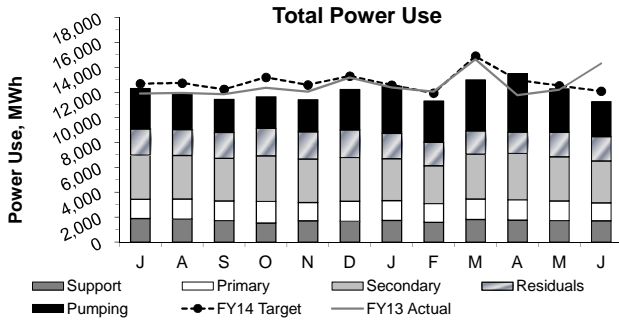
Frederick A. Laskey, Executive Director  
Michael J. Hornbrook, Chief Operating Officer  
September 17, 2014

# OPERATIONS AND MAINTENANCE

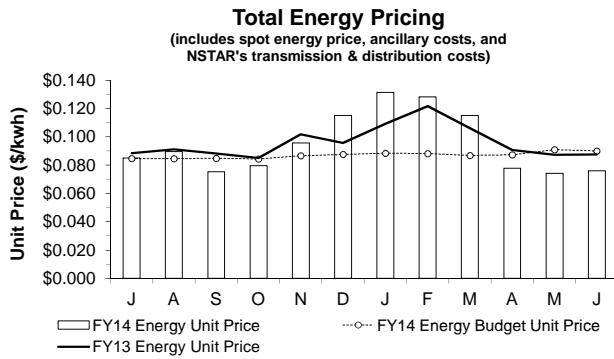
# Deer Island Operations

4th Quarter - FY14

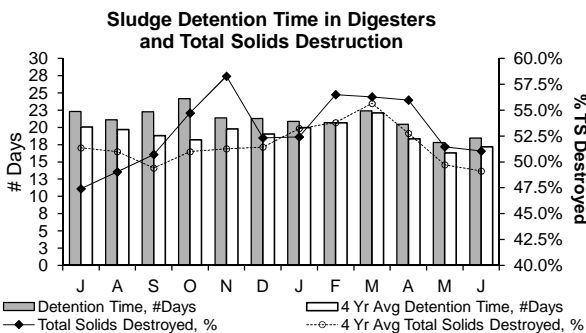
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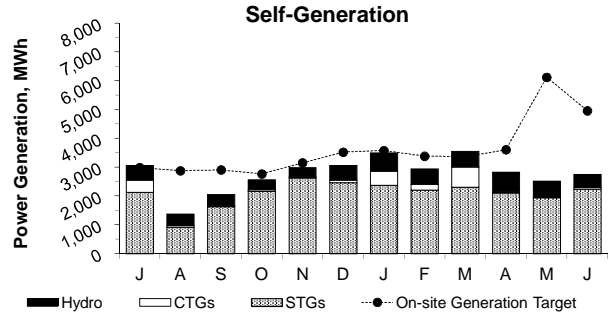
Total Power Use in the 4th Quarter was 1.5% lower than the FY14 projections for the same period as plant flow was 1.0% lower-than-expected. Total Power Use was 5.9% lower-than-expected for FY14. Total Power Use is lower than expected as a result of lower-than-expected power used for pumping and for secondary wastewater treatment (as a result of energy optimization measures in the secondary reactor process area). Power used for pumping was 13.8% low for FY14 as plant flow was 13.2% lower than expected.



Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The actual Total Energy Unit Price for the quarter was 15.0% lower than the FY14 budget estimate. However, Total Power Purchased for the quarter was 22.8% higher than budgeted. Overall, year end costs were \$706,244 (7.4%) higher than budgeted as the Total Energy Unit Price for FY14 was 9.4% higher than budgeted while the Total Power Purchased was 1.5% lower than budgeted. The Total Energy Unit Price for FY14 was higher than budgeted in six (6) of the 12 months and from May through November ranged from 10% to 49% higher than budgeted. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges.

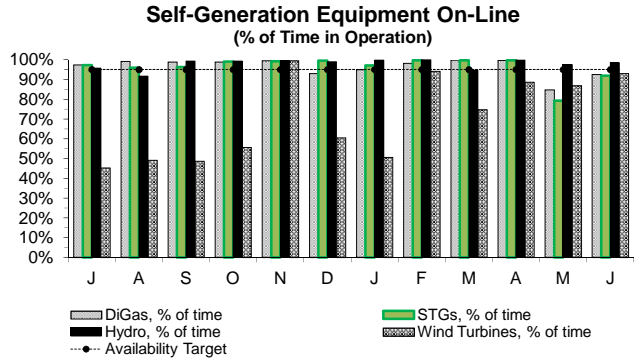


Total solids (TS) destruction following anaerobic sludge digestion averaged 52.8% during the 4th Quarter, 4.5% higher than the 4 year average with an average sludge detention time in the digesters of 18.9 days, 9.5% higher than the 4 year average. TS destruction averaged 53.0% for FY14, 2.7% higher than the 4 year average with an average sludge detention time of 21.1 days, 10% higher than the 4 year average.

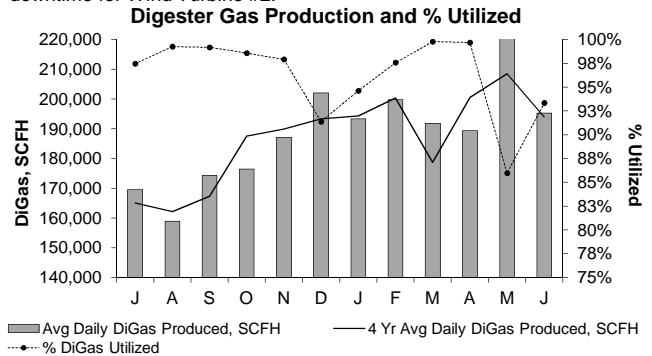


Power generated on-site during the 4th Quarter was 40% lower than target as the generation by the CTGs, STGs, and Wind Turbines all fell below target by 97%, 26%, and 5%. The Hydro Turbines and Solar Panels both generated more than target by 7% and 13%. The main reason for the lower-than-expected generation was less-than-expected operation of the CTGs for storm events. The target assumed the CTGs would be operated on five (5) - 24 hour days during the quarter for wet weather events but were not needed for this purpose. Additionally, repairs and maintenance on the STGs and the DiGas system reduced the availability of the STG and BP-STG for operation, resulting in a reduction in power generation. In FY14, power generation was 17.8% lower than target due, in large part, to below target generation by the CTGs and the STGs by 52% and 16%.

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 290 MWh was generated by the Solar Panels and 416 MWh was generated by the Wind Turbines in the 4th Quarter (860 MWh and 1,477 MWh, respectively for FY14).



The Hydro Turbine system exceeded the 95% availability target for the 4th Quarter. The STGs, DiGas, and Wind Turbine systems all fell slightly below their 95% availability target by 4.7%, 2.6%, and 5.5%, respectively. For FY14, the Hydro Turbines, STGs, and the DiGas system all exceeded the 95% availability target while the Wind Turbines fell below target by 29.4% due to various mechanical issues resulting in significant downtime for Wind Turbine #2.



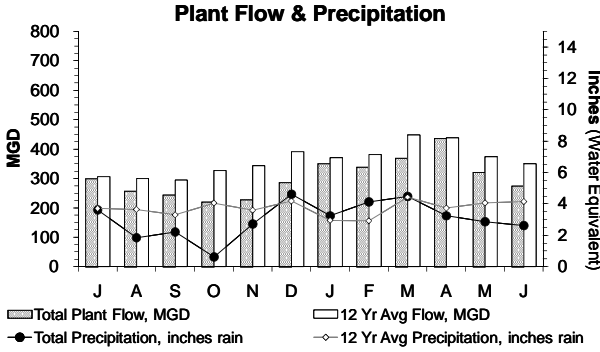
The Avg Daily DiGas Production in the 4thd Quarter was on target (+0.6%) with the 4 Year Avg Daily DiGas Production for the same period and was also on target (+0.8%) for FY14. 93.0% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant and overall, 96.2% of all the DiGas produced in FY14 was utilized at the Thermal Power Plant. Monthly DiGas utilization dropped below 90% in May due to the annual Thermal Power Plant shutdown when only 86.0% was able to be utilized.



# Deer Island Operations

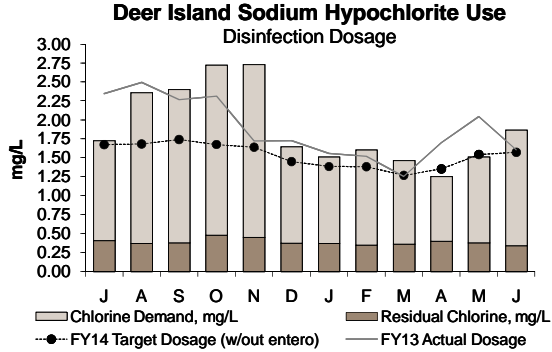
4th Quarter - FY14

Page 2 of 3



The total plant flow for the quarter was 11.2% lower than the target total plant flow (343.6 MGD actual vs. 387.1 MGD expected) as precipitation for the 4th Quarter was 27% below target (8.72 inches actual vs. 11.95 inches expected).

In FY14, the total plant flow was 16.3% lower than target (301.7 MGD actual vs. 360.2 MGD expected) as precipitation was 19% below target (36.18 inches actual vs. 44.75 inches expected). Several low flow records were set during FY14, most notably, a recordsetting monthly low total plant flow of 219.7 MGD for October 2013 which was 22.32 MGD lower than the previous low flow record of 241.9 MGD from August 2007. Also, a new record low for the Total North System flows was set the same month with a flow of 149.34 MGD which was 14.75 MGD lower than the previous record low of 164.09 MGD set one month earlier.



The disinfection dosing rate in the 4th Quarter was 4% higher than the target. DITP maintained an average disinfection chlorine residual of 0.37 mg/L this quarter with an average dosing rate of 1.54 mg/L (as chlorine demand was 1.17 mg/L). Dosing was higher-than-expected due to a higher chlorine demand as a result of stronger wastewater caused by the lower-than-expected plant flows. For FY14, chlorine dosing was 24% higher than expected due to the record low plant flows. The actual hypochlorite usage in pounds of chlorine, however, was within 2% of the FY14 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	99.7%	6.63
A	1	1	0	99.6%	6.25
S	1	1	0	99.97%	0.96
O	0	0	0	100.0%	0.00
N	1	1	0	99.8%	3.73
D	1	1	0	99.5%	6.07
J	1	1	0	99.9%	3.56
F	2	2	0	99.96%	2.97
M	1	1	0	96.5%	52.05
A	4	4	0	99.9%	15.53
M	1	1	0	99.9%	3.35
J	0	0	0	100.0%	0.00
<b>Total</b>	<b>15</b>	<b>15</b>	<b>0</b>	<b>99.5%</b>	<b>101.10</b>

99.9% of all flows were treated at full secondary for the 4th Quarter and 99.5% for all of FY14. There were a total of five (5) separate secondary blending events in the quarter and 15 separate events in FY14; all due to high plant flows resulting from heavy rain. All five (5) blending events in the quarter combined to total 18.88 hours of blending and 29.96 Mgal of flow blended with secondary effluent.

The Maximum Secondary Capacity for the quarter and for FY14 was 700 MGD, except for 19.5 hours on May 6 during the the RSL pump isolation valve replacement work that required Secondary Battery C to be taken offline thus reducing the Maximum Secondary Capacity to 540 MGD temporarily during this essential maintenance work. The work was done during dry weather and no blending occurred.

## Deer Island Operations & Maintenance Report

### Environmental/Pumping:

In the 4th Quarter, the plant achieved a maximum average hourly flow rate of 848.0 MGD during the late morning of April 8 as a result of a two (2) day rain event that produced 0.71 inches of rain. During FY14, the plant achieved a maximum average hourly flow rate of 1,175.4 MGD on March 30 near the height of a three (3) day storm event that produced a total of 3.64 inches of rain in the Boston area. Pumping and treatment operations at DITP continued without incident through this storm, as well as throughout the entire fiscal year.

The Winthrop Terminal Headworks was taken offline for 5.5 hours on June 12 to allow staff to repair six (6) bars on screen #1 in the the headworks facility. As a safety precaution and to ease staff entry into the channel to affect repairs, the flow from the Caruso Pump Station to the Winthrop Terminal Headworks was held back temporarily to lower overall flows to the facility. Pumping was restored after the repairs were completed and there were no impacts to operation.

### Secondary Treatment:

Annual turnaround maintenance was performed on Train #2 in the Cryogenic Oxygen Facility in mid-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 two (2) week 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.

## Deer Island Operations & Maintenance Report (continued)

### Secondary Treatment (cont.):

On May 6, Secondary Battery C was shut down for approximately 19.5 hours to allow staff to replace three (3) large Return Sludge "RSL" pump isolation valves. This project was scheduled to occur only during dry weather flow conditions and staff pre-staged all the equipment and supplies necessary to minimize the duration of the shutdown. During the maintenance, the maximum secondary capacity was temporarily reduced from 700 MGD to 540 MGD as a result of taking Secondary Battery C offline. The plant flow remained well below 540 MGD and all effluent received secondary treatment. The maintenance was successfully completed and the battery placed back into service at 7:30 pm on the same day. The regulators (EPA and DEP) were notified in advance of this maintenance.

### Primary and Secondary Treatment:

Contractors started work during the week of June 2 on a major essential Primary and Secondary Clarifier Scum Tip Tube Replacement Project. This work is scheduled to take approximately 28 months to complete. 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 few scum tip tubes that are not being replaced are ones that were installed in 2009 as trial units that became the basis of the design for the units that will be installed during this project. DITP has sequenced the work so as to minimize impact on DITP's overall capacity and the risk for secondary bypasses. 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). The regulators (EPA and DEP) were notified in advance of this maintenance.

As of the end of June, the contractor was working in two (2) primary clarifiers and three (3) secondary clarifiers with the work in all five (5) clarifiers expected to be completed by the end of July.

### Odor Control Treatment:

Activated carbon media was changed out in carbon adsorber (CAD) units #4, #5, and #8 in the East Odor Control (EOC) Facility and in #1, #3, and #6 in the West Odor Control (WOC) Facility in the 4th Quarter as part of routine practice to replace spent carbon. Additionally, the scrubber media in wet chemical scrubber units #1 and #2 in the EOC Facility, and scrubbers #3 and #4 in the WOC Facility was replaced as part of routine practice to replace older, worn media.

The airflow fans in the Residuals Odor Control (ROC) Facility were shut down for a total of 33.5 hours from June 2 to June 4 to allow contractors to safely perform repairs to the fiberglass ductwork in the ROC Facility. Process air was contained within the the facility during all of these odor control shutdowns and no odor complaints were received as a result of any of these shutdowns.

### Energy and Thermal Power Plant:

Solar power generation accounted for 3.3% (290.4 MWh) of the total power generated on-site in the 4th Quarter while Wind Turbine generation accounted for 4.7% (416.2 MWh) of the total power generated on-site in the 4th Quarter. Overall in FY14, solar power generation accounted for 2.42% (860.4 MWh) of the total power generated while Wind Turbine generation accounted for 4.16% (1,477.0 MWh) of the total power generated on-site.

Overall, total power generated on-site accounted for 23.8% of Deer Island's total power use in the 4th Quarter (24.6% in FY14). Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 23.5% of Deer Island's total electrical power use in the quarter (23.1% in FY14).

The annual maintenance and boilers testing at the Thermal Power Plant took place starting May 11 and continued into the first week of June. Part of this annual maintenance and testing includes a state mandated boiler inspection, as well as combustion testing and boiler tuning of both Zurn boilers. During this test each boiler was operated on digester gas, oil, and a combination of both. The main STG, the BP-STG, and the boilers were offline intermittently during the majority of the three (3) week maintenance period, except for approximately two (2) days when maintenance was performed on the common system and required a full Thermal Power Plant shutdown. Steam turbine power generation was achieved during much of this maintenance period by operating the BP-STG at maximum load.

Annual overhaul maintenance on CTG-2B took place in early April and required the generator to be locked out during the work period. This weather-dependent work was completed and the unit tested in advance of the rain event on April 8. CTG-1A was available on stand-by for operation had it been necessary. A verbal notification to the regulators (EPA/DEP) was provided, as required, in advance of this scheduled maintenance.

Both CTGs successfully completed a required 5-year inspection of their start air tanks in mid-May while the state's inspector was already on-site to oversee the boiler inspections. This inspection required each CTG unit to be taken out of service for approximately one (1) day to perform this test. A rotor ground fault detector was replaced on CTG-1A prior to this testing and required a two (2) day shutdown of the CTG to perform this work. The CTG was operated successfully for a brief period following this repair and the start air tank testing for this unit was completed later in the same day.

### Clinton AWWTP:

Plant continues to meet its running average flow limit. June 2014 marks the 21st consecutive month the running average has been met.

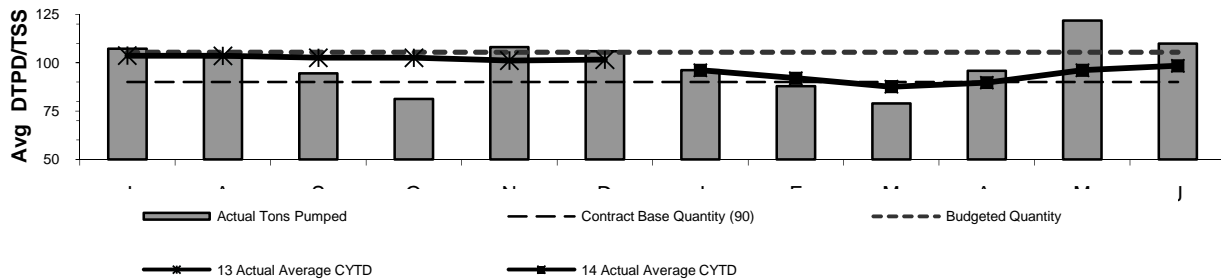
Primary settling tanks #1 and 2 have undergone extensive maintenance including the replacement of wear shoes and several broken flights. These tanks were put back on line and will run during the reconstruction of tanks 3 and 4, which will be turned over to the contractor July 1st.

## Deer Island Residuals

4th Quarter - FY14

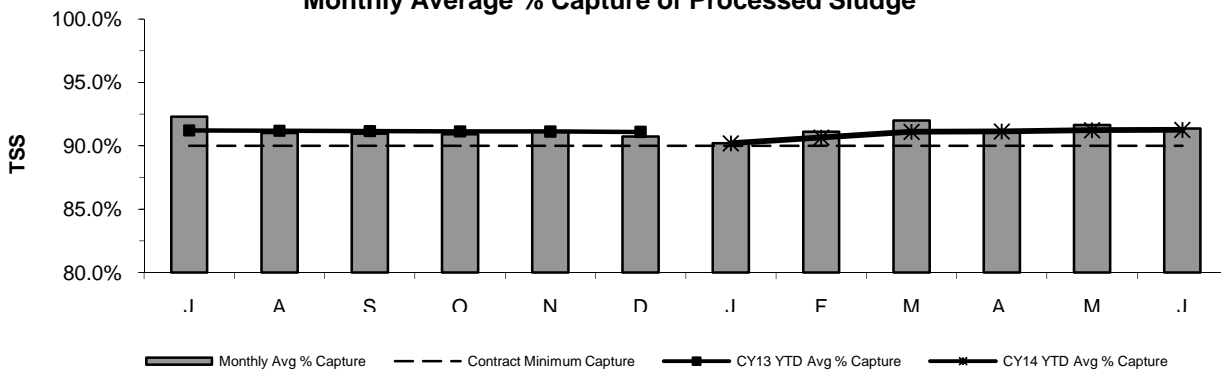
MWRA pays a fixed monthly amount for the calendar year to process up to 90 DTPD/TSS as an annual average. The monthly invoice is based on 90 DTPD/TSS (Dry Tons Per Day/Total Suspended Solids) times 365 days divided by 12 months. At the end of the year, the actual totals are calculated and additional 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 (FY14's budget is 105.4 DTPD/TSS).

### Sludge Pumped From Deer Island



The average total quantity of sludge pumped in the 4th Quarter was 109.2 DTPD - higher than FY14's budget of 105.4 DTPD. The higher amount is due to higher sludge production due to warmer weather. The FY14 average quantity was 99.2 DTPD, well under the budget quantity, due in part to improved digester performance.

### Monthly Average % Capture of Processed Sludge



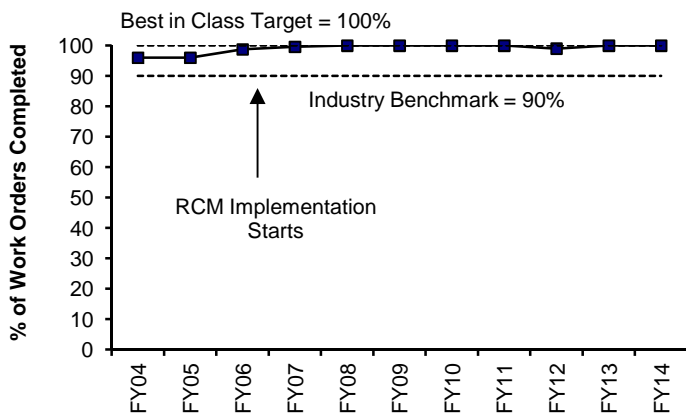
The contract requires NEFCo to capture at least 90% of the solids delivered to the Biosolids Processing Facility in Quincy. The CY14 to date average capture is 90.93%

# Deer Island Yearly Maintenance Metrics

4th Quarter - FY14

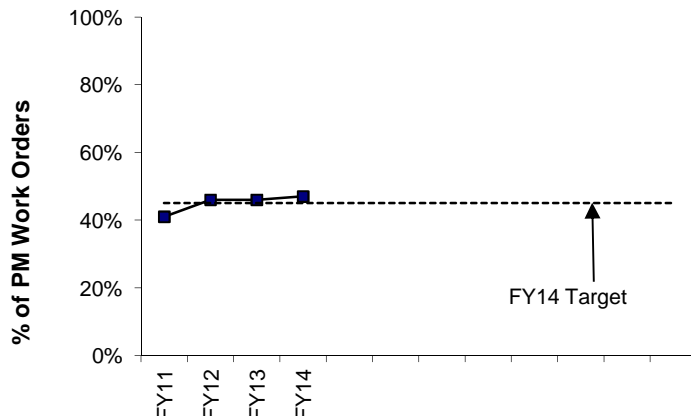
## Proactive and Productivity Measures

### Preventive Maintenance



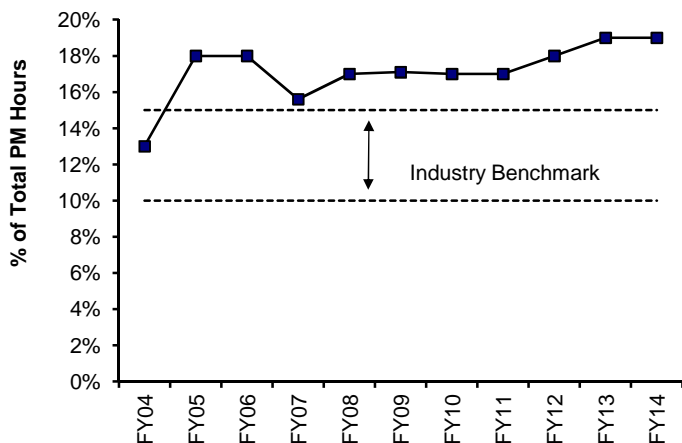
The industry benchmark is 90% for Preventive Maintenance (PM) completion. Upon reaching the 90% goal in FY04, the target goal was increased to the "best in class" standard of 100% PM completion. Since then, the percentage of PM work order completion has been at 99% or higher. Reliability-Centered Maintenance (RCM) and PM optimization efforts have continued since FY01. PM completion rate was 99.8% in FY14.

### Preventive Maintenance Kitting



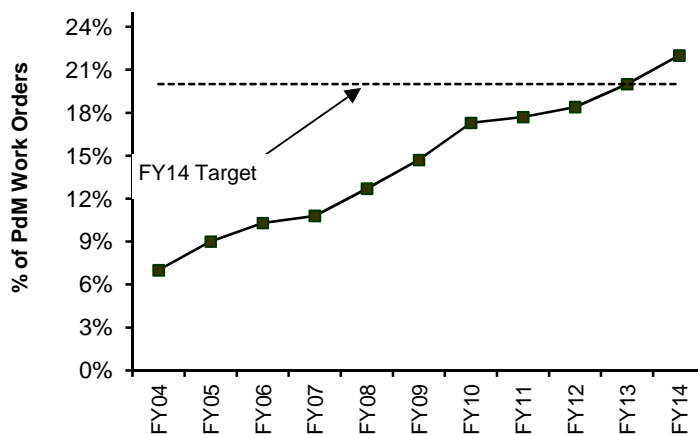
PM inventory items were loaded into Maximo so that parts for equipment could be assigned to PM work orders on a monthly basis. DITP reached the PM kitting goal in FY10. A new graph above was developed in FY11 to track kitting of all maintenance work orders. In an effort to increase wrench time, staff have been fine-tuning a process to "kit" all maintenance work orders. Kitting is considered a best practice by maintenance and reliability professionals and 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 FY14 was 47%.

### Operations Light Maintenance PMs



The percentage of preventive maintenance work order hours completed by Operations staff (not maintenance staff) has increased from less than 1% in January 2002 to the current level for FY14 of 19%. DI reached the industry benchmark range of 10-15% in April 2003 and has exceeded the goal through FY14. Operations completes approximately 630 PM work orders per month.

### Predictive Maintenance

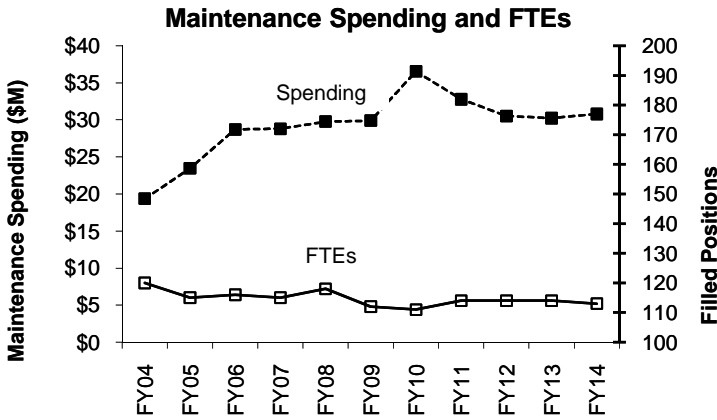


Predictive maintenance has steadily increased from 7% in FY04 to 22% in FY14, surpassing our goal of 20%. The increase in predictive maintenance was achieved through the expanded use of lubrication, vibration, thermography, and acoustic ultrasonic testing techniques. The Condition Monitoring Group continually reviews and investigates new opportunities and initiatives to expand condition monitoring testing and analysis.

# Deer Island Yearly Maintenance Metrics

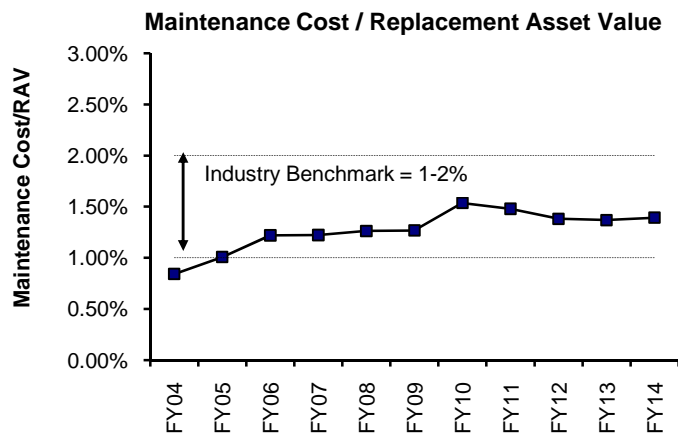
## 4th Quarter - FY14

### Overall Maintenance Program Measures

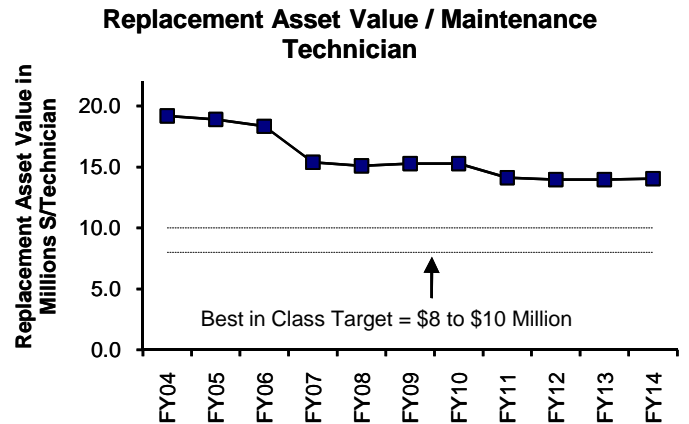


Maintenance staff is currently at 113 FTE's. Maintenance has been successful in meeting its goals through implementation of numerous maintenance efficiencies including Operations staff performing light maintenance, cross-functional training and flexibility, and Reliability Centered Maintenance.

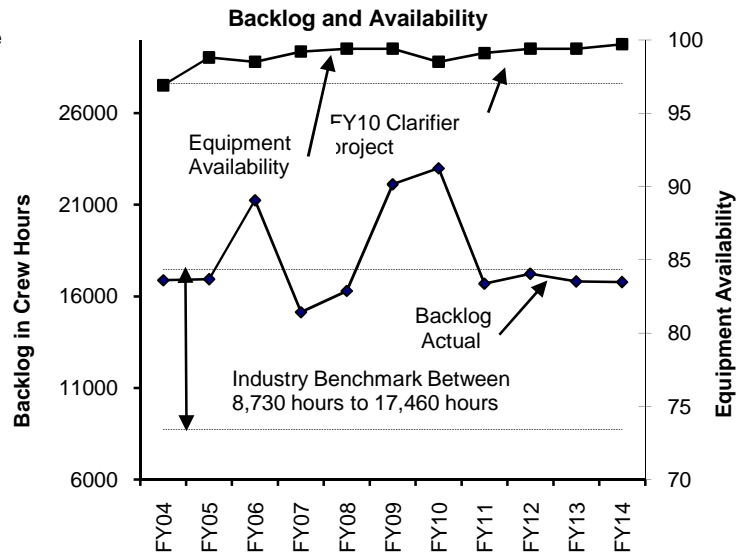
The maintenance spending graph shows actual annual maintenance spending and large asset replacements (equipment costs only). Maintenance budgeting will continue to evaluate proper preventive maintenance of plant assets and requirements for replacement of obsolete equipment to insure plant operates at maximum efficiency. In FY14, overall spending decreased slightly from FY13. CIP projects during FY14 included the Expansion joint repairs, NMPS VFD Replacement, Digester MOD 1 and 2 Piping Replacement and Electrical Equipment upgrades. The large spike in FY10 and FY11 was 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 was calculated to be approximately \$2.3 billion dollars. DITP's current maintenance spending is within the target range. Additional spending is expected to be required as the plant ages and additional equipment replacements are required. The maintenance spending includes \$12.3 million in CEB together with CIP spending which included projects such as the Expansion joint repairs, NMPS VFD Replacement, Digester MOD 1 and 2 Piping Replacement Contract and Electrical Equipment upgrades.



DITP has adopted a "best in class" target of \$8-\$10 Million/Technician for its maintenance staffing. DITP exceeds the target at this time although the trend continues downward. As the plant ages and additional projects and replacements are required, additional staffing needs will be assessed.



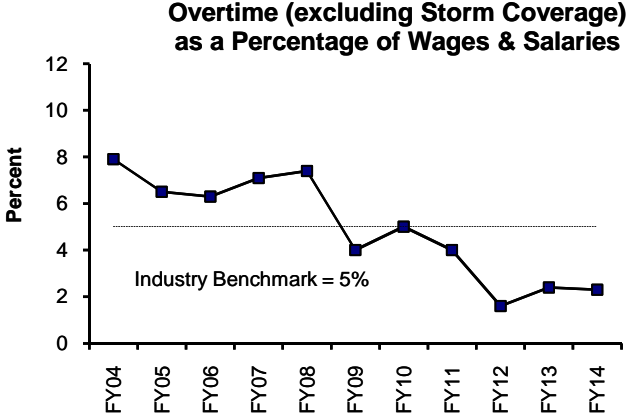
The industry benchmarks for equipment availability is 97% and the maintenance backlog based on current staffing levels is between 8,730 to 17,460 hours, respectively. The equipment availability exceeded the goal for the last nine years is 99.7% for FY14. The FY14 availability of 99.7% is the highest ever attained.

The total average backlog for FY14 was 16,782 hours and is within the industry benchmark. The slight decrease in backlog is attributed to less maintenance work on clarifiers after completing of the clarifier rehabilitation project and the return of some staff from IA, absences, and filling critical trade vacancies. Management continues to prioritize work and closely monitor our backlog.

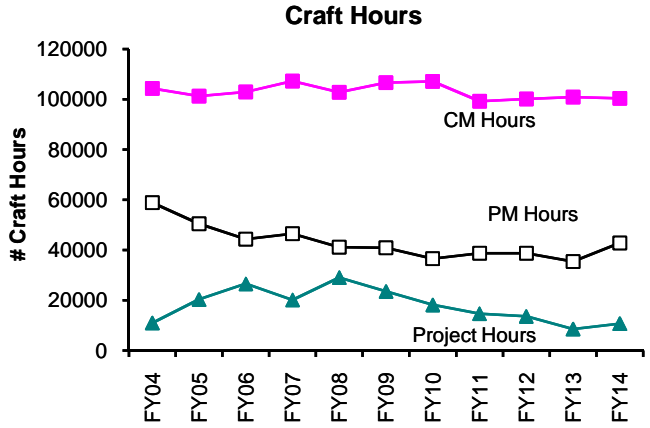
# Deer Island Yearly Maintenance Metrics

4th Quarter - FY14

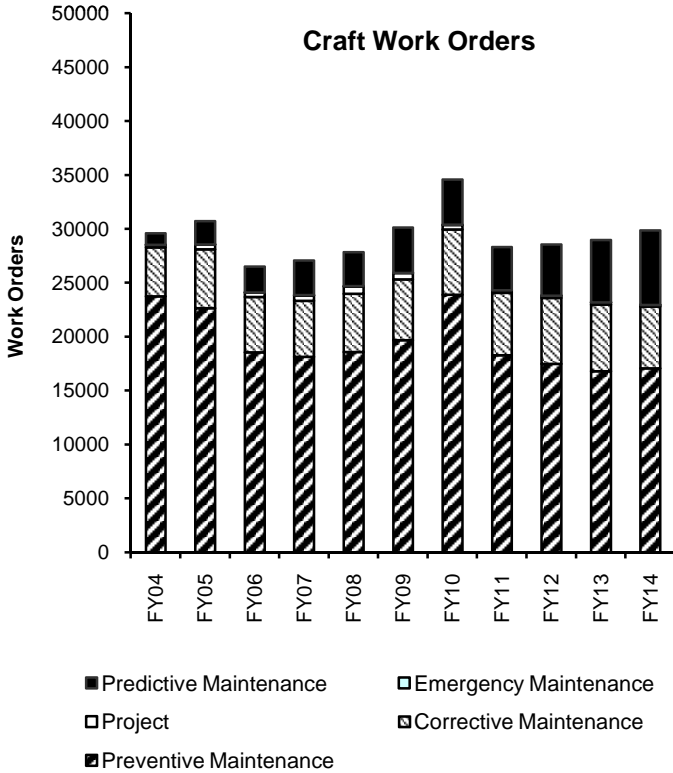
## Overall Maintenance Program Measures (cont.)



Management continues its effort to keep overtime within the industry benchmark. DITP maintenance overtime was 2.3% for FY14. 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 FY14.



Optimization of the PM program through the transfer of some light maintenance tasks, from maintenance to Operations staff (20% of PM hours at the end of FY14), elimination of duplicate work orders, decreasing PM frequency due to equipment history and performance, completion of a PM Optimization efforts, and RCM recommendations has resulted in a significant decrease of 7,693 hours in maintenance staff PM craft hours from FY04 to FY14. Corrective Maintenance (CM) hours reduced slightly from last year. Project Maintenance hours showed an increase due to the replacement of AHU units throughout Deer Island.



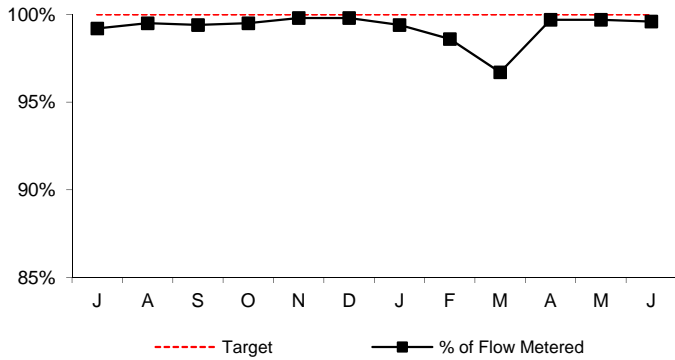
During FY14, the number of work orders increased by 854 from the previous year due to an increase in Predictive Maintenance work orders. Predictive Maintenance techniques allow maintenance to monitor and test equipment while remaining in service, therefore allowing convenient scheduling of corrective tasks to maximize plant equipment availability and minimize random failures.

## Operations Division Metering

### 4th Quarter - FY14

#### WATER METERS

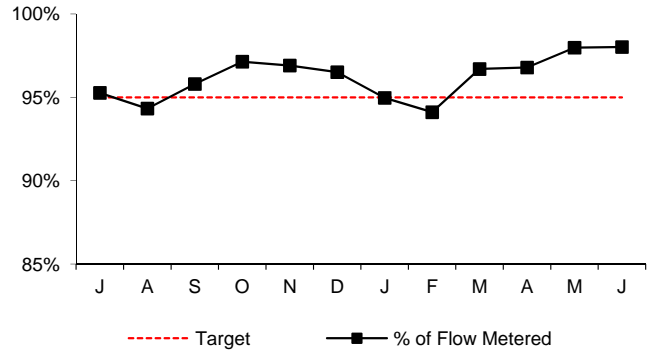
**Percent of Total Revenue Water Deliveries Calculated Using Meters**



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 FY14, meter actuals accounted for 99.67% of flow; only 0.33% of total revenue water deliveries were estimated. The following is the breakdown of estimations:  
 In-house and Capital Construction Projects - 0.07%  
 Instrumentation Failure - 0.26%

#### WASTEWATER METERS

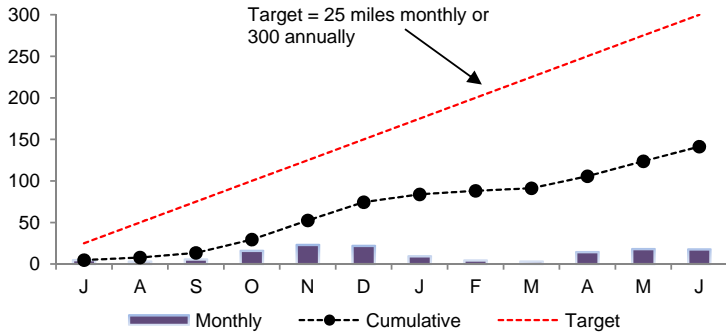
**Percent of Total Wastewater Transport Calculated Using Meters**



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 FY14, meter actuals accounted for 97.6% of flow; 2.4% of wastewater transport was estimated.

#### WATER DISTRIBUTION SYSTEM PIPELINES

**Miles Surveyed for Leaks**



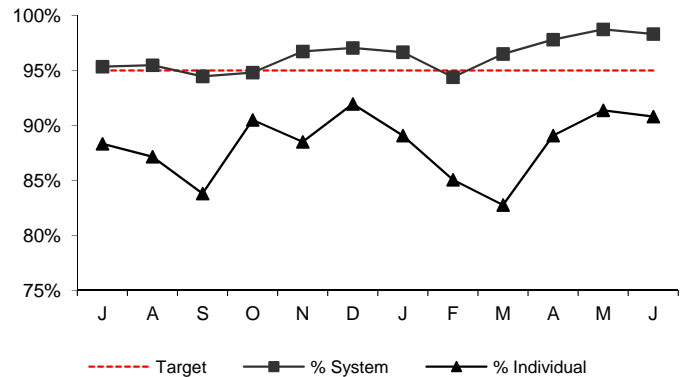
During the 4th Quarter of FY14, 50.12 miles of water mains were inspected. The total mileage inspected for the fiscal year is 141.33. Miles inspected are less than the annual 300 mile target due in part to the following conditions which occurred during various times of the fiscal year: staffing changes; winter weather conditions and some emergency community assistance.

**Water Distribution System**

Month	J	A	S	O	N	D	J	F	M	A	M	J
<b>Leaks Detected</b>	2	1	0	8	5	6	3	1	3	5	4	4
<b>Leaks Repaired</b>	0	1	2	5	4	5	4	4	2	5	3	1
<b>Backlog</b>	2	2	0	3	4	5	4	1	2	2	3	6
<b>Avg. Lag Time</b>	1.0	20.0	27.3	13.7	15.3	16.4	20.0	22.0	21.9	21.0	21.1	21.8

During the 4th Quarter of FY14, thirteen (13) leaks were detected. Five leaks were detected in April, four in May and four in June. Of the thirteen (13) leaks detected during the 4th Quarter, 8 were repaired by the end of the fiscal year. Additionally, Walnut Street, Saugus originally detected on October 23, 2013 remains unrepaired.

**% Wastewater Meter Uptime**



During the 4th Quarter of FY14, out of a possible 1,520,064 data points, only 25,867 points were missed resulting in a system-wide up time of 98.3%. Of the 174 revenue meters installed, on average 17 experienced down time greater than the 5% target resulting in a 90.4% individual meter uptime. Annual target not met due to a parts issue in February as well as the loss of three maintenance days in March for software system upgrade and staff training. For the 4th Quarter of FY14, down time for an individual meter is defined by any individual meter having less than 2,766.3 data points out of a potential 2,880 data points.

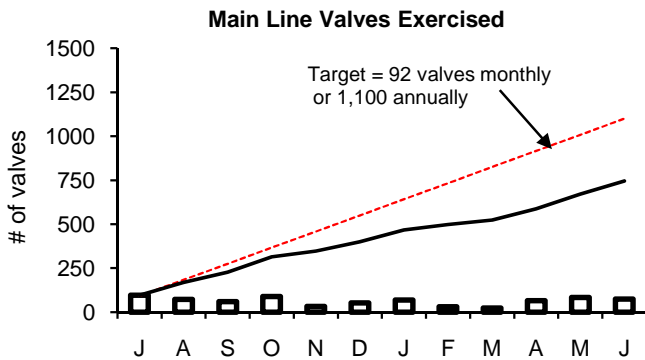
# Water Distribution System Valves

4th Quarter - FY14

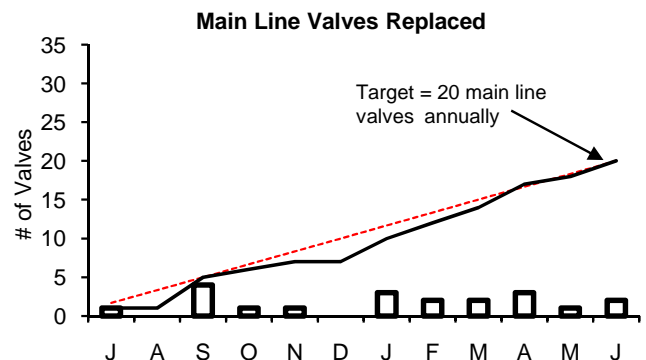
## Background

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.

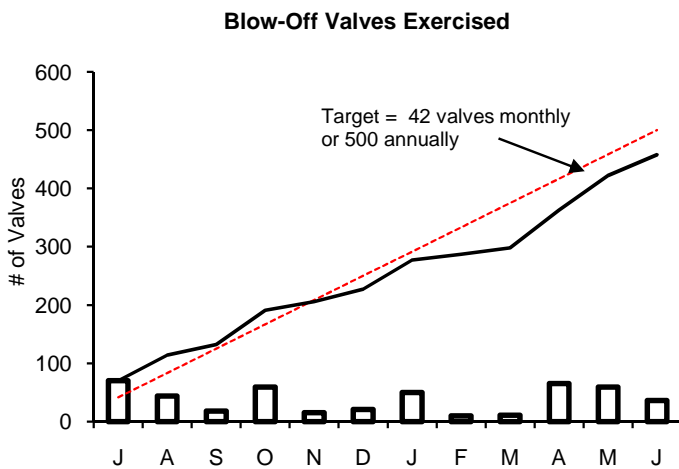
Type of Valve	Inventory #	Operable Percentage	
		FY14 to Date	FY14 Targets
Main Line Valves	2,092	97.7%	95%
Blow-Off Valves	1,206	95.1%	95%
Air Release Valves	1,335	93.1%	95%
Control Valves	48	100.0%	95%



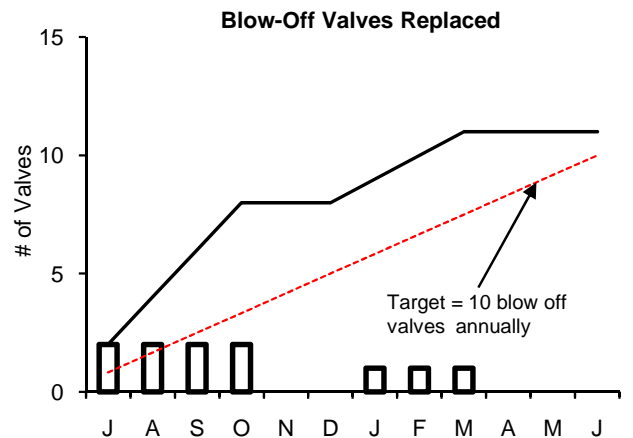
During the 4th Q of FY14 staff exercised 222 main line valves. The total exercised for the fiscal year is 745.



During the 4th Q of FY14 staff replaced six main line valves. The total replaced for the fiscal year is twenty.



During the 4thQ of FY14 staff exercised 160 blow-off valves. The total exercised for the fiscal year is 458.



During the 4thQ of FY14, no blow-off valves were replaced. The total replaced for the fiscal year is eleven.

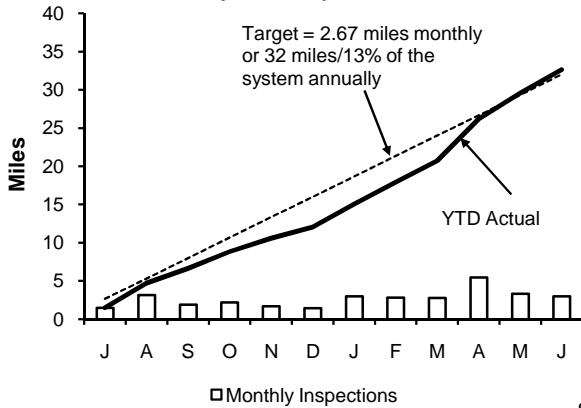


# Wastewater Pipeline and Structure Inspections and Maintenance

Fourth Quarter, FY-14

## Inspections

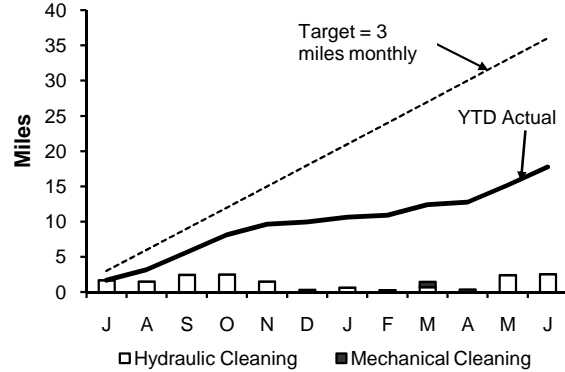
### Pipeline Inspections



Staff internally inspected 3.04 miles of MWRA sewer pipeline during the month of June. The year to date total is 32.62 miles. No Community Assistance was provided to this month.

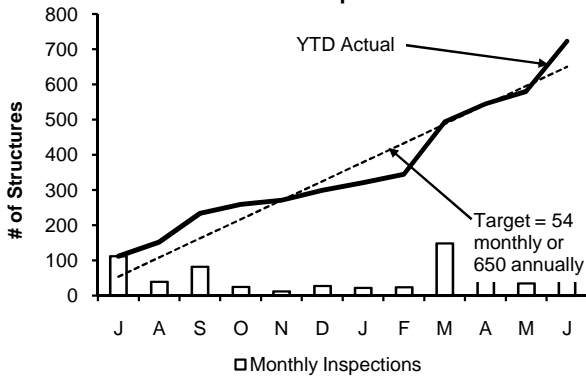
## Maintenance

### Pipeline Cleaning



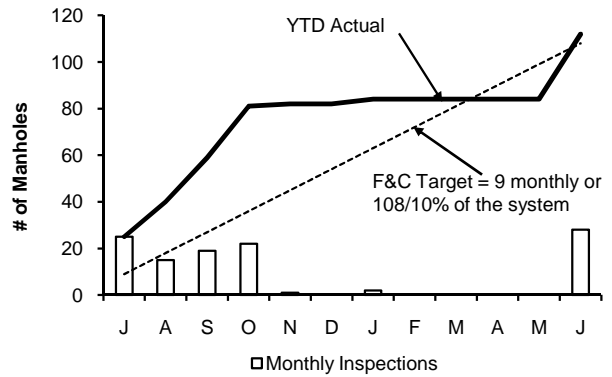
Staff cleaned 2.55 miles of MWRA's sewer system and removed 15 yards of grit and debris during the month of June. The year to date total is 17.75 miles. Pipeline maintenance staff focused on siphon cleaning given dry weather and low flow conditions, as well as, providing assistance to other units reducing time available for pipeline cleaning. No Community Assistance was provided this month.

### Structure Inspections



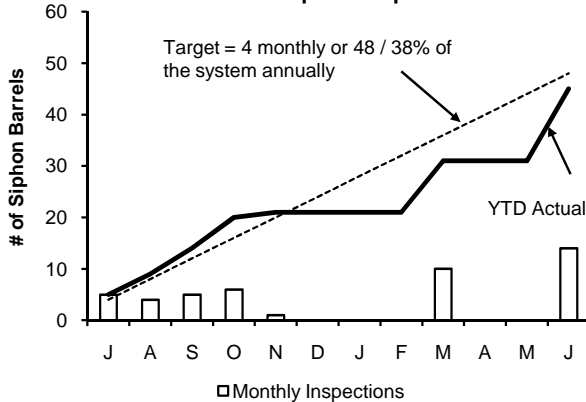
Staff inspected the 12 CSO structures and performed 131 additional manhole/structure inspections during the month of June. The year to date total is 723 inspections.

### Manhole Rehabilitation



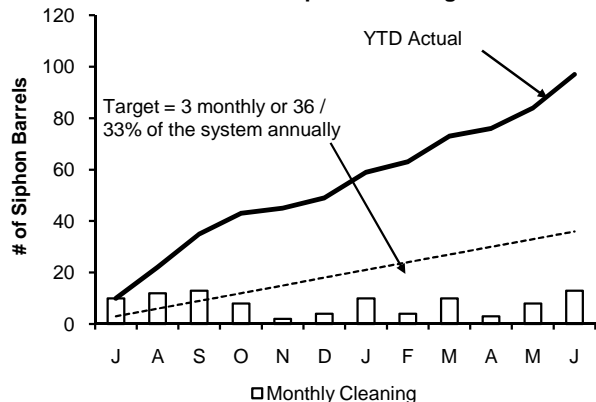
Staff replaced 28 frames & covers during the month of June. The year to date total is 112.

### Inverted Siphon Inspections



Staff inspected 14 siphon barrels during the month of June. Year to date total is 45 inspections.

### Inverted Siphon Cleaning



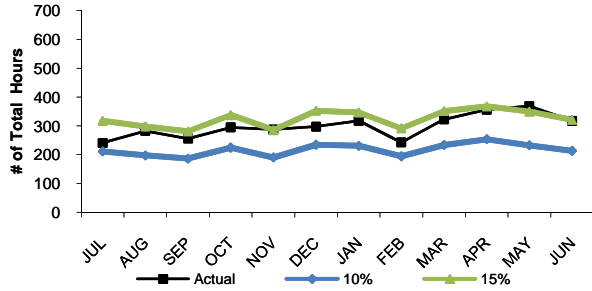
Staff cleaned 13 siphon barrels during the month of June. The year to date total is 97 barrels.

# Field Operations' Metropolitan Equipment & Facility Maintenance

## 4th Quarter, FY14

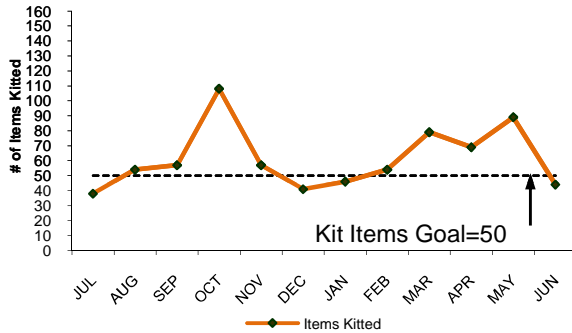
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus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

**Operations Light Maintenance PM Hours**



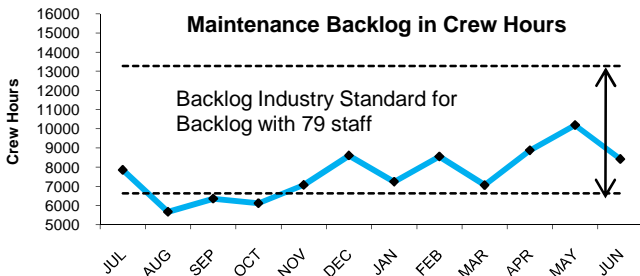
Operations staff averaged 348 hours of preventive maintenance during the 4th Quarter, an average of 15% of the total PM hours for the 4th Quarter, which is within the industry benchmark of 10% to 15%.

**Items Kitted Utilizing Maximo**



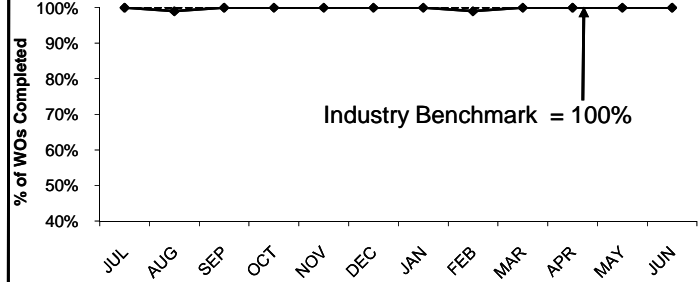
In an effort to more efficiently complete work, maintenance staff and work coordination staff have utilized the Lawson/Maximo interface to better kit stock and non stock material. The goal for FY14 is to "kit" 50 stock and non stock items total per month. An average of 67 items were kitted during the 4th Quarter.

**Maintenance Backlog in Crew Hours**



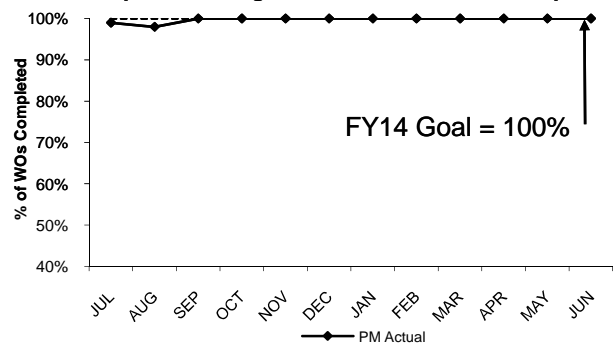
The 4th Quarter backlog average is 9162 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6450 to 12,940 hours. There are currently three vacant positions Facility Specialist, and two OMC laborers.

**Overall Preventive Maintenance**



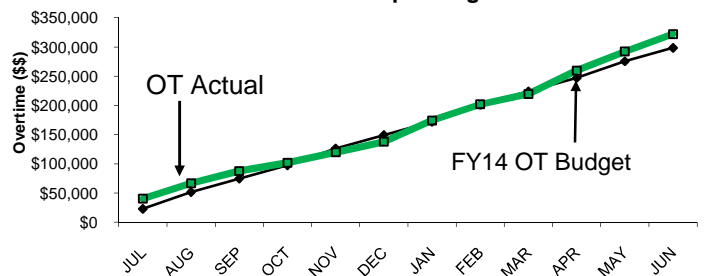
The Field Operations Department (FOD) preventive maintenance goal for FY14 is 100% of all PM work orders. Staff completed an average of 100% of all PM work orders in the 4th Quarter.

**Operations Light Maintenance % PM Completion**



Wastewater Operators complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY14 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.

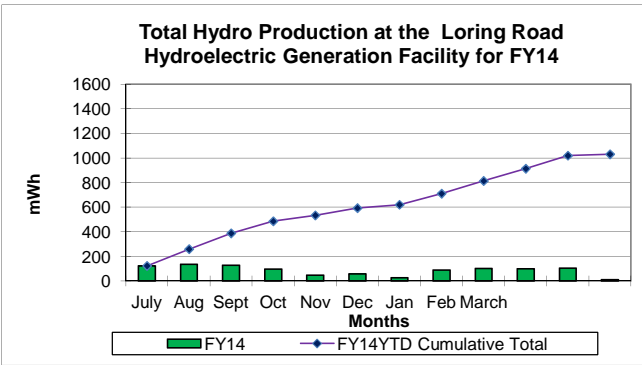
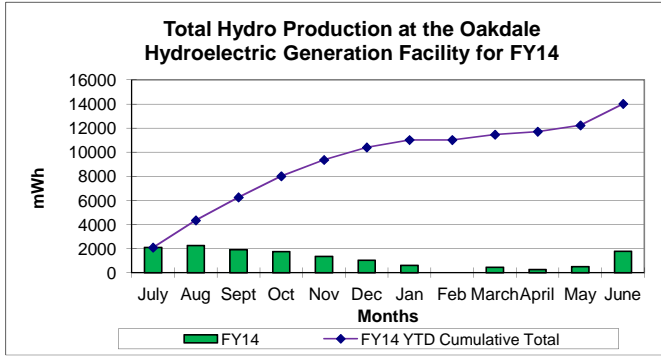
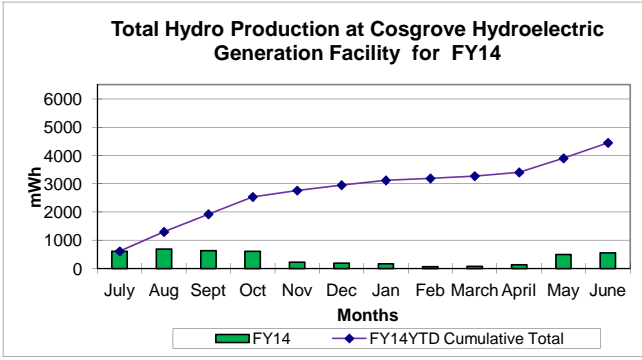
**Overtime Spending**



Maintenance overtime was \$24k over budget for the 4th Quarter. Overtime was used for emergency repairs, storm coverage and upgrades to the Chelsea Administration Building.

# Field Operations Hydroelectric Generation Quarterly Report

4th Quarter - FY14



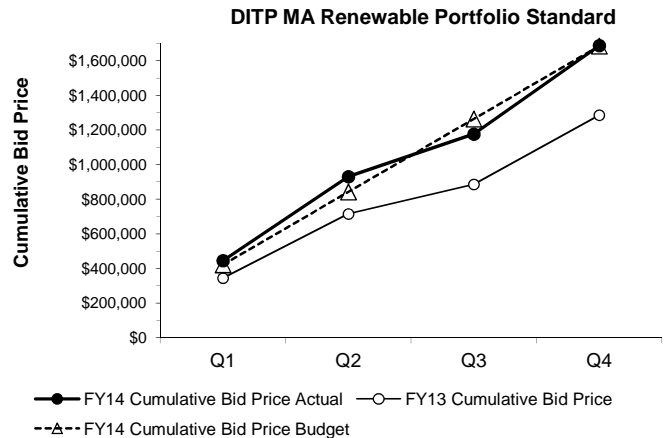
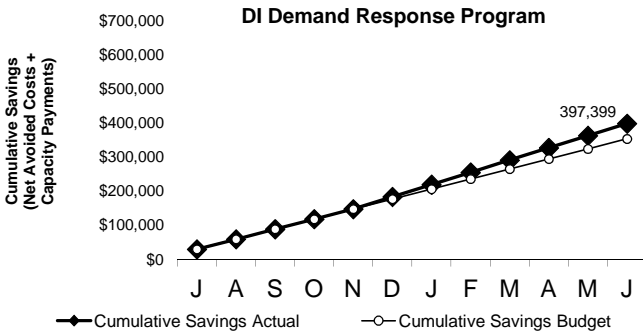
In the 4th Quarter, the **Cosgrove Hydroelectric Station** generated a net of 1,177 MWh; approximately 21% less power than was generated during the same quarter in FY13. The revenue generated at Cosgrove in the fourth quarter was \$45,656.

In the 4th Quarter, the **Oakdale Hydroelectric Station** generated a net of 2,555 MWh; 96% more power than was generated during the same quarter in FY13. The net revenue generated in the fourth quarter was \$109,784. (Power is generated when water is transferred from Quabbin to Wachusett.)

In the 4th Quarter, the **Loring Road** hydroelectric 200 kW station generated 216 MWh; approximately 31% less power than was generated during the same quarter in FY13. The net revenue generated in the fourth quarter was \$10,181 (this only represents power sold to the grid, it does not reflect power used on site). Power is generated as water conveyed from Norumbega to the Loring Road storage tanks is reduced in pressure and the energy available in this pressure reduction is captured by the new turbine. The facility operates continuously. Some power is consumed on site, with the bulk exported to the grid.

**Energy Audits and Implementation of Audit Recommendations at FOD Facilities:** Technical energy audits of 24 facilities were performed in FY13. The focus of these energy audits were to identify specific lighting, HVAC, pumps, and motors, and insulation, among other measures that could be implemented at these facilities to save energy. Implementation of these audit recommendations began in the second quarter of FY14, and continued into the 4th quarter. The installation of VFDs and an Energy Management System on the HVAC system at the Navy Yard was completed in the 4th quarter. In addition, contracts were signed for the installation of energy efficient heaters for generators at five water and wastewater pump stations, and for the installation of VFDs on the exhaust and supply fans at two waterwater pump stations to reduce ventilation needs during unoccupied hours, during the 4th quarter.

**Demand Response Payments:** The John Carroll Water Treatment Plant, Loring Road Hydro, and Chelsea Creek, Columbus Park, Nut Island, and Ward Street Headworks are all enrolled in the ISO's Demand Response Program. The total net capacity payments for the third quarter of FY14 was \$10,456.



Deer Island participates in the ISO-New England Demand Response Programs. By agreeing to have its Combustion Turbine Generators available to run and thus relieve the New England energy grid of Deer Island's load during times of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates the CTGs during an ISO-NE called event, MWRA receives energy payments from ISO-NE and also avoids the cost of purchasing electricity from the grid. "Net Avoided Cost" is the avoided electricity costs, offset by the cost of running the CTGs and the energy payments from ISO-NE.

Cumulative savings are the sum of Net Avoided Costs and monthly Capacity Payments - totaling \$ 397,399 through June.

CTG-2B was operated on June 10 for a ISO-NE declared Demand Response audit event

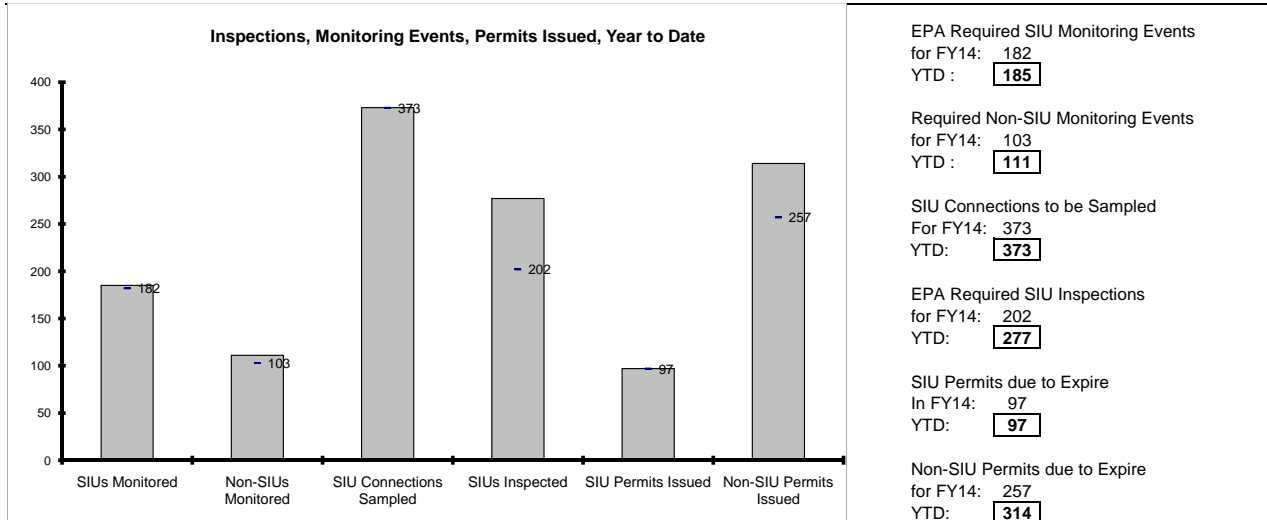
Note: Only the actual payments received are now being reported.

Bids were awarded during the 4th Quarter from Deer Island's renewable energy assets for the sale of 16,698 Class I Renewable Energy Certificates (RECs) for a total value of \$499,688 and 48 Solar Renewable Energy Certificates (S-RECs) for a total value of \$12,087. The value of the S-RECs is currently more than 8.4 times higher than the current value of Class I RECs (for STG, hydro and wind).

REC prices reflect the bid prices on the date that bids are accepted. Cumulative bid price reflects the total value of bids received to date. The FY14 budgeted cumulative bid estimate through the end the fiscal year is \$1,685,611 while the actual bid total is \$1,688,039.

# Toxic Reduction and Control

4th Quarter 2014



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

TRAC's annual monitoring and inspection goals are set at the beginning of each fiscal year but they can fluctuate due to the actual number of SIUs at any given time. During the course of the year, some SIUs do not discharge and cannot be monitored. TRAC also monitors one-third of the non-SIUs each year. SIU and Non-SIU permits are issued with durations of two to five years, depending on the category of industry, varying the number of permits that expire in a given year.

	Number of Days to Issue a Permit						Total Permits Issued	
	0 to 120		121 to 180		181 or more		SIU	Non-SIU
Jul	7	13	0	0	0	0	7	14
Aug	1	94	1	1	0	1	2	96
Sep	12	13	1	3	0	0	13	16
Oct	5	9	0	4	0	0	5	15
Nov	12	10	0	0	1	0	13	10
Dec	7	26	5	3	0	1	12	30
Jan	3	45	1	1	0	1	4	47
Feb	2	9	1	2	0	1	3	12
Mar	4	21	1	5	1	2	6	28
Apr	10	13	0	3	0	2	10	18
May	12	12	0	1	0	1	12	14
Jun	10	13	0	1	0	0	10	14
% YTD	88%	89%	10%	8%	2%	4%	97	314

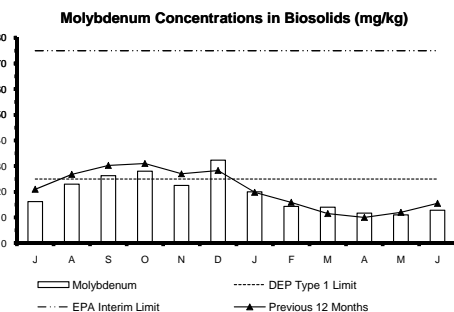
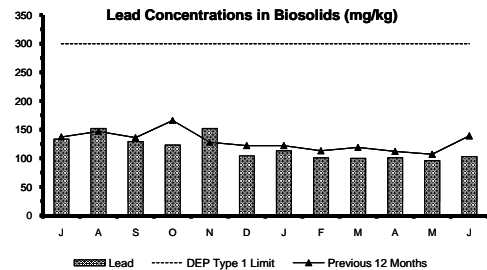
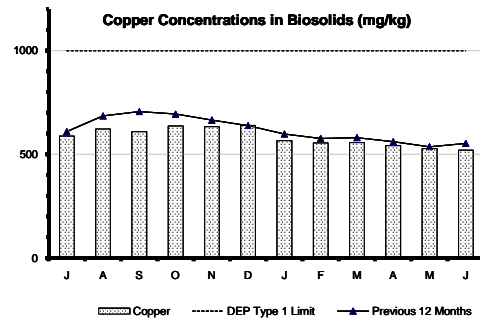
EPA requires MWRA to issue or renew 90% of SIU permits within 120 days of receipt of the application or the permit expiration date - whichever is later and the remaining 10% of SIU permits be issued within 180 days.. Over the fiscal year 88% of SIU permits were issued within 120 days, missing the 90% target and 2% were issued after 180 days. In the 4th quarter, seventy-eight permits were issued. Thirty-two SIU permits and thirty-eight non-SIU permits were issued within 120 days after receipt of their applications. Five non-SIU permit were issued more than 120 days but before 180 days after receipt of their applications, but three non-SIU permits were issued after the 180-day period.

Delays in permit issuance were due to :

- i) payment of the permit fee was late, ii) there were unique permitting considerations, or iii) because new staff were being trained.

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. Overall, during this fiscal year, seventy-five percent of the time, the molybdenum levels were below the DEP limit. In the 4th quarter, the level of molybdenum remained below the DEP type 1 Limit, making it six months in succession.

MWRA and its contractor (NEFCO) do not distribute product in Massachusetts between July and January under its approval of suitability.



# Field Operations Highlights – Orange Notebook Bullets

## 4<sup>th</sup> Quarter – FY14

### Western Water Operations and Maintenance

Ware Disinfection Facility: As part of the UV construction project, staff installed an interconnection to allow dilution water to be fed from the sample water line while the contractor's temporary bypass line was in service. Staff also installed an alternate sodium hypochlorite injection location for use while on the bypass line. The line stop and bypass line allowed the contractor to tie in the new UV piping to the existing piping and allow the replacement of the failed 48-inch butterfly valve. Staff also supported the contractor during the first phase of Demonstration Testing. During Demonstration Testing, two U.V. Reactor Trains are outfitted with lamps. The third train does not have lamps and all flow goes through this train during the second and third shifts.

Chicopee Valley Aqueduct: Staff continued to provide support for the contractor at the Shea Avenue leak site, including a night time shut down of the aqueduct. The Shea Avenue leak repair was completed by the end of the quarter.

Aqueducts: Staff completed the yearly inspection of all culverts on the Wachusett, Hultman, and Sudbury Aqueducts. Over one hundred culverts were inspected. Staff also fabricated and installed a new pipe gate on the Sudbury Aqueduct at the Memorial School in Natick to support the Aqueduct Trails Program.

### Metro Water Operations & Maintenance

Water Pipeline Program: Seven valves were replaced during the fourth quarter, bringing the annual total replaced to 21, exceeding the annual goal of 20. The replaced valves were located in Belmont, Chelsea, Clinton, Malden and Revere. The annual goal (10) for blow off retrofits had been exceeded (11 completed) by March. There is a minor leak on the valve at detail record (70-76) (it is not surfacing), which requires the valve to be replaced after the summer demand season when Section 70 can be isolated without any potential service impacts. Leak repairs were completed on WASM 11 at 425 Pleasant Street in Belmont on Section 56 in the substructure of the General Edwards Bridge on the Revere/Lynn line and on Section 69 in Revere. The WASM 11 leak repair was completed without taking the main out of service and Section 56 continues to be an issue with badly deteriorating pipe conditions.

Valve Program: Main Line Valve Exercising (MLVE), Pressure Reducing Valve (PRV) preventative maintenance, and fire blow bypass valve maintenance were all performed per their normal routine maintenance schedules. Main Line Valve Exercising was approximately 70% of its annual goal due to staffing changes (one vacancy, and second due to IA for several months). The goal is expected to be met during FY15. Valve Operations were performed to support the in-house valve replacements noted above. Valve Operations for a variety of CIP and 8M permit contracts were performed including Section 20 for Mass DOT, Sections 16 and 69 for Revere sewer repair, Gillis Pump Station for CIP work and the Watertown Section CIP contractor. Section 80 was flushed in anticipation of Needham and Wellesley beginning to take water during the warmer weather season. The refilling of the Chestnut Hill Reservoir started early in April to return it to its normal operating range after the winter draw down. Section 69 was disinfected, flushed, and returned to service in the next phase of the Winthrop Avenue Revere sewer repair in April, and Section 16 was returned to service in early May. The portable water fountain was deployed at several locations, including the AWWA Annual Conference in Boston.

Cambridge Water Supply Transition: Transition back to Cambridge completely supplying themselves with water was first attempted on May 21. The CSO work had reached the point where the city's 40" water transmission main could be partially returned to service, per the city's hydraulic model. Meter 145, the temporarily active connection between the MWRA and Cambridge water systems was slowly closed. There was a resulting immediate pressure drop in the area of the city in the immediately adjacent to Meter 145. The decision was made in conjunction with the city, for the meter to remain in service. It was determined that there was a leak on the city's 40" water transmission main that required repair. The operation to isolate Meter 145 and return to all Cambridge water supply then scheduled for early June. On June 11, the city fully reactivated their 40" transmission main within their water distribution system on. Pressure within the Cambridge water system remained normal. After 24 hours of independent system operation, Meter 145 to Cambridge was completely isolated on June 12. There is additional work in Cambridge that is currently scheduled for the fall, which will require the activation of Meter 145 to augment the city's water supply.

Chicopee Valley Aqueduct Emergency Connection Test: On Tuesday, April 8, a test was conducted at the recently upgraded emergency connection between the Chicopee Valley Aqueduct (CVA) and the Springfield water system on West Street in Ludlow. One of the 10" Mobile Pump Units (MPU) was deployed to the site and operated by Water Pipeline Staff. Operations Engineering and Western Operations staff coordinated the activities with Springfield Water staff prior to and during the test. Western Valve staff operated the required valves to align the flow configuration. The MPU ultimately pumped at a 6 mgd flow rate during the successful test.

## **Wastewater Operations & Maintenance**

Nut Island Headworks Odor Control In-house Maintenance Staff continue to install and test the odor control chemical piping system rebuild and were assisted by Operations Staff during system startup and testing. This will allow the wet scrubber side of the odor control system to be utilized during the summer months (peak H2S).

Hurricane Drill: Staff participated in the June 18 hurricane drill at the Chelsea Facility. The drill activity included staff travelling to a remote OCC location at the John Carroll Water Treatment Plant for remote operations exercise. From the remote OCC, site staff operated equipment at the Hayes Pump Station. All operation testing was successful.

Remote Headworks Upgrades: Wastewater Operations Staff continue to work with Engineering & Construction and for work necessary prior to the major renovation project of the Chelsea Creek Headworks and will be coordinated to minimize impact on the facility's normal operation. In April, staff attended a modeling workshop regarding the issue of possible high velocities in the screening channels while the headworks are choking and the impacts on equipment positioning.

Braintree/Weymouth and Houghs Neck Carbon Replacement: Staff determined that the carbon in the carbon absorbers at these facilities was beginning to fail and should be replaced by early summer. A contract for the replacement of the carbon at these two facilities and bids were solicited by Purchasing. A purchase order was issued to Carbon Activated, who has installed carbon at these two facilities in the past. Carbon has been delivered and installed. The collected carbon samples were tested by an independent lab in June and found to pass requirements.

## **Metro Equipment and Facility Maintenance**

Nut Island Chemical System Replacement: The Odor Control Scrubber System had with multiple leaks and was difficult to repair and operate so MWRA staff decided to remove existing equipment and piping. They installed four new peristaltic hydroxide pumps and four new peristaltic sodium hypochlorite pumps. All CPVC piping was replaced with 20 isolation valves, and new pressure switches, back pressure valves and pressure relief valves. The new system will operate more efficiently with additional isolation valves to provide flexibility and system redundancy to use any of the four chemical feed pumps in alignment with any scrubber.

## **TRAC**

Enforcement-Settlement Agreement between Aero Brazing Corporation and MWRA: TRAC and Aero Brazing Corporation entered into a Settlement Agreement to resolve all issues related to the June 4, 2013 Penalty Assessment Notice. Aero Brazing's Facility, located in Woburn, generates industrial wastewater from an aluminum brazing process. Aero Brazing had operated without a licensed pretreatment operator, falsified information on its permit application and failed to submit a pretreatment report on time as required by its permit. The original penalty was \$62,500.00. The Settlement Agreement requires Aero Brazing to pay a \$45,000.00 administrative penalty and pay stipulated penalties for a period of two years for reporting and discharge violations.

Inspections and Monitoring: During FY14, TRAC staff completed 743 industrial inspections, 1079 gasoline/oil separator inspections and 249 septage site and hauler inspections. The industrial inspections includes 214 Significant Industrial User (SIU) inspections meeting EPA's requirement that all SIUs be inspected annually. Staff also issued 287 Sewer Use Discharge Permits, 97 of which were issued to SIUs. Staff met the goal for SIU Permits and exceeded the goal for Non-SIU Permits. TRAC Staff sampled 185 SIUs as required by EPA's Pretreatment Regulations. The EPA requires that each SIU be sampled at least once per fiscal year, and TRAC's Monitoring Plan requires sampling of 40% of the SIUs at least one additional time per year and 10% at least two additional times per year. All SIUs with discharges were sampled except for a few locations that stopped discharging early in 2013.

## **Metering and Monitoring**

Staff completed evaluating possible discrepancies with field dataloggers. Eight meter dataloggers, system wide, required flow adjustments and were included with the final 2013 community flow.

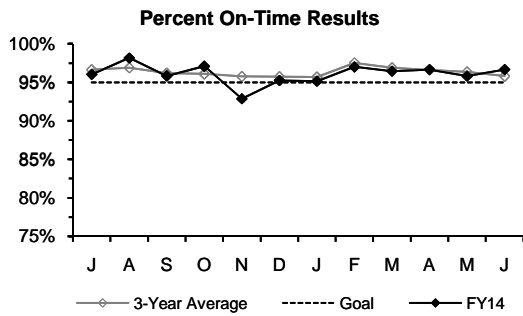
## **Environmental Quality**

Algae: Algae monitoring began as usual in May. Nuisance algae levels were elevated for much of the early spring, and on June 24 a copper sulfate treatment at Wachusett Reservoir was deemed necessary to control levels of *Synura*. There have been no taste and odor complaints during the quarter related to algae.

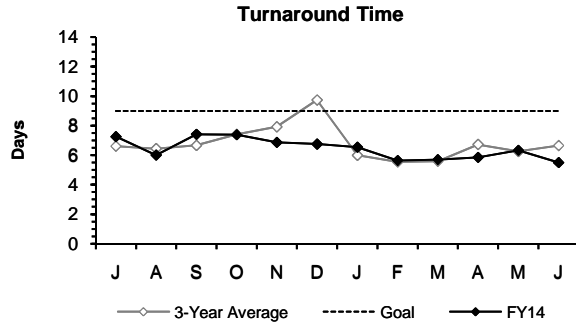
Harbor and Outfall Monitoring: Three surveys were conducted during the quarter. *Alexandrium* (algae responsible for red tide) levels were low in Massachusetts Bay this season.

OMSAP Meeting: A meeting of the Outfall Monitoring Science Advisory Panel has been scheduled for September 23<sup>rd</sup> and will be held in Nahant.

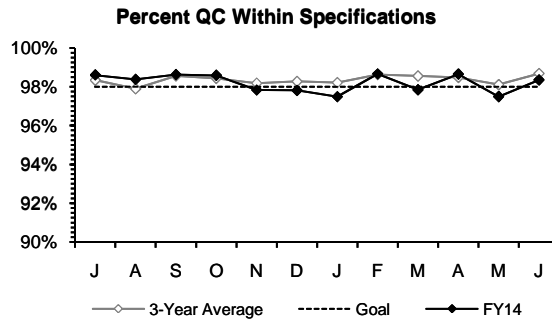
## Laboratory Services 4th Quarter - FY14



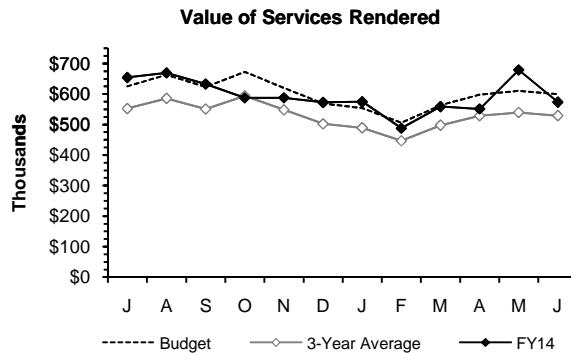
The Percent On-Time measurement was above the 95% goal.



Turnaround Time was faster than the 9-day goal.



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



Value of Services Rendered was slightly below the seasonally adjusted budget projection.

### Highlights:

Lab Services has completed most of the annual Proficiency Test (PT) samples for 2014 at its five locations. Passing an annual PT is required to maintain DEP certification. This included 36 of 36 microbiology parameters and 381 of 382 chemistry parameters. Received passing scores for 97% of the parameters for "oceanographic" PT samples. These voluntary PT samples are similar to the Harbor and Outfall Monitoring samples we test from Boston Harbor and Mass. Bay.

**Quality Assurance:** Completed work with Internal Audit on a management advisory on Lab QA/QC. DEP conducted the every other year certification audit at the Central Lab and only a small number of minor findings were noted, which have been addressed. DEP certified us for the new, more automated cyanide test that will be phased in for all wastewater testing in July.

**LIMS:** Issues since March Go Live of the new version of LIMS have been minor and most have been addressed quickly by MIS. Working MIS on LIMS enhancements and implementing Electronic Laboratory Notebook software to replace paper logbooks.

**Mobile Lab:** Two successful drills by the mobile lab were completed with the ESU.

**DITP:** Assisted with the delivery of fuel oil by collecting QC samples from random trucks.

**TRAC:** Continuing to work with an MWRA group examining wastewater sources of molybdenum.

**Wastewater Operations:** Tested CSO wet-weather samples from a treatment evaluation special study.

### ENQUAL Clean Water and Drinking Water:

Regulatory testing for drinking water, waste water and Mass. Bay has been going smoothly.

**Outside Customers:** Began receiving nitrification samples from Peabody.

# CONSTRUCTION PROGRAMS

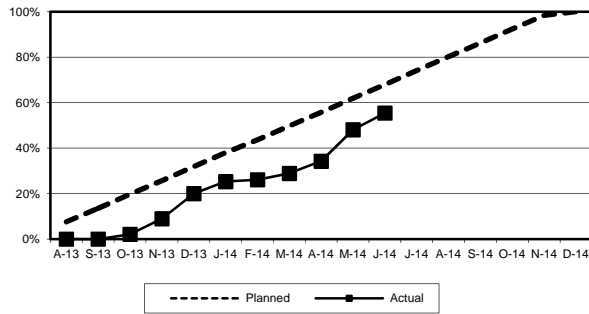


## Projects In Construction

Q4 - FY14

(Progress Percentages based on Construction Expenditures)

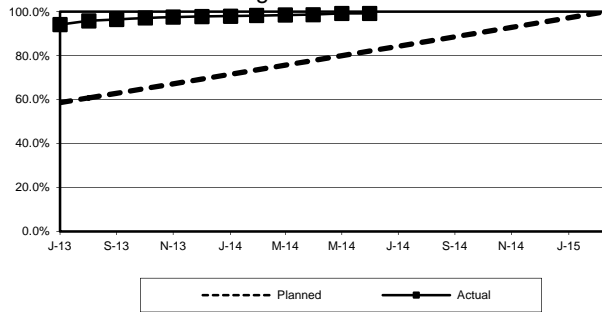
**Nut Island Headworks Electrical and Conveyor Improvements Progress – June 2014**



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

*Status and Issues:* As of June the Contractor, J.F. White, completed the installation of cable tray on the ground, lower and bottom levels of the facility. They installed junction boxes in the boiler room for Ductbank A-2 and began installing conduit for the existing equipment on the bottom level.

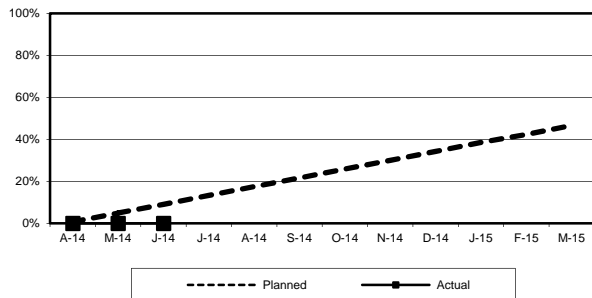
**UV Disinfection Facilities CWTP Progress – June 2014**



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

*Status and Issues:* As of June the Contractor continued with punchlist work. The cooling water pipes for the air handling units in the Mechanical room were chlorinated and flushed. The roofing contractor furnished and installed 5" down-spouts and drain piping connection into all buildings. In addition, final paving and site restoration was completed.

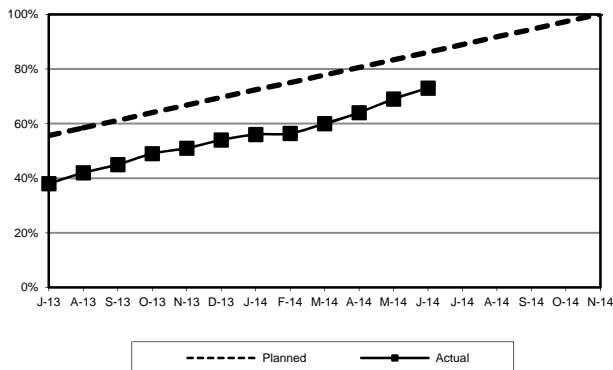
**Clinton Digester and Primary Clarifier Rehab Progress - June 2014**



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

*Status and Issues:* As of June, the contractor, R.H. White Construction, began removing the railings, flights and chains, so that demolition of Primary Clarifiers 3 & 4 can begin. In addition, they began excavating around the perimeter of the tank walls and commenced ground penetrating radar on the concrete walls as required prior to demolition.

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



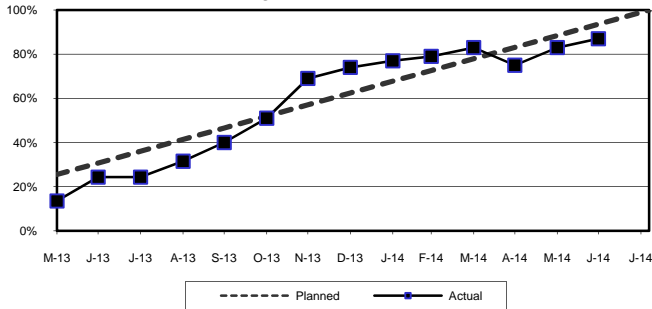
*Project Summary:* This is a design/build project for the construction of two, 10 million-gallon covered concrete storage tanks and a buried pump station, which will provide back-up redundancy for the Northern High and Northern Intermediate High distribution service areas.

*Status and Issues:* As of June, the concrete wall sections and base slab cells for Tank #1 are 100% complete and the roof decks are approximately 89% complete. The concrete roof decks in Tank #2 are approximately 98% complete. They completed sealing visible leaks on Tank #2 external walls and continued backfilling the tank. The South and West walls of Tank #2 are partially completed to elevation 201. Electrical and mechanical work inside the pump station continues. As of June 30<sup>th</sup>, 2014 the project is 45 days behind schedule.

## Projects In Construction

(Progress Percentages based on Construction Expenditures)

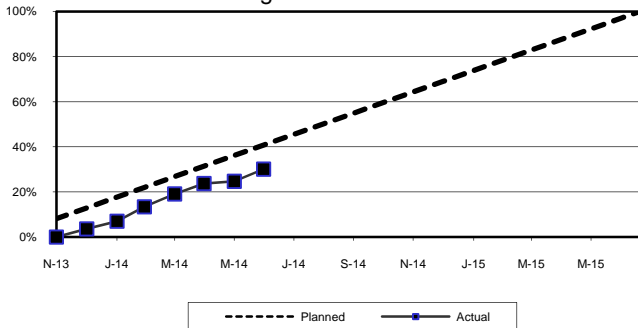
**Quabbin UV Disinfection  
Progress – June 2014**



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

*Status and Issues:* During June, the Contractor replaced the 48" butterfly valve and piping in Vault 1. They conducted the start-up and functional testing of the UV units; moved the chlorine feed from Vault 1 to the UV Building; and calibrated the flow meters in the UV pipes.

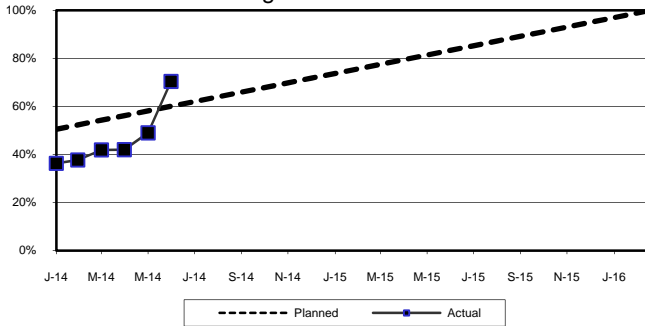
**Pump, Gear Box and Diesel Engine Upgrade  
Prison Point and Cottage Farm CSO Facilities  
Progress - June 2014**



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

*Status and Issues:* As of June, the sub-contractor, Waukesha, completed the rehabilitation of Engine #1 and continued troubleshooting low oil pressure issue on Engine #2 at Cottage Farm. At Prison Point, the subcontractor erected staging at the pump level in order to remove the existing engine silencer on Engine #4.

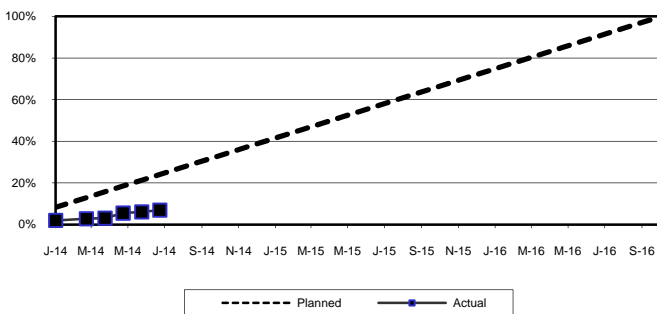
**North Main Pump Station VFDs & Motors  
Progress - June 2014**



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

*Status and Issues:* The Contractor, J.F. White, has completed the installation of VFD/motor No. 7 and VFD No. 6. The 90 day test period continues until mid-September.

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



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

*Status and Issues:* The Contractor, Walsh Construction, completed the removal of the existing tip tubes in SC-C5, SC-C6 and SC-A18, after which they began the installation of the new tip tubes. They began the installation of the new terminal blocks and disconnects for the scum skimmer control panels on Secondary Clarifier Batteries A & C.

# CSO CONTROL PROGRAM

4th Quarter - FY14

MWRA and the CSO communities have completed 32 of the 35 projects in the Long-Term CSO Control Plan, including the Interceptor Connection Relief and Floatables Control at Outfall SOM01A project, which MWRA completed in December 2013 ahead of the June 2014 milestone in Schedule Seven. Two CSO projects are in construction: Reserved Channel Sewer Separation by BWSC, and CAM004 Sewer Separation by the City of Cambridge. MWRA recently bid the construction contract for the Automated Gate and Floatables Control at Outfall MWR003 and Rindge Avenue Siphon Relief, the last CSO project to move into construction, and plans to issue notice to proceed with construction in August 2014, in compliance with Schedule Seven. The following table reports on the progress of the three CSO projects not yet complete, as well as BWSC's continuing inflow removal work associated with the completed South Dorchester Bay Sewer Separation project.

Project		Court Milestones in Schedule Seven (Shaded milestones are complete.)			Status as of June 30, 2014																															
		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.																															
					<table border="1"> <tr><td>Contract 1</td><td>CSO outfall rehab</td><td>\$ 4.2 M</td><td>Complete</td></tr> <tr><td>Contract 2</td><td>Sewer separation</td><td>\$ 5.9 M</td><td>Complete</td></tr> <tr><td>Contract 3A</td><td>Sewer separation</td><td>\$11.2 M</td><td>Complete</td></tr> <tr><td>Contract 3B</td><td>Sewer separation</td><td>\$ 9.6 M</td><td>90% complete</td></tr> <tr><td>Contract 4</td><td>Sewer separation</td><td>\$ 7.4 M</td><td>75% complete</td></tr> <tr><td>Contract 5</td><td>Cleaning &amp; Lining</td><td>ineligible</td><td>Awarded</td></tr> <tr><td>Contract 6</td><td>Downspout Disconnect</td><td>\$ 0.9M</td><td>Awarded</td></tr> <tr><td>Contract 7</td><td>Pavement restoration</td><td>\$ 1.1 M</td><td>Complete</td></tr> <tr><td>Contract 8</td><td>Pavement restoration</td><td>\$ 5.4 M</td><td>35% complete</td></tr> </table>	Contract 1	CSO outfall rehab	\$ 4.2 M	Complete	Contract 2	Sewer separation	\$ 5.9 M	Complete	Contract 3A	Sewer separation	\$11.2 M	Complete	Contract 3B	Sewer separation	\$ 9.6 M	90% complete	Contract 4	Sewer separation	\$ 7.4 M	75% complete	Contract 5	Cleaning & Lining	ineligible	Awarded	Contract 6	Downspout Disconnect	\$ 0.9M	Awarded	Contract 7	Pavement restoration	\$ 1.1 M
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Contract 8	Pavement restoration	\$ 5.4 M	35% complete																																	
					The MWRA Board approved Amendment 14 to the BWSC MOU/FAA on May 14, 2014, increasing the total award amount to \$292.6 million. BWSC plans to complete all 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	Dec 15	Cambridge completed four initial construction contracts for this project more than a decade ago and is presently managing three additional sewer separation contracts (contracts 8A, 8B and 9) to complete the project. Cambridge may issue work on Concord Lane as a fourth contract.																															
			Sep 12		<table border="1"> <tr><td>Contract 8A</td><td>Sewer separation</td><td>\$10.1M</td><td>Subst. complete</td></tr> <tr><td>Contract 8B</td><td>Sewer separation</td><td>\$16.3M</td><td>23% complete</td></tr> <tr><td>Contract 9</td><td>Sewer separation</td><td>\$ 5.7M</td><td>18% complete</td></tr> </table>	Contract 8A	Sewer separation	\$10.1M	Subst. complete	Contract 8B	Sewer separation	\$16.3M	23% complete	Contract 9	Sewer separation	\$ 5.7M	18% complete																			
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Contract 9	Sewer separation	\$ 5.7M	18% complete																																	
	MWR003 Gate and Rindge Ave. Siphon Relief	Apr 12	Aug 14	Oct 15	The construction contract was advertised on May 27 and three bids were received on June 26. Staff will seek Board approval to award on July 16. Staff plan to issue the notice to proceed with construction by August 2014 and complete this contract by October 2015, in compliance with Schedule Seven.																															

Other CSO Related Work				
Project	Court Milestones in Schedule Seven (Shaded milestones are complete.)			Status as of June 30, 2014
	Commence Design	Commence Construction	Complete Construction	
South Dorchester Bay Sewer Separation Post-Construction Inflow Removal	N/A	N/A	N/A	BWSC has completed its investigation of alternatives for removing additional stormwater inflow from its Dorchester Interceptor or otherwise relieving hydraulic conditions in the interceptor during extreme storms following the closing of CSO regulators with completion of the South Dorchester Bay sewer separation project in 2007. The final draft report with recommendations will be available in August 2014. A meeting between BWSC, its consultant and MWRA has been scheduled for August 6 to discuss the findings and next steps. 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 FY14 CIP includes \$5.6 million for the inflow removal effort, of which approximately \$2.6 million is allocated to awarded design and construction contracts.

## CIP Expenditures 4<sup>th</sup> Quarter - FY14

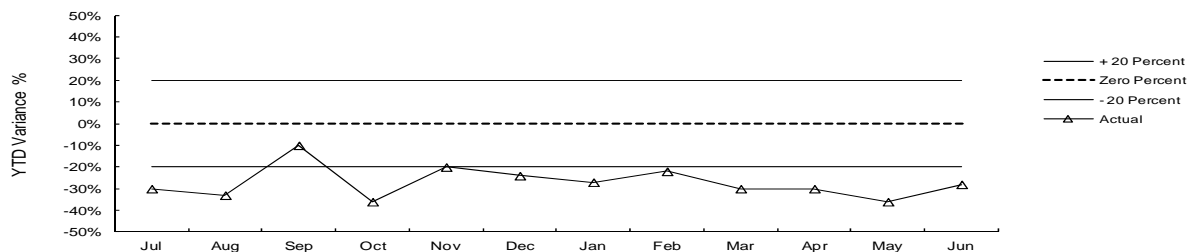
The Year-To-Date variances are highlighted below:

FY14 Capital Improvement Program Expenditure Variances through June by Program (\$000)				
Program	FY14 Budget Through June	FY14 Actual Through June	Variance Amount	Variance Percent
Wastewater	84,251	55,690	(28,562)	-34%
Waterworks	49,839	40,966	(8,872)	-18%
Business and Operations Support	7,972	5,507	(2,465)	-31%
<b>Total</b>	<b>\$142,062</b>	<b>\$102,163</b>	<b>(\$39,899)</b>	<b>-28%</b>

Underspending within Wastewater is primarily due to: timing of anticipated expenditures for contracts 8B and 9 for the Cambridge Sewer Separation project; delays of equipment delivery for the North Main Pump Station Variable Frequency Drives Construction; timing for Prison Point/Cottage Farm Engine Pump & Gearbox Rebuilds; timing of expenditures and contract adjustments for the South Dorchester Sewer Separation contracts; award less than budget for the Nut Island Electrical Grit & Screening Conveyance Construction; and schedule changes for North Main Pump Station Butterfly Valve Replacement, Clinton Digester Rehabilitation, Miscellaneous VFD Replacements, and Sodium Hypochlorite Pipe Replacement Design contracts. This was partially offset by greater than anticipated community requests for grants and loans for the Infiltration/Inflow (I/I) Program, progress on the Scum Skimmer Replacement contract, and timing of equipment delivery for the Electrical Equipment Upgrade contract. Underspending in Waterworks is primarily due to lower than budgeted award for WASM 3 Design Construction Administration/Resident Inspection, schedule change for Carroll Treatment Plant Existing Facility Modifications CP-7, site issues and delay in equipment delivery for the Spot Pond Storage Facility Design/Build contract, and timing of Watershed Land purchases. This was partially offset by community requests for loans were greater than anticipated and unanticipated work for the Chicopee Valley Aqueduct Shea Ave Leak Repair contract.

### CIP Expenditure Variance

Total FY14 CIP Budget of \$142,461,000.



### 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 6/30/2014	\$80 million
Unused capacity under the debt cap:	\$723 million
Estimated date for exhausting construction fund without new borrowing:	Oct-14
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper outstanding:	\$170 million
Commercial paper capacity:	\$350 million
Budgeted FY14 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 – FY14

### Source Water – Microbial Results

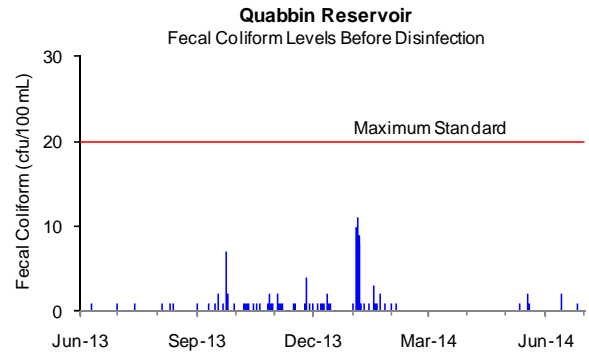
Total coliform bacteria are monitored in both source and treated water to provide an indication of overall bacteriological activity. Most coliforms are harmless. However, fecal coliform, a subclass of the coliform group, are identified by their growth at temperatures comparable to those in the intestinal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

#### Sample Site: Quabbin Reservoir

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

From May 30 until June 7, grab samples for the Quabbin Reservoir were taken at the Winsor Power Station due to the raw water sample tap being temporarily unavailable at WDF.

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.**

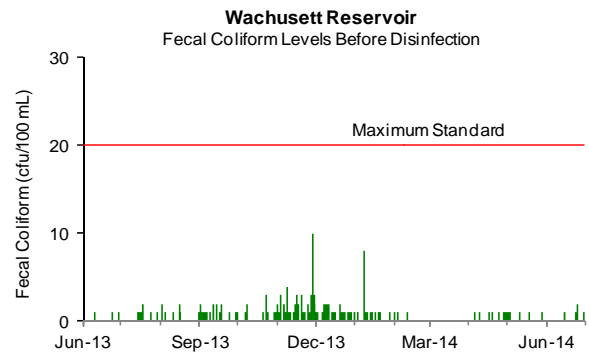


#### Sample Site: Wachusett Reservoir

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.**

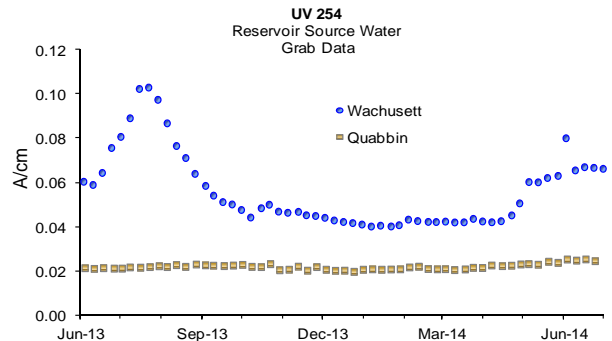


### Source Water – UV Absorbance

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. Hurricanes can have a significant and long lasting impact.

Quabbin Reservoir UV-254 levels are currently around 0.024 A/cm.

Wachusett Reservoir UV-254 levels are currently around 0.067 A/cm.



## Source Water – Turbidity

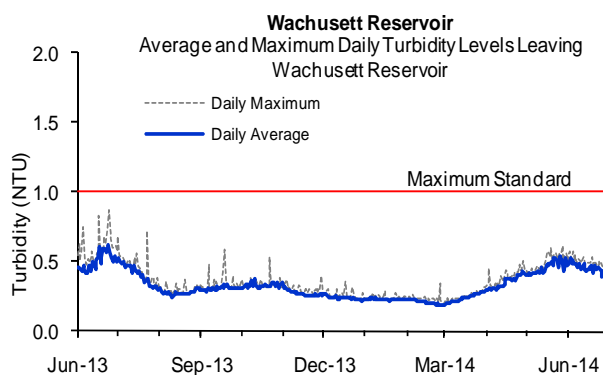
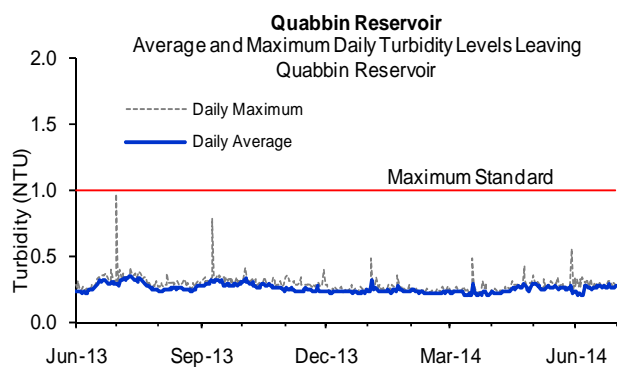
4th Quarter – FY14

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

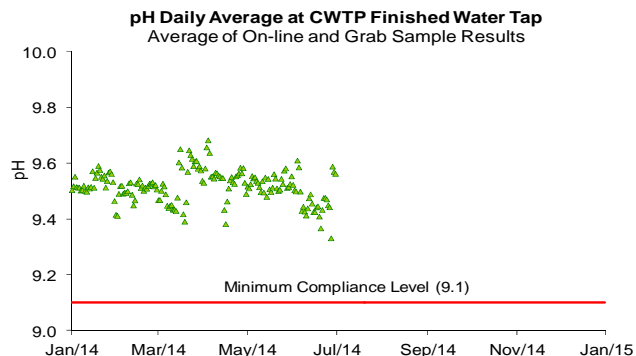
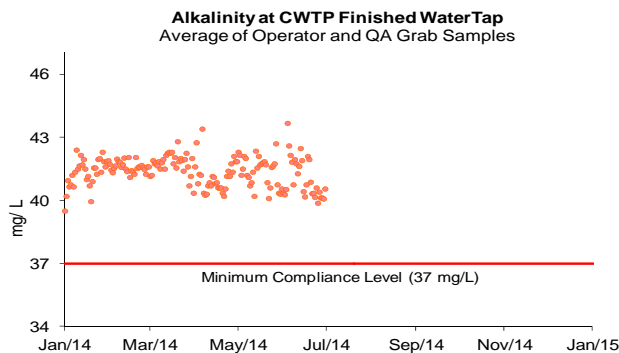
From May 30 until June 7, the turbidity analyzer was relocated to Winsor Power Station due to the sample tap being unavailable at WDF. Maximum turbidity results at Quabbin and Wachusett were within DEP standards for the quarter



## Treated Water – pH and Alkalinity Compliance

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

Distribution system samples were collected on June 18 and 19, 2014. Distribution system sample pH ranged from 9.3 to 9.5 and alkalinity ranged from 41 to 43 mg/L. No sample results were below DEP limits for this quarter.





## Treated Water – Disinfection Effectiveness

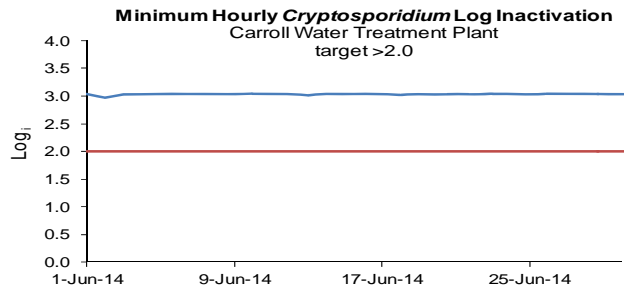
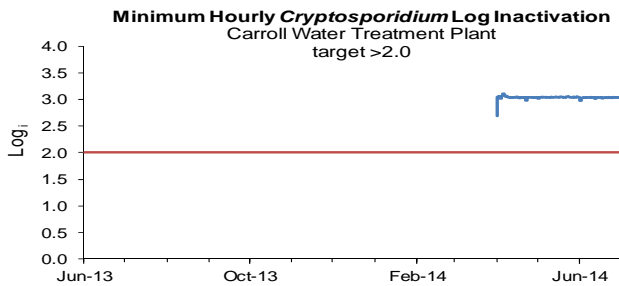
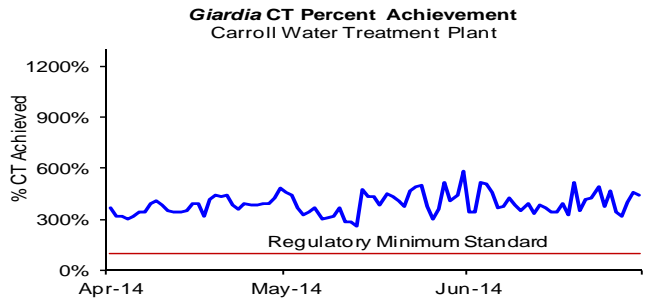
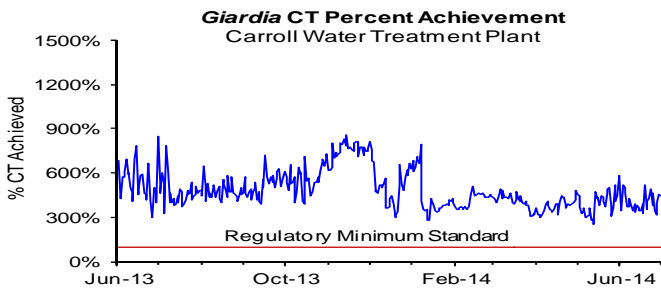
4th Quarter – FY14

At the Carroll Water Treatment Plant (CWTP), MWRA reports on 99.9% (3-log) inactivation for *Giardia* (reported as “CT”), and 99% (2-log) inactivation for *Cryptosporidium* (reported as “Log<sub>i</sub>”). MWRA calculates inactivation rates hourly and reports inactivation at maximum flow for *Giardia*, and minimum Log<sub>i</sub> for *Cryptosporidium*. CT achievement for *Giardia* assures CT achievement for viruses, which have a lower CT requirement.

Compliance with the *Giardia* standard is expressed as percent of required CT achieved; 100% is the minimum allowed. Compliance with the *Cryptosporidium* standard is based on meeting the Log<sub>i</sub> requirement of 2-log and meeting the “off-spec” requirement. Off-Spec water is water that has not received the required UV dose or if the UV reactor was operated outside the validated testing ranges. No more than 5% off-spec water is allowed in a month.

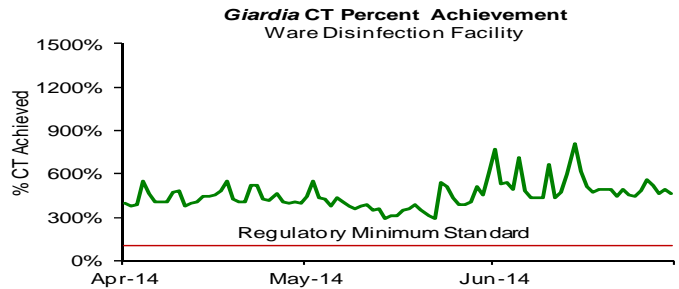
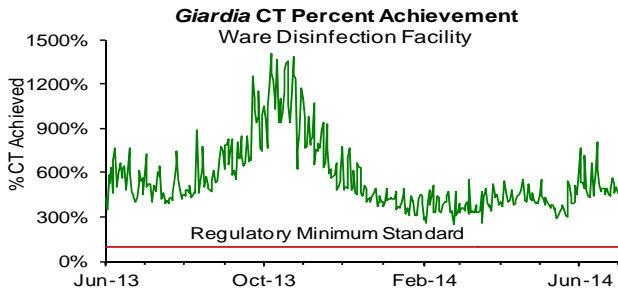
### Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 1.4 to 2.5 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* Log<sub>i</sub> was maintained above 2 log during the month. Off-spec water was less than 5%.
- The CWTP UV treatment process officially went on-line for regulatory compliance on April 1.



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

CT was maintained above 100% at all times the plant was providing water into the distribution system for the quarter, as well as every day for the last fiscal year. The chlorine dose at Ware Disinfection Facility (WDF) is adjusted in order to achieve MWRA’s seasonal target of  $\geq 0.75$  mg/L (November 01 – May 31) and  $\geq 1.0$  mg/L (June 1– October 31) at Ludlow Monitoring Station. The chlorine dose at WDF varied between 1.4 to 1.9 mg/L for the quarter.



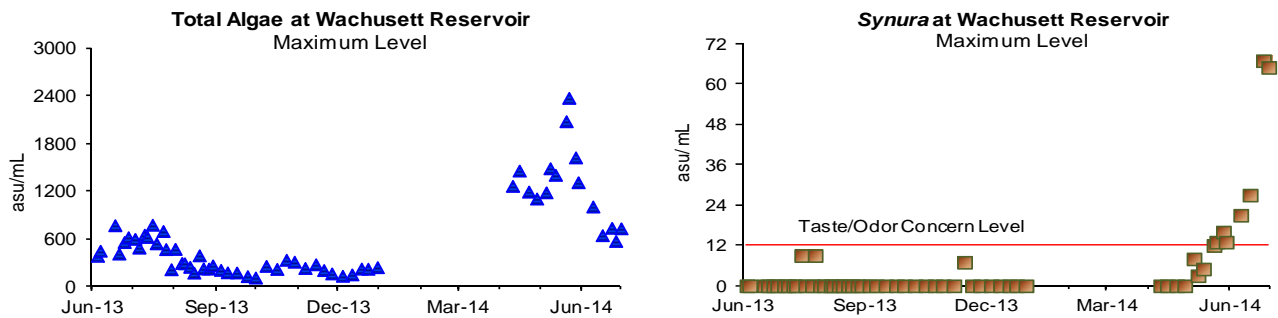
## Source Water - Algae

### 4th Quarter – FY14

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

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

In the 4th Quarter, there were two complaints which may be related to algae reported from local water departments. Wachusett Reservoir was treated with copper sulfate on June 24 to control the growth of *Synura*, a taste and odor causing algae species.

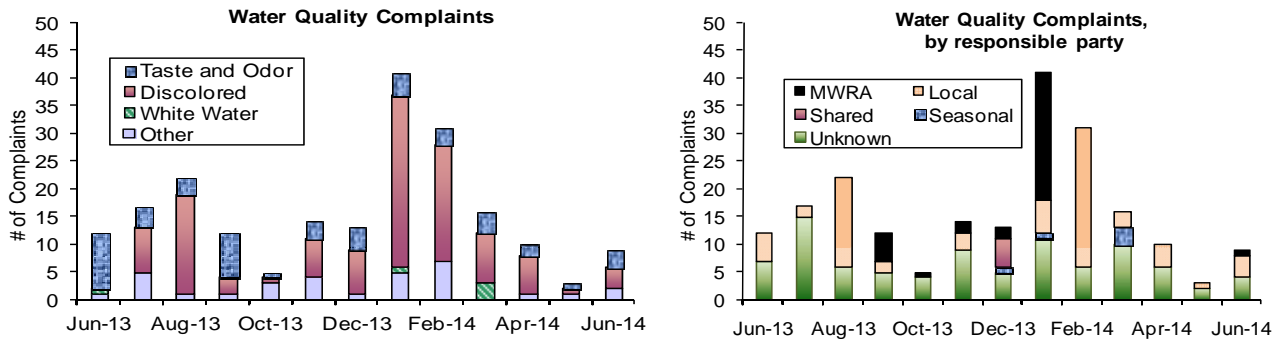


## Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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 22 complaints during the quarter compared to 45 complaints for 4th Quarter of FY13. Of these complaints, 12 were for “discolored water”, 6 were for “taste and odor”, and 4 were for “other”. Of these complaints, 9 were local community issues, 1 was an MWRA issue, and 12 were unknown in origin.



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

4<sup>th</sup> Quarter – FY14

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

The MWRA TCR program has 139 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, 11 of the 5,980 community samples (0.18% system-wide) submitted to MWRA labs for analysis tested positive for coliform (Bedford - April; Swampscott - May; Boston, Framingham, Lexington, Newton, Revere, Somerville, and Waltham - June). Three of the 1,946 MWRA samples (0.15%) tested positive for total coliform in June. No sample tested positive for *E. coli*. Only 1.7% 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	374	0 (0%)	0		1.20	2.33	
		Communities In Program	1572	3 (0.19%)	0	No	0.02	1.89	
		<b>Total: MWRA</b>	<b>1946</b>	<b>3 (0.15%)</b>	<b>0</b>	<b>No</b>	<b>0.02</b>	<b>1.98</b>	
Fully Served		ARLINGTON	156	0 (0%)	0		0.00	1.50	
		BELMONT	104	0 (0%)	0		0.71	1.99	
		BOSTON	783	1 (0.10%)	0	No	1.04	1.91	
		BROOKLINE	221	0 (0%)	0		0.16	2.00	
		CHELSEA	169	0 (0%)	0		1.20	1.82	
		DEER ISLAND	52	0 (0%)	0		1.18	1.98	
		EVERETT	170	0 (0%)	0		0.89	1.15	
		FRAMINGHAM	219	1 (0.34%)	0	No	0.84	2.14	
		LEXINGTON	120	1 (0.64%)	0	No	1.62	2.15	
		LYNNFIELD	18	0 (0%)	0		0.53	1.39	
		MALDEN	234	0 (0%)	0		0.95	1.75	
		MARBLEHEAD	72	0 (0%)	0		0.36	1.95	
		MEDFORD	204	0 (0%)	0		0.93	1.82	
		MELROSE	120	1 (0.61%)	0	No	0.02	1.18	
		MILTON	96	0 (0%)	0		1.39	1.83	
		NAHANT	30	0 (0%)	0		0.12	1.55	
		NEWTON	279	1 (0.27%)	0	No	0.58	2.04	
		NORWOOD	99	0 (0%)	0		0.17	1.90	
		QUINCY	299	0 (0%)	0		0.20	1.84	
		READING	130	0 (0%)	0		0.45	1.74	
		REVERE	198	1 (0.39%)	0	No	0.35	2.09	
		SAUGUS	104	0 (0%)	0		1.41	1.89	
		SOMERVILLE	276	1 (0.26%)	0	No	1.08	1.92	
		SOUTHBOROUGH	30	0 (0%)	0		0.14	2.12	
		STONEHAM	92	0 (0%)	0		0.92	2.02	
		SWAMPSCOTT	57	1 (1.33%)	0	No	0.02	1.77	
		WALTHAM	225	3 (1.01%)	0	No	0.31	2.15	
		WATERTOWN	130	0 (0%)	0		1.45	2.09	
		WESTBORO HOSPITAL	15	0 (0%)	0		0.08	0.46	
		WESTON	48	0 (0%)	0		1.39	2.35	
		WINTHROP	73	0 (0%)	0		0.12	1.81	
		<b>Total: Fully Served</b>	<b>4823</b>	<b>11 (0.17%)</b>					
CVA & Partially Served	b	BEDFORD	60	0 (0%)	0		0.65	1.34	
		CANTON	87	0 (0%)	0		0.04	1.03	
		HANSCOM AFB	27	0 (0%)	0		0.86	1.81	
		MARLBORO	126	0 (0%)	0		0.17	1.81	
		NEEDHAM	123	0 (0%)	0		0.02	0.60	
		NORTHBORO	50	0 (0%)	0		1.17	2.01	
		WAKEFIELD	143	0 (0%)	0		0.42	1.24	
		WELLESLEY	113	0 (0%)	0		0.02	0.82	
		WILMINGTON	87	0 (0%)	0		1.25	1.98	
		WINCHESTER	98	0 (0%)	0		0.16	1.33	
		WOBURN	195	0 (0%)	0		0.06	0.93	
		c	SOUTH HADLEY FD1	48	0 (0%)	0		0.09	0.57
			<b>Total: CVA &amp; Partially Served</b>	<b>1157</b>	<b>0 (0%)</b>				
		<b>Total: Community Samples</b>	<b>5980</b>	<b>11 (0.18%)</b>					

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

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

### 4th Quarter – FY14

Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5s) are by-products of disinfection treatment with chlorine. TTHMs and HAA5s are of concern due to their potential adverse health effects at high levels. EPA's running annual average (RAA) standard is 80 µg/L for TTHMs and 60 µg/L for HAA5s. For the MetroBoston system, effective Q2 2013, under the Stage 2 DBP Rule, compliance is based on locational running annual averages (LRAA). Sampling locations have increased from 16 to 32 each quarter. Data prior to Q1 2013 reports the running annual average, and since Q1 2013, the maximum LRAA is reported (in addition to min and max values).

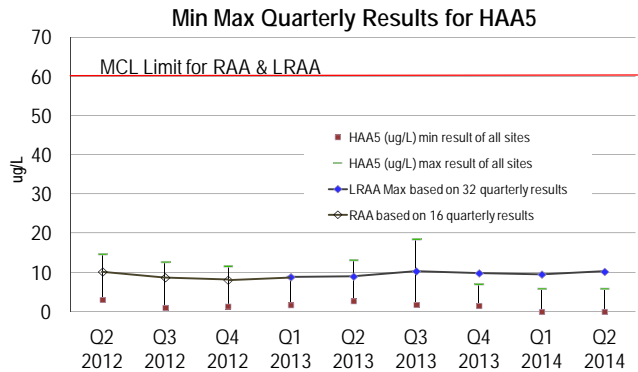
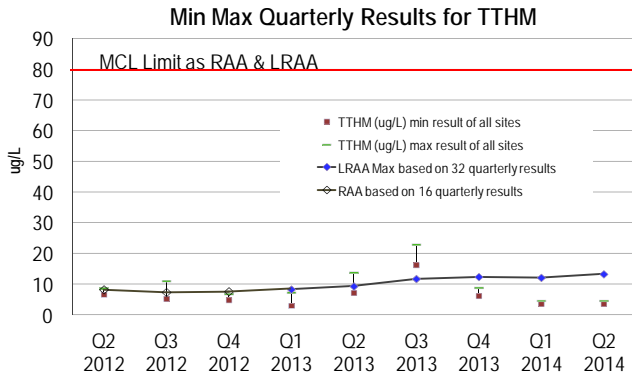
For the CVA communities, effective Q3 2013, under the Stage 2 DBP Rule, compliance is based on a LRAA for each community. Sampling locations have increased from 12 to 14 each quarter. Prior to Q3 2013, the running annual average is reported, and since Q3 2013, the maximum LRAA is reported (in addition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

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

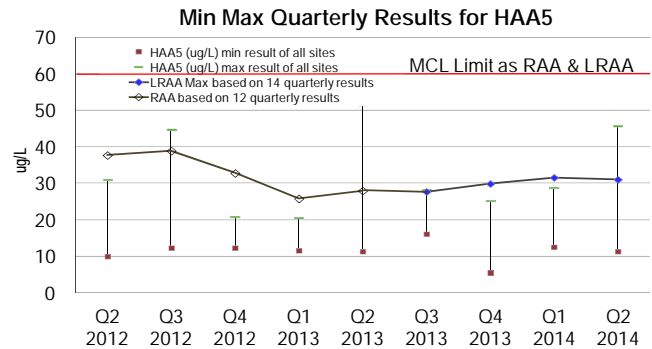
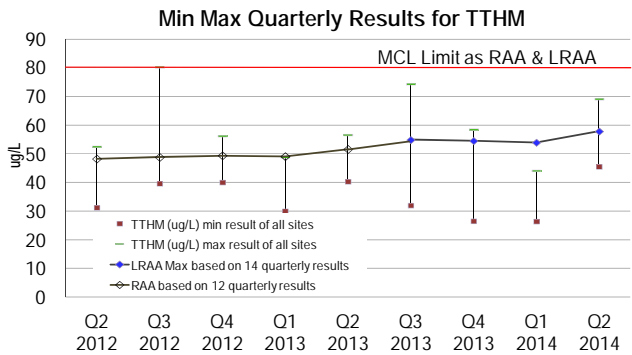
Bromate is tested monthly per DEP requirements for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA's RAA MCL standard for bromate is 10 µg/L.

The RAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remain below current standards. The LRAA for TTHMs = 13.3 µg/L; HAA5s = 10.2 µg/L. The current RAA for Bromate = 0.0 µg/L. CVA's DBP levels continue to be below current standards.

### MetroBoston Disinfection By-Products



### CVA Disinfection By-Products



# Water Supply and Source Water Management

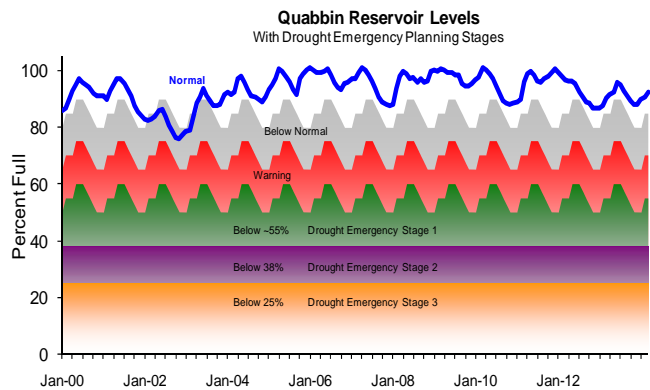
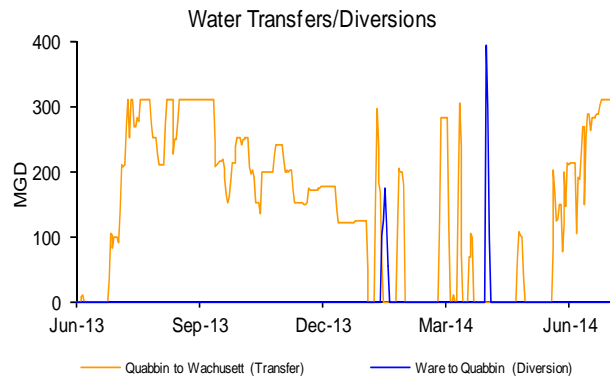
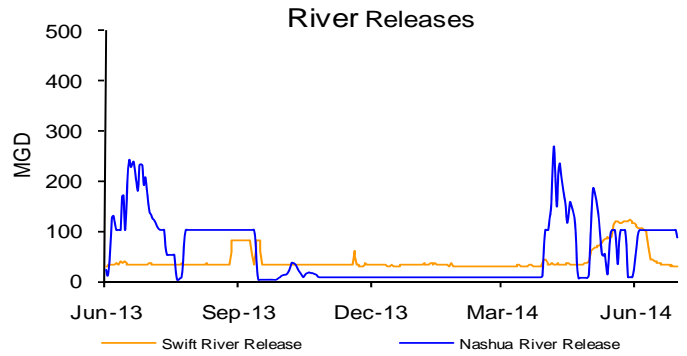
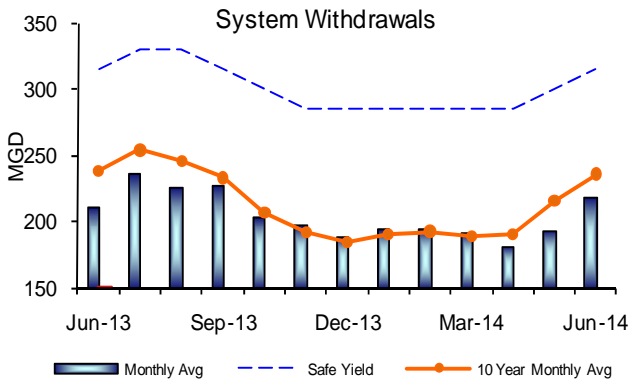
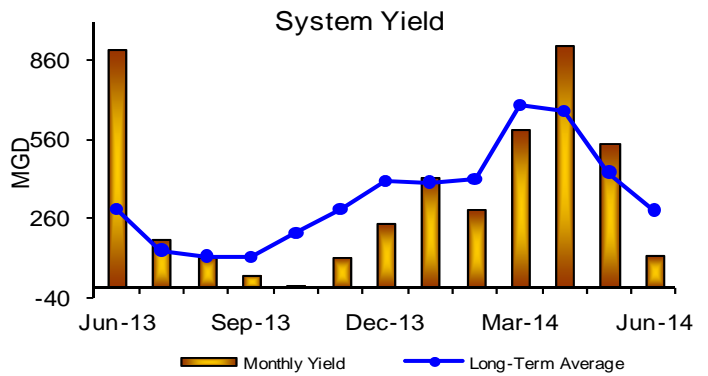
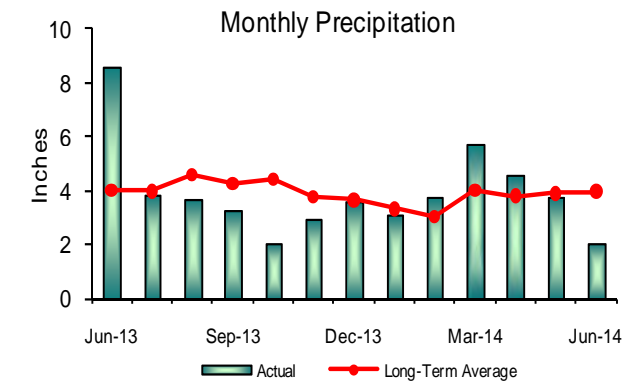
4th Quarter – FY14

## 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 96.8% as of June 30, 2014; a 3.8% increase for the quarter, which represents an increase of 15.7 billion gallons of storage. Yield for the quarter was above its quarterly long term average while precipitation was slightly below its long term average. Monthly withdrawals continue to be below its long-term average.



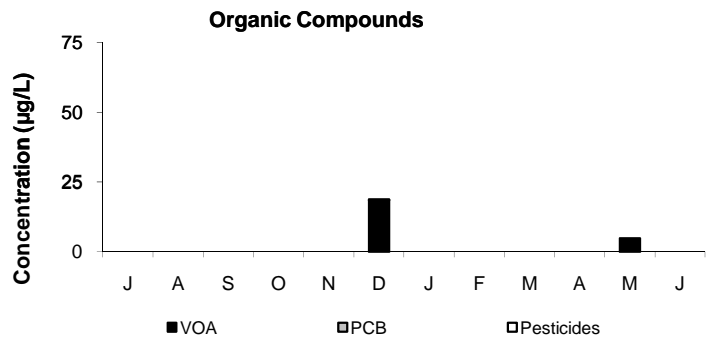
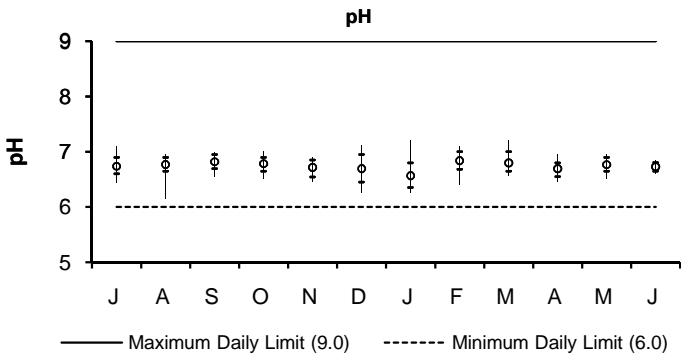
# WASTEWATER QUALITY

## NPDES Permit Compliance: Deer Island Treatment Plant 4th Quarter - FY14

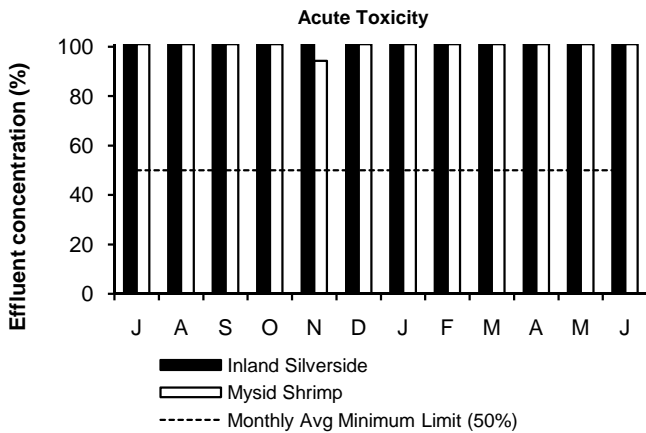
### NPDES Permit Limits

Effluent Characteristics		Units	Limits	April	May	June	4th Quarter Violations	FY14 YTD Violations
Dry Day Flow:		mgd	436	269.1	272.5	267.8	0	0
cBOD:	Monthly Average	mg/L	25	6.3	4.4	6.4	0	0
	Weekly Average	mg/L	40	10.6	5.3	7.4	0	0
TSS:	Monthly Average	mg/L	30	18.4	6.7	9.2	0	0
	Weekly Average	mg/L	45	36.3	7.3	10.9	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	74	20	20	0	0
	Weekly Geometric Mean	col/100mL	14000	24	8	8	0	0
	% of Samples >14000	%	10	0	0	0	0	0
	Consecutive Samples >14000	#	3	0	0	0	0	0
pH:		SU	6.0-9.0	6.5-7.0	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	100	50	50	0	0
	Inland Silverside	%	≥1.5	100	100	50	0	0

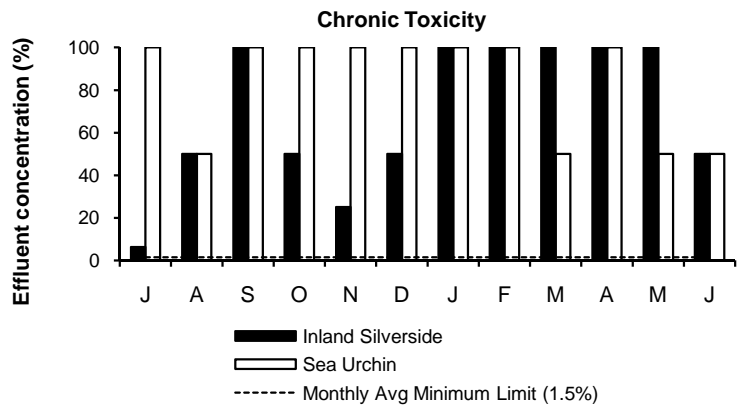
There have been no permit violations in FY14 at the Deer Island Treatment Plant.



An important wastewater component monitored in the effluent is organic compounds, such as volatile organic acids, pesticides, and polychlorinated biphenyls, which are all sampled monthly. The secondary treatment process has significantly reduced organic compounds in the effluent stream. In the 4th Quarter, all organic compounds were below the detection limit.



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% dilution 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 - FY14

### NPDES Permit Limits

Effluent Characteristics		Units	Limits	April	May	June	4th Quarter Violations	FY14 YTD Violations
Flow:	Running Average:	mgd	3.01	2.50	2.56	2.40	0	0
BOD:	Monthly Average:	mg/L	20	3.1	2.9	3.1	0	0
	Weekly Average:	mg/L	20	4.4	3.2	3.8	0	0
TSS:	Monthly Average:	mg/L	20	3.6	3.6	3.1	0	0
	Weekly Average:	mg/L	20	5.5	4.6	3.4	0	0
pH:		SU	6.5-8.3	6.9-7.6	7.1-7.3	7.2-7.6	0	0
Dissolved Oxygen:	Daily Minimum:	mg/L	6	6.9	6.3	6.8	0	0
Fecal Coliform:	Daily Geometric Mean:	col/100mL	400	4	5	6	0	0
	Monthly Geometric Mean:	col/100mL	200	3	3	3	0	0
TCR:	Monthly Average:	ug/L	50	0	0	0	0	0
	Daily Maximum:	ug/L	50	0	7	0	0	0
Total Ammonia Nitrogen: June 1 - October 31								
	Monthly Average:	mg/L	10.0	0.54	0.00	0.02	0	0
	Daily Maximum:	mg/L	35.2	2.69	0.00	0.05	0	0
Copper:	Monthly Average:	ug/L	20	2.7	1.9	3.5	0	0
Phosphorus:								
	Monthly Average:	mg/L	N/A	--	--	--	0	0
Acute Toxicity:	Daily Minimum:	%	100	*N/A	*N/A	>100	0	0
Chronic Toxicity:	Daily Minimum:	%	> 62.5	*N/A	*N/A	100.0	0	1

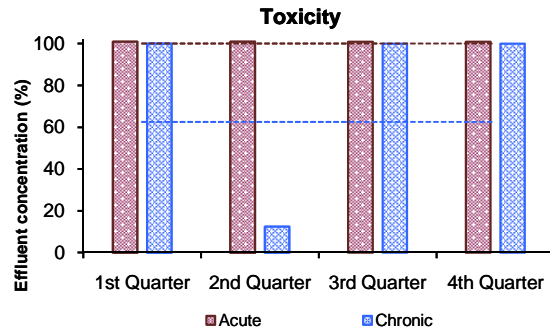
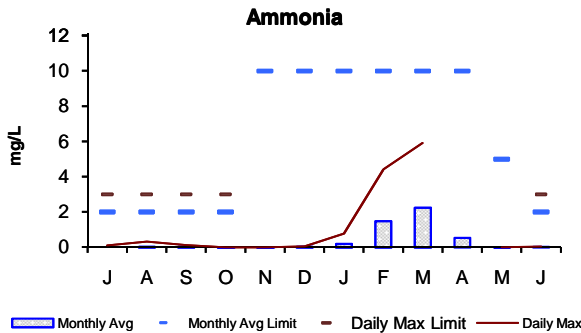
There has been one permit violation in FY14 at the Clinton Treatment Plant.

**1st Quarter:** There were no permit violations in the 1st Quarter of FY14.

**2nd Quarter:** There was one permit violation in the 2nd Quarter of FY14. In December 2013, the chronic toxicity was 12.5%, which is below the permit minimum of 62.5%.

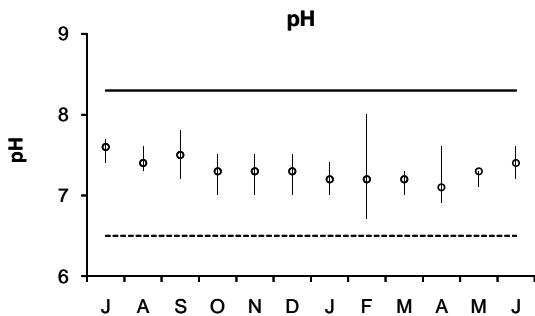
**3rd Quarter:** There were no permit violations in the 3rd Quarter of FY14.

**4th Quarter:** There were no permit violations in the 4th Quarter of FY14.

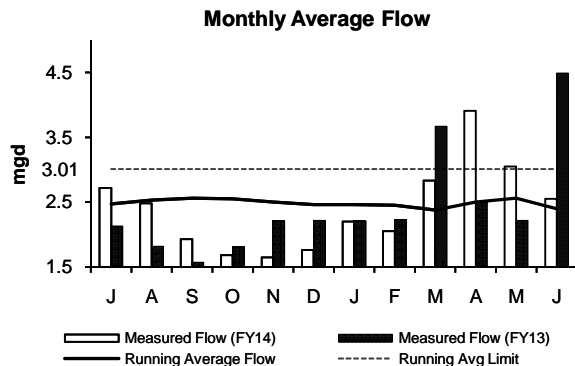


The 4th Quarter's monthly average and daily maximum concentrations were below the permit limits. The monthly average and daily maximum limits for the 4th Quarter are variable, getting more stringent towards June. The permit limits are most stringent from June to October when warm weather conditions are 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 allowed by the permit.



The graph depicts the running annual average monthly flow, measured in million gallons per day, exiting the plant. The average monthly flows during the 4th Quarter met the NPDES permit limit.



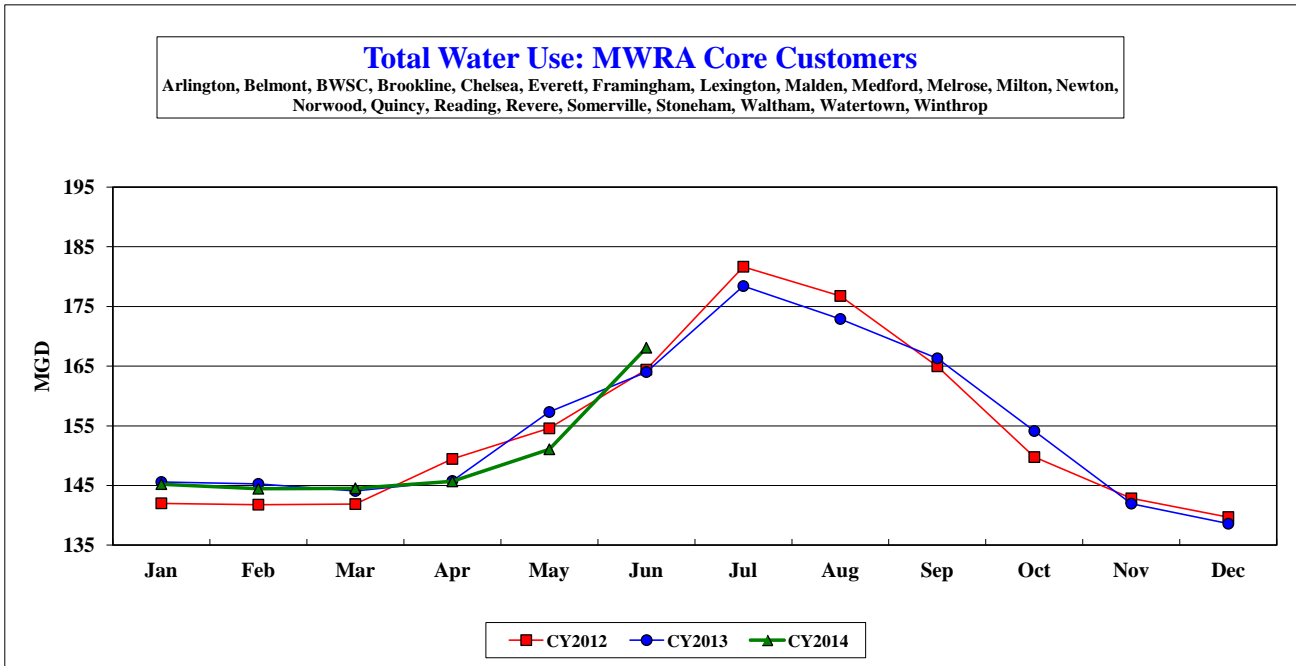
# COMMUNITY FLOWS AND PROGRAMS

## Total Water Use: MWRA Core Customers 4th Quarter - FY14

Massachusetts Water Resources Authority  
Water Supplied: MWRA Core Communities

MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
CY2012	142.017	141.788	141.883	149.452	154.576	164.414	181.663	176.766	164.979	149.759	142.842	139.708	154.208
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	154.605
CY2014	145.227	144.459	144.530	145.687	151.070	168.088	0.000	0.000	0.000	0.000	0.000	0.000	149.855

MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
CY2012	4,402.513	4,111.860	4,398.384	4,483.569	4,791.865	4,932.424	5,631.565	5,479.746	4,949.362	4,642.530	4,285.248	4,330.949	56,440.017
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	56,430.974
CY2014	4,502.028	4,044.839	4,480.442	4,370.607	4,683.163	5,042.649	0.000	0.000	0.000	0.000	0.000	0.000	27,123.728



Water Use Report recently distributed to communities served by the MWRA waterworks systems. Each community's annual water use relative to the system as a whole is the primary factor in allocating the annual water rate revenue requirement to MWRA water communities. Calendar year 2014 water use will be used to allocate the FY16 water utility rate revenue requirement.

June 2014 water supplied of 214.3 mgd (for revenue generating users) is up 9.9 mgd or 4.9% compared to June 2013. This includes 1.4 mgd supplied to the City of Cambridge and 0.597 mgd supplied to the Town of Hudson. Including the water supplied to Cambridge and Hudson, annual system-wide consumption for CY14 remains higher than CY13 with 185.4 mgd being supplied to MWRA customers through June. This is 4.3 mgd higher than CY13, and is an increase of 2.4%.

Excluding water provided to Cambridge and Hudson, CY14 year to date consumption through June is 1.6 mgd or 0.9% lower than CY13.

# Community Wastewater Flows

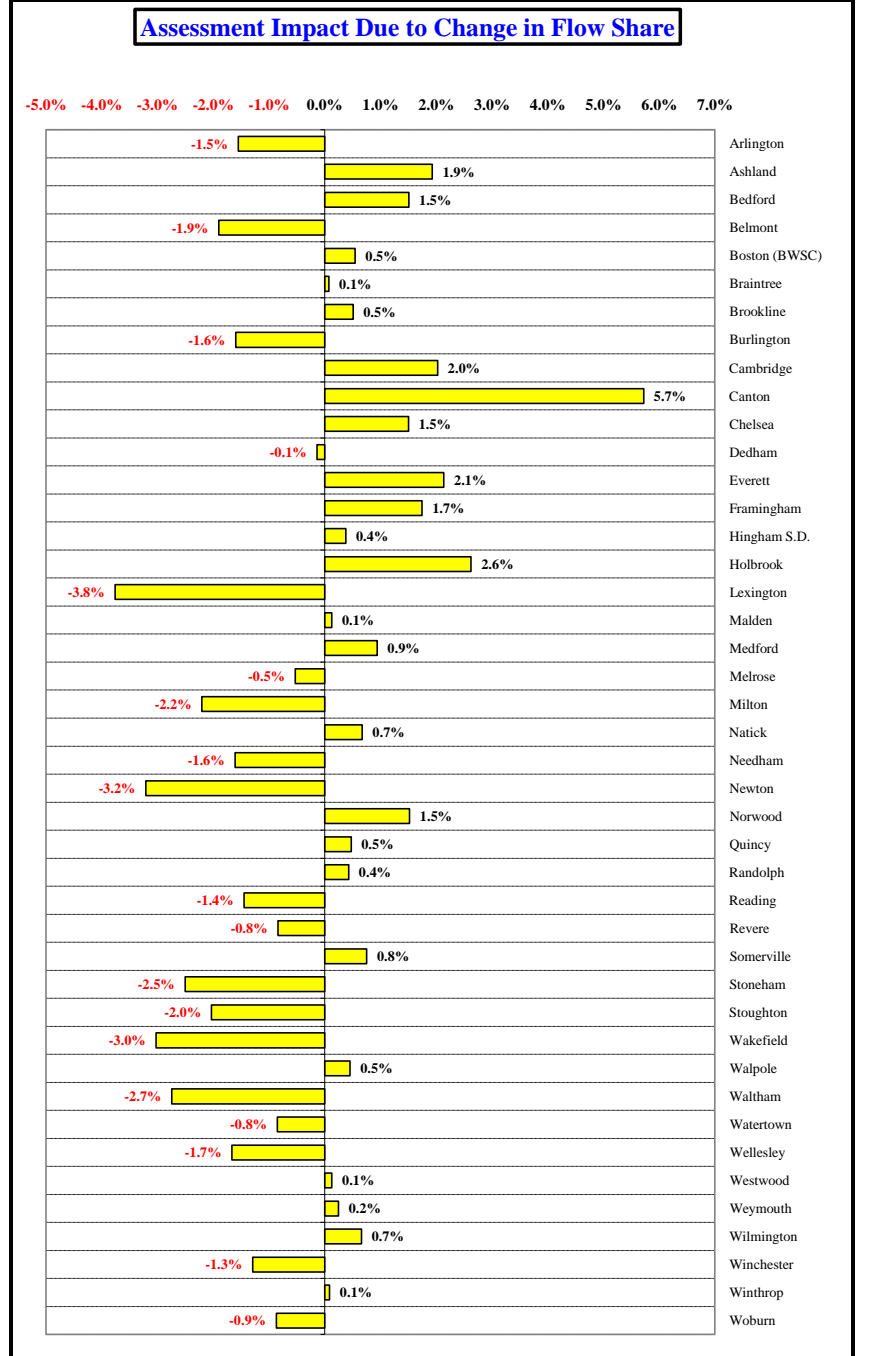
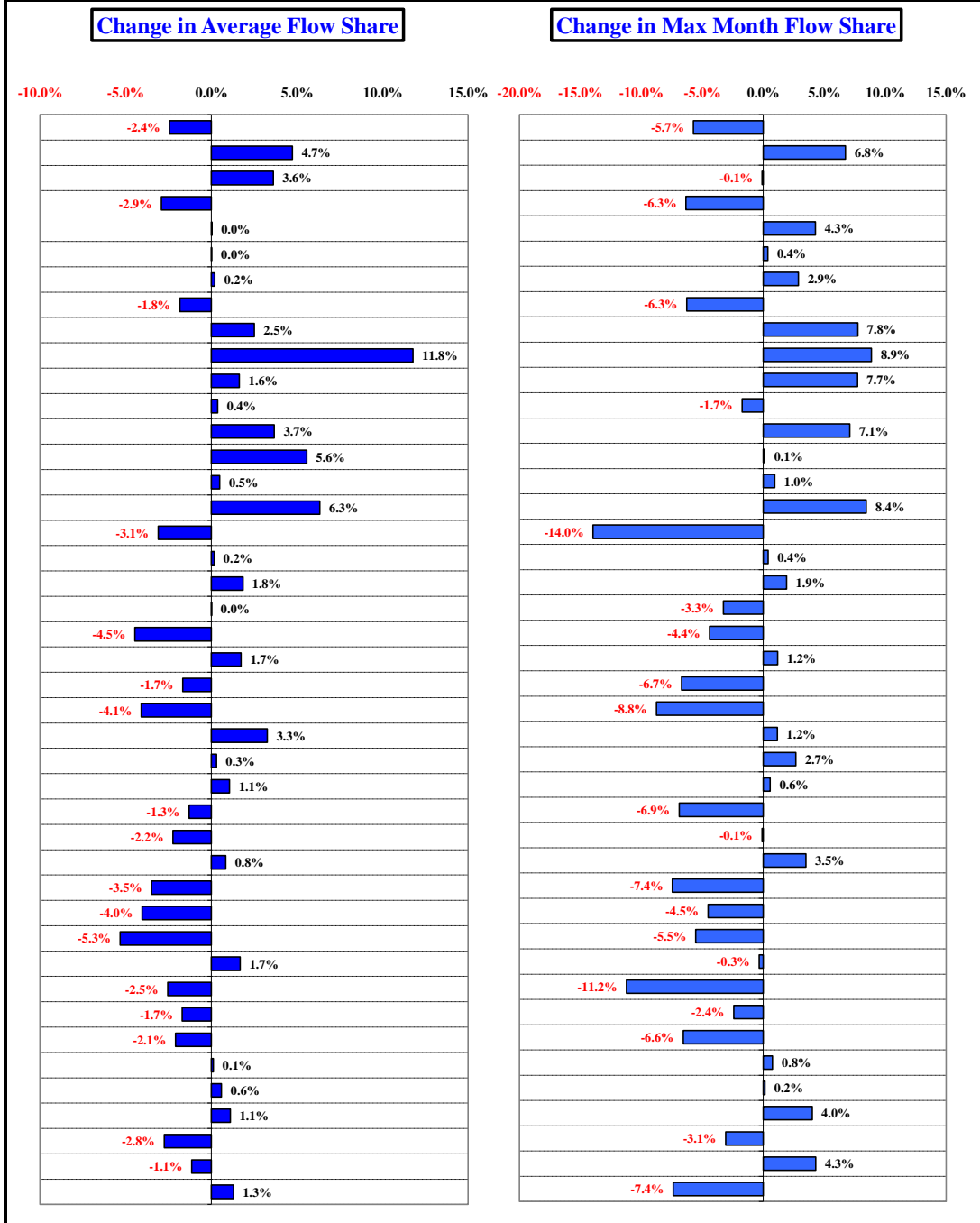
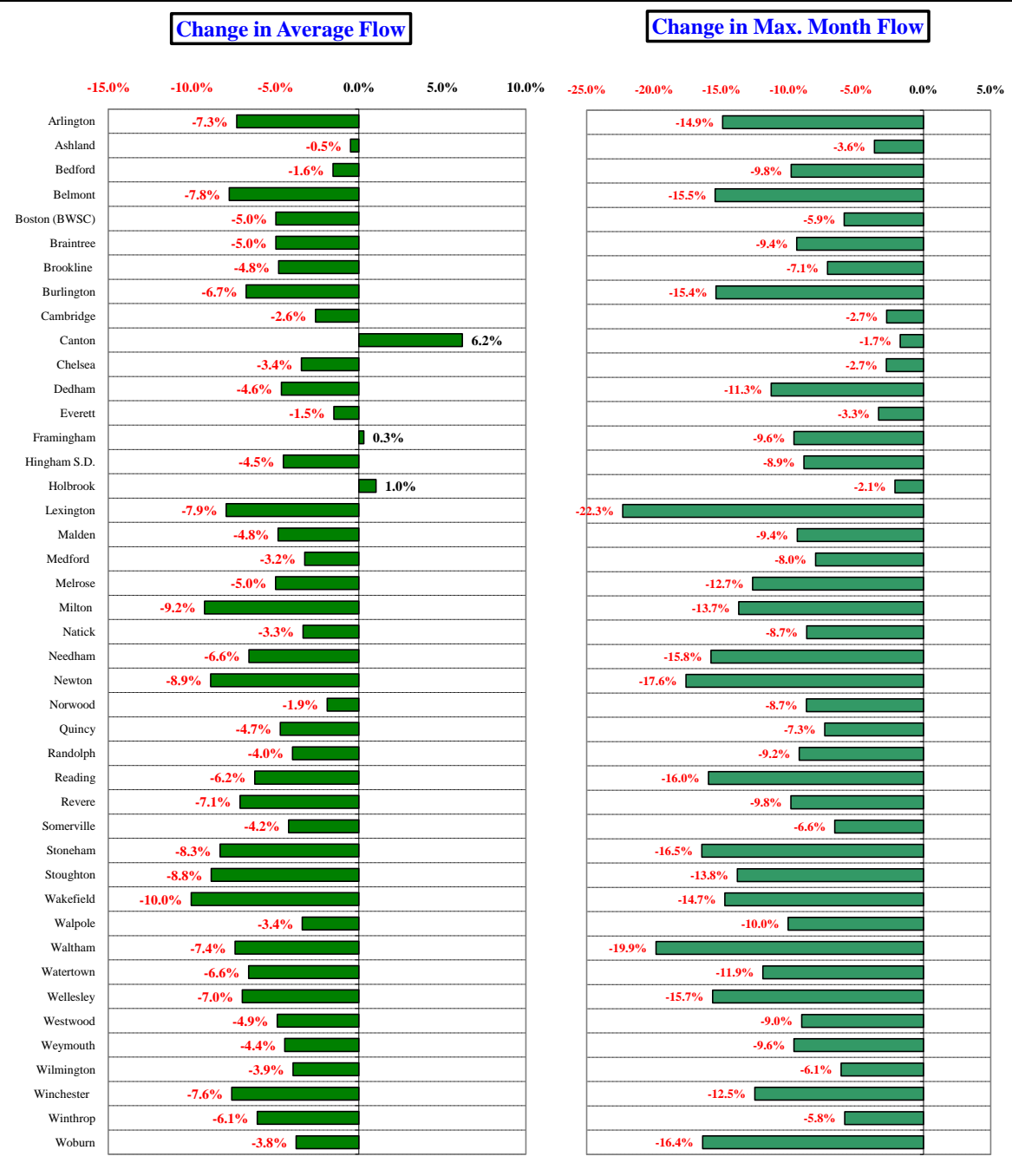
## 4th Quarter - FY14

### How Projected CY2014 Community Wastewater Flows Could Effect FY2016 Sewer Assessments <sup>1,2,3</sup>

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

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

The chart below illustrates the change in the TOTAL BASE assessment due to FLOW SHARE CHANGES. <sup>4</sup>



**Notes:**

- <sup>1</sup> MWRA uses a 3-year flow average to calculate sewer assessments. Three-year averaging smoothes the impact of year-to-year changes in community flow share, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.
- <sup>2</sup> Based on CY2011 to CY2014 average wastewater flows as of 08/07/14. Flow data is preliminary and subject to change pending additional MWRA and community review.
- <sup>3</sup> CY2011 to CY2013 wastewater flows based on actual meter data. CY2014 flows based on actual meter data for January to June and projected flows for July to December.
- <sup>4</sup> Represents ONLY the impact on the total BASE assessment resulting from the changes in average and maximum wastewater FLOW SHARES.

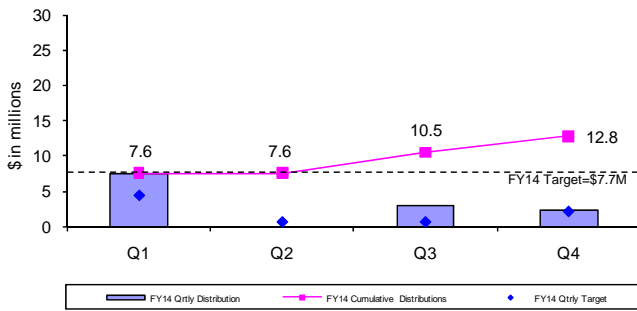
# Community Support Programs

## 4<sup>th</sup> Quarter – FY14

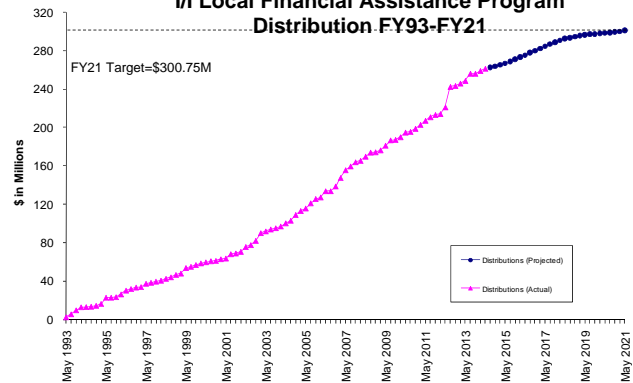
### Infiltration/Inflow Local Financial Assistance Program

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

**FY14 Quarterly Distributions of Sewer Grant/Loans**



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

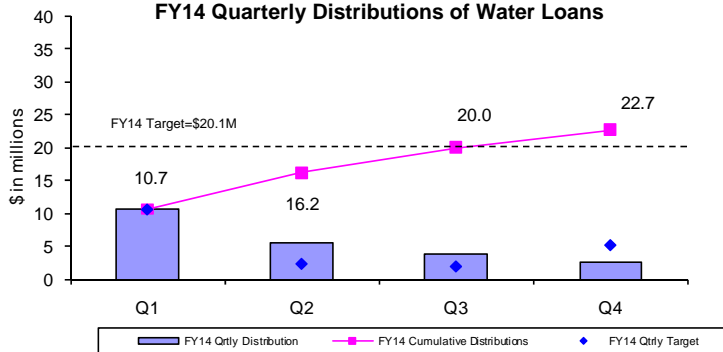


During the 4<sup>th</sup> Quarter of FY14, \$2.27 million in financial assistance (45% grants and 55% interest-free loans) was distributed to fund local sewer rehabilitation projects in Ashland, Hingham, Melrose, Reading and Weymouth. Total grant/loan distribution for FY14 is \$12.75 million. From FY93 through the 4<sup>th</sup> Quarter of FY14, all 43 member sewer communities have participated in the program and more than \$261 million has been distributed to fund 459 local I/I reduction and sewer system rehabilitation projects. Distribution of the remaining funds has been approved through FY21 and community loan repayments will be made through FY26. All scheduled community loan repayments have been made. (Changes to the program approved as part of the FY15 budget will be reported next quarter).

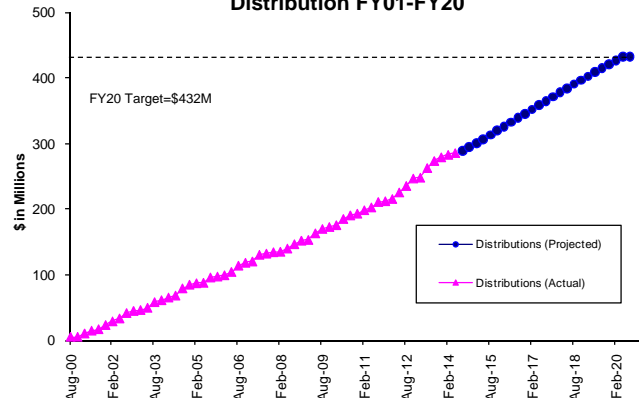
### Water Local Pipeline and Water System Assistance Programs

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.

**FY14 Quarterly Distributions of Water Loans**



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



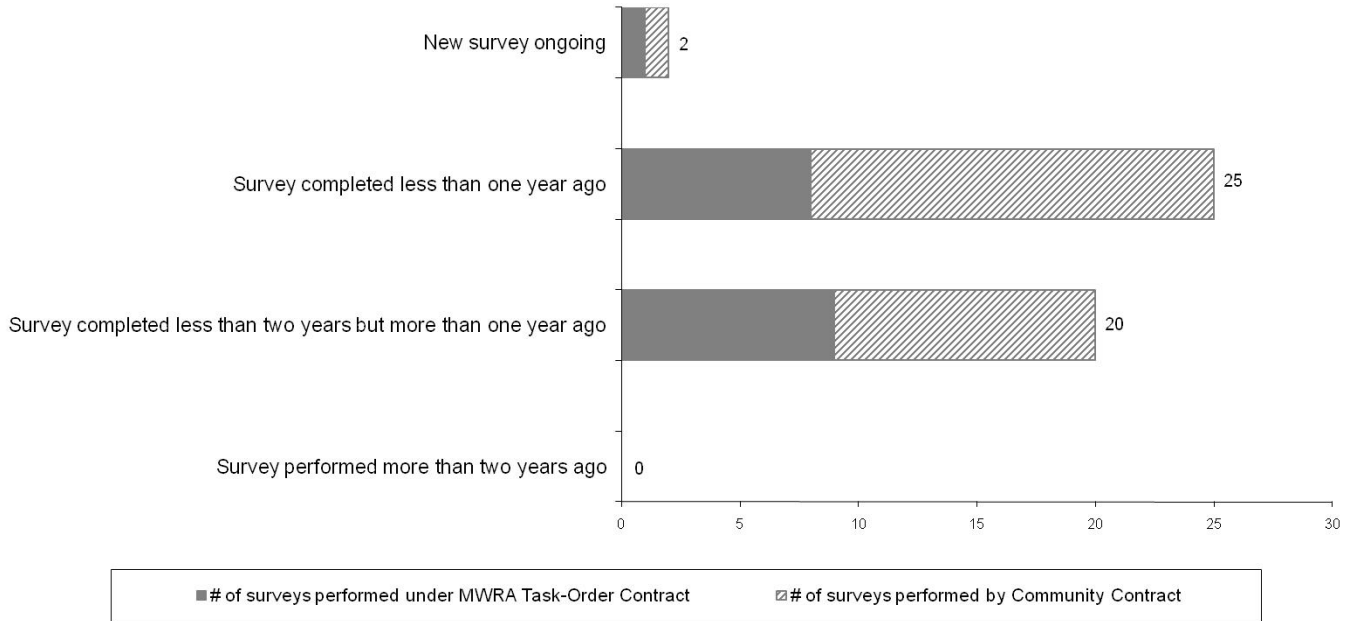
During the 4<sup>th</sup> Quarter of FY14, \$2.69 million in interest-free loans was distributed to fund local water projects in Peabody and Swampscott. Total loan distribution for FY14 is \$22.72 million. From FY01 through the 4<sup>th</sup> Quarter of FY14, more than \$285 million has been distributed to fund 330 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.

## Community Support Programs

4<sup>th</sup> Quarter – FY14

### 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 4<sup>th</sup> Quarter of FY14, 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.

FY14 DISTRIBUTION	Annual Target	Q1	Q2	Q3	Q4	Annual Total
Educational Brochures	100,000	55,816	24,172	89,623	52,618	222,229
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	2,323	3,624	6,041	3,294	15,282
Toilet Leak Detection Dye Tablets	-----	827	954	1,983	1,214	4,978

## BUSINESS SERVICES

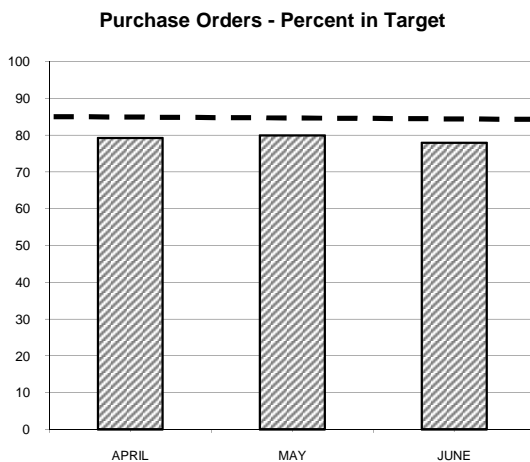
# Procurement: Purchasing and Contracts

4th Quarter, FY14

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

**Outcome:** Processed 79% of purchase orders within target; Average Processing Time was 7.07 days vs. 12.63 days in Qtr 4 of FY13. Processed 76 % (22 of 29) contracts within target timeframes; Average Processing Time was 105 days vs. 78 days in Qtr 4 of FY13.

## Purchasing



	No.	TARGET	PERCENT IN TARGET
\$0 - \$500	1122	3 DAYS	74.1%
\$500 - \$2K	1053	7 DAYS	87.2%
\$2K - \$5K	171	10 DAYS	59.0%
\$5K - \$10K	99	25 DAYS	78.7%
\$10K - \$25K	76	30 DAYS	82.8%
\$25K - \$50K	19	60 DAYS	84.2%
Over \$50K	45	90 DAYS	86.6%

The Purchasing Unit processed 2585 purchase orders, 33 more than the 2552 processed in Qtr 4 of FY13 for a total value of \$14,260,418 versus a dollar value of \$11,313,866 in Qtr 4 of FY13.

The purchase order processing target was not met for the \$0 - \$500 category due to vendor price confirmations; the \$2k - \$5k due to end user confirmations; the \$5k - \$10k due to end user evaluations and sole source requirements; the \$10k-\$25k due to end user evaluations and sole source requirements and the \$25k - \$50k due to end user evaluations and staff summary requirements.

## Contracts, Change Orders and Amendments

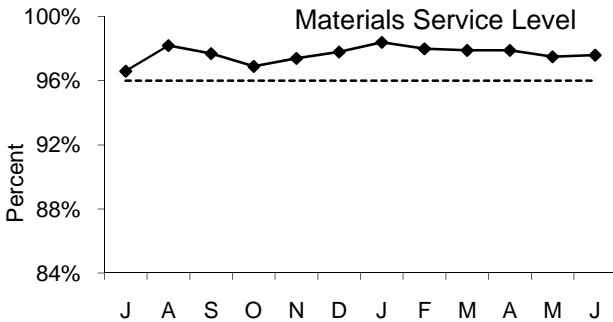
Seven contracts were not processed within target timeframes for the following reasons: delayed submission of contract documentation from the consultant; rebidding; multiple design revisions; longer than anticipated bid review and contractor qualifications process; and holding execution to meet the originating department's need for the service.

Procurement processed twenty seven contracts with a value of \$12,692,077 and eleven amendments with a value of \$653,968.

Twenty nine change orders were executed during the period. The dollar value of all non-credit change orders during Q4 FY14 was \$1,298,419 and the value of credit change orders was (\$468,061).

# Materials Management

4th Quarter, FY14



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 8,273 (97.7%) of the 8,470 items requested in Q4 from the inventory locations for a total dollar value of \$1,161,867.

## Inventory Value - All Sites

Inventory goals focus on:

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

The FY14 goal is to reduce consumable inventory from the July '13 base level (\$6.9 million) by 4.0% (approximately \$276,182), to \$6.6 million by June 30, 2014 (see chart below).

Items added to inventory this quarter include:

- Deer Island – adhesive caulk and labeling tape for Maintenance; fuses, relays, VFD mounting kit, and thermostat for Core; bearings, ring seal and bearing housing for Residuals; clamps, elbows, insulation, copper tubing, ball valves and filters for HVAC.
- Chelsea – battery inverter, clevis hook, grease gun holder, battery charger, battery cable, brake adapter, wheel bearing and oxygen sensor for VMM; grit screws, rotork actuator, coil, probes, pressure switch, submersible pump and cordless flashlight for Work Order Coordination Group.
- Southboro – crimp anchors, wire wheels, degreaser, abrasive discs and cleaner for Maintenance; calibration gas, rebuild kit and valves for Carroll Water Treatment Plant.

Property Pass Program:

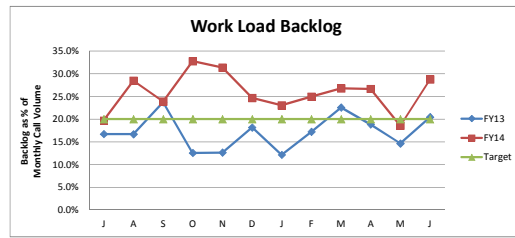
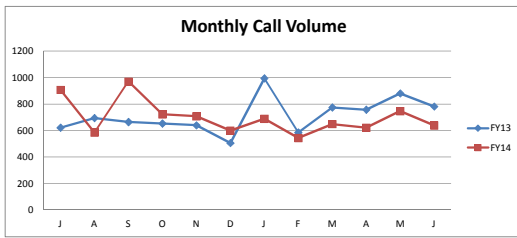
- Audits were conducted at Barre Shaft 8, Chelsea Creek, Ward Street, Columbus Park and Nut Island Head works and plumber's tool boxes during Q4.
- Numerous obsolete network switches, monitors, computers, printers, scanners, storage controls, power supplies, laptops and cell phones have been received into property pass as surplus. Disposition is being handled as part of our ongoing recycling efforts.
- Scrap revenue received for Q4 amounted to \$24,260. Year to date revenue received amounts to \$94,768.
- Revenue received from online vehicle auction held during Q4 amounted to \$97,136. Year to date revenue received amounts to \$183,531.

Items	Base Value July-13	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	6,954,017	7,622,448	668,431
Spare Parts Inventory Value	7,358,692	7,428,034	69,342
Total Inventory Value	14,312,709	15,050,482	737,773

**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.

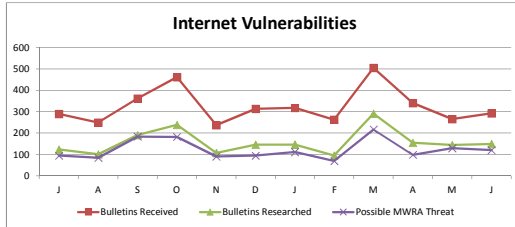
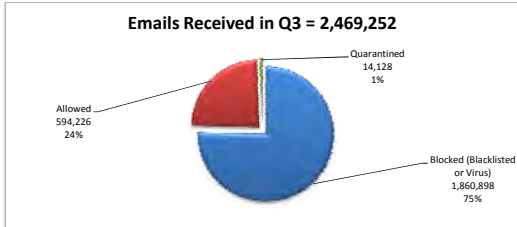


**MIS Program  
4th Quarter FY14**



**Performance:**

Call Volume: Peaked in May. FY14-Q4 decreased by 17% from FY13-Q4. Call Backlog: Peaked in June and was 8.8% above the targeted benchmark of 20%.



**Information Security:**

During Q4, staff pushed security fixes and updates to desktops and servers throughout the quarter in order to protect against 95 vulnerabilities.

LANDesk Antivirus quarantined 60 distinct viruses from 42 MWRA computers. MWRA's systems are current with anti-virus providers' signatures for all known malware.

**Infrastructure:**

Data Network Circuit Upgrades: Completed circuit upgrades at several sites. The network group working with Verizon completed upgrades of the circuits connecting Southborough, and CWTP facility to Chelsea data center, from 3 MB to 10MB service. Internet service was also increased from 12MB to 50MB.

Data Storage Upgrade Project: As part of the Data Storage Project, MIS is in the process of consolidating all of its direct attached and SAN storage into one single unified platform. This will allow for MIS data growth, and reduces power consumption to support MIS "green" initiatives. In the month of May completed the installation of 3-PAR SAN storage with HP, and began connecting the VM hosts to the 3-PAR storage.

Windows 7 Upgrade: Rolling out new Windows 7 PCs replacing the older PCs and upgrading the remaining PC's XP Operating System (OS) with the Windows 7 OS. On 6/23/2014 a kickoff meeting occurred with the arrival of two onsite contractors from LANDesk who will use the LANDesk tool to pull information about the existing PCs on the network and push out the upgrades across the network. Images for PCs have been developed at the end of June, one for the new PCs and one for existing PCs being upgraded to the new OS. Image testing will occur in July.

Citrix Mobile Application Design and Development: Issued iPads to a pilot group of MWRA staff earlier this year so that they could evaluate application use opportunities for their functional areas. Created and distributed a survey this quarter to the iPad pilot group to collect feedback on the usefulness of the iPads and a wish list for mobile applications. Results have been compiled and reviewed in follow-up Brown Bag meeting with the pilot group in May. The next phase of the project is the Citrix Infrastructure Design and Build and is currently underway. Consultants incorporated feedback from the survey and several weeks of meeting with users and IT staff to develop a list of applications that will be mobilized and design the appropriate infrastructure to support the MWRA's initial mobilized application needs. In addition, Disaster Recovery (DR) and business continuity failover requirements designs are underway. The design document will be delivered in July and the consultants have started to build a pilot environment.

**Applications/Training/Records Center:**

Strategic Sourcing and Contract Management: Strategic Sourcing is the Infor/Lawson application used for electronic bidding. Information about the awarded bid will be passed into the new Infor/Lawson Contract Management module. IT Systems and application support staff worked with the vendor to upgrade the development system's Application Environment from 10.0.4.5 to 10.1.0.23 and the Landmark Application from version 9.0.1.10 to 9.1.1.1. Following testing of the upgraded development system, the production system will be upgraded in July. The upgrades allow us to stay current with the vendor's release and take advantage of recently added functionality. Staff and users continued working on new contract language, developing contract template types, new business processes, data migration from legacy systems, and reports.

BottomLine: BottomLine is a specialized application used for printing checks, AP invoices, as well as for reformatting ACH (Automated Clearing House) files used by banks for transactions such as direct deposit, child support, AP EFT vendors. The MWRA installed BottomLine version was on extended support which is due to expire in September of 2014. The application was successfully upgraded on both production system and the Disaster Recovery system after staff and users conducted numerous tests and parallel processes.

Cumulus: Cumulus is the application used by the MWRA to manage and publish the MWRA's photo collection. The application needed to be upgraded to maintain vendor support. Staff created two new virtual servers (internal and external) for the Cumulus application and data storage, created shares with appropriate permissions, set up the public facing environment so that Cumulus catalogs can be made available on mwra.com. All data (approximately 2TB) was copied over to the internal server. Existing catalogs were converted to the new version. Staff was trained on Administration functions and end users attended a demo regarding the new features.

GIS: The GIS system has been upgraded to version 10.2 and the GIS database was migrated to the Oracle Database Appliance (ODA). The ODA provides for manual failover to another node should the primary one go down.

LIMS: The Electronic Laboratory Notebook module of LabWare's Laboratory Information Management System has been installed in the development environment. Workshops to gather user requirements for a pilot have started with the Chelsea Laboratory.

Waste Water Quality (WWQ): The batch jobs for the WWQ data warehouse used by the central laboratory and their clients have been modified to run in a LINUX environment. These changes were made to enable user testing of WWQ on the development Oracle Database Appliance. User testing is expected to begin in July.

Library & Records Center: The Library completed 45 research requests (150 YTD), cataloged 179 books and reports (763 YTD), and provided 107 articles and standards as needed (381 YTD). New services are being evaluated for automatically generating and emailing staff topic based articles (3,793 YTD). The Records Center added 192 boxes (731 YTD), conducted 1 training session, and attended 2 Records Conservation Board Meetings. The Records Center staff also participated in the Chelsea Hurricane drill to support the protection of records stored in Chelsea. Some notable library research topics included engineering subjects like Variable Frequency Drive (VFD) testing standards, health and safety topics like neurotoxicity of fluoride, and scientific topics such as enterococcus bacteria and molybdenum minerals.

IT Training: For the quarter, 81 staff attended 18 classes and 4 workshops. 28% of the workforce has attended at least one class year-to-date. The Q4 MIS course offerings included, Cumulus training for managing the MWRA Photo and pictures catalogs, LIMS Electronic Lab Notebook training, Infor/Lawson Self-Service training and selected Chelsea and Southboro staff received GIS training and several SMART Board demos were conducted. In addition, 703 staff completed the Information Security 2014 Computer Based Training (CBT) through June 30<sup>th</sup>.

# Legal Matters

## 4th Quarter FY 2014

### PROJECT ASSISTANCE

#### COURT AND ADMINISTRATIVE ORDER

- **Boston Harbor Litigation and CSO:** Reviewed and filed quarterly compliance and progress report.
- **NPDES:** Reviewed comment letter on department of public health's proposed amendments to minimum standards for beach closings.
- **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

- **Section 36/W11C/Shaft 9-A11 Site, Arlington and Medford: Section 36/W11C/Shaft 9-A11 Site, Arlington and Medford:** Recorded fifty-three (53) voluntary grants of easements and prepared and recorded 3 Orders of Taking for 13 private properties and 6 public ways necessary for construction of the project.
- **Spot Pond:** Negotiated, drafted and recorded an Amended and Restated Grant of Easements with Fellsway Development LLC, whereby MWRA obtained permanent utility easements on two parcels, one 32,507 sq. ft. and the second at 45,699 sq. ft., for MWRA's Spot Pond Covered Storage project at no additional cost to MWRA; finalized a telecommunications license with Verizon, and an electric service agreement with NSTAR.
- **Fore River Railroad/Fore River:** Finalized MWRA/FRRC License with Railpod for use of the FRRC track. Finalized letter agreement between MWRA/FRRC and Quincy Shipyard for easement swap in Fore River Shipyard. Finalized access agreement between FRRC and Quincy Shipyard for Fore River Shipyard.
- **Cross Harbor Cable:** Met with representatives of NSTAR to discuss NSTAR's counter proposal to MWRA's proposal.
- **Charlestown Wind Turbine:** Finalized a new net metering contract with NSTAR for net metering for the Charlestown Wind Turbine.
- **Public Access Permits:** Finalized Weston's public access permit.
- **DCR/City of Cambridge:** Reviewed and approved of an MOA between DCR and the City of Cambridge, and legislation, Chapter 270 of the Acts of 2010, allowing DCAMM, in consultation with MWRA, to grant an easement to the City of Cambridge on DCR land in Cambridge, in order to allow the City to proceed with the City's Alewife Stormwater Wetland Project.
- **Construction Contractor Claim:** Reviewed and made a recommendation on four (4) construction contractor claims.
- Worked with City of Cambridge and representatives of the Fresh Pond Mall to bring closure to the City's needs to access the Mall property for geotechnical and environmental investigations.
- **TRAC:** Drafted guidance and briefed staff on regulation promulgation/amendment process, as well as the applicable enabling act provisions.
- **Regulations:** Reviewed DEP proposed amendments to c.21E and UST regulations, and the comments submitted.
- **Chapter 21E/Waste Cleanup:** Reviewed two draft Activities and Use Limitations (AULs) that were going to be placed on properties on which the MWRA has a sewer and/or water easement and determined that AULs would not interfere with the MWRA's current use and potential uses of the property.

## REAL ESTATE, CONTRACT AND OTHER SUPPORT (cont.)

### MISCELLANEOUS

- Reviewed and approved thirty-seven (37) Section 8(m) Permits; drafted one day permit for an outdoors community dinner featuring local businesses, and all activities reasonably related thereto, to be held on that portion of Sudbury Aqueduct situated in DCR's Hemlock Gorge Reservation in Newton.
- **Co-Digestion:** Explored 50-Day Private Use exception to private activity limits.

## LABOR, EMPLOYMENT AND ADMINISTRATIVE

### New Matters

Eight 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 disability and retaliation.

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

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

## LITIGATION/TRAC

### New Matters

During the Fourth Quarter of FY 2014, no new lawsuits were received.

### Significant Developments

Estate of Marie Stewart v. MWRA: The parties exchanged discovery identifying their experts and the opinions and testimony expected from them.

### Matters Concluded

Three cases closed during the Fourth Quarter FY 2014.

Portfolio Recovery Associates, LLC vs. (Alfred B. Robinson- current employee): Summons to Trustee (MWRA) was served on February 7, 2014 in an action brought against (current employee) in the amount of \$3, 963.10. A Discharge of Trustee was filed with the court on May 20, 2014.

MWRA v. J.F. Shea: MWRA received all settlement funds and all parties to the case executed the settlement agreement, ending the litigation.

Gilchrist Metal Fabricating Co., Inc. v. City Lights Electrical Co., Inc. v. MWRA, et al: This case arose out of MWRA Contract #6855, Deer Island Treatment Plant Electrical Equipment Upgrade Construction 3. City Lights, the general contractor, entered into a subcontract with Gilchrist, a shop metals fabricator, to supply the supports for a ramp and bridge to elevate certain electrical conduits. Gilchrist provided supports fabricated out of carbon steel; however, the Contract required stainless steel supports. Gilchrist sued City Lights for the additional costs it allegedly incurred to replace the carbon steel supports with the stainless steel supports specified in the Contract, and claimed an ambiguity in the Contract documents. City Lights brought third-party claims against MWRA for contribution and indemnification. MWRA successfully tendered its defense to the design contractor, AECOM, which provided MWRA with defense counsel at no cost to MWRA. Counsel for MWRA filed a motion for summary judgment as to City Lights' claims, on the grounds that the action against MWRA was contractually barred, in light of the failure of City Lights to file a claim for the additional costs allegedly incurred by Gilchrist. The motion was allowed on April 3, 2014, and the action against MWRA is now dismissed.

### Subpoenas

During the Fourth Quarter of FY 2014, no new subpoenas were received and no subpoenas were pending at the end of the Fourth Quarter FY 2014.

### Public Records

During the Fourth Quarter of FY 2014 seven public records request were received, one withdrawn and two public records requests were closed.

**SUMMARY OF PENDING LITIGATION MATTERS**

<b>TYPE OF CASE/MATTER</b>	<b>As of June 2014</b>	<b>As of Mar 2014</b>	<b>As of Dec 2013</b>
Construction/Contract/Bid Protest (other than BHP)	4	5	5
Tort/Labor/Employment	5	5	6
Environmental/Regulatory/Other	1	1	1
Eminent Domain/Real Estate	0	0	0
<b>total – all defensive cases</b>	<b>10</b>	<b>11</b>	<b>12</b>
Affirmative cases not in suit:	0	1	1
Other Litigation matters (restraining orders, etc.) <u>MWRA v. Thomas Mercer</u>	1	1	1
<b>Total – all pending lawsuits</b>	<b>11</b>	<b>13</b>	<b>14</b>
Significant claims not in suit:	0	0	0
Bankruptcy	0	1	1
Wage Garnishment	16	17	15
TRAC/Adjudicatory Appeals	1	4	4
Subpoenas	0	0	1
<b>OTAL – ALL LITIGATION MATTERS</b>	<b>28</b>	<b>35</b>	<b>35</b>

**TRAC/MISC.**

**New Appeals**                      There were no new TRAC appeals received in the 4th Quarter FY 2014.

**Settlement by Agreement of Parties**                      Three cases were settled by Agreement of Parties in the 4th Quarter FY 2014.

Brigham & Women’s Hospital; MWRA Docket Nos. 13-01 and 13-19 (Consolidated)

Northeastern University; MWRA Docket No. 13-18

Aero Brazing Co., MWRA Docket No. 13-16

**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 2014.

**Final Decisions**                      No Final Decisions were issued during the 4th Quarter FY 2014.

## INTERNAL & CONTRACT AUDIT PROGRAM

### 4<sup>th</sup> Quarter FY14

### Highlights

Department of Laboratory Services Quality Assurance Program A draft report was issued on the DLS QA Program. This review found the program to be well documented, including the elements recommended by the Environmental Protection Agency (EPA). The QA Plan, Standard Operating Procedures and other procedural documents are available on-line. The following recommendations were made.

- Update the Ethics Statement in the QA Plan to include EPA suggested language and to post the statement in conspicuous places.
- Develop a report that would assist the DLS managers in the re-certification of staff by identifying the number of tests each analyst performed in the last 12 months.
- Increase the frequency of rolling audits
- Have supervisors perform biannual “methods and procedures” audits of each of their analysts.

### Status of Open Audit Recommendations (12 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
Warehouse Practices (9/30/10)	1	9
Facility Card Access Controls (2/22/11)	2	18
DITP Data Center Access Controls (10/14/11)	2	20
Chelsea Facility Physical Security (12/31/12)	3	29
Hardware Equipment Management (5/22/13)	19	17
Bay State Fertilizer (9/3/13)	5	0
Follow-up Report on Fleet Services Activities (12/31/13)	4	13
MBE/WBE Program Contracting Goals (3/14/14)	<u>5</u>	<u>5</u>
<b>Total Recommendations</b>	<b>41</b>	<b>111</b>

### Audit Savings

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

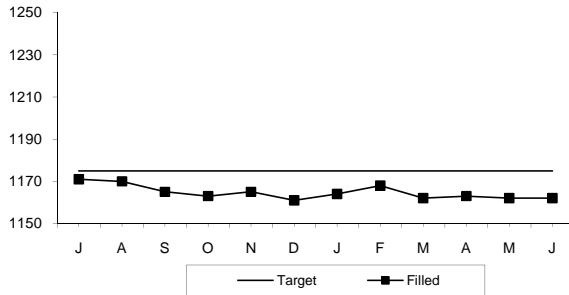
Savings	FY10	FY11	FY12	FY13	FY14	TOTAL
Consultants	\$194,238	\$520,176	\$259,245	\$587,314	\$294,225	\$1,855,198
Contractors & Vendors	\$599,835	\$3,129,538	\$435,760	\$2,153,688	\$415,931	\$6,734,752
Internal Audits	\$206,282	\$152,478	\$407,350	\$391,083	\$923,370	\$2,080,563
<b>Total</b>	<b>\$1,000,355</b>	<b>\$3,802,192</b>	<b>\$1,102,355</b>	<b>\$3,132,085</b>	<b>\$1,633,526</b>	<b>\$10,670,513</b>

## OTHER MANAGEMENT

# Workforce Management

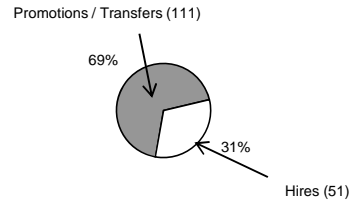
## 4th Quarter FY14

**Filled Position Tracking**



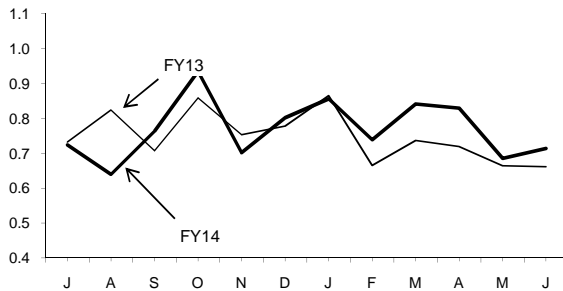
FY14 Target for Filled Positions = 1175  
 Filled Positions as of June 2014 = 1162

**Positions Filled by Hires/Promotions**  
 FY14-YTD



	Pr/Trms	Hires	Total
FY11	48 (62%)	30 (38%)	78
FY12	42 (61%)	27 (39%)	69
FY13	82 (64%)	47 (36%)	129
FY14	111 (69%)	51 (31%)	162

**Average Monthly Sick Leave Usage**  
 Per Employee



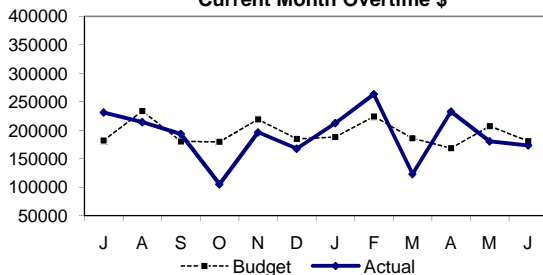
Average monthly sick leave for the 4th Quarter of FY14 decreased as compared to the 3rd Quarter (9.33 to 9.23 days).

In Q4 of FY14, the average quarterly sick leave usage has increased 3.1% from the same time last year.

	Number of Employees	YTD	Annualized Total	Annual FMLA %	FY13
A&F	182	10.18	10.18	38.1%	8.48
Aff. Action	6	11.78	11.78	31.2%	12.25
Executive	5	4.37	4.37	0.0%	3.08
Int. Audit	8	7.46	7.46	0.0%	7.36
Law	16	10.35	10.35	14.2%	11.80
OEP	6	16.14	16.14	59.0%	5.89
Operations	939	8.98	8.98	21.6%	9.02
Pub. Affs.	12	12.21	12.21	35.0%	9.08
<b>MWRA Avg</b>	<b>1174</b>	<b>9.23</b>	<b>9.23</b>	<b>24.6%</b>	<b>8.95</b>

Percent of sick leave usage attributable to Family and Medical Leave Act (FMLA) leave is 24.6% for the 4th Quarter of FY14.

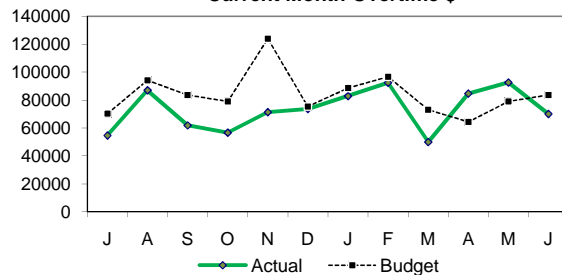
**Field Operations**  
 Current Month Overtime \$



Total Overtime for **Field Operations** for June was \$173,605 which is (\$7k) under budget. Emergency overtime was \$59k, which was (\$28k) under budget. Spending included \$36k for rain events, \$11k for emergency maintenance, \$5k for emergency operations, and \$4k for CSO activation. Coverage overtime was \$60k, which was \$9k over budget, mainly for vacation coverage. Planned overtime was \$56k or \$12k over budget, mainly for maintenance off-hours work at \$25k, work completion at \$6k, and planned operations at \$5k.

Year-to-date June FY14, FOD's overtime was \$2.295m, which was (\$41k), or (\$1.7%) under budget, mainly due to lower than anticipated wet weather response.

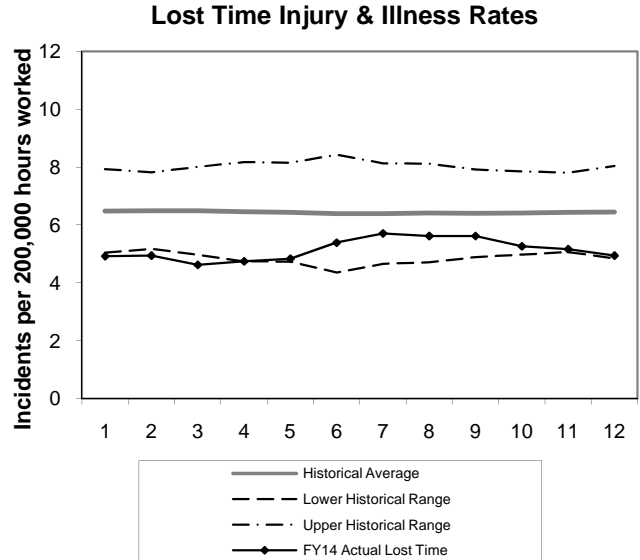
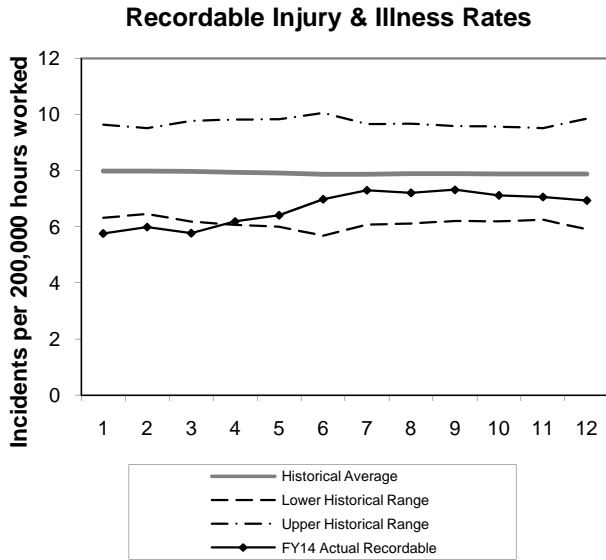
**Deer Island Treatment Plant**  
 Current Month Overtime \$



**Deer Island's** total overtime expenditure in June 2014 was \$70K, which was (\$13K) or (16.2%) under budget. The variance reflects lower than anticipated storm coverage requirements, (\$25K), along with Management's continued efforts to control overtime spending by allowing overtime for maintenance or repair of critical systems and equipment only, (\$4K). These items are partially offset by higher than anticipated shift coverage overtime, \$16K.

Year-to-date June 2014, Deer Island's overtime was \$878K, which was (\$134K) or (13.2%) under budget, mainly due to less than anticipated storm coverage requirements, (\$184K), along with Management's continued efforts to control overtime spending by allowing overtime for maintenance or repair of critical systems and equipment only, (\$87K). These items are partially offset by higher than anticipated shift coverage overtime in Thermal due a vacancy, IA and FMLA, of a 2nd class engineer, \$57K, and higher Operations shift coverage requirements, \$80K.

## Workplace Safety 4th Quarter FY 14



- 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 FY13. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively. FY14 actual incident rates can be expected to fall within this historical range.

### Workers Compensation Claims Highlights - Fourth Quarter FY14

	New	Closed	Open Claims
Lost Time	10	20	67
Medical Only	19	36	14
Report Only	26	26	
	<b>New</b>		<b>YTD Light Duty Returns</b>
Light Duty Returns	4		13

#### Highlights/Comments:

##### Light Duty Returns

- Apr** 3 employees returned to work light duty from IA  
1 employee worked light duty, has several days on full comp, then returned full duty
- May** 1 employee returned to light duty assignment after a few days on IA (not counted as a new light duty return)
- June** 1 employee returned to light duty assignment after a few days on IA (not counted as a new light duty return)  
1 employee returned to light duty assignment after IA

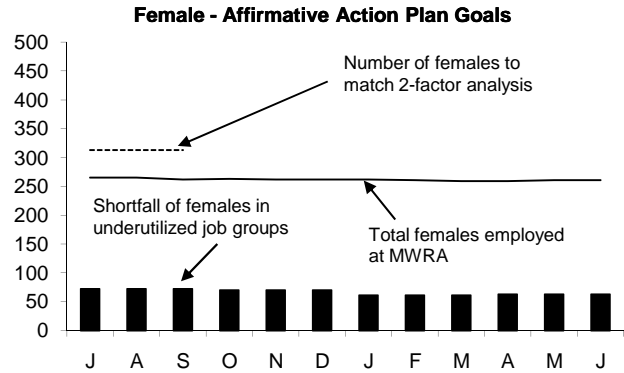
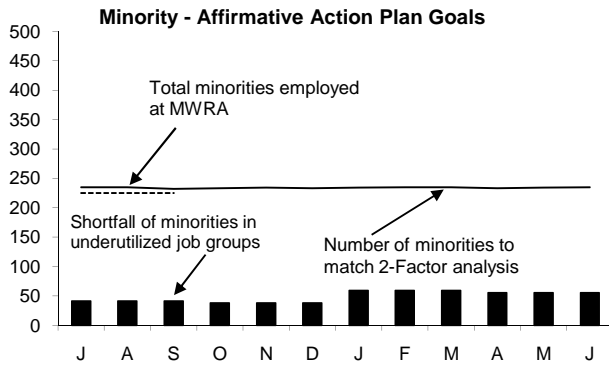
##### Regular Duty Returns

- Apr** 1 employee returned to work full duty from IA  
1 employee returned to work full duty from a light duty assignment
- May** 1 employee returned to work full duty from a light duty assignment
- June** 1 employee returned to work full duty from a light duty assignment  
6 employees returned to work full duty from IA



# MWRA Job Group Representation

## 4th Quarter - FY14



### Highlights:

At the end of Q4 FY14, 10 job groups or a total of 55 positions are underutilized by minorities as compared to 10 job groups or a total of 40 positions at the end of Q4 FY13; for females 13 job groups or a total of 63 positions are underutilized by females as compared to 14 job groups or a total of 77 positions at the end of Q4 FY13. During Q4, 4 minorities and 3 females were hired. During this same period, 3 minorities and 1 females terminated.

### Underutilized Job Groups - Workforce Representation

Job Group	Employees as of 6/30/2014	Minorities as of 6/30/2014	Achievement Level	Minority Over or Under Under utilized	Females As of 6/30/2014	Achievement Level	Female Over or Under Under utilized
Administrator A	20	2	2	0	5	6	-1
Administrator B	21	0	3	-3	3	6	-3
Clerical A	43	18	11	7	37	17	20
Clerical B	33	7	11	-4	12	2	10
Engineer A	78	16	20	-4	12	16	-4
Engineer B	50	13	11	2	6	12	-6
Craft A	115	13	22	-9	0	3	-3
Craft B	152	31	28	3	3	5	-2
Laborer	68	25	16	9	3	4	-1
Management A	104	13	24	-11	32	47	-15
Management B	48	10	12	-2	13	20	-7
Operator A	66	4	7	-3	1	4	-3
Operator B	66	7	17	-10	4	3	1
Para Professional	54	12	16	-4	24	38	-14
Professional A	35	3	8	-5	23	14	9
Professional B	166	46	43	3	78	75	3
Technical A	49	14	8	6	5	7	-2
Technical B	6	1	1	0	0	2	-2
<b>Total</b>	<b>1174</b>	<b>235</b>	<b>260</b>	<b>30/-55</b>	<b>261</b>	<b>281</b>	<b>43/-63</b>

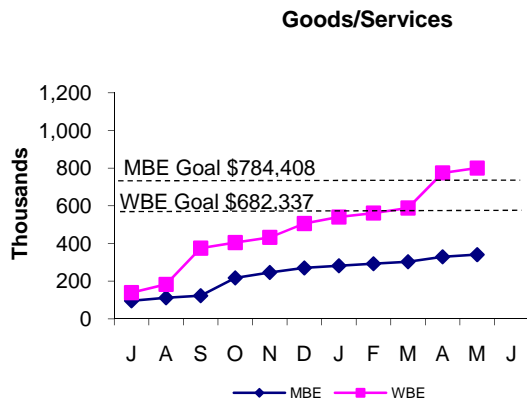
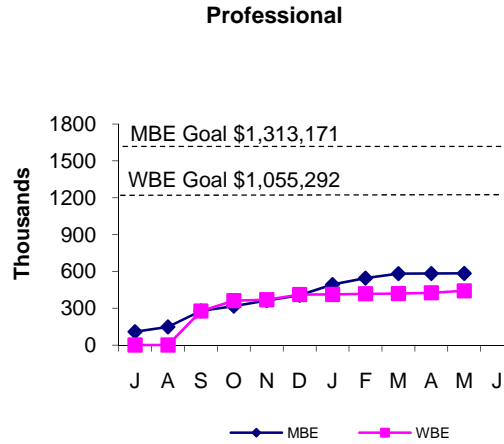
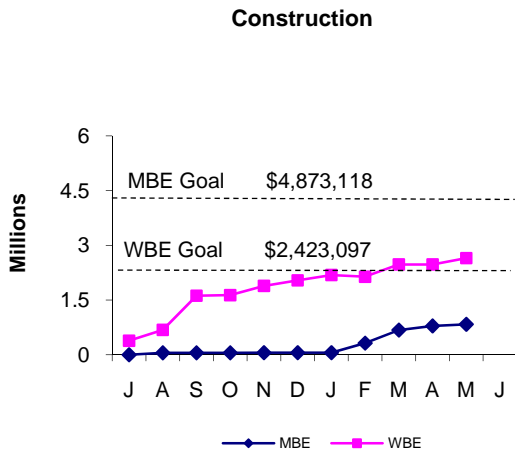
### AACU Candidate Referrals for Underutilized Positions

Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions/ Transfers	AACU Ref. External	Position Status
Craft A	Plumber/Pipefitter	2	Int/ Ext	1	1	NH=BM; T=WM
Craft A	Instrumentation Specialist	1	Int	1	0	Promo = WM
Craft A	M&O Specialist	1	Int/Ext	1	0	Promo = WM
Craft A	Unit Supervisor	1	Int/Ext	1	0	Promo = WM
Craft A	Valve Maintenance Foreman	1	Int	0	0	In Progress
Clerical A	Secretary I	2	Int/Ext	0	2	In Progress
Clerical A	Administrative Coordinator I	1	Int	0	0	In Progress
Clerical B	Messenger/Courier	1	Int/Ext	0	0	New Hire = WM
Clerical B	Inventory Control Specialist	1	Int	0	0	In Progress
Engineer A	Project Engineer	1	Int	1	0	Promo = HM
Engineer A	Sr. Staff Engineer, Electrical	1	Int/Ext	0	0	In Progress
Engineer A	Sr. Program Manager, SCADA	1	Int	1	0	Promo = WM
Engineer A	Sr. Staff Engineer, Structural	1	Int/Ext	0	0	NH = AM
Engineer A	Project Manager	2	Int/Ext	0	0	Rehire = AM
Engineer A	Project Manager Environmental Data	1	Int	0	0	In Progress
Engineer B	Staff Engineer	2	Int	1	0	Transfer = HM
Engineer B	Project Manager, Process Control	1	Ext	0	0	In Progress
Laborers	OMC Laborer	2	Int/Ext	0	1	In Progress
Management A	Assistant Director of Construction	1	Int	1	0	Promo = WF
Management A	Construction Coordinator	2	Int	1	0	(2)Promo = WM
Management A	Manager, It Security	1	Ext	0	0	In Progress
Management B	Shifts Operations Manager	1	Int	1	0	Promo = WM
Management B	Facilities Manager	1	Int	1	0	Promo = BM
Management B	Operations Supervisor	1	Int	1	0	Promo = WM
Operator A	Area Supervisor	1	Int	1	0	(2)Promo = WM
Operator B	Operator	2	Ext	0	0	In Progress
Professional B	Senior Laboratory Technician	3	Int/ Ext	0	1	Rehire=WF & BF
Professional B	Chemist III	4	Int/Ext	0	1	NH = AF
Professional B	Financial Planner	1	Int/Ext	0	0	In Progress
Professional B	Sr. Sampling Associate	1	Int	1	0	Promo = WM
Professional B	Chemist I	1	Int	1	0	Promo = WF
Professional B	Source Coordinator	1	Int	0	0	In Progress
ParaProfessional	Planning & Scheduling Coordinator	2	Int	1	0	(2)Promo = WM

## MBE/WBE Expenditures Fourth Quarter FY 2014

### Background:

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



FY14 spending and percentage of goals achieved, as well as FY13 performance are as follows:

	MBE				WBE			
	FY14 Year-to-Date		FY13		FY14 Year-to-Date		FY13	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Construction	834,566	20.2%	5,364,613	121.7%	2,647,980	129.0%	4,522,050	206.4%
Professional Svc.	584,242	44.5%	1,477,040	134.3%	442,350	41.9%	557,922	63.1%
<u>Goods &amp; Svcs.</u>	<u>340,683</u>	<u>43.4%</u>	<u>1,128,359</u>	<u>378.4%</u>	<u>800,328</u>	<u>117.3%</u>	<u>578,379</u>	<u>223.0%</u>
Total	1,759,491	28.3%	\$7,970,012	137.3%	3,890,658	102.6%	\$5,658,351	169.7%

MBE/WBE dollar totals include MBE and WBE payments to prime contractors, consultants and vendors.

\*Note: The MBE shortfall is the result of changes in contract schedules and therefore projected MBE work for FY14 did not ensue.

**FY14 CEB Expenses through  
4th Quarter – FY14**

	June 2014 Year-to-Date (\$000)					
	Budget	Actual	Variance	%	FY14 Budget	%
<b>EXPENSES</b>						
WAGES AND SALARIES	\$ 94,874	\$ 91,751	\$ (3,123)	-3.3%	\$ 94,874	96.7%
OVERTIME	3,580	3,400	(180)	-5.0%	3,580	95.0%
FRINGE BENEFITS	18,064	18,074	11	0.1%	18,064	100.1%
WORKERS' COMPENSATION	2,000	2,311	311	15.6%	2,000	115.6%
CHEMICALS	10,671	10,226	(445)	-4.2%	10,671	95.8%
ENERGY AND UTILITIES	22,761	23,397	636	2.8%	22,761	102.8%
MAINTENANCE	27,762	29,453	1,692	6.1%	27,762	106.1%
TRAINING AND MEETINGS	331	329	(2)	-0.6%	331	99.4%
PROFESSIONAL SERVICES	6,083	4,900	(1,183)	-19.4%	6,083	80.6%
OTHER MATERIALS	5,969	5,986	17	0.3%	5,969	100.3%
OTHER SERVICES	22,279	21,736	(543)	-2.4%	22,279	97.6%
<b>TOTAL DIRECT EXPENSES</b>	<b>\$ 214,374</b>	<b>\$ 211,565</b>	<b>\$ (2,809)</b>	<b>-1.3%</b>	<b>\$ 214,374</b>	<b>98.7%</b>
INSURANCE	\$ 2,094	\$ 2,051	\$ (43)	-2.1%	\$ 2,094	97.9%
WATERSHED/PILOT	27,215	26,641	(574)	-2.1%	27,215	97.9%
BECo PAYMENT	3,347	3,526	179	5.3%	3,347	105.3%
MITIGATION	1,567	1,495	(72)	-4.6%	1,567	95.4%
ADDITIONS TO RESERVES	169	169	-	0.0%	169	100.0%
RETIREMENT FUND	12,432	12,447	16	0.1%	12,432	100.1%
<b>TOTAL INDIRECT EXPENSES</b>	<b>\$ 46,823</b>	<b>\$ 46,329</b>	<b>\$ (494)</b>	<b>-1.1%</b>	<b>\$ 46,823</b>	<b>98.9%</b>
STATE REVOLVING FUND	\$ 75,961	\$ 72,685	\$ (3,276)	-4.3%	\$ 75,961	95.7%
SENIOR DEBT	204,471	229,506	25,035	12.2%	204,471	112.2%
CORD FUND	132	132	-	0.0%	132	100.0%
DEBT SERVICE ASSISTANCE	-	(854)	(854)	---	-	0.0%
CURRENT REVENUE/CAPITAL	9,200	9,200	-	0.0%	9,200	100.0%
SUBORDINATE MWRA DEBT	100,117	100,117	-	0.0%	100,117	100.0%
LOCAL WATER PIPELINE CP	4,128	316	(3,811)	-92.3%	4,128	7.7%
CAPITAL LEASE	3,217	3,217	-	0.0%	3,217	100.0%
VARIABLE DEBT	-	(12,770)	(12,770)	---	-	0.0%
DEFEASANCE ACCOUNT	-	-	-	---	-	---
<b>TOTAL DEBT SERVICE</b>	<b>\$ 397,226</b>	<b>\$ 401,550</b>	<b>\$ 4,323</b>	<b>1.1%</b>	<b>\$ 397,226</b>	<b>101.1%</b>
<b>TOTAL EXPENSES</b>	<b>\$ 658,423</b>	<b>\$ 659,444</b>	<b>\$ 1,020</b>	<b>0.2%</b>	<b>\$ 658,423</b>	<b>100.2%</b>
<b>REVENUE &amp; INCOME</b>						
RATE REVENUE	\$ 628,721	\$ 628,721	\$ -	0.0%	\$ 628,721	100.0%
OTHER USER CHARGES	8,127	8,030	(97)	-1.2%	8,127	98.8%
OTHER REVENUE	6,444	11,266	4,822	74.8%	6,444	174.8%
RATE STABILIZATION	3,500	3,500	-	0.0%	3,500	100.0%
INVESTMENT INCOME	11,631	12,130	499	4.3%	11,631	104.3%
<b>TOTAL REVENUE &amp; INCOME</b>	<b>\$ 658,423</b>	<b>\$ 663,647</b>	<b>\$ 5,224</b>	<b>0.8%</b>	<b>\$ 658,423</b>	<b>100.8%</b>

As of June 2014, total revenue was \$663.6 million, \$5.2 million or 0.8% higher than budget and total expenses were \$659.4 million, \$1.0 million or 0.2% more than budget for a net variance of \$4.2 million, after recognition of \$26.2 million defeasance.

**Expenses –**

- **Direct Expenses** are \$211.6 million, \$2.8 million or 1.3% less than budget.
- **Wages and Salaries** are underspent by \$3.1 million or 3.3% due to lower headcount, mix of salaries for people retiring and new hires, and higher than budget leave time use.
- **Professional Services** are underspent by \$1.2 million or 19.4% mainly for lower engineering of \$555,000 for as-needed support and Dam Emergency Action Plan Updating services, lower Other of \$253,000, and lower Lab & Testing of \$252,000.
- **Maintenance** is overspent by \$1.7 million or 6.1% year-to-date. Material purchases are greater than budget by \$1.8 million and services are underspent by \$153,000.
- **Utilities** are over budget by \$636,000 or 2.8% due to higher Electricity of \$1.2 million mainly for winter congestion pricing offset by lower Diesel Fuel of \$355,000, Water use of \$119,000, and Natural Gas use of \$82,000.
- **Other Services** are underspent by \$543,000 or 2.4% due to lower sludge quantities of \$485,000, lower Other Services of \$206,000, and lower Grit & Screenings Removal of \$96,000 offset by higher space/lease rentals of \$152,000, police details of \$79,000, Telephones of \$78,000, and Membership/Dues of \$56,000.
- **Chemicals** are underspent by \$445,000 or 4.2% due to lower Nitrazyme of \$204,000 for Framingham modifications, Liquid Oxygen of \$193,000 for lower pricing and volume, Sodium Hypochlorite of \$178,000, and Sodium Bisulfite of \$150,000. Offset by higher Hydrogen Peroxide of \$135,000 for pretreatment of hydrogen sulfide gas, Soda Ash of \$129,000 due to better mixing, Activated Carbon of \$71,000, and Ferric Chloride of \$63,000.
- **Workers Compensation** expenses are higher than budget by \$311,000 or 15.6%. The majority of the variance is due to higher than budget Administrative and Legal Costs of \$140,000 and Medical Expenses of \$113,000.
- **Overtime** is underspent by \$180,000 or 5.0% mainly due to lower than projected emergency wet weather events.
- **Indirect Expenses** are \$46.3 million, \$494,000 or 1.1% under budget mainly for Watershed Reimbursement expenses of \$574,000 mainly for lower Payment in Lieu of Taxes (PILOT) expense and lower operating expenses. Also, lower insurance expenses of \$43,000, mostly related to premiums.
- **Debt Service Expenses** totaled \$401.5 million, \$4.3 million or 1.1% over budget. The higher Debt Service variance is the result of debt service related surplus of \$21.8 million offset by \$26.2 million defeasance executed in June.

**Revenue and Income –**

- **Total Revenue / Income** for June is \$663.6 million, \$5.2 million or 0.8% higher than budget due to Non-Rate Revenue of \$4.7 million and Investment Income of \$499,000. The higher Non-Rate Revenue is due to \$3.1 million in proceeds in exchange for the dismissal of all disputed claims of all parties to the 2010 water main break cost recovery lawsuit, \$538,000 for the sale of emergency water for the Town of Hudson, \$320,000 for higher energy revenue, \$291,000 for the sale of surplus equipment and other items totaling \$573,000, and higher investment income of \$499,000.

# Cost of Debt

## 4<sup>th</sup> Quarter - FY14

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

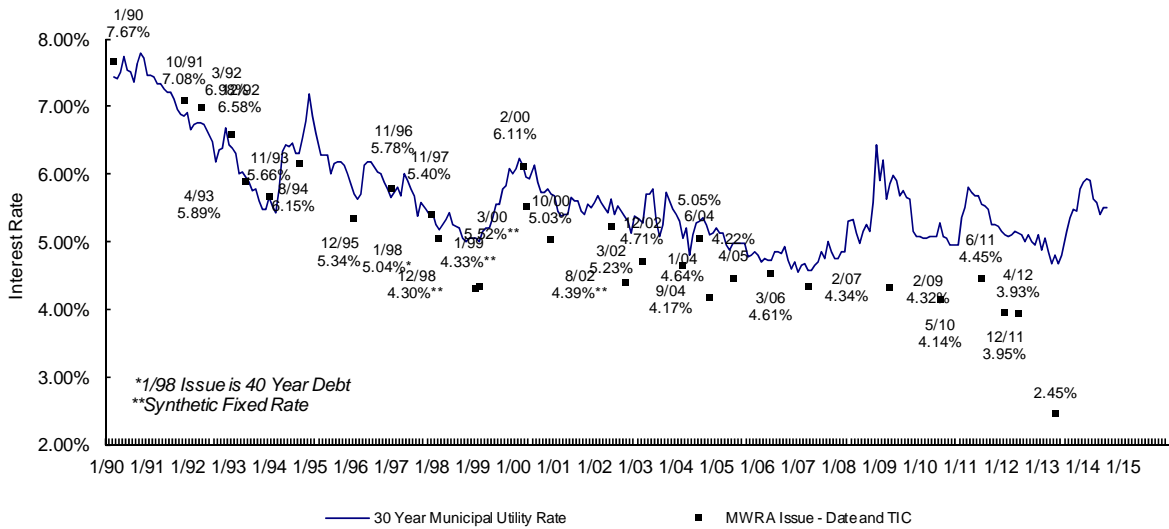
### Average Cost of MWRA Debt

Fixed Debt (\$4,013)	4.34%
Variable Debt (\$484.3)	0.61%
SRF Debt (\$1,023)	1.22%
 Weighted Average Debt Cost (\$5,520)	 3.43%

### Most Recent Senior Fixed Debt Issue March 2013

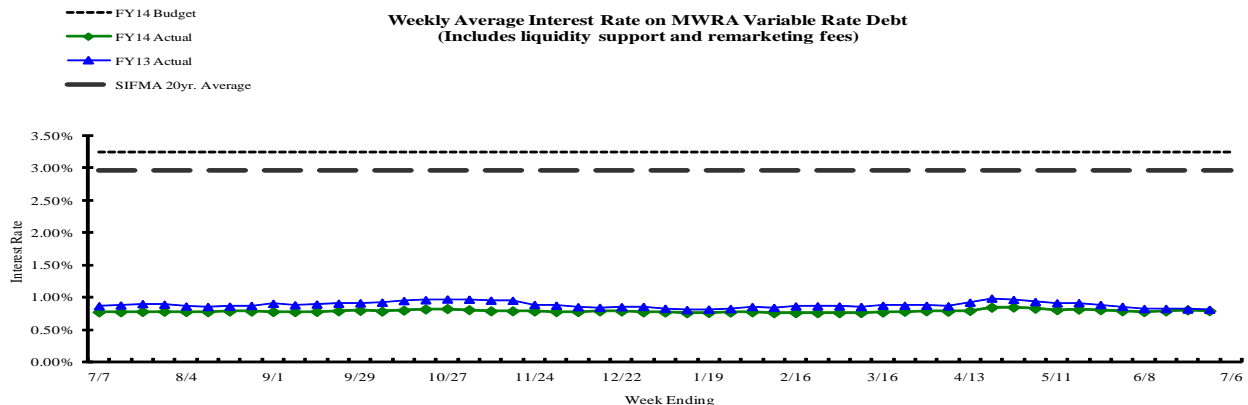
2013 Series A (\$170.6) 2.45%

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



### Weekly Average variable Interest Rates vs. Budget

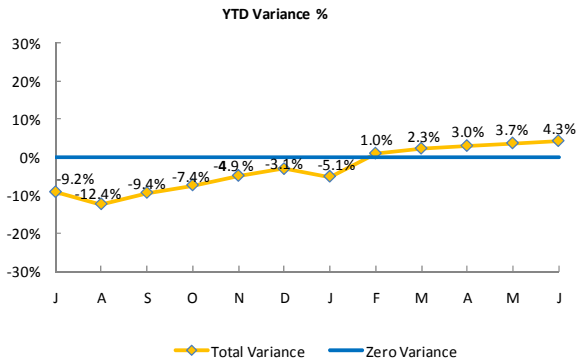
MWRA currently has ten variable rate debt issues with \$1.0 billion outstanding, excluding commercial paper. Of the ten outstanding series, five have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In June, SIFMA rates fluctuated with a high of 0.07% and a low of 0.05%. MWRA's issuance of variable rate debt, although consistently less expensive in recent years, results in exposure to additional interest rate risk as compared to fixed rate debt.



# Investment Income

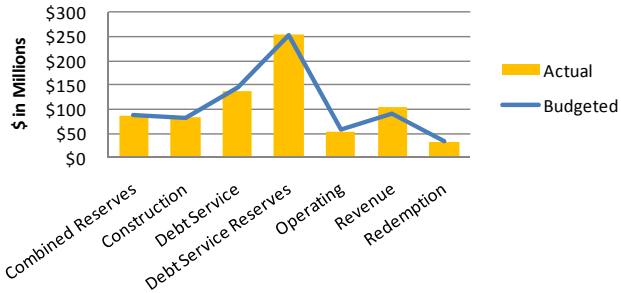
4<sup>th</sup> Quarter - FY14

## Year To Date



	YTD BUDGET VARIANCE			
	(\$000)			
	BALANCES IMPACT	RATES IMPACT	TOTAL	%
Combined Reserves	\$52	(\$283)	(231)	-9.0%
Construction	\$4	(\$6)	(2)	-1.3%
Debt Service	(\$12)	(\$16)	(28)	-9.7%
Debt Service Reserves	\$0	\$996	997	13.5%
Operating	(\$24)	(\$241)	(266)	-45.1%
Revenue	\$37	(\$31)	6	1.9%
Redemption	\$0	\$23	23	6.3%
<b>Total Variance</b>	<b>\$57</b>	<b>\$442</b>	<b>\$499</b>	<b>4.3%</b>

### YTD Average Balances Budgeted vs. Actual

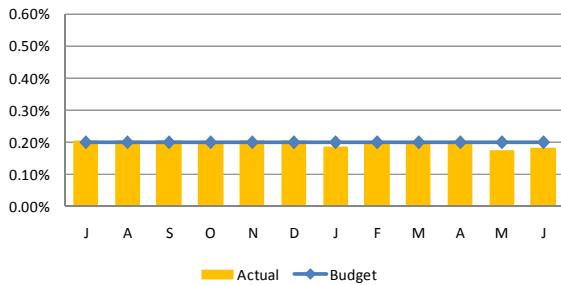


### YTD Average Interest Rate Budgeted vs. Actual

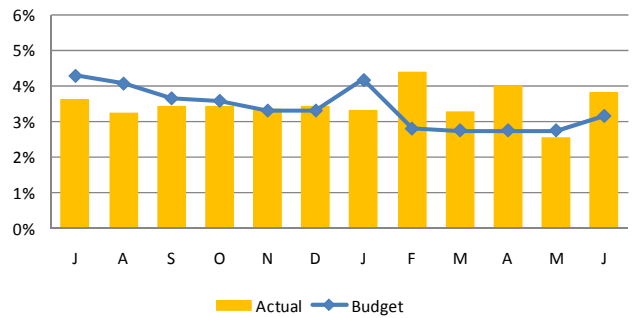


## Monthly

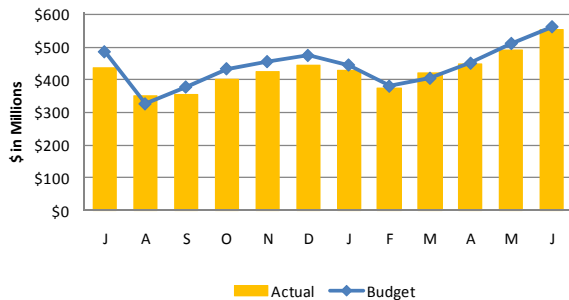
### Short-Term Interest Rates



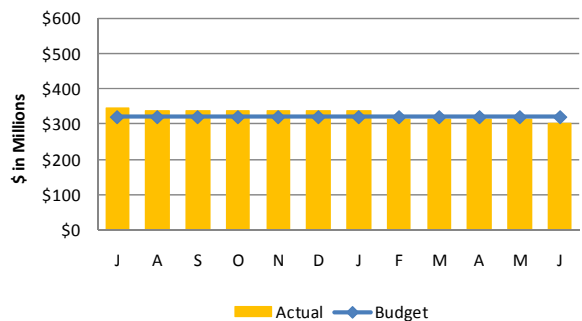
### Long-Term Interest Rates



### Short-Term Average Balances




### Long-Term Average Balances



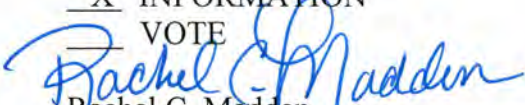
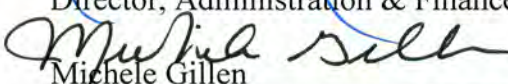
**STAFF SUMMARY**

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director  
**DATE:** September 17, 2014  
**SUBJECT:** Delegated Authority Report – July and August 2014



COMMITTEE: Administration, Finance & Audit

Barbie Aylward, Administrator A & F  
Joanne Gover, Admin. Systems Coordinator  
Preparer/Title

INFORMATION  
 VOTE  
  
Rachel C. Madden  
Director, Administration & Finance  
  
Michele Gillen  
Deputy Director, Administration & Finance

**RECOMMENDATION:**

For information only. Attached is a listing of actions taken by the Executive Director under delegated authority for the period July 1 through August 31, 2014 .

This report is broken down into three sections:

- Awards of Construction, non-professional and professional services contracts and change orders and amendments in excess of \$25,000, including credit change orders and amendments in excess of \$25,000;
- Awards of purchase orders in excess of \$25,000; and
- Amendments to the Position Control Register, if applicable.

**BACKGROUND:**

The Board of Directors' Management Policies and Procedures, as amended by the Board's vote on October 14, 2009, delegate authority to the Executive Director to approve the following:

Construction Contract Awards:

Up to \$1 million if the award is to the lowest bidder; or up to \$500,000 if the award is to other than the lowest bidder.

Change Orders:

Up to 25% of the original contract amount or \$250,000, whichever is less, where the change increases the contract amount, and for a term not exceeding an aggregate of six months; and for any amount and for any term, where the change decreases the contract amount. The delegations for cost increases and time can be restored by Board vote.

Professional Service Contract Awards:

Up to \$100,000 and one year with a firm; or up to \$50,000 and one year with an individual.

Non-Professional Service Contract Awards:

Up to \$250,000 if a competitive procurement process has been conducted, or up to \$100,000 if a procurement process other than a competitive process has been conducted.

Purchase or Lease of Equipment, Materials or Supplies:

Up to \$1 million if the award is to the lowest bidder; or up to \$500,000 if the award is to other than the lowest bidder.

Amendments:

Up to 25% of the original contract amount or \$250,000, whichever is less, and for a term not exceeding an aggregate of six months.

Amendments to the Position Control Register:

Amendments which result only in a change in cost center.

**BUDGET/FISCAL IMPACT:**

Recommendations for delegated authority approval include information on the budget/fiscal impact related to the action. For items funded through the capital budget, dollars are measured against the approved capital budget. If the dollars are in excess of the amount authorized in the budget, the amount will be covered within the five-year CIP spending cap. For items funded through the Current Expense Budget, variances are reported monthly and year-end projections are prepared at least twice per year. Staff review all variances and projections so that appropriate measures may be taken to ensure that overall spending is within the MWRA budget.

CONSTRUCTION/PROFESSIONAL SERVICES DELEGATED AUTHORITY ITEMS JULY 1 - 31, 2014

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMEND/CO	COMPANY	FINANCIAL IMPACT
C-1.	07/03/14	SECURITY EQUIPMENT MAINTENANCE AND REPAIR SERVICES INCREASE ESTIMATED QUANTITIES, ALLOWANCES AND EXTEND CONTRACT TERM BY 46 CALENDAR DAYS FROM JUNE 30, 2014 TO AUGUST 15, 2014 IN ORDER TO PROVIDE UNINTERRUPTED SERVICE AND MAINTENANCE OF MWRA'S SECURITY SYSTEM UNTIL REPLACEMENT CONTRACT IS COMPETITIVELY RE-BID AND AWARDED.	EXE-031	4	VISCOM SYSTEMS, INC.	\$128,332.40
C-2.	07/07/14	OXYGEN GENERATION FACILITY SERVICES DEER ISLAND TREATMENT PLANT DECREASE ESTIMATED QUANTITIES FOR NON-EMERGENCY ON-CALL TESTING AND ON-CALL AUTHORITY PERSONNEL TRAINING SERVICES, EMERGENCY ON-CALL SERVICES, CONSUMABLE MATERIALS, APPROVED TRAVEL ALLOWANCES, FIRE DEPARTMENT SERVICES, REPLACEMENT PARTS AND MARK-UP.	S491	1	SOLUTIONWERKS, INC.	(\$233,165.64)
C-3.	07/22/14	GROUNDSKEEPING SERVICES - SOUTH METROPOLITAN BOSTON AREA AWARD OF CONTRACT TO LOWEST RESPONSIVE BIDDER FOR GROUNDSKEEPING SERVICES AT 19 MWRA WATER AND WASTEWATER LOCATIONS LOCATED IN BOSTON AND THE SURROUNDING SOUTH METROPOLITAN AREA FOR A TERM FO 545 CALENDAR DAYS.	OP-232A	AWARD	BUZZ CUTS MAXIMUM LAWN CARE	\$153,500.00
C-4.	07/31/14	SUDBURY AQUEDUCT TREE REMOVAL AWARD OF CONTRACT TO LOWEST RESPONSIVE BIDDER FOR TREE REMOVAL AT THE SUDBURY AQUEDUCT FOR A TERM OF 90 CALENDAR DAYS.	OP-254	AWARD	NORTHERN TREE SERVICE, INC.	\$61,500.00



## PURCHASING DELEGATED AUTHORITY ITEMS - July 1 - 31, 2014

NO.		TITLE AND EXPLANATION	CONTRACT #	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-1.	7/2/14	<p><b>ONE 30-INCH HORIZONTAL GATE VALE</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR ONE 30-INCH HORIZONTAL GATE VALVE. AS PART OF ITS OVERALL MAINTENANCE AND OPERATION OF THE METROPOLITAN WATER SYSTEM, THE WATER PIPELINE UNIT REPLACES APPROXIMATELY 20 MAIN LINE VALVES OF VARYING SIZE EACH YEAR. TO ENSURE THAT THE PROPER SIZED VALVES ARE ALWAYS AVAILABLE TO MINIMIZE DOWN TIME AND TO BE ABLE TO IMMEDIATELY RESPOND TO A SUDDEN BREAK IN SERVICE, THE WAREHOUSE IN CHELSEA STOCKS VALVES OF VARIOUS DIMENSIONS.</p>	WRA-3839		BILLERICA WINWATER WORKS CO.	\$35,000.00
P-2.	7/2/14	<p><b>SUPPLY AND DELIVERY OF SODIUM BISULFITE</b></p> <p>AWARD OF A ONE-YEAR PURCHASE ORDER CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF SODIUM BISULFITE TO VARIOUS WASTEWATER LOCATIONS. THIS PURCHASE ORDER CONTRACT WILL REQUIRE THE SUPPLIER TO DELIVER SODIUM BISULFITE TO EACH OF THE FOLLOWING LOCATIONS ON AN AS-NEEDED BASIS: COTTAGE FARM, PRISON POINT, SOMERVILLE MARGINAL AND UNION PARK.</p>	WRA-3874		JCI JONES CHEMICAL, INC.	\$77,400.00
P-3.	7/7/14	<p><b>PIPING, VALVES AND APPURTENANCES</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR PIPING, VALVES AND APPURTENANCES. THE WATER PIPELINE UNIT REPLACES AN AVERAGE OF 20 MAIN LINE VALVES EACH YEAR AND HAS REBUILT SEVERAL WATER METERS TO MWRA CUSTOMER COMMUNITIES OVER THE YEARS. MWRA AND THE TOWN OF BROOKLINE ARE COORDINATING THE REPLACEMENT OF THE EXISTING METER 98 AND ASSOCIATED PIPING TO BRING THE INSTALLATION UP TO CURRENT STANDARDS. THE TOWN IS PLANNING RECONSTRUCTION OF FISHER AVE. IN 2015 WHERE METER 98 IS LOCATED. TO COMPLETE THE REPLACEMENT OF METER 98, MWRA WILL NEED TO PURCHASE 100 FEET OF 16-INCH DUCTILE IRON PIPING, THREE DUCTILE IRON TEES, FOUR 20-INCH VERTICAL GATE VALVES AND FIVE GATE BOX TOPS.</p>	WRA-3847Q		BILLERICA WINWATER WORKS CO.	\$45,988.00
P-4.	7/7/14	<p><b>DATA STORAGE HARDWARE, INSTALLATION AND SUPPORT</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR DATA STORAGE HARDWARE, INSTALLATION AND SUPPORT. ON MARCH 14, 2012, THE BOARD OF DIRECTORS WAS PRESENTED WITH THE MIS FIVE-YEAR STRATEGIC PLAN. DATA MANAGEMENT IS ONE OF THE PRIMARY PROJECTS INCLUDED IN THE IT INFRASTRUCTURE PROGRAM OUTLINED IN THE STRATEGIC PLAN. THE PURCHASE OF THIS ADDITIONAL STORAGE WILL INCREASE THE CURRENT STORAGE CAPACITY FOR CONSTRUCTION PHOTOS AND VIDEOS AND ALLOW FOR EXPANSION AS FUTURE DEMANDS DICTATE.</p>	WRA-3858Q ITC47		HUB TECHNICAL SERVICES, LLC	\$155,991.46
P-5.	7/10/14	<p><b>SUPPLY AND DELIVERY OF AQUA AMMONIA</b></p> <p>AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF AQUA AMMONIA TO THE JOHN J. CARROLL WATER TREATMENT PLANT.</p>	WRA-3876		BORDEN & REMINGTON CORPORATION	\$250,761.00
P-6.	7/22/14	<p><b>SIX REINFORCED BOX CULVERTS AND TWO WING WALLS</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR SIX REINFORCED BOX CULVERTS AND TWO WING WALLS FOR THE GREAT ESKER PARK CULVERT REPLACEMENT PROJECT. UNDER AN ADMINISTRATIVE CONSENT ORDER FROM MASS DEP TO MITIGATE FOR THE LOSS OF WETLANDS DUE TO THE CONSTRUCTION AND OPERATION OF THE INTERMEDIATE PUMP STATION IN WEYMOUTH, MWRA IS UNDERTAKING A WETLANDS RESTORATION PROJECT LOCATED IN WEYMOUTH'S GREAT ESKER PARK. THE PROJECT WILL REPLACE THE EXISTING 24-INCH CULVERT WITH A LARGER, THREE-FOOT BY FIVE-FOOT BOXED CULVERT WITH WING WALLS. THIS PROCUREMENT IS FOR THE PURCHASE OF SIX REINFORCED BOXED CULVERTS WITH WING WALLS, WHICH WILL BE INSTALLED UNDER THE ROADWAY. ONLY FOUR ARE NEEDED BUT SINCE LEAD TIME IS APPROXIMATELY 30 DAYS, STAFF RECOMMEND THAT TWO ADDITIONAL "SPARES" BE PURCHASED SHOULD ANY OF THE FOUR REQUIRED BE DAMAGED DURING INSTALLATION.</p>	WRA-3871Q		SCITUATE CONCRETE PRODUCTS	\$33,520.00
P-7.	7/28/14	<p><b>SIX 14-INCH SLUICE GATES</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR SIX 14-INCH-DIAMETER SLUICE GATES FOR THE DEER ISLAND TREATMENT PLANT. THERE ARE A TOTAL OF 48 PRIMARY CLARIFIERS ON DEER ISLAND AND EACH CLARIFIER HAS A SET OF EIGHT 14-INCH-DIAMETER SLUICE GATES THAT ISOLATE THE FLOW OF RAW WASTE WATER FROM THE PRIMARY INFLUENT CHANNEL INTO EACH CLARIFIER. THE ORIGINAL SLUICE GATES, PROVIDED BY RODNEY HUNT COMPANY, HAVE BEEN IN SERVICE FOR APPROXIMATELY 20 YEARS AND THE SEALING SURFACES ARE WEARING DUE TO AGE AND CORROSION. REPLACEMENT OF ALL OF THE SLUICE GATES WILL BE INCLUDED IN THE UPCOMING CLARIFIER REHABILITATION PHASE 2 PROJECT IN APPROXIMATELY TWO TO THREE YEARS. UNTIL THEN, STAFF WILL STILL NEED TO CONTINUE TO PURCHASE REPLACEMENT SLUICE GATES AND REPLENISH STOCK. THE PURCHASE WILL BE FOR SIX SLUICE GATES, WHICH HAS BEEN ESTABLISHED AS THE RE-ORDER POINT FOR THIS INVENTORY ITEM.</p>	WRA-3818Q		RODNEY HUNT COMPANY	\$29,895.00
P-8.	7/28/14	<p><b>EIGHT 16-INCH PLUG VALVES AND FLANGE ADAPTERS</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR EIGHT 16-INCH PLUG VALVES AND FLANGE ADAPTER FOR THE DEER ISLAND TREATMENT PLANT. THERE ARE MORE THAN 180 16-INCH PLUG VALVES INSTALLED IN THE SECONDARY SLUDGE SYSTEM PUMPING AREA THAT ARE NOW MORE THAN 16 YEARS OLD. DUE TO AGE AND THE HARSH ENVIRONMENT IN WHICH THEY OPERATE, VALVES FAIL AND MUST BE REPLACED. STAFF HAVE ADDED THESE PLUG VALVES AND FLANGE ADAPTERS AS STOCK INVENTORY ITEMS IN THE WAREHOUSE THAT MUST BE PERIODICALLY REPLENISHED AS STAFF DRAW DOWN SUPPLY.</p>	WRA-3860Q		ATLANTIC FLUID TECHNOLOGY	\$45,480.00

## PURCHASING DELEGATED AUTHORITY ITEMS - July 1 - 31, 2014

NO.	TITLE AND EXPLANATION	CONTRACT #	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-9.	<p><b>7/28/14 REPAIR OF THE WINTHROP THERMAL FACILITY'S PUMP 3</b></p> <p>AWARD OF A SOLE SOURCE PURCHASE ORDER FOR THE REPAIR OF RAW WASTE WATER PUMP 3 IN THE WINTHROP THERMAL FACILITY AT DEER ISLAND. THERE ARE SIX FAIRBANKS MORSE CENTRIFUGAL PUMPS IN THE WINTHROP TERMINAL FACILITY THAT RECEIVE RAW WASTE WATER FROM THE NORTH METROPOLITAN TRUNK SEWER (CHELSEA, REVERE &amp; WINTHROP). THESE 600-HORSEPOWER PUMPS ARE 20 YEARS OLD AND ALTHOUGH PERFORMANCE HAS BEEN SATISFACTORY, PERIODIC OVERHAULS AND REPAIRS ARE NECESSARY. MWRA STAFF SUCCESSFULLY REBUILT TWO OF THE SIX PUMPS - PUMP 2 IN 2012 AND PUMP 6 IN 2009. EARLIER THIS YEAR, PUMP 3 WAS TAKEN OUT OF SERVICE BECAUSE VIBRATION ANALYSIS INDICATED THAT THE PUMP WAS TRENDING TOWARD FAILURE. MWRA STAFF REBUILT PUMP 3 IN ACCORDANCE WITH THE SAME PROCEDURES FOLLOWED IN PUMP 2 AND PUMP 6, BUT THE PUMP FAILED TO STAY OPERATIONAL. THE PUMP WAS SENT TO HAYES PUMP FOR INSPECTION AND REPAIR. THE ROOT CAUSE OF THE FAILURE WAS DEEMED TO BE FAILURE OF THE JUST-REPLACED THRUST BEARING. TO REPLACE THE SHAFT, HAYES PUMP WAS REQUIRED TO REMOVE THE UPPER AND LOWER PUMP BEARINGS. IN ACCORDANCE WITH "BEST MAINTENANCE PRACTICE," THIS TYPE OF INVASIVE REPAIR WORK DICTATES THAT ADDITIONAL BEARINGS, ALONG WITH THE LIP SEALS, AND GASKETS BE REPLACED WITH NEW PARTS UPON REASSEMBLY. STAFF HAVE RECONFIRMED THAT THE HAYES PUMP COMPANY IS STILL THE SOLE AUTHORIZED DISTRIBUTOR AND SERVICE CENTER IN THIS AREA FOR FAIRBANKS MORSE PUMP COMPANY.</p>			HAYES PUMP COMPANY	\$49,016.61
P-10.	<p><b>7/28/14 DISPOSE OF AN/OR RECYCLE MATERIAL EXCAVATED BY MWRA</b></p> <p>AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER TO DISPOSE OF AND/OR RECYCLE MATERIAL EXCAVATED BY MWRA. DURING A TYPICAL PIPELINE CONSTRUCTION PROJECT THAT IS PERFORMED BY MWRA STAFF, EXCAVATIONS GENERATE ROADWAY AND GRAVEL MATERIAL THAT TYPICALLY CONSISTS OF UNDESIRABLE AND UNUSABLE BITUMINOUS CONCRETE, GRAVEL, WOOD, SOD, BRICK, AND OTHER DEBRIS. UPON COMPLETION OF THE NEEDED REPAIR STAFF BACKFILL THE EXCAVATION WITH SEPARATELY PURCHASED GRAVEL THAT MEETS MASSACHUSETTS DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS. THE EXCAVATED MATERIAL IS THEN LOADED INTO AN MWRA TRUCK AND TRANSPORTED TO A LANDFILL FOR DISPOSAL. THE CONTRACTED VENDOR THEN SEPARATES AND RECYCLES AS MUCH OF THE MATERIAL AS POSSIBLE.</p>	WRA-3872		NORTHGATE RECYCLING, INC.	\$95,400.00
P-11	<p><b>7/28/14 OFFICE CHAIRS</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR 300 OFFICE CHAIRS FOR THE CHELSEA FACILITY AND THE CHARLESTOWN NAVY YARD FACILITY. THE CHELSEA FACILITY, BUILT AND FIRST OCCUPIED IN 2001, HOUSES 560 STAFF LOCATED IN TWO BUILDINGS - 449 ASSIGNED TO THE ADMINISTRATION BUILDING AND 111 TO THE MAINTENANCE BUILDING. NEW OFFICE CHAIRS WERE PROVIDED AT OCCUPANCY IN 2001. SINCE THAT TIME, THERE HAS BEEN SIGNIFICANT AND EXPECTED NORMAL WEAR AND TEAR ON THE TASK CHAIRS. TASK CHAIRS IN THE CHARLESTOWN NAVY YARD (CNY) ARE ALSO IN NEED OF REPLACEMENT. OF THE 300 CHAIRS RECOMMENDED FOR PURCHASE, 100 WILL BE DISTRIBUTED IN CNY, WITH THE BALANCE GOING TO THE CHELSEA FACILITY. THE RECOMMEND TASK CHAIR PURCHASE WILL PROVIDE STAFF WITH IMPROVED SEATING, AND ALSO UPGRADE THE OVERALL LOOK AND PROFESSIONAL IMAGE OF THESE TWO MWRA FACILITIES.</p>	WRA-3867		NEW ENGLAND OFFICE SUPPLY, INC.	\$108,222.00
P-12	<p><b>7/28/14 SUPPLY AND DELIVERY OF HYDROFLUOROSILICIC ACID</b></p> <p>AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF HYDROFLUOROSILICIC ACID TO THE JOHN J. CARROLL WATER TREATMENT PLANT.</p>	WRA-3875		SOLVAY FLUORIDES, LLC	\$619,825.80
P-13	<p><b>7/29/14 SUPPLY AND DELIVERY OF HYDROGEN SULFIDE CONTROL CHEMICALS</b></p> <p>AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF HYDROGEN SULFIDE CONTROL CHEMICALS FOR THE FRAMINGHAM EXTENSION SEWER AND FRAMINGHAM EXTENSION RELIEF SEWER.</p>	WRA-3863		EVOQUA WATER TECHNOLOGIES, LLC	\$161,940.00
P-14	<p><b>7/31/14 TWO BUCHI SYNCORE CONCENTRATORS</b></p> <p>APPROVAL OF A PURCHASE ORDER FOR TWO SYNCORE CONCENTRATION UNITS FOR THE CENTRAL LABORATORY AT THE DEER ISLAND TREATMENT PLANT. THE DEPARTMENT OF LABORATORY SERVICES (DLS) PERFORMS THE ANALYSIS OF SEA WATER, DRINKING WATER, GROUND WATER, SURFACE WATER, INDUSTRIAL WASTEWATER, AND SEDIMENT. INSTRUMENTS USED FOR THE CONCENTRATION OF SAMPLE EXTRACTS PRIOR TO THE ANALYSES BY THE VARIOUS ORGANIC TEST METHODS PERFORMED BY DLS MUST DEMONSTRATE SUPERIOR RECOVERIES OF THE TARGET ANALYTES. RECENT LABORATORY FINES ISSUED BY THE MASSACHUSETTS ATTORNEY GENERAL'S OFFICE FOR THE EMISSION OF VOLATILE ORGANIC COMPOUNDS (VOC) AND HAZARDOUS AIR POLLUTANTS (HAP) DEMONSTRATE THE IMPORTANCE OF RECOVERING THE HIGHEST POSSIBLE PERCENTAGES OF THESE COMPOUNDS IN THE CONCENTRATORS. TO ENSURE THAT MWRA ACHIEVES THIS, STAFF RECOMMEND THE REPLACEMENT OF DLS' EXISTING TWO HORIZON DRY VAP CONCENTRATORS.</p>			BUCHI CORPORATION	\$103,555.50
P-15	<p><b>7/31/14 SUPPLY AND DELIVERY OF SODIUM HYPOCHLORITE</b></p> <p>AWARD OF A ONE-YEAR PURCHASE ORDER CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF SODIUM HYPOCHLORITE TO VARIOUS WASTEWATER LOCATIONS.</p>	WRA-3877		UNIVAR USA, INC.	\$118,792.31
P-16	<p><b>7/31/14 21 WATSON-MARLOW HOSE PUMP ASSEMBLIES</b></p> <p>AWARD OF A SOLE SOURCE PURCHASE ORDER FOR 21 WATSON-MARLOW HOSE PUMP ASSEMBLIES FOR THE DEER ISLAND TREATMENT PLANT. THERE ARE MORE THAN 125 WATSON MARLOW HOSE PUMPS IN OPERATION AT THE DEER ISLAND TREATMENT PLANT FOR VARIOUS APPLICATIONS. THE MAJORITY OF THE WATSON MARLOW PUMPS WERE INSTALLED BY VARIOUS CONTRACTORS UNDER SEPARATE, COMPETITIVELY BID CONSTRUCTION PACKAGES DURING THE BOSTON HARBOR PROJECT. SINCE THAT TIME, MWRA HAS REPLACED SEVERAL HOSE PUMPS UNDER SOLE SOURCE PURCHASE ORDERS WITH THE MANUFACTURER'S SOLE REGIONAL DISTRIBUTOR, THE MAHER CORP. ALL HOSE PUMPS OPERATING ON DEER ISLAND WERE MANUFACTURED BY WATSON MARLOW.</p>			THE MAHER CORP.	\$155,430.00

CONSTRUCTION/PROFESSIONAL SERVICES DELEGATED AUTHORITY ITEMS AUGUST 1 - 31, 2014

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMEND/CO	COMPANY	FINANCIAL IMPACT
C-1.	08/18/14	SPOT POND WATER STORAGE FACILITY DESIGN/BUILD PROJECT FURNISH AND INSTALL THREE MOTOR-OPERATED, 36-INCH DIAMETER BUTTERFLY VALVES IN LIEU OF THE SPECIFIED MANUALLY OPERATED VALVES; FURNISH AND INSTALL A 1,000-KW DIESEL GENERATOR IN LIEU OF THE CONTRACT-SPECIFIED 900-KW GENERATOR; FURNISH AND INSTALL A 6,000-GALLON UNDERGROUND DIESEL FUEL STORAGE TANK IN LIEU OF THE CONTRACT-SPECIFIED 4,000-GALLON TANK.	6457	6	WALSH CONSTRUCTION COMPANY	\$105,659.90
C-2.	08/22/14	QUABBIN UV DISINFECTION FACILITIES FURNISH AND INSTALL FIBER OPTIC CABLE IN LIEU OF THE SPECIFIED COPPER CABLE FOR ALL COMMUNICATION LINES ASSOCIATED WITH THE QUABBIN UV FACILITY BUILDING.	6776	13	DANIEL O'CONNELL'S SONS, INC.	\$52,638.47

## PURCHASING DELEGATED AUTHORITY ITEMS - August 1 - 31, 2014

NO.		TITLE AND EXPLANATION	CONTRACT #	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-1.	8/18/14	<p><b>REPAIR SPARE PUMP</b></p> <p>APPROVAL OF A PURCHASE ORDER FOR REPAIR OF SPARE PUMP AT THE BRAINTREE/WEYMOUTH PUMP STATION. THERE ARE THREE FLOWSERVE PUMPS AT THE BRAINTREE/WEYMOUTH PUMP STATION (AND ONE SPARE PUMP). THE #3 PUMP/MOTOR AT THE BRAINTREE/WEYMOUTH PUMP STATION WAS NOT PUMPING TO CAPACITY. IT WAS DECIDED TO REMOVE THE EXISTING PUMP AND INSTALL THE SPARE PUMP SO PUMPING CAPACITY WOULDN'T BE COMPROMISED. THE NEWLY INSTALLED PUMP, MOTOR AND VFD WAS TESTED AND PUT ON LINE. CURRENTLY ALL THREE PUMPS ARE ON LINE. THE PROBLEMATIC PUMP WAS SENT TO ASSOCIATED ELECTRO-MECHANIC, INC., FLOWSERVE'S AUTHORIZED REPAIR SHOP, TO BE EVALUATED. THE RESULT OF THE EVALUATIONS DETERMINED THAT INSIDE THE IMPELLER WAS BOUND UP WITH DEBRIS AND RAGS. THE IMPELLER WILL BE INSPECTED, DYNAMIC BALANCED, AND CASING AND IMPELLER WEAR RINGS REPLACED.</p>			ASSOCIATED ELECTRO-MECHANIC, INC.	\$26,960.00
P-2.	8/18/14	<p><b>ONE IMPELLER AND CASING</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE DIRECT REPLACEMENT OF ONE IMPELLER AND CASING FOR DEER ISLAND'S RESIDUALS SLUDGE TRANSFER PUMP TO THE PELLETIZING PLANT. DIGESTED SLUDGE IS TRANSPORTED FROM THE DEER ISLAND STORAGE TANKS TO MWRA'S PELLETIZING PLANT IN QUINCY. SLUDGE IS PUMPED THROUGH THE INTER-ISLAND TUNNEL BY ONE 1,650-GPM (GALLONS PER MINUTE) CENTRIFUGAL SLUDGE TRANSFER PUMP MANUFACTURED BY GOULD PUMP. THE PUMP IS CONSIDERED TO BE A "WORKHORSE," PUMPING SLUDGE 24 HOURS A DAY, SIX DAYS A WEEK. RECENTLY, THE PUMP'S CAPACITY WAS NOTED TO HAVE DECREASED DUE TO EROSION FOUND ON THE PUMP'S IMPELLER AND CASING AFTER A LITTLE MORE THAN TWO AND A HALF YEARS OF CONTINUOUS SERVICE. STAFF INSTALLED A SPARE PUMP ASSEMBLY AND FULL PUMPING CAPACITY WAS RESTORED. SINCE THERE IS ONLY ONE CENTRIFUGAL SLUDGE TRANSFER PUMP CURRENTLY INSTALLED, IT IS IMPORTANT TO HAVE SPARE COMPONENTS ON HAND TO QUICKLY RETURN THE PUMP TO SERVICE IF A FAILURE OF SOME KIND WERE TO OCCUR.</p>	WRA-3866Q		HAYES PUMP, INC.	\$31,282.00
P-3.	8/18/14	<p><b>MONTHLY GENERAL MOTORS AUTOMOTIVE TRAINING</b></p> <p>AWARD OF A ONE YEAR SOLE SOURCE PURCHASE ORDER FOR MONTHLY GENERAL MOTORS AUTOMOTIVE TRAINING FOR FLEET SERVICES' STAFF. MWRA HAS 496 PLATED VEHICLES, 299 OF WHICH ARE GENERAL MOTORS (GM) VEHICLES. THE TECHNOLOGY ON THESE (AND ALL) VEHICLES EVOLVES QUICKLY WITH A CONTINUED EVOLUTION TOWARDS HYBRID, COMPUTER AND ADVANCED ELECTRICAL TECHNOLOGY. PROVIDING MANUFACTURER SPECIFIC TRAINING WILL ALLOW MWRA TO CONTINUE TO SERVICE AS THE PRIMARY SOURCE OF MAINTENANCE AND REPAIR FOR THESE VEHICLES TO ASSURE THAT THE FLEET REMAINS AS SAFE AND RELIABLE AS POSSIBLE AND THAT MWRA STAFF PROVIDE EFFICIENT, COST EFFECTIVE VEHICLE MAINTENANCE AND REPAIR. THE CONTRACT IS FOR THE PERIOD OF SEPTEMBER 1, 2014 TO AUGUST 31, 2015.</p>			MASSACHUSETTS BAY COMMUNITY COLLEGE	\$42,000.00
P-4.	8/18/14	<p><b>ONE 36-INCH HORIZONTAL GATE VALVE</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR ONE 36-INCH HORIZONTAL GATE VALVE. AS PART OF ITS OVERALL MAINTENANCE AND OPERATION OF THE METROPOLITAN WATER SYSTEM, FIELD OPERATIONS' WATER PIPELINE UNIT REPLACES APPROXIMATELY 20 MAIN LINE VALVES OF VARYING SIZE EACH YEAR. TO ENSURE THAT THE PROPER SIZED VALVE IS ALWAYS AVAILABLE TO MINIMIZE DOWN TIME AND TO BE ABLE TO IMMEDIATELY RESPOND IN THE EVENT OF A SUDDEN BREAK IN SERVICE, VALVES OF VARIOUS DIMENSIONS ARE STOCKED AT THE CHELSEA FACILITY.</p>	WRA-3890Q		BILLERICA WINWATER WORKS CO.	\$43,748.00
P-5.	8/18/14	<p><b>REPAIR ONE ALLEN BRADLEY VARIABLE FREQUENCY DRIVE</b></p> <p>AWARD OF A SOLE SOURCE PURCHASE ORDER FOR THE REPAIR OF ONE ALLEN BRADLEY VARIABLE FREQUENCY DRIVE AT THE CARUSO PUMP STATION. THE CARUSO PUMP STATION, LOCATED ADJACENT TO THE CHELSEA CREEK IN EAST BOSTON, WAS CONSTRUCTED IN 1991 AND HAS A DESIGNED WASTEWATER FLOW CAPACITY OF 125 MILLION GALLONS PER DAY. DURING A WET-WEATHER EVENT, THE MAIN BREAKER TRIPPED AT CARUSO PUMP STATION. STAFF INVESTIGATED AND IDENTIFIED A VARIABLE FREQUENCY DRIVE (VFD) FAULT ON THE PUMP CONTROL PANEL FOR PUMP 2-3, A 50-MGD PUMP WITH A 400-HORSEPOWER MOTOR. UPON INVESTIGATION, STAFF FOUND A BLACK BURNT APPEARANCE INSIDE THE VFD PANEL AROUND THE INVERTER SECTION. THE EXISTING ALLEN BRADLEY VFD IS OBSOLETE AND PARTS ARE DIFFICULT TO OBTAIN. NORTHEAST ELECTRICAL HAS PROPOSED TO UPGRADE THE INVERTER SECTION TO A POWERFLEX 700 INVERTER SECTION UTILIZING THE EXISTING CABINET AND CONTROLS. MWRA STAFF WILL INSTALL AND WIRE ALL VFD PARTS ASSOCIATED WITH THIS REPAIR UNDER THE SUPERVISION OF NORTHEAST ELECTRICAL'S FIELD ENGINEER, WHO WILL ENSURE THAT ALL VFD PARTS ARE INSTALLED, TESTED, AND OPERATE PROPERLY AS DESIGNED.</p>			NORTHEAST ELECTRICAL DISTRIBUTORS, INC.	\$44,725.00
P-6.	8/18/14	<p><b>25 GLASS LINED PLUG VALVES</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR 25 GLASS-LINED PLUG VALVES FOR THE DEER ISLAND TREATMENT PLANT. THE PRIMARY SLUDGE LINES AT THE DEER ISLAND TREATMENT PLANT CARRY PUMPED SETTLED SOLIDS, OR SLUDGE, FROM THE PRIMARY TANKS TO THE RESIDUALS COMPLEX FOR THICKENING, DIGESTION, AND FINAL PUMPING TO THE PELLETIZING PLANT IN QUINCY. THE SLUDGE CONTAINS SOLIDS AND GRIT THAT ERODE THE INTERIOR GLASS LINING OF THE PIPING AND FITTINGS, PARTICULARLY AT THE BENDS AND VALVES. THIS CONSTANT EROSION EVENTUALLY EXPOSES THE CORE STEEL PIPING SURFACE AND RUST AND CORROSION CAN THEN LEAD TO THE VALVE NOT ISOLATING PROPERLY AND LEAKING. CURRENTLY, THERE ARE APPROXIMATELY 20 GLASS-LINED PLUG VALVES THAT ARE IN NEED OF REPLACEMENT BECAUSE THEY CAN NO LONGER PROVIDE LEAK-FREE ISOLATION. STAFF RECOMMEND THAT ALL 20 BE REPLACED AND THAT AN ADDITIONAL FIVE PLUG VALVES BE PURCHASED TO HAVE ON HAND FOR IMMEDIATE REPLACEMENT SHOULD ADDITIONAL VALVES BEGIN TO FAIL.</p>	WRA-3884		ATLANTIC FLUID TECHNOLOGY	\$96,375.00
P-7.	8/21/14	<p><b>ONE HEAVY-DUTY SLOPE MOWER</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR ONE HEAVY-DUTY SLOPE MOWER. THE CURRENT SLOPE MOWER USED BY MWRA'S WESTERN GROUNDS MAINTENANCE STAFF FOR DAM FACE AND TANK SLOPE CUTTING IS MORE THAN 10 YEARS OLD AND HAS BEEN PROBLEMATIC FOR THE LAST FEW YEARS, REQUIRING EXTENSIVE REPAIRS TO KEEP IT OPERATIONAL. STAFF RECOMMEND THAT IT BE REPLACED TO INCREASE EFFICIENCY.</p>	WRA-3886		KUT KWICK CORPORATION	\$63,417.47
P-8.	8/22/14	<p><b>PRINTING AND MAILING OF THE "MWRA CONSUMER CONFIDENCE REPORT"</b></p> <p>APPROVAL OF AMENDMENT 1 TO PURCHASE ORDER CONTRACT WRA-3663 FOR THE PRINTING AND MAILING OF THE ANNUAL "MWRA CONSUMER CONFIDENCE REPORT" WITH SHAWMUT PRINTING, EXERCISING THE OPTION YEAR AND AMENDING THE CONTRACT AMOUNT BY A TOTAL OF \$30,067.84, INCREASING THE PURCHASE ORDER AMOUNT FROM \$523,391.22 TO A NOT TO EXCEED AMOUNT OF \$553,459.06.</p>	WRA-3563	1	SHAWMUT PRINTING	\$30,067.84

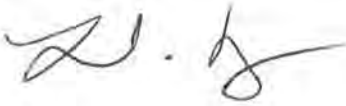
## PURCHASING DELEGATED AUTHORITY ITEMS - August 1 - 31, 2014

NO.	TITLE AND EXPLANATION	CONTRACT #	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-9.	<p><b>8/22/14 TEN SELF CONTAINED BREATHING APPARATUS AND ACCESSORIES</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR TEN SELF-CONTAINED BREATHING APPARATUS AND ACCESSORIES FOR USE AT THE DEER ISLAND TREATMENT PLANT. SELF-CONTAINED BREATHING APPARATUS IS NEEDED AT DEER ISLAND FOR USE OF THE EMERGENCY RESPONSE TEAM (ERT). THE ERT USES THIS EQUIPMENT TO ENTER CONFINED SPACES OR OTHERS SPACES THAT DO NOT HAVE BREATHABLE AIR DUE TO LACK OF OXYGEN OR OTHER DANGEROUS GASES. THE EXISTING EQUIPMENT HAS BEEN IN SERVICE FOR MORE THAN 10 YEARS AND IS IN NEED OF REPLACEMENT. THE EQUIPMENT IS MADE OF RUBBER AND POLYMERS, WHICH LOSE ELASTICITY WITH AGE, NEGATIVELY IMPACTING THEIR PERFORMANCE. THIS IS NEEDED TO ENSURE ERT THAT STAFF ARE ABLE TO CONTINUE TO WORK SAFELY AND THAT ADEQUATE INVENTORIES OF EQUIPMENT ARE AVAILABLE TO SUPPORT WORK ACTIVITIES.</p>	WRA-3861Q		W. W. GRAINGER, INC.	\$31,637.55
P-10.	<p><b>8/22/14 1,440 WASTEWATER METER ALKALINE BATTERY PACKS</b></p> <p>AWARD OF A THREE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR 1,440 WASTEWATER METER ALKALINE BATTERY PACKS. BECAUSE FLOW CONDITIONS IN SOME OF MWRA'S SEWER LINES CAN VARY, THE WASTEWATER METERING SYSTEM CONSISTS OF THREE DIFFERENT TYPES OF METERS. ONE TYPE OF METER (ADFM VELOCITY PROFILER) USES AN ASSEMBLED BATTERY PACK COMPRISED OF 28 ALKALINE BATTERY CELLS AND 4 SIX-VOLT LANTERN BATTERIES. ANOTHER TYPE OF METER (FLODAR) USES A 12-CELL LITHIUM BATTERY PACK. THE THIRD TYPE (ADS FLOWSHARK) USES A 24 D-CELL AND 12 VOLT ALKALINE BATTERY PACK. BASED ON PAST USAGE, STAFF RECOMMEND THE MWRA ESTABLISH A CONTRACT THAT WILL SPAN THREE YEARS, DURING WHICH MWRA WILL PURCHASE, 1,440 BATTERY PACKS. MWRA DOES NOT HAVE THE SPACE TO STORE ALL 1,440 BATTERY PACKS AND BECAUSE OF SHELF-LIFE CONCERNS, FURTHER RECOMMEND THAT MWRA NOT TAKE DELIVERY OF ALL 1,440 BATTERIES AT ONE TIME. THEREFORE, UNDER THE TERMS OF THE PURCHASE ORDER THE VENDOR WILL DELIVER 40 BATTERY PACKS PER MONTH.</p>	WRA-3885		EPEC ENGINEERED TECHNOLOGIES	\$68,376.00
P-11	<p><b>8/22/14 ONE 37,000-POUND, 6/8-YARD, DIESEL-POWERED DUMP TRUCK</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR ONE 37,000-POUND, 6/8-YARD, DIESEL-POWERED DUMP TRUCK. WRA-822 IS A 2005 SIX-WHEEL DUMP TRUCK WITH A PLOW AND SANDER USED BY THE METROPOLITAN GROUNDS MAINTENANCE UNIT PRIMARILY TO PLOW AND SAND 19 MWRA FACILITIES, TO TRANSPORT SLOPE CUTTING MACHINES, AND TO HAUL LOAM AND MATERIALS TO AND FROM VARIOUS JOB SITES. THE WRIST PINS IN THE ENGINE OF WRA-822 ARE IN DANGER OF FAILING AND THE TRANSMISSION SHIFTS VERY HARD, WHICH IS AN INDICATION THAT TRANSMISSION REPLACEMENT WILL SOON BE NECESSARY. IN ADDITION, THE FRONT PANEL OF THE DUMP BODY IS ROTTED THROUGH AND THE AIR BRAKE CANS NEED TO BE REPLACED. FLEET SERVICES HAS DETERMINED IT IS NO LONGER ECONOMICALLY FEASIBLE TO CONTINUE TO MAINTAIN AND REPAIR THIS UNIT AND IS RECOMMENDING REPLACEMENT. UPON REPLACEMENT, STAFF PLAN TO DECLARE WRA-822 SURPLUS.</p>	WRA-3881		BOSTON FREIGHTLINER	\$135,918.00
P-12	<p><b>8/22/14 TWO JCB MODEL 3CX-17 BACKHOE LOADERS</b></p> <p>AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR TWO BACKHOE LOADERS. THE OPERATIONS DIVISION'S METROPOLITAN WASTEWATER AND WATER PIPELINE UNITS HAVE A COMBINED TOTAL OF FIVE BACKHOES, TWO IN WASTEWATER PIPELINE MAINTENANCE, AND THREE IN WATER PIPELINE MAINTENANCE. THE BACKHOES ARE USED ON A DAILY BASIS FOR EXCAVATION, BACKFILLING, MATERIAL PLACEMENT, AND MOVEMENT OF MATERIAL ON JOB SITES. IN THE LAST SIX MONTHS, MWRA HAS BEEN REQUIRED TO RENT BACKHOES SEVERAL TIMES WHILE ITS EQUIPMENT WAS OUT OF SERVICE. AS PART OF VEHICLE REPLACEMENT PLANNING, STAFF EVALUATED THE BACKHOES AND DETERMINED THAT, WRA-487 AND WRA-966 SHOULD BE REPLACED AS REPAIRS ARE NO LONGER COST EFFECTIVE.</p>	WRA-3789		NORTHLAND INDUSTRIAL TRUCK CO., INC.	\$257,976.00

POSITION CONTROL REGISTER (PCR) LOCATION CHANGES July 2014

<u>DATE OF CHANGE</u>	<u>POSITION TITLE</u>	<u>CURRENT PCR#</u>	<u>CURRENT COST CENTER</u>	<u>NEW PCR #</u>	<u>NEW COST CENTER</u>	<u>REASON FOR CHANGE</u>
7/12/2014	HVAC Specialist	29880101	Trade Labor Maintenance	5470075	EQ Maintenance	To resolve personnel issue

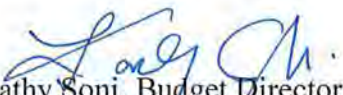

### STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** FY14 Year-End Financial Update and Summary

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COMMITTEE: Administration, Finance & Audit

INFORMATION  
 VOTE

  
Kathy Soni, Budget Director  
David Whelan, Budget Manager  
Preparer/Title 

  
Rachel C. Madden  
Director, Administration and Finance

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#### RECOMMENDATION:

For information only. This staff summary provides the financial update and variance highlights for Fiscal Year 2014, based on the final year-end financial close.

#### DISCUSSION:

Total year-end expenses were higher than budget by \$1.0 million or 0.2% and total revenues were greater than budgeted by \$5.2 million or 0.8% for a net variance of \$4.2 million, after using \$26.2 million for the defeasance executed in June. The majority of the surplus was due to the favorable short-term interest rates, less than budgeted State Revolving Fund (SRF) borrowing, and the receipt of payments for the negotiated settlement agreement for the dismissal of all disputed claims of all parties to the 2010 water main break cost recovery lawsuit.

Of the \$4.2 million surplus at year-end, \$854,000 was for the receipt of Debt Service Assistance in FY14, funds which were applied to FY15 debt service to reduce the rate revenue requirement in FY15 as was recommended by the Advisory Board.

After the defeasance and the application of the \$854,000 from Debt Service Assistance to lower FY15 rate revenue requirement, the remaining surplus is \$3.3 million. The majority of the \$3.3 million surplus is directly attributable to the successful \$3.1 million water main break settlement.

Staff are recommending that the \$3.1 million revenue from the settlement and other surplus be deposited into the Defeasance Account for use in FY15 to defease debt and provide targeted rate relief for communities in future challenging years. This defeasance strategy has proven to be very effective in the past few years in managing assessment increases over time.

Total Expenses were higher than budget by \$1.0 million or 0.2%.

	<b>FY14 Budget (June)</b>	<b>FY14 Actual (June)</b>	<b>\$ Variance</b>	<b>% Variance</b>
Direct Expenses	\$214.4	\$211.6	-\$2.8	-1.3%
Indirect Expenses	\$46.8	\$46.3	-\$0.5	-1.1%
Debt Service	\$397.2	\$401.5	\$4.3	1.1%
<b>Total</b>	<b>\$658.4</b>	<b>\$659.4</b>	<b>\$1.0</b>	<b>0.2%</b>

The variances for the year by major categories were:

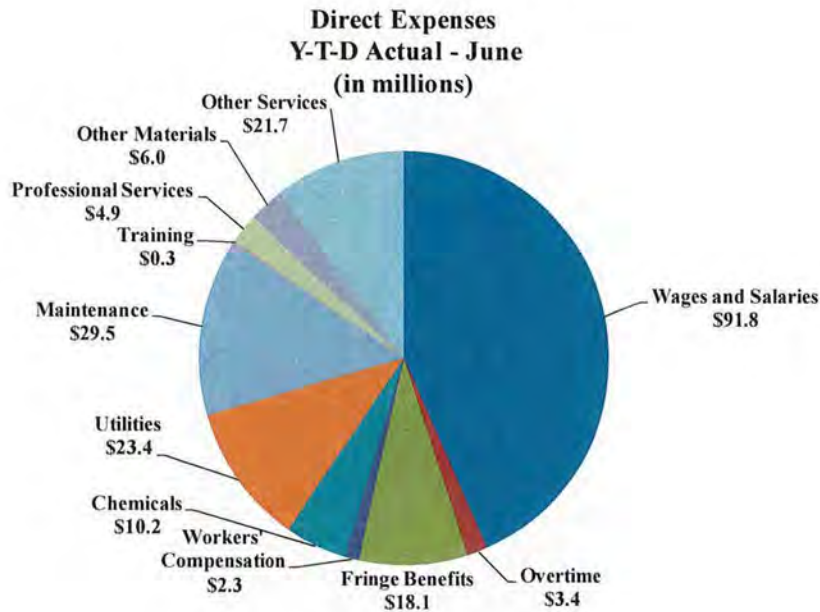
- Lower Direct Expenses of \$2.8 million mostly for wages and salaries, professional services, other services, chemicals, and overtime;
- Lower Indirect Expenses of \$494,000 for lower Watershed Reimbursement of \$574,000 mainly for lower Payment in Lieu of Taxes (PILOT) and operating expenses offset by a higher Deer Island Harbor Cable expense of \$179,000 due to year-end true-up;
- Higher Debt Service of \$4.3 million was the result of debt service related savings of \$21.8 million offset by \$26.2 million defeasance executed in June. The \$21.8 million surplus before the defeasance was due to: lower than budgeted variable rate of \$12.8 million; lower Local Water Pipeline Commercial Paper expense of \$3.8 million; lower State Revolving Fund (SRF) expenses of \$3.3 million for the delayed borrowing; \$1.1 million for no new money borrowing in FY14; and the receipt of Debt Service Assistance of \$853,660; and
- Revenues were higher than budgeted by \$5.2 million due to greater Non-Rate Revenue of \$4.7 million mainly due to \$3.1 million the MWRA received in payments in exchange for the dismissal of all disputed claims of all parties to the 2010 water main break cost recovery lawsuit, \$609,000 for emergency water use by the Town of Hudson, and \$320,000 for higher energy related revenue.

Please refer to Attachment 2 for a more detailed comparison by line item.

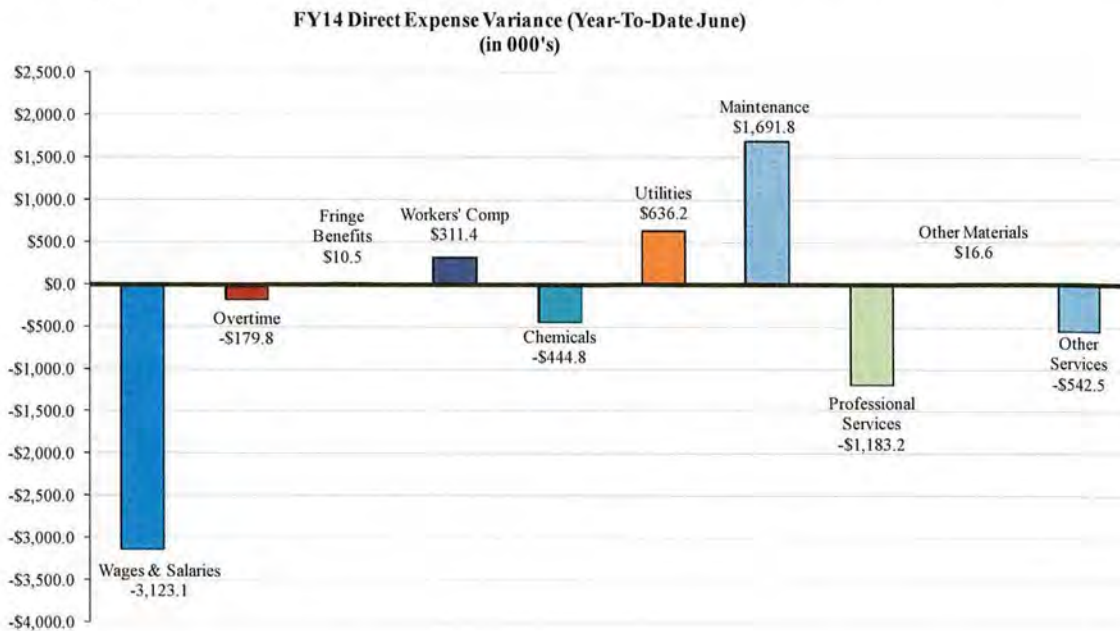


## Direct Expenses

Direct Expenses totaled \$211.6 million, \$2.8 million or 1.3% less than budget. The chart below represents the make-up of direct expense spending by category:

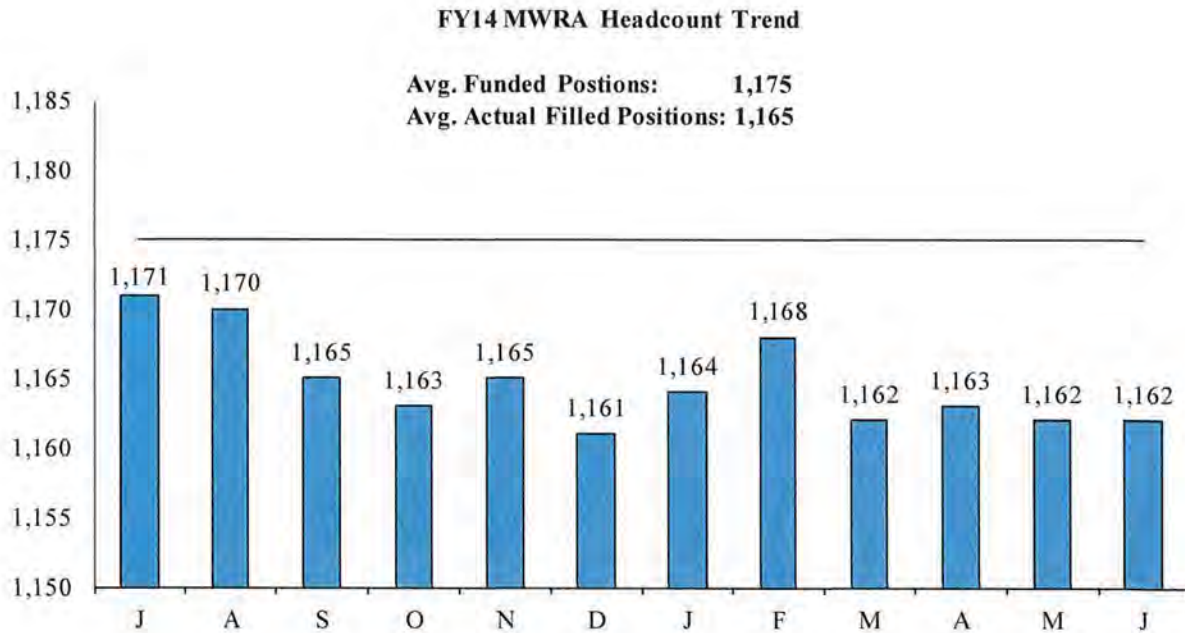


The primary reason for underspending on Direct Expenses was lower spending for wages and salaries, professional services, other services, chemicals, and overtime offset by overspending for maintenance, utilities, and workers' compensation.



## Wages and Salaries

Wages and Salaries were underspent by \$3.1 million or 3.3% mainly as a result of lower than budgeted filled positions and the salary mix differential between staff retiring at higher rates and new hires coming on board at lower rates. The average actual filled positions were 1,165 which were 10 positions lower than the 1,175 positions funded. Additionally, MWRA had 3 temporary employees at year-end.



## Professional Services

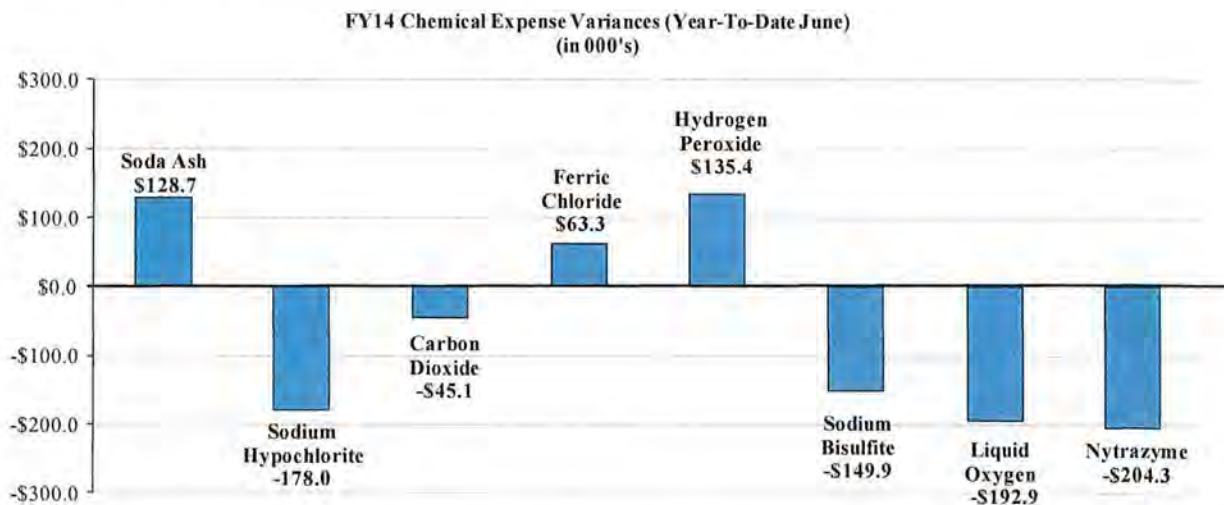
Professional Services were underspent by \$1.2 million or 19.4% in FY14 mainly due to Engineering of \$555,000 for lower use of as-needed engineering services and delayed timing of dam safety and emergency action services, Other Professional Services of \$253,000 due to delays in commencing the as-needed utility boring contract and timing of the Maximo upgrade, Lab and Testing services of \$252,000 primarily from lower costs for the new contract and use of as-needed services for red tide assessment for the Harbor Monitoring program, and Legal of \$89,000 for lower than budgeted need for outside legal services.

## Other Services

Other Services were lower than budget by \$543,000 or 2.4% mainly for Sludge Pelletization of \$485,000 due to quantities being approximately 5% lower, 99.2 tons per day versus 104.0 budgeted primarily due to equipment improvements and optimization efforts at Deer Island which resulted in improved digestion. The Other Services category is also underspent by \$206,000 due to the timing of Automatic Vehicle Locator services and lower than projected licensing costs.

## Chemicals

Chemicals are underspent by \$445,000 or 4.2% year-to-date mainly due to lower than budgeted need for Nitrazyme of \$204,000 due to system modifications by the Town of Framingham, Liquid Oxygen of \$193,000 and Sodium Bisulfite of \$150,000 due to lower pricing and usage due to better than expected water quality from the Quabbin Reservoir, and Sodium Hypochlorite of \$178,000 due to lower pricing and fewer deliveries at Deer Island. Underspending is offset by overspending for Hydrogen Peroxide of \$135,000 due to lower flows which required increased pretreatment for hydrogen sulfide gas, Soda Ash of \$129,000 due to greater than budgeted flow at Carroll Plant and better mixing at the Clinton Wastewater Treatment Plant, and Ferric Chloride of \$63,000 for struvite control.



## Overtime

Overtime was underspent by \$180,000 or 5.0% in FY14 mainly at Deer Island and Field Operations due to lower than budgeted wet weather response.

## Maintenance

Maintenance was overspent by \$1.7 million or 6.1% for the year. Materials are overspent by \$1.8 million while services are lower than budget by \$153,000. The majority of the maintenance overspending is attributable to the receipt of materials in the warehouse, computer software license renewals, and completion of several unbudgeted projects at Deer Island and Field Operations.

## Utilities

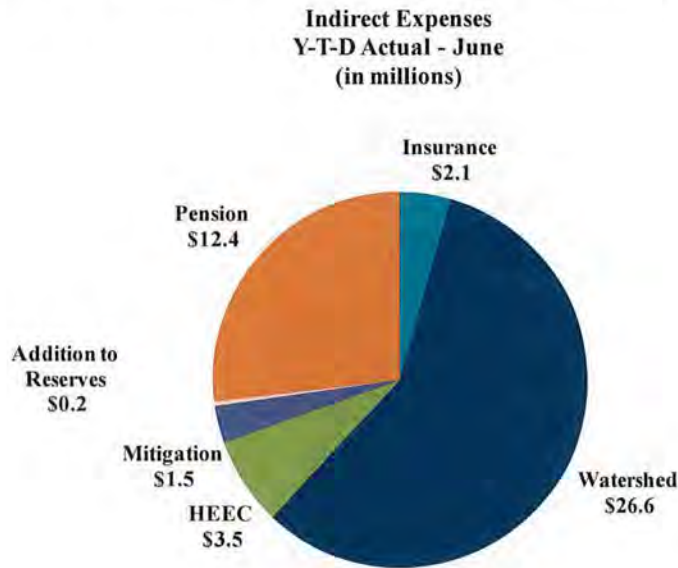
Utilities were overspent by \$636,000 or 2.8% in FY14 mainly due to overspending for Electricity of \$1.2 million mainly due to winter congestion pricing. Offset by lower diesel fuel of \$355,000 due to lower pricing and wet weather usage at Deer Island, lower water use of \$119,000, and natural gas of \$82,000 due to lower pricing and delay in conversion from natural gas at the Chelsea Creek Headworks facility.

## Workers' Compensation

Workers' Compensation expenses are higher than budget by \$311,000 or 15.6%, based on higher actual administrative and legal costs of \$140,000, medical expenses of \$113,000, and compensation expenses of \$58,000.

## Indirect Expenses

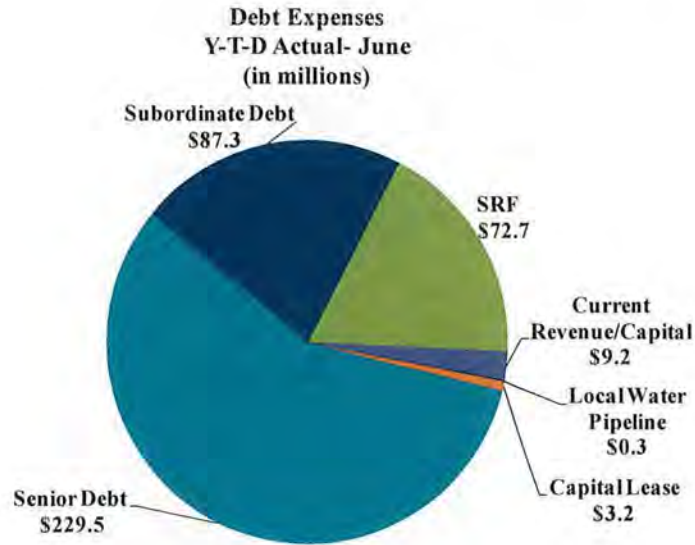
Indirect Expenses for FY14 total \$46.3 million, \$494,000 or 1.1% less than budget.



The majority of the underspending on Indirect Expenses in FY14 was for lower Watershed expenses of \$574,000 due to lower Payment in Lieu of Taxes (PILOT) and lower operating expenses offset by higher Harbor Electric Energy Company (HEEC) expenses of \$179,000 due to FY14 true-up.

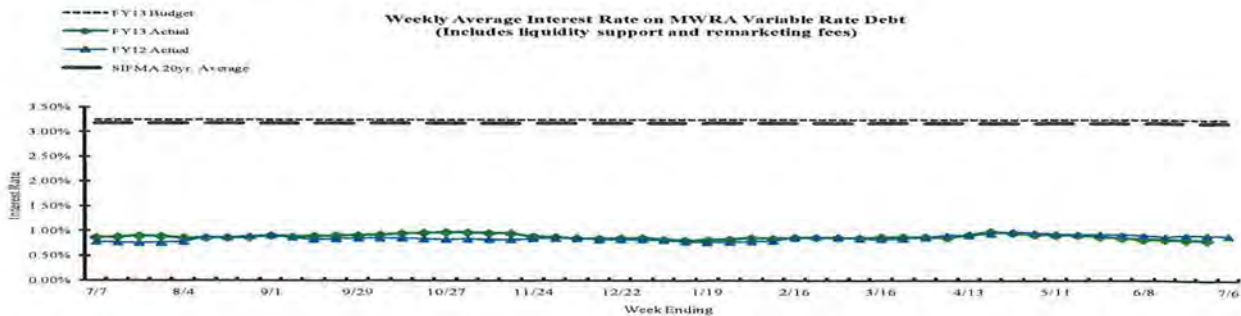
## Debt Service Expenses

Debt Service Expenses include the principal and interest payment for fixed debt, the variable subordinate debt, and the State Revolving Fund (SRF) obligation, the commercial paper program for the Local Water Pipeline projects, current revenue for capital, and the Chelsea facility lease payment.



Debt Service for FY14 totaled \$401.5 million which was higher than budget by \$4.3 million or 1.1% after the June defeasance. It should be noted that \$26.2 million of the June defeasance was funded from the FY14 surplus using \$21.8 million in debt-related surplus, \$4.4 million from direct and indirect underspending, and higher revenues.

The graph below reflects the variable rate trend by month over the past year in comparison with FY13 Actuals and the FY14 Budget for the same period.



## Revenue

FY14 Revenue totals \$663.6 million which was \$5.2 million or 0.8% higher than budget due to higher non-rate revenue of \$4.7 million and higher Investment Income of \$499,000.

The higher non-rate Revenue of \$4.7 million is mainly due to \$3.1 million in payments for the negotiated “no admissions” settlement agreement for the dismissal of all disputed claims of all parties to the 2010 water main break cost recovery lawsuit, \$609,000 for the sale of unbudgeted emergency water for the Town of Hudson, \$320,000 for higher energy revenue due to timing or receipt and higher Demand Response and Renewable Portfolio Standard (RPS) sales, \$291,000 for the sale of surplus equipment, a variety of other items totaling approximately \$400,000, and higher investment income of \$499,000.

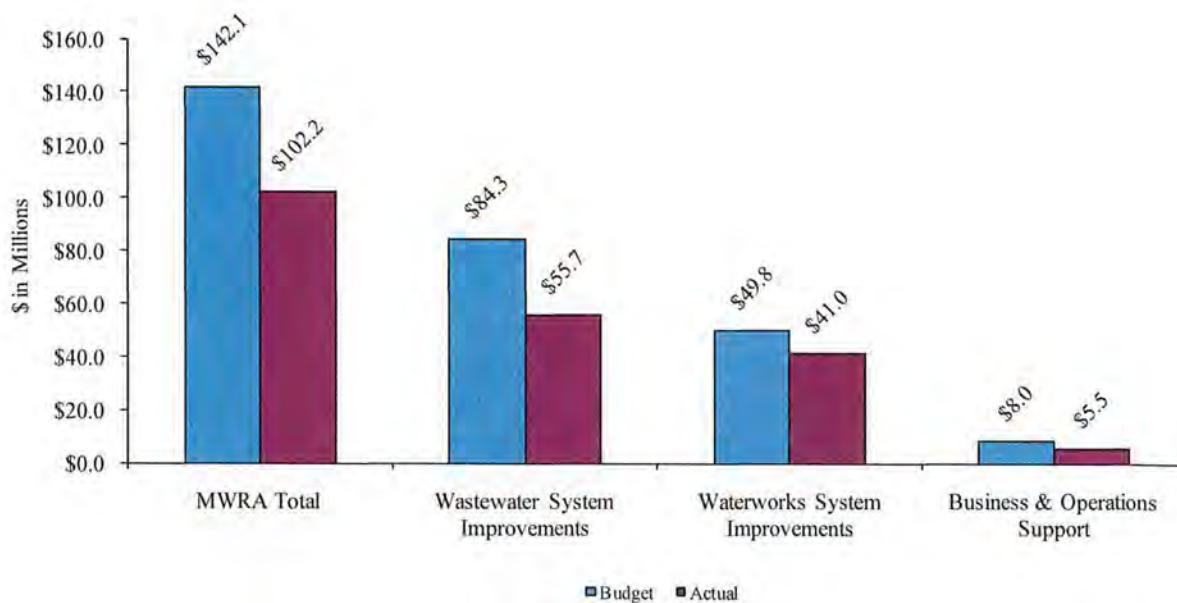
## FY14 Capital Improvement Program

Spending in FY14 totaled \$102.2 million, \$39.9 million or 28.1% lower than budget. After accounting for programs which are not directly under MWRA's control, most notably the Inflow and Infiltration (I/I) program, the Local Water Pipeline program, and the community managed Combined Sewer Overflow (CSOs) projects, the underspending is \$29.3 million or 26.5%.

Underspending was reported in all programs: Wastewater of \$28.6 million, Waterworks of \$8.9 million, and Business and Operations Support of \$2.5 million.

Spending By Program:

FY14 CIP Spending



\$ in Millions	Budget	Actuals	\$ Var.	% Var.
<b>Wastewater System Improvements</b>				
Interception & Pumping	13,072,800	6,873,770	-6,199,030	-47.4%
Treatment	39,419,221	28,657,696	-10,761,525	-27.3%
Residuals	370,754	532,123	161,369	43.5%
CSO	32,273,126	15,578,636	-16,694,489	-51.7%
Other	-884,725	4,047,346	4,932,072	557.5%
<b>Total Wastewater System Improvements</b>	<b>84,251,176</b>	<b>55,689,573</b>	<b>-28,561,601</b>	<b>-33.9%</b>
<b>Waterworks System Improvements</b>				
Drinking Water Quality Improvements	32,336,046	30,232,484	-2,103,561	-6.5%
Transmission	6,386,220	4,462,855	-1,923,365	-30.1%
Distribution & Pumping	10,037,948	4,816,606	-5,221,341	-52.0%
Other	1,078,343	1,454,226	375,884	34.9%
<b>Total Waterworks System Improvements</b>	<b>49,838,557</b>	<b>40,966,172</b>	<b>-8,872,384</b>	<b>-17.8%</b>
<b>Business &amp; Operations Support</b>	<b>7,971,668</b>	<b>5,507,453</b>	<b>-2,464,214</b>	<b>-30.9%</b>
<b>Total MWRA</b>	<b>142,061,401</b>	<b>102,163,200</b>	<b>-39,898,202</b>	<b>-28.1%</b>

The main reasons for FY14 underspending were:

1. **Combined Sewer Overflow (CSOs)** of \$16.7 million – primarily due timing of anticipated expenditures for the Cambridge Sewer Separation payment of \$13.9 million which is lower than originally estimated, South Dorchester Bay Sewer Separation – Commercial Point for Inflow/Infiltration work and final cost adjustments of \$2.1 million, Bulfinch Triangle of \$803,000 for final cost adjustments, and North Dorchester Bay of \$639,000 mainly due to reduced scope for outfall design and resident inspection work. Offset by some overspending on South Dorchester Bay Sewer Separation – Fox Point of \$473,000 for final cost adjustments and Reserved Channel Sewer Separation of \$461,000 for additional work.
2. **Treatment** of \$10.8 million – mainly for lower spending on North Main Pump Station (NMPS) VFD Replacement Construction of \$3.4 million, NMPS Butterfly Valve Replacement of \$2.4 million, Clinton Digester Rehabilitation of \$908,000, Miscellaneous VFD Replacements of \$846,000, Sodium Hypochlorite Pipe Replacement Design of \$830,000, Power System Improvement of \$750,000, DI Digester & Storage Design of \$700,000, Fire Alarm System Replacement Design of \$700,000 HVAC Equipment Replacement Design of \$687,000, Roof Replacement of \$595,000, and Thermal Plant Boiler Control of \$583,000, and other smaller projects of \$3.2 million. Offset by overspending for Scum Skimmer Replacement of \$2.9 million, Electrical Equipment Upgrade Construction of \$1.0 million, Digester Modules 1 and 2 of \$608,000 and Expansion Joint Repair Construction 2 of \$342,000.
3. **Wastewater Interception and Pumping** of \$6.2 million – primarily due to Prison Point and Cottage Farm Engine, Pumps, and Gear boxes of \$2.2 million due to timing, Nut Island Headworks Electric and Grit/Screenings Conveyance construction project of \$1.7 million due to the award being less than budgeted, and Rehabilitation of Sections 186 & 4 of \$1.2 million, Prison Point Piping Rehabilitation of \$331,000 and DeLauri Pump Station Upgrades of \$313,000 due to schedule shifts.
4. **Water Distribution and Pumping** of \$5.2 million – for lower spending on Weston Aqueduct Supply Mains of \$3.2 million for lower than budgeted award for WASM 3 Design and for work anticipated in FY14 but completed in FY13 for Watertown Section Rehabilitation, Northern Intermediate High of \$651,000 primarily for lower than anticipated design services for Section 89 & 29 Redundancy, Valve Replacement of \$500,000 due to timing of equipment purchases, Southern Extra High Redundancy and Storage of \$470,000 mainly for delays for Southern Extra High Redundancy and Storage Final Design, Southern Spine Distribution Mains of \$289,000 due to the completion of Section 21, 43, & 22 Design Project under budget, and Lynnfield Pipeline of \$165,000 due to timing.
5. **Drinking Water Quality Improvements** of \$2.1 million – mainly for Carroll Water Treatment Plant of \$2.3 million mainly due to delays for modifications to existing maintenance facilities and Spot Pond Covered Storage of \$1.1 million mainly for site issues and delay in equipment delivery. Offset by overspending for emergency work on

the CVA Shea Avenue Leak Repair of \$723,000, Quabbin Ultraviolet Construction of \$351,000, and Quabbin Ultraviolet Design of \$309,000.

6. **Water Transmission** of \$1.9 million – mainly for lower than budgeted spending for Watershed Land of \$960,000 due to timing, Hultman Rehabilitation of \$443,000 due to lower final contract costs, and Dam Projects of \$327,000 due to less than anticipated final Design/Engineering Services During Construction/Construction Administration/Resident Inspection work.

The underspending was offset by overspending for the Community Financial Assistance Programs:

1. **Wastewater Other** of \$4.9 million – primarily due to Inflow and Infiltration (I/I) community requests for grants and loans being greater than budget.
2. **Waterworks Other** of \$0.4 million – primarily due to Local Water Pipeline Assistance Program community requests for loans being greater than budget.

### **Construction Fund Balance**

The construction fund balance was at \$80 million as of June 2013. Commercial Paper availability was at \$180 million to fund construction projects.

Attachment 1 – Variance Summary June 2014

Attachment 2 – Current Expense Variance Explanations

Attachment 3 – Capital Improvement Program Variance Explanations

Attachment 4 – FY14 Final versus FY14 Year-End Projection

Attachment 5 – FY14 Actual versus FY13 Actual



ATTACHMENT 1

	June 2014 Year-to-Date					
	Period 12 YTD Budget	Period 12 YTD Actual	Period 12 YTD Variance	%	FY14 Approved	% Expended
<b>EXPENSES</b>						
WAGES AND SALARIES	\$ 94,874,284	\$ 91,751,235	\$ (3,123,049)	-3.3%	\$ 94,874,284	96.7%
OVERTIME	3,580,025	3,400,247	(179,778)	-5.0%	3,580,025	95.0%
FRINGE BENEFITS	18,063,825	18,074,366	10,541	0.1%	18,063,825	100.1%
WORKERS' COMPENSATION	2,000,000	2,311,448	311,448	15.6%	2,000,000	115.6%
CHEMICALS	10,671,225	10,226,458	(444,767)	-4.2%	10,671,225	95.8%
ENERGY AND UTILITIES	22,760,588	23,396,747	636,159	2.8%	22,760,588	102.8%
MAINTENANCE	27,761,580	29,453,365	1,691,785	6.1%	27,761,580	106.1%
TRAINING AND MEETINGS	330,917	328,782	(2,135)	-0.6%	330,917	99.4%
PROFESSIONAL SERVICES	6,083,402	4,900,235	(1,183,167)	-19.4%	6,083,402	80.6%
OTHER MATERIALS	5,969,470	5,986,021	16,551	0.3%	5,969,470	100.3%
OTHER SERVICES	22,278,700	21,736,151	(542,549)	-2.4%	22,278,700	97.6%
<b>TOTAL DIRECT EXPENSES</b>	<b>\$ 214,374,016</b>	<b>\$ 211,565,055</b>	<b>\$ (2,808,965)</b>	<b>-1.3%</b>	<b>\$ 214,374,016</b>	<b>98.7%</b>
INSURANCE	\$ 2,093,618	\$ 2,050,555	\$ (43,063)	-2.1%	\$ 2,093,618	97.9%
WATERSHED/PILOT	27,214,833	26,640,877	(573,956)	-2.1%	27,214,833	97.9%
BECo PAYMENT	3,346,854	3,525,799	178,945	5.3%	3,346,854	105.3%
MITIGATION	1,566,797	1,494,900	(71,897)	-4.6%	1,566,797	95.4%
ADDITIONS TO RESERVES	169,304	169,304	-	0.0%	169,304	100.0%
RETIREMENT FUND	12,431,515	12,447,338	15,823	0.1%	12,431,515	100.1%
<b>TOTAL INDIRECT EXPENSES</b>	<b>\$ 46,822,921</b>	<b>\$ 46,328,773</b>	<b>\$ (494,147)</b>	<b>-1.1%</b>	<b>\$ 46,822,921</b>	<b>98.9%</b>
STATE REVOLVING FUND	\$ 75,960,616	\$ 72,684,514	\$ (3,276,102)	-4.3%	\$ 75,960,616	95.7%
SENIOR DEBT	204,471,302	229,505,983	25,034,681	12.2%	204,471,302	112.2%
CORD FUND	132,238	132,238	-	0.0%	132,238	100.0%
DEBT SERVICE ASSISTANCE	-	(853,660)	(853,660)	---	-	0.0%
CURRENT REVENUE/CAPITAL	9,200,000	9,200,000	-	0.0%	9,200,000	100.0%
SUBORDINATE MWRA DEBT	100,117,241	100,117,241	-	0.0%	100,117,241	100.0%
LOCAL WATER PIPELINE CP	4,127,810	316,440	(3,811,370)	-92.3%	4,127,810	7.7%
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%	3,217,060	100.0%
VARIABLE DEBT	-	(12,770,132)	(12,770,132)	---	-	0.0%
DEFEASANCE ACCOUNT	-	-	-	---	-	---
<b>TOTAL DEBT SERVICE</b>	<b>\$ 397,226,267</b>	<b>\$ 401,549,684</b>	<b>\$ 4,323,416</b>	<b>1.1%</b>	<b>\$ 397,226,267</b>	<b>101.1%</b>
<b>TOTAL EXPENSES</b>	<b>\$ 658,423,204</b>	<b>\$ 659,443,512</b>	<b>\$ 1,020,303</b>	<b>0.2%</b>	<b>\$ 658,423,204</b>	<b>100.2%</b>
<b>REVENUE &amp; INCOME</b>						
RATE REVENUE	\$ 628,721,000	\$ 628,721,000	\$ -	0.0%	\$ 628,721,000	100.0%
OTHER USER CHARGES	8,127,379	8,030,020	(97,359)	-1.2%	8,127,379	98.8%
OTHER REVENUE	6,444,291	11,266,436	4,822,145	74.8%	6,444,291	174.8%
RATE STABILIZATION	3,500,000	3,500,000	-	0.0%	3,500,000	100.0%
INVESTMENT INCOME	11,630,534	12,129,653	499,119	4.3%	11,630,534	104.3%
<b>TOTAL REVENUE &amp; INCOME</b>	<b>\$ 658,423,204</b>	<b>\$ 663,647,109</b>	<b>\$ 5,223,905</b>	<b>0.8%</b>	<b>\$ 658,423,204</b>	<b>100.8%</b>

**ATTACHMENT 2**  
**Current Expense Variance Explanations**

Total MWRA	FY14 Budget YTD June Preliminary	FY14 Actuals YTD June Preliminary	FY14 YTD Actual vs. FY14 Budget		Explanations
			\$	%	
<b>Direct Expenses</b>					
Wages & Salaries	94,874,284	91,751,235	(3,123,049)	-3.3%	Underspending is due to lower headcount, the salary mix differential between staff retiring at higher rates and new hires coming on board at lower rates, and higher than budgeted use of accrued leave time. At the end of June the average filled positions year-to-date were 10 positions less than the 1,175 funded positions.
Overtime	3,580,025	3,400,247	(179,778)	-5.0%	Lower than projected emergency wet weather events.
Fringe Benefits	18,063,825	18,074,366	10,541	0.1%	Basically at budgeted levels.
Worker's Compensation	2,000,000	2,311,448	311,448	15.6%	Overspending primarily due to higher Administrative and Legal costs of \$140k and Medical Expenses being \$113k higher than budget.
Chemicals	10,671,225	10,226,458	(444,767)	-4.2%	Underspending for Nitrazyme of \$204k from lower usage due to Town of Framingham system improvements, Liquid Oxygen of \$193k due to both lower pricing and volume, Sodium Hypochlorite of \$178k, and Sodium Bisulfite of \$150k offset by overspending for Hydrogen Peroxide of \$135k for increased need for pretreatment of hydrogen sulfide gas, Soda Ash of \$129k due to higher dosing, Activated Carbon of \$71k, and Ferric Chloride of \$63k.
Utilities	22,760,588	23,396,747	636,159	2.8%	Overspending of \$1.2 million for Electricity mainly due to winter congestion pricing offset by lower Diesel Fuel of \$355k, Water use of \$119k, and Natural Gas use of \$82k.
Maintenance	27,761,580	29,453,365	1,691,785	6.1%	Material purchases are greater than budget by \$1.8 million and services are underspent by \$153k.
Training & Meetings	330,917	328,782	(2,135)	-0.6%	

**ATTACHMENT 2**  
**Current Expense Variance Explanations**

Total MWRA	FY14 Budget YTD June Preliminary	FY14 Actuals YTD June Preliminary	FY14 YTD Actual vs. FY14 Budget		Explanations
			\$	%	
Professional Services	6,083,402	4,900,235	(1,183,167)	-19.4%	Lower Engineering of \$555k due to less than planned use of as-needed engineering support and Dam Emergency Action Plan Updating Services, \$253k lower professional support associated with the MIS Maximo upgrade, lower Lab & Testing of \$252k due to new Harbor and Outfall Monitoring contract and less need for red-tide assessments, and Legal services of \$89k.
Other Materials	5,969,470	5,986,021	16,551	0.3%	Higher spending for Computer Hardware of \$144k, Vehicle Purchases of \$54k, Work Clothes of \$49k, and Health/Safety of \$46k offset by lower spending for Equipment/Furniture of \$339k.
Other Services	22,278,700	21,736,151	(542,549)	-2.4%	The majority of the underspending is due to lower than budgeted sludge quantities of \$485k, Other Services of \$206k for lower than projected spending on AVL Services and Licensing Costs, lower Grit and Screenings of \$96k offset by higher than budgeted spending for space/lease rentals of \$152k, Police Details of \$79k, Telephones of \$78k, and Membership Dues of \$56k.
<b>Total Direct Expenses</b>	<b>214,374,016</b>	<b>211,565,055</b>	<b>(2,808,961)</b>	<b>-1.3%</b>	
<b>Indirect Expenses</b>					
Insurance	2,093,618	2,050,555	(43,063)	-2.1%	Lower spending for Premiums of \$30k and Claims of \$13k.
Watershed/PILOT	27,214,833	26,640,877	(573,956)	-2.1%	Lower PILOT (Payment in Lieu of Taxes) expense of \$328k as land valuations were lower than expected and Watershed Reimbursement of \$246k for lower operating expenses.
HEEC Payment	3,346,854	3,525,799	178,945	5.3%	
Mitigation	1,566,797	1,494,900	(71,897)	-4.6%	Lower Mitigation for Quincy of \$51k and Winthrop of \$21k.
Addition to Reserves	169,304	169,304	-	0.0%	
Pension Expense	12,431,515	12,447,338	15,823	0.1%	
Post Employee Benefits	-	-	-		
<b>Total Indirect Expenses</b>	<b>46,822,921</b>	<b>46,328,773</b>	<b>(494,148)</b>	<b>-1.1%</b>	

**ATTACHMENT 2**  
**Current Expense Variance Explanations**

Total MWRA	FY14 Budget YTD June Preliminary	FY14 Actuals YTD June Preliminary	FY14 YTD Actual vs. FY14 Budget		Explanations
			\$	%	
<b>Debt Service</b>					
Debt Service	397,226,267	402,403,344	5,177,077	1.3%	The higher debt service variance is the result of debt service related surplus of \$21.0 million offset by \$26.2 million defeasance executed in June. The majority of debt service related underspending is the result of lower than budgeted short-term interest rates.
Debt Service Assistance	-	(853,660)	(853,660)		The variance of \$854k is due to the receipt of unbudgeted Debt Service Assistance from the Commonwealth of Massachusetts which will be used in FY15 to lower community assessments.
<b>Total Debt Service Expenses</b>	<b>397,226,267</b>	<b>401,549,684</b>	<b>4,323,417</b>	<b>1.1%</b>	
<b>Total Expenses</b>					
<b>Total Expenses</b>	<b>658,423,204</b>	<b>659,443,512</b>	<b>1,020,308</b>	<b>0.2%</b>	
<b>Revenue &amp; Income</b>					
Rate Revenue	628,721,000	628,721,000	-	0.0%	
Other User Charges	8,127,379	8,030,020	(97,359)	-1.2%	
Other Revenue	6,444,291	11,266,436	4,822,145	74.8%	The higher non-rate Revenue of \$4.8 million is mainly due to \$3.1 million in payments for dismissal of all disputed claims of all parties to the 2010 water main break cost recovery, \$538k for the sale of unbudgeted emergency water for the Town of Hudson, \$320k for higher energy revenue, \$291k for the sale of surplus equipment, and a variety of other smaller items totaling \$573k.
Rate Stabilization	3,500,000	3,500,000	-	0.0%	
Investment Income	11,630,534	12,129,653	499,119	4.3%	
<b>Total Revenue</b>	<b>658,423,204</b>	<b>663,647,109</b>	<b>5,223,905</b>	<b>0.8%</b>	
<b>Net Revenue in Excess of Expenses</b>	<b>-</b>	<b>4,203,597</b>	<b>4,203,597</b>		

**ATTACHMENT 3**  
**Capital Improvement Program Variance Explanations**

	FY14 Budget YTD June	FY14 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Interception & Pumping (I&P)	\$13,073	\$6,874	(\$6,199)	-47.4%	Underspending mainly due to timing of work for Prison Point/Cottage Farm Engine Pump & Gearbox Rebuilds of \$2.2M, lower than budgeted award for Nut Island Electrical & Grit/Screens Conveyance - Construction contract of \$1.7M, and schedule changes for Rehabilitation of Sections 186 and 4 - Construction of \$1.2M, Prison Point Piping Rehab of \$331,000, DeLauri Pump Station Upgrades of \$313,000, and North System Hydraulic Study of \$247,000.
Treatment	\$39,419	\$28,658	(\$10,762)	-27.3%	Underspending on North Main Pump Station (NMPS) VFD Replacement Construction of \$3.4M due to timing of equipment delivery, Scum Skimmer Replacement of \$2.9M due to timing of equipment delivery and review and approval by MWRA staff, NMPS & Winthrop Terminal Facility Butterfly Valve Replacements of \$2.4M, Clinton Digester Rehabilitation of \$908,000, Sodium Hypochlorite Pipe Replacement - Design of \$830,000, Power System Improvements - Construction of \$750,000, Fire Alarm System Replacement - Design of \$700,000, HVAC Equipment Replacement - Design/ESDC of \$687,000, Thermal Power Plant Boiler Controls Replacement of \$583,000, Cryogenic Chillers Replacement of \$450,000, and Digester Sludge Pump Replacement - Construction of \$446,000 due to schedule shifts, As-Needed Design 7-3 of \$348,000 due to timing, and Roof Replacement Phase 3 of \$595,000 due to lower than budgeted award. Offset by overspending on Electrical Equipment Upgrade Construction 4 of \$1.0M due to timing of electrical equipment delivery, Digester Modules 1 and 2 Pipe Replacement of \$608,000 and Expansion Joint Repair Construction 2 of \$342,000 due to work scheduled for FY13 performed in FY14.
Residuals	\$371	\$532	\$161	43.5%	

**ATTACHMENT 3  
Capital Improvement Program Variance Explanations**

	FY14 Budget YTD June	FY14 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
CSO	\$32,273	\$15,579	(\$16,694)	-51.7%	Underspending on Cambridge Sewer Separation of \$13.9M primarily due to timing of payments for contracts 8B and 9, South Dorchester Sewer Separation (Commercial Point) of \$2.1M due to schedule change for inflow removal work and final cost adjustments, Bulfinch Triangle Sewer Separation of \$803,000 due to final contract adjustments, and North Dorchester Bay Outfall of \$536,000 due to reduced scope resulting in less than anticipated design services. Offset by Dorchester Bay Sewer Separation (Fox Point) of \$473,000 due to final contract adjustments, and Reserved Channel Sewer Separation of \$461,000 due to additional work for contracts 3B and 4.
Other Wastewater	(\$885)	\$4,047	\$4,932	-	Overspending on Infiltration and Inflow (I/I) due to community requests for grants and loans being greater than budgeted.
<b>Total Wastewater</b>	<b>\$84,251</b>	<b>\$55,690</b>	<b>(\$28,562)</b>	<b>-33.9%</b>	
Drinking Water Quality Improvements	\$32,336	\$30,232	(\$2,104)	-6.5%	Underspending for Carroll Water Treatment Plant of \$2.3M mainly for Existing Facility Modifications, CP7 - Design and Construction due to schedule shifts, and Spot Pond Storage Facility of \$1.1M mainly for site issues and timing of equipment delivery. Offset by Quabbin Water Treatment Plant of \$1.4M due to emergency leak repair at CVA Shea Avenue and unanticipated work for Quabbin UVWTP - Design/CA/RI and Construction.
Transmission	\$6,386	\$4,463	(\$1,923)	-30.1%	Underspending for Watershed Land of \$960,000 due to the timing of land acquisitions, Hultman Aqueduct Rehabilitation of \$443,000 mainly due to updated costs and timing of final work, and Dam Projects of \$327,000 due to less than anticipated design services.

**ATTACHMENT 3**  
**Capital Improvement Program Variance Explanations**

	FY14 Budget YTD June	FY14 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Distribution & Pumping	\$10,038	\$4,817	(\$5,221)	-52.0%	Underspending on Weston Aqueduct Supply Mains of \$3.2M mainly due to the award being lower than budget for WASM3 Design/Construction Administration/Resident Inspection of \$2.4M, work anticipated in FY14 but completed in FY13 for Watertown Section Rehabilitation of \$621,000 and Section 36/WS/Waltham Connection - Design/CA/RI pending review of additional alternatives. Also, underspending on Northern Intermediate High Redundancy & Storage of \$651,000 mainly due to delays associated with alignment changes, Valve Replacement of \$500,000 due to timing of equipment purchases, SEH Redundancy & Storage of \$470,000 mainly due to Redundancy/Storage Phase 1 - Final Design/CA/RI delays pending additional time to meet with local communities, and Southern Spine Distribution Mains of \$289,000 due to the completion of Sections 21, 43 & 22 Design below budget.
Other Waterworks	\$1,078	\$1,454	\$376	34.9%	Overspending on Local Water Pipeline Assistance Program due to community requests for loans being greater than budgeted by \$1.0M.
<b>Total Waterworks</b>	<b>\$49,839</b>	<b>\$40,966</b>	<b>(\$8,872)</b>	<b>-17.8%</b>	
Business & Operations Support	\$7,972	\$5,507	(\$2,465)	-30.9%	Underspending on Alternative Energy Initiatives of \$1.2M mainly due to the Deer Island Wind Turbine repairs being funded via warranty and lower than projected as-needed technical assistance for energy initiatives, Capital Maintenance Planning & Development of \$950,000 due to lower than projected use of as-needed technical assistance, and Centralized Equipment Purchase of \$940,000 due to timing of security equipment and vehicle purchases. Offset by overspending of MIS-related projects of \$659,000 due to progress of IT Strategic Plan implementation.
<b>Total MWRA</b>	<b>\$142,061</b>	<b>\$102,163</b>	<b>(\$39,898)</b>	<b>-28.1%</b>	

**Attachment 4**  
**FY14 Actual versus FY14 Year-End Projection**


TOTAL MWRA	FY14 Projection	FY14 Actual	Change FY14 Actual vs. FY14 Projection	
			\$	%
<b>EXPENSES</b>				
WAGES AND SALARIES	\$ 91,964,696	\$ 91,751,235	\$ (213,461)	-0.2%
OVERTIME	3,427,072	3,400,247	(26,825)	-0.8%
FRINGE BENEFITS	18,072,137	18,074,366	2,229	0.0%
WORKERS' COMPENSATION	2,400,358	2,311,448	(88,910)	-3.7%
CHEMICALS	10,527,640	10,226,458	(301,182)	-2.9%
ENERGY AND UTILITIES	22,507,652	23,396,747	889,095	4.0%
MAINTENANCE	28,290,162	29,453,365	1,163,203	4.1%
TRAINING AND MEETINGS	314,190	328,782	14,592	4.6%
PROFESSIONAL SERVICES	5,458,377	4,900,235	(558,142)	-10.2%
OTHER MATERIALS	5,834,079	5,986,021	151,942	2.6%
OTHER SERVICES	21,838,437	21,736,151	(102,286)	-0.5%
<b>TOTAL DIRECT EXPENSES</b>	<b>\$ 210,634,800</b>	<b>\$ 211,565,055</b>	<b>\$ 930,255</b>	<b>0.4%</b>
INSURANCE	\$ 2,000,101	\$ 2,050,555	\$ 50,454	2.5%
WATERSHED/PILOT	26,636,833	26,640,877	4,044	0.0%
HEEC PAYMENT	3,379,550	3,525,799	146,249	4.3%
MITIGATION	1,525,477	1,494,900	(30,577)	-2.0%
ADDITIONS TO RESERVES	169,304	169,304	-	0.0%
RETIREMENT FUND	12,447,338	12,447,338	-	0.0%
POSTEMPLOYMENT BENEFITS			-	
<b>TOTAL INDIRECT EXPENSES</b>	<b>\$ 46,158,603</b>	<b>\$ 46,328,773</b>	<b>\$ 170,170</b>	<b>0.4%</b>
<b>DEBT SERVICE</b>				
State Revolving Funds (SRF)	73,548,811	72,684,514	\$ (864,297)	-1.2%
Senior Debt	203,337,969	203,337,969	-	0.0%
Subordinate Debt	100,117,241	100,117,241	-	0.0%
Local Water Pipeline CP	341,921	316,440	(25,481)	-7.5%
Capital Lease	3,217,060	3,217,060	-	0.0%
Current Revenue for Capital	9,200,000	9,200,000	-	0.0%
Variable Rate Debt	(12,441,396)	(12,770,132)	(328,736)	2.6%
CORE Fund Deposit	132,238	132,238	-	0.0%
Defeasance Account	-	-	-	
Debt Service before Defeasance and Offsets	377,453,844	376,235,330	(1,218,514)	-0.3%
Projected/Actual Defeasance	26,700,000	26,168,014	(531,986)	-2.0%
DEBT SERVICE ASSISTANCE	(853,660)	(853,660)	-	
<b>TOTAL DEBT SERVICE</b>	<b>\$ 403,300,183</b>	<b>\$ 401,549,684</b>	<b>\$ (1,750,500)</b>	<b>-0.4%</b>
<b>TOTAL EXPENSES</b>	<b>\$ 660,093,586</b>	<b>\$ 659,443,512</b>	<b>\$ (650,075)</b>	<b>-0.1%</b>
<b>REVENUE &amp; INCOME</b>				
RATE REVENUE	\$ 628,721,000	\$ 628,721,000	\$ -	0.0%
OTHER USER CHARGES	8,127,379	8,030,020	(97,359)	-1.2%
OTHER REVENUE	10,640,291	11,266,436	626,145	5.9%
RATE STABILIZATION	3,500,000	3,500,000	-	
INVESTMENT INCOME	12,030,534	12,129,653	99,119	0.8%
<b>TOTAL REVENUE &amp; INCOME</b>	<b>\$ 663,019,204</b>	<b>\$ 663,647,109</b>	<b>\$ 627,905</b>	<b>0.1%</b>
Surplus after Defeasance	\$ 2,925,618	\$ 4,203,597	\$ 1,277,979	43.7%



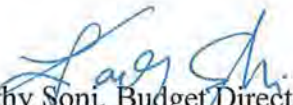
**Attachment 5**  
**FY14 Actual versus FY13 Actual**

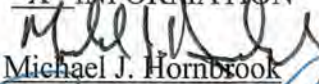
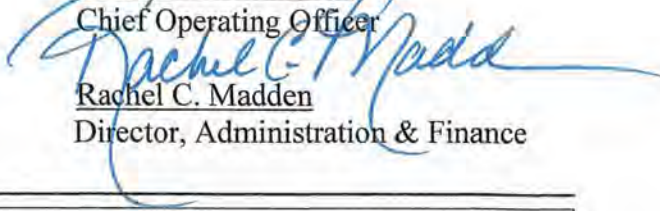
TOTAL MWRA	FY13 Actual	FY14 Actual	Change FY14 Actual vs. FY13 Actual	
			\$	%
<b>EXPENSES</b>				
WAGES AND SALARIES	\$ 90,658,806	\$ 91,751,235	\$ 1,092,429	1.2%
OVERTIME	3,542,871	3,400,247	(142,624)	-4.0%
FRINGE BENEFITS	17,536,480	18,074,366	537,886	3.1%
WORKERS' COMPENSATION	2,114,701	2,311,448	196,747	9.3%
CHEMICALS	10,139,257	10,226,458	87,201	0.9%
ENERGY AND UTILITIES	23,057,581	23,396,747	339,166	1.5%
MAINTENANCE	26,956,073	29,453,365	2,497,292	9.3%
TRAINING AND MEETINGS	320,596	328,782	8,186	2.6%
PROFESSIONAL SERVICES	5,002,664	4,900,235	(102,429)	-2.0%
OTHER MATERIALS	6,955,029	5,986,021	(969,008)	-13.9%
OTHER SERVICES	22,323,327	21,736,151	(587,176)	-2.6%
<b>TOTAL DIRECT EXPENSES</b>	<b>\$ 208,607,384</b>	<b>\$ 211,565,055</b>	<b>\$ 2,957,670</b>	<b>1.4%</b>
INSURANCE	\$ 2,220,704	\$ 2,050,555	\$ (170,149)	-7.7%
WATERSHED/PILOT	26,004,694	26,640,877	636,183	2.4%
HEEC PAYMENT	3,492,064	3,525,799	33,735	1.0%
MITIGATION	1,517,791	1,494,900	(22,891)	-1.5%
ADDITIONS TO RESERVES	1,398,329	169,304	(1,229,025)	-87.9%
RETIREMENT FUND	10,490,247	12,447,338	1,957,091	18.7%
POSTEMPLOYMENT BENEFITS			-	
<b>TOTAL INDIRECT EXPENSES</b>	<b>\$ 45,123,829</b>	<b>\$ 46,328,773</b>	<b>\$ 1,204,944</b>	<b>2.7%</b>
<b>DEBT SERVICE</b>				
State Revolving Funds (SRF)	71,491,293	72,684,514	\$ 1,193,221	1.7%
Senior Debt	191,457,985	203,337,969	11,879,984	6.2%
Subordinate Debt	93,341,994	100,117,241	6,775,247	7.3%
Local Water Pipeline CP	335,271	316,440	(18,831)	-5.6%
Capital Lease	3,217,060	3,217,060	-	0.0%
Current Revenue for Capital	8,200,000	9,200,000	1,000,000	12.2%
Variable Rate Debt	(13,197,283)	(12,770,132)	427,151	-3.2%
Defeasance Account	-	-	-	N/A
Core Fund Deposit	-	132,238	132,238	N/A
<b>DEBT SERVICE BEFORE OFFSETS</b>	<b>354,846,320</b>	<b>376,235,330</b>	<b>21,389,010</b>	<b>6.0%</b>
ACTUAL DEFEASANCE	25,398,119	26,168,014	769,895	3.0%
DEBT SERVICE ASSISTANCE	-	(853,660)	(853,660)	N/A
<b>TOTAL DEBT SERVICE</b>	<b>\$ 380,244,437</b>	<b>\$ 401,549,684</b>	<b>\$ 21,305,245</b>	<b>5.6%</b>
<b>TOTAL EXPENSES</b>	<b>\$ 633,975,650</b>	<b>\$ 659,443,512</b>	<b>\$ 25,467,859</b>	<b>4.0%</b>
<b>REVENUE &amp; INCOME</b>				
RATE REVENUE	\$ 607,512,000	\$ 628,721,000	\$ 21,209,000	3.5%
OTHER USER CHARGES	7,707,031	8,030,020	322,989	4.2%
OTHER REVENUE	8,173,785	11,266,436	3,092,651	37.8%
RATE STABILIZATION	-	3,500,000	3,500,000	N/A
INVESTMENT INCOME	13,590,492	12,129,653	(1,460,839)	-10.7%
<b>TOTAL REVENUE &amp; INCOME</b>	<b>\$ 636,983,311</b>	<b>\$ 663,647,109</b>	<b>\$ 26,663,801</b>	<b>4.2%</b>
Surplus after Defeasance	\$ 3,007,661	\$ 4,203,597	\$ 1,195,942	39.8%

## STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Fiscal Year 2014 Year-End Capital Improvement Program Spending Report

COMMITTEE: Administration, Finance & Audit

  
Kathy Soni, Budget Director  
Dave Whelan, Budget Manager  
Preparer/Title

VOTE  
X INFORMATION  
  
Michael J. Hornbrook  
Chief Operating Officer  
  
Rachel C. Madden  
Director, Administration & Finance

*At the end of each fiscal year, staff present the Board with a recap of the Capital Improvement Program (CIP) with more detailed explanations of variances than those provided in the monthly Financials.*

*FY14 was the first year of MWRA's five-year base-line spending cap for FY14-18 established at \$791.7 million. The FY14 capital spending totaled \$102.2 million, \$39.9 million or 28.1% lower than budget. After accounting for programs which are not directly under MWRA's control, most notably the Inflow and Infiltration (I/I) program, the Local Water Pipeline program, and the community managed Combined Sewer Overflow (CSOs) projects, the underspending is \$29.3 million or 26.5%.*

*In terms of overall spending, FY14 has followed previous year's trends driven by a multitude of factors that influence both design and construction projects, such as: changes in schedules, scope and priorities; removal of projects from the CIP due to work being done in-house; permitting issues; and revision or deletion of projects after further re-evaluation, etc.*

*Although spending was lower than budget in FY14, MWRA achieved significant progress on several major projects including the construction of Ultraviolet (UV) Disinfection facilities at the Carroll Water and Quabbin Treatment Plants, the Spot Pond Storage Facility Design/Build, the Deer Island Treatment Plant North Main Pump Station VFD Construction, and the recent award of the last contract in the Combined Sewer Overflow (CSO) program which will enable us to meet the December 2015 court milestone to complete the program. The completion of the UV installations on schedule and on budget, represents a significant milestone in FY14. The addition of UV to the existing ozone process provides additional assurance that any pathogens potentially in the reservoirs will be rendered harmless. The UV process and MWRA's high quality source water allow MWRA to meet new regulatory requirements cost effectively*

*In addition, staff managed over 100 design and construction projects, and awarded new contracts valued at over \$69 million.*

## **RECOMMENDATION:**

For information only. The Fiscal Year 2014 Year-End Capital Program Spending Report highlights major capital program accomplishments and provides explanations for spending variances and schedule changes versus the budget.

## **DISCUSSION:**

### **Projects that were completed or reached substantial completion in FY14 included:**

- Carroll Water Treatment UV Disinfection Construction - \$32.1 million
- Reserved Channel Sewer Separation Contract 3A (BWSC) - \$11.8 million
- Cambridge Sewer Separation Contract 8A (Huron Ave) - \$11.5 million
- Deer Island Digester Modules 1 & 2 Pipe Replacement Construction - \$6.4 million
- As-Needed Design Contracts 9 and 10 - \$3.6 million
- Weston Aqueduct Supply Mains Watertown Section Rehabilitation - \$2.6 million
- Oakdale Phase 1A Electrical Construction - \$2.3 million
- Deer Island Treatment Plant Expansion Joint Repair Construction 2 - \$1.9 million
- Deer Island Treatment Plant Clarifier Flushing System - \$1.3 million
- Wachusett Aqueduct Emergency Interconnections Valves - \$1.2 million
- Interceptor Connection Relief and Floatables Control at Outfall SOM01A - \$0.2 million
- Gravity Thickener Center Column Replacement - \$0.8 million
- Southern Extra High Redundancy & Storage Concept Plan/Preliminary Design/Environmental Review - \$0.6 million
- Residuals Asset Protection Technology & Regulatory Review - \$0.5 million

### **MWRA and CSO communities also made significant progress on a number of water and wastewater projects, including:**

- Quabbin UV Disinfection Construction - 89% complete
- Spot Pond Storage Facility Design/Build – 74% complete
- Deer Island Treatment Plant North Main Pump Station Variable Frequency Drives Construction – 70% complete
- Deer Island Scum Skimmer Replacement – 34% complete
- Deer Island Electrical Equipment Upgrade Construction 4 – 35% complete
- Reserved Channel Sewer Separation – 93% complete
- Cambridge Sewer Separation – 70% complete

### **In addition, the MWRA awarded the following contracts in FY14:**

- Scum Skimmer Replacement Notice to Proceed was issued in October 2013.
- Clinton Rehabilitation of Anaerobic Digesters, Primary Clarifiers, and New Influent Gates Notice to Proceed was issued in April 2014.

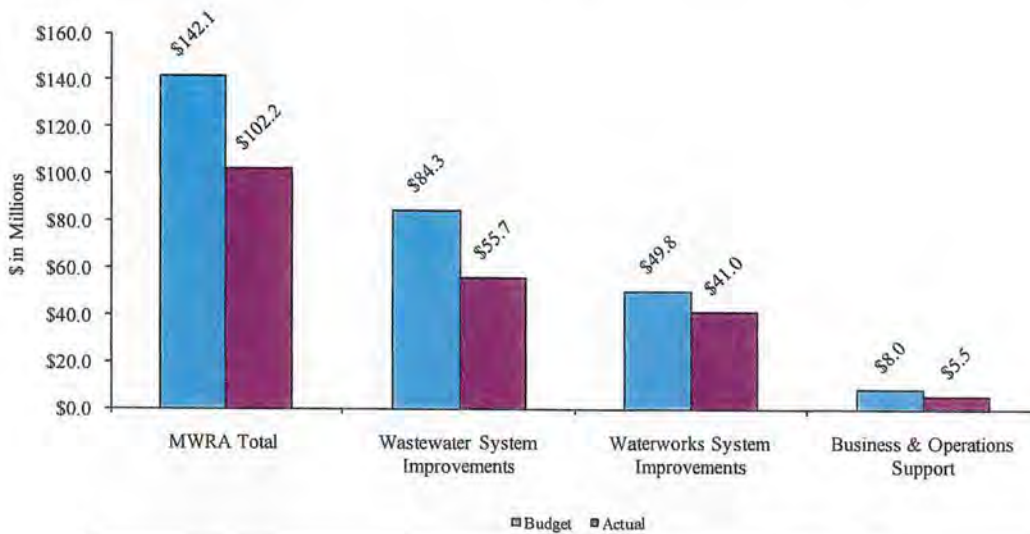
- Deer Island North Main Pump Station and Winthrop Terminal Facility Butterfly Valves Replacement Notice to Proceed was issued in June 2014.
- Northern Intermediate High Redundancy and Storage West Street Pipeline Construction Phase 1A Notice to Proceed was issued in April 2014.

FY14 also included spending of \$35.4 million (\$29.7 million in loans and \$5.7 million in Inflow and Infiltration (I/I) grants) offset by \$29.7 million in prior period loan repayments for net spending of \$5.5 million.

**Major Variances to FY14 Budget**

For FY14, total Capital Improvement Program spending was budgeted at \$142.1 million. Total spending was \$102.2 million, which was \$39.9 million or 28.1% below budget. After accounting for programs which are not directly under MWRA’s control, most notably the Inflow and Infiltration (I/I) program, the Local Water Pipeline program, and the community managed Combined Sewer Overflow (CSOs) projects, the underspending is \$29.3 million or 26.5%.

**FY14 CIP Spending**



\$ in Millions	Budget	Actuals	\$ Var.	% Var.
<b>Wastewater System Improvements</b>				
Interception & Pumping	13,072,800	6,873,770	-6,199,030	-47.4%
Treatment	39,419,221	28,657,696	-10,761,525	-27.3%
Residuals	370,754	532,123	161,369	43.5%
CSO	32,273,126	15,578,636	-16,694,489	-51.7%
Other	-884,725	4,047,346	4,932,072	557.5%
<b>Total Wastewater System Improvements</b>	<b>84,251,176</b>	<b>55,689,573</b>	<b>-28,561,601</b>	<b>-33.9%</b>
<b>Waterworks System Improvements</b>				
Drinking Water Quality Improvements	32,336,046	30,232,484	-2,103,561	-6.5%
Transmission	6,386,220	4,462,855	-1,923,365	-30.1%
Distribution & Pumping	10,037,948	4,816,606	-5,221,341	-52.0%
Other	1,078,343	1,454,226	375,884	34.9%
<b>Total Waterworks System Improvements</b>	<b>49,838,557</b>	<b>40,966,172</b>	<b>-8,872,384</b>	<b>-17.8%</b>
<b>Business &amp; Operations Support</b>	<b>7,971,668</b>	<b>5,507,453</b>	<b>-2,464,214</b>	<b>-30.9%</b>
<b>Total MWRA</b>	<b>142,061,401</b>	<b>102,163,200</b>	<b>-39,898,202</b>	<b>-28.1%</b>

The \$39.9 million variance is the net of \$49.9 million in less than budgeted spending on 40 projects offset by \$10.0 million in more than budgeted spending on 12 projects.

The main reasons for FY14 underspending were:

1. **Combined Sewer Overflow (CSOs)** of \$16.7 million – primarily due to timing of anticipated expenditures for the Cambridge Sewer Separation payment of \$13.9 million which is lower than originally estimated, \$2.1 million South Dorchester Bay Sewer Separation – Commercial Point for Inflow/Infiltration work and final cost adjustments, Bulfinch Triangle of \$803,000 for final cost adjustments, and North Dorchester Bay of \$639,000 mainly due to a reduced scope for outfall design and resident inspection work. Offset by some overspending on Reserved Channel Sewer Separation of \$461,000 for additional work and South Dorchester Bay Sewer Separation – Fox Point of \$473,000 for final cost adjustments.
2. **Wastewater Treatment** of \$10.8 million – mainly for lower spending on North Main Pump Station (NMPS) VFD Replacement Construction of \$3.4 million, NMPS Butterfly Valve Replacement of \$2.4 million, Clinton Digester Rehabilitation of \$908,000, Miscellaneous VFD Replacements of \$846,000, Sodium Hypochlorite Pipe Replacement Design of \$830,000, Power System Improvement of \$750,000, DI Digester & Storage Design of \$700,000, Fire Alarm System Replacement Design of \$700,000 HVAC Equipment Replacement Design of \$687,000, Roof Replacement of \$595,000, and Thermal Plant Boiler Control of \$583,000, and other smaller projects totaling \$3.2 million. Offset by overspending for Scum Skimmer Replacement of \$2.9 million, Electrical Equipment Upgrade Construction of \$1.0 million, Digester Modules 1 and 2 of \$608,000 and Expansion Joint Repair Construction 2 of \$342,000.
3. **Wastewater Interception and Pumping** of \$6.2 million – primarily due to Prison Point and Cottage Farm Engine, Pumps, and Gear boxes of \$2.2 million due to timing of work, Nut Island Headworks Electric and Gas Conveyance construction project of \$1.7 million due to the award being less than budget, Rehabilitation of Sections 186 & 4 of \$1.2 million, Prison Point Piping Rehabilitation of \$331,000 and DeLauri Pump Station Upgrades of \$313,000 due to schedule shifts.
4. **Water Distribution and Pumping** of \$5.2 million – for lower spending on Weston Aqueduct Supply Mains of \$3.2 million for lower than budgeted award for WASM 3 Design and for work anticipated in FY14 but completed in FY13 for Watertown Section Rehabilitation, Northern Intermediate High of \$651,000 primarily for lower than anticipated design services for Section 89 & 29 Redundancy, Valve Replacement of \$500,000 due to timing of equipment purchases, Southern Extra High Redundancy and Storage of \$470,000 mainly for delays for Southern Extra High Redundancy and Storage Final Design, Southern Spine Distribution Mains of \$289,000 due to the completion of Section 21, 43, & 22 Design Project under budget, and Lynnfield Pipeline of \$149,000 due to timing.

5. **Drinking Water Quality Improvements** of \$2.1 million – mainly for Carroll Water Treatment Plant of \$2.3 million mainly due to the delays for modifications to existing maintenance facilities and Spot Pond Covered Storage of \$1.1 million mainly for site issues and delay in equipment delivery. Offset by overspending for emergency work on the CVA Shea Avenue Leak Repair of \$723,000, Quabbin UV Construction of \$351,000, and Quabbin UV Design of \$309,000.
6. **Water Transmission** of \$1.9 million – mainly for lower than budgeted spending for Watershed Land of \$960,000 due to timing, Hultman Rehabilitation of \$443,000 due to lower final contract costs, and Dam Projects of \$327,000 due to less than anticipated final Design/Construction Administration/Resident Inspection work.

The underspending was offset by overspending for the Community Financial Assistance Programs:

1. **Wastewater Other** of \$4.9 million – primarily due to Inflow and Infiltration (I/I) community requests for grants and loans being greater than budget.
2. **Waterworks Other** of \$0.4 million – primarily due to Local Water Pipeline Assistance Program community requests for loans being greater than budget.

Please refer to Attachment B of the report for detailed FY14 CIP variance explanations.

### **FY15 Outlook**

Looking ahead to Fiscal Year 2015, the projected capital spending is \$145.1 million including contingency of \$7.5 million. Projects with the largest budgeted spending in FY15 include Deer Island Treatment Plant Asset Protection of \$36.9 million, Spot Pond Storage Facility of \$16.0 million, Cambridge Sewer Separation \$14.9 million, Facility Asset Protection of \$12.0 million, and Inflow/Infiltration Local Financial Assistance of \$11.2 million.

It should be noted that the Cap calculation starting in FY15 will exclude the Community Financial Assistance Programs, as recommended by the Advisory Board, thus preserving CIP spending capacity for all other projects. Additionally, the expansion of the Inflow and Infiltration (I/I) program during the FY15 CIP Budget is a major positive development for the communities.

Staff will be completing the design and progressing to the bid and award stage on several major projects such as Wachusett Aqueduct Pump Station Construction, Weston Aqueduct Supply Mains Section 36/W11/S 9, Alewife Brook Pump Station Rehabilitation Construction, Carroll Water Treatment Plant Existing Facilities Modifications CP-7, Deer Island Treatment Plant (DITP) Gravity Thickener Rehabilitation, DITP Digester Sludge Pump Replacement Phase 2, DITP Winthrop Terminal Facility VFD Replacement Construction, Chelsea Screenhouse Upgrades, DITP Fuel System Modifications, and Caruso Pump Station Improvements. Staff also recently issued notice to proceed for construction of the Gate, Siphon, and Floatables Contract and will continue to provide oversight for the CSO Community Managed projects including Reserved Channel and Cambridge Sewer Separation contracts. In addition, staff continue to work on the final design of the Headworks Upgrades projects.

**ATTACHMENTS:**

- A. Fiscal Year 2014 Year-End Capital Program Spending Report
- B. FY14 CIP Year-End Variance Report
- C. FY14 Planned versus Actual/Revised CIP Notice to Proceeds
- D. Linear Footage of Rehabilitated or New Pipelines in FY14
- E. FY15 Planned Capital Contract Awards

**MASSCHUSETTS WATER RESOURCES AUTHORITY**

# **Capital Program Spending Report**

for

**FY2014**



September 17, 2014



# Fiscal Year 2014 Year-End Capital Program Spending Report

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## Introduction

Since its inception, MWRA has expended \$7.8 billion on capital initiatives. Of this spending 72% has supported improvements to the Wastewater treatment, interceptor, pumping and combined sewer overflow (CSO) systems, 27% has supported Waterworks treatment, transmission, distribution and water protection improvements, and 1% has supported Business and Operations Support initiatives.

<b>MWRA Capital Spending FY1986 - FY2024</b>				
(\$ in millions)				
	Expenditures FY86 - 2014		Planned Expenditures 2015 - 2024	
<b>Program</b>	Total	% of Total	Total	% of Total
Wastewater	\$5,643	72%	\$1,025	53%
Waterworks	\$2,084	27%	\$862	45%
Business & Operations Support	\$115	1%	\$39	2%
<b>Total MWRA</b>	<b>\$7,843</b>	<b>100%</b>	<b>\$1,926</b>	<b>100%</b>

Through FY14, nearly 80% of the capital spending has been for court mandated projects. The long-term strategy for capital work is identified in the Authority's Master Plan which was published in 2006, updated in 2013, and serves as a road map for inclusion of projects in the CIP in every budget cycle. Going forward, MWRA expects to spend an additional \$1.9 billion on system improvements between FY14-FY24 with main emphasis on Asset Protection and Water System Redundancy initiatives.

To date, MWRA has spent \$861.0 million on the Wastewater CSO program and plans to spend an additional \$39.1 million through FY24.

To date, MWRA has distributed \$104.8 million in grants and \$156.3 million in no-interest loans to fund 454 separate projects in 43 communities under the I/I Local Financial Assistance Program. Additionally, \$285.7 million in Local Water Pipeline Assistance Program loans has been distributed to member communities.

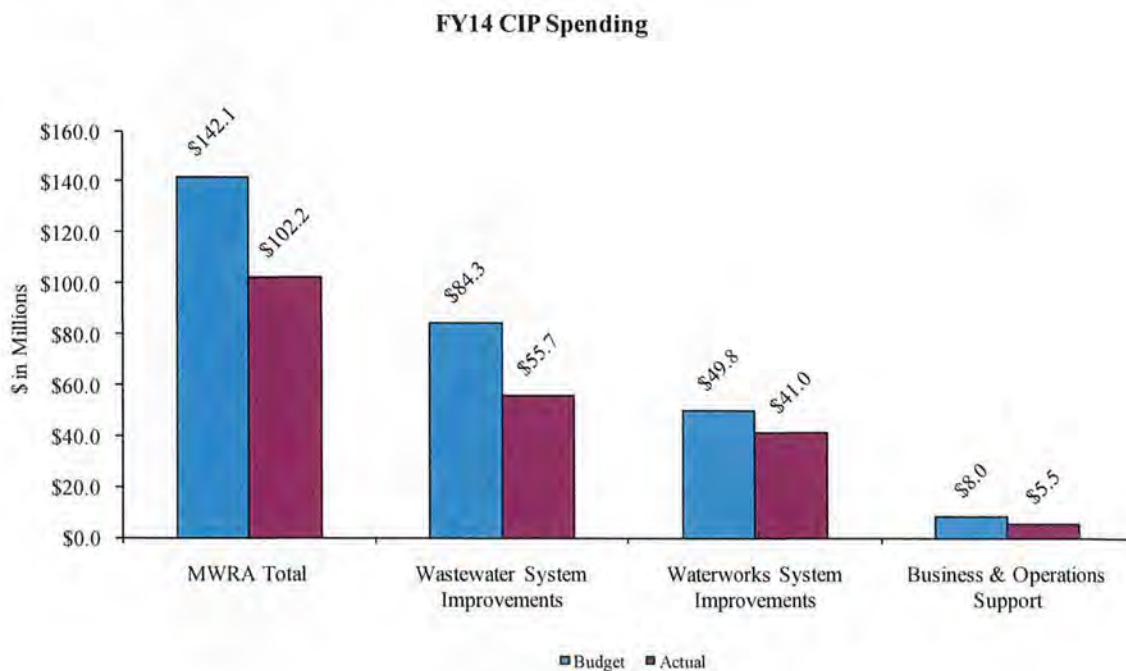
### FY14 Spending

Total Capital Improvement Program (CIP) spending in Fiscal Year 2014 was \$102.2 million which was \$39.9 million or 28.1% less than the \$142.1 million budgeted. After accounting for programs which are not directly under MWRA's control, most notably the Inflow and Infiltration (I/I) program, the Local Water Pipeline program, and the community managed Combined Sewer Overflow (CSOs) projects, the underspending is \$29.3 million or 26.5%.

Spending by program in FY14 was:

Program	FY14 Budget (\$ Millions)	FY14 Actuals (\$ Millions)	Variance	% Variance
Wastewater	\$84.2	\$55.7	(\$28.6)	-33.9%
Waterworks	\$49.8	\$41.0	(\$8.9)	-17.8%
Business & Operations Support	\$8.0	\$5.5	(\$2.5)	-30.9%
<b>Total</b>	<b>\$142.1</b>	<b>\$102.2</b>	<b>(\$39.9)</b>	<b>-28.1%</b>

Variances are illustrated in the following graph:



FY14 also included spending of \$35.4 million (\$29.7 million in loans and \$5.7 million in Inflow and Infiltration (I/I) grants) offset by \$29.7 million in prior period loan repayments for net spending of \$5.5 million

During FY14, the MWRA rehabilitated or replaced over 6 miles of wastewater pipeline including Community Managed pipeline and nearly 2 miles of water pipeline. These numbers do not include the rehabilitated or replaced pipelines of our member communities which are funded through our Inflow/Infiltration (I/I) program as referenced above. Refer to Attachment D for the linear footage of rehabilitated or new pipelines in FY14.

**FY14 Capital Program Highlights**

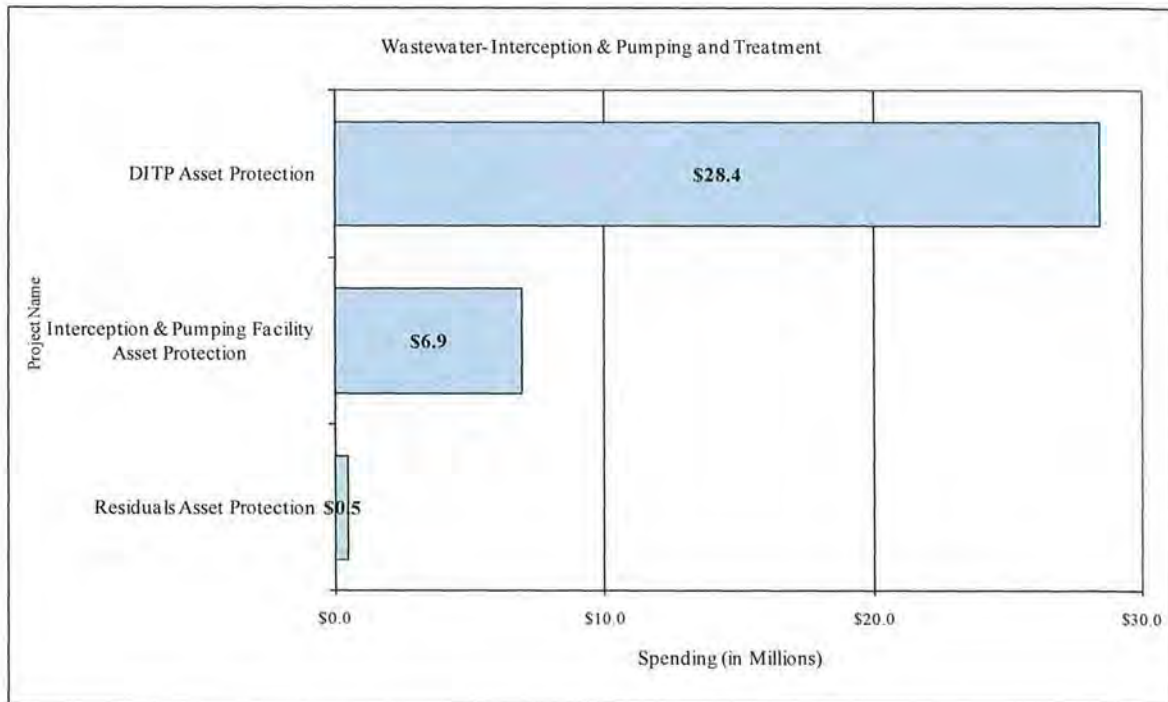
**Wastewater System**

During FY14, the MWRA spent \$55.7 million on the Wastewater system projects for the following: Interception & Pumping projects of \$6.9 million, Treatment projects of \$28.7 million, Residuals of \$0.5 million, CSO projects of \$15.6 million, and Other Wastewater projects of \$4.0 million.

This section highlights the spending and key accomplishments by the major program categories and projects:

**Wastewater Interception & Pumping and Treatment Projects**

Total FY14 spending for Interception & Pumping was \$6.9 million, Treatment was \$28.7 million, and Residuals was \$0.5 million. The largest spending occurred on the following:



Key Accomplishments include:

***Wastewater - Interception and Pumping:***

- Prison Point/Cottage Farm Engine/Pumps Gearbox Rebuilds Notice to Proceed was issued in October 2013.
- Prison Point/Cottage Farm Engine/Pumps Gearbox Rebuilds Engineering Services During Construction Notice to Proceed was issued in February 2014.

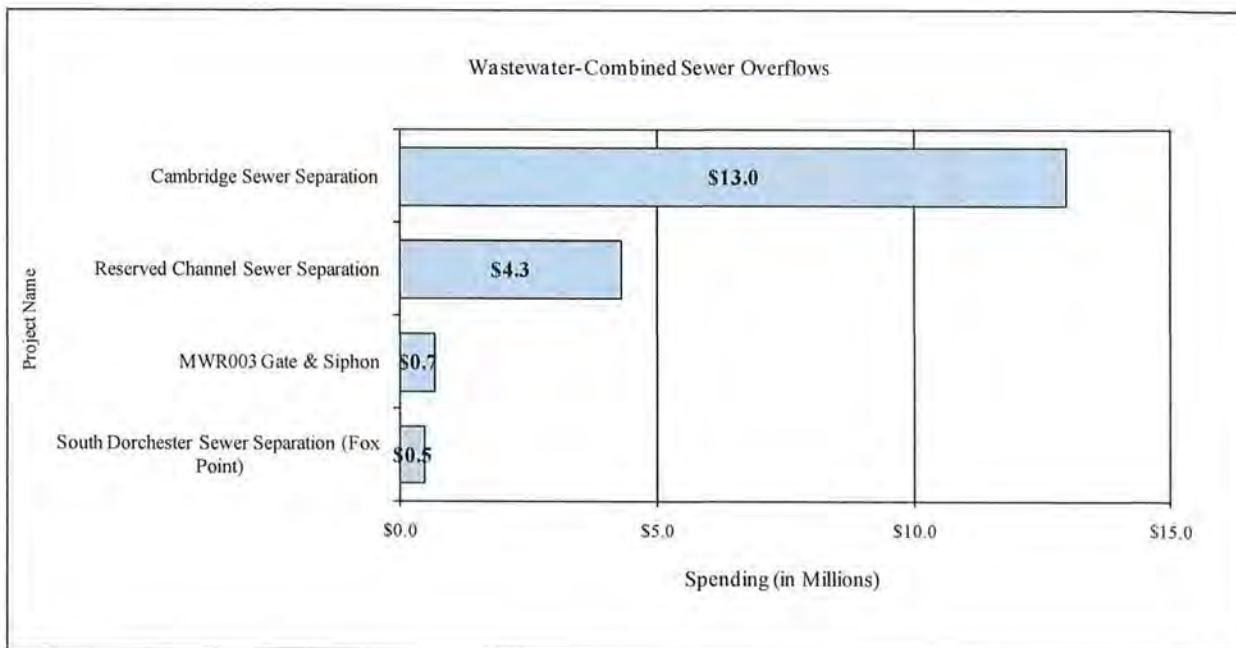
***Wastewater – Treatment & Residuals:***

- Significant progress was made on the Deer Island Treatment Plant (DITP) North Main Pump Station Variable Frequency Drives Construction.
- Deer Island Treatment Plant Clarifier Flushing System was substantially complete in July 2013.
- Deer Island Digester Modules 1 & 2 Pipe Replacement Construction was substantially complete in August 2013.
- Deer Island Roof Replacement Phase 3 Notice to Proceed was issued in September 2013.
- Deer Island Pipe Supports for Sludge Pipelines Notice to Proceed was issued in September 2013.
- Scum Skimmer Replacement Notice to Proceed was issued in October 2013.
- Clinton Wastewater Treatment Plant Phosphorus Reduction Design/Engineering Services During Construction Notice to Proceed was issued in November 2013.
- Deer Island Treatment Plant Center Column Replacement was substantially complete in January 2014.
- Residuals Technology & Regulatory Review was substantially complete in January 2014.
- Deer Island Treatment Plant Expansion Joint Repair Construction 2 was substantially complete in February 2014.
- Deer Island Treatment Plant HVAC Equipment Replacement Design/Engineering Services During Construction Notice to Proceed was issued in March 2014.
- Clinton Rehabilitation of Anaerobic Digesters, Primary Clarifiers, and New Influent Gates Notice to Proceed was issued in April 2014.

- Clinton Digester Rehabilitation Engineering Services During Construction Notice to Proceed was issued in April 2014.
- Deer Island Electrical Equipment Upgrade 4 Resident Engineering Inspection Notice to Proceed was issued in May 2014.
- Deer Island North Main Pump Station & Winthrop Terminal Facility Butterfly Valve Replacement Notice to Proceed was issued in June 2014.
- Significant progress was made on the Deer Island Treatment Plant Electrical Equipment Upgrade Construction 4 contract.

### Wastewater System – Combined Sewer Overflow (CSO) Projects

Total FY14 spending for CSO projects was \$15.6 million. Of this amount, the Community Managed projects totaled \$16.1 million, MWRA Managed projects totaled \$0.7 million, and Planning and Support projects totaled (\$1.2) million. The largest spending occurred on the following:



Key accomplishments include:

- Significant progress has been made on construction of the Reserved Channel and Cambridge Sewer Separation projects.
- Reserved Channel Contract 3A was substantially complete in August 2013.

- City of Cambridge issued the Notice to Proceed for CAM004 Contract 8B (Huron Avenue East) in September 2013.
- Interceptor Connection Relief and Floatables Control at SOM01A were substantially complete in December 2013, ahead of the June 2014 milestone in Schedule Seven.
- Boston Water & Sewer Commission awarded Reserved Channel Contract 6 (Downspout Disconnect) in January 2014.
- Boston Water & Sewer Commission awarded Reserved Channel Contract 5 (Sewer Relining) in February 2014.
- City of Cambridge issued the Notice to Proceed for CAM004 Contract 9 (Concord Ave) in February 2014.
- Cambridge Contract 8A (Huron Avenue West) was substantially complete in May 2014.

### **Wastewater - Other**

This category included the community managed Infiltration/Inflow (I/I) Local Financial Assistance Program.

In FY14, MWRA distributed \$5.7 million in grants and \$7.0 million in no-interest loans which is offset by repayment of prior-period loans of \$8.7 million which resulted in net spending of \$4.0 million.

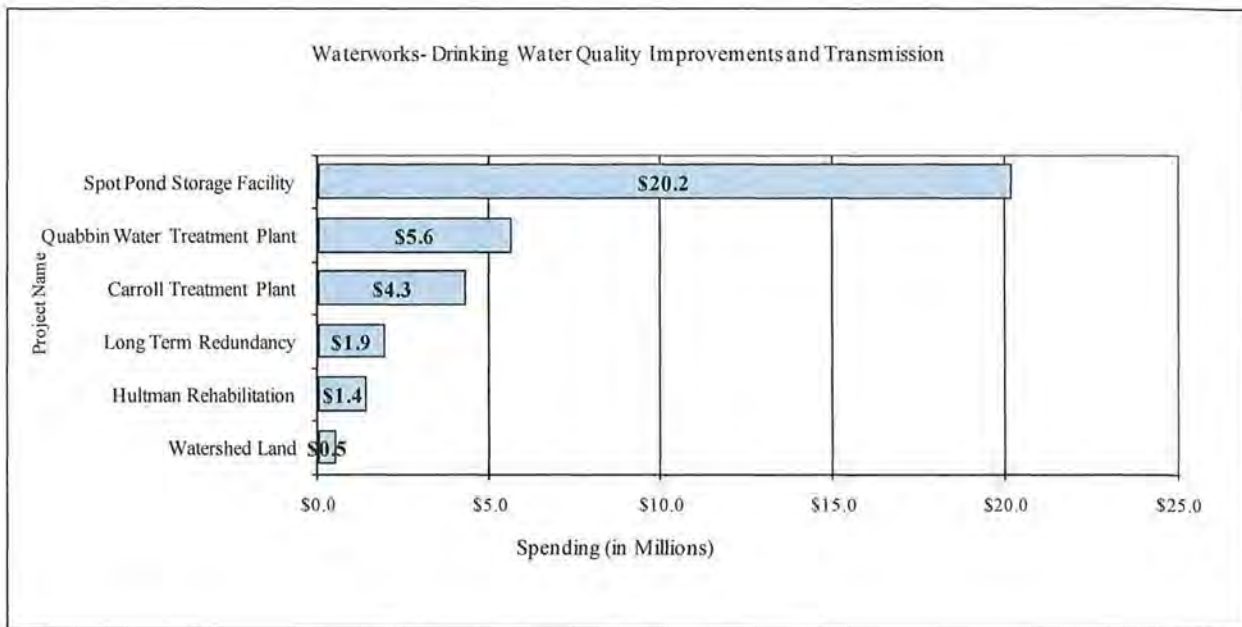
### **Waterworks System**

During FY14, the MWRA spent \$41.0 million on the Waterworks system projects for the following: Drinking Water Quality Improvement projects of \$30.2 million, Transmission projects of \$4.5 million, Distribution and Pumping projects of \$4.8 million and Other Waterworks projects of \$1.5 million.

This section highlights the spending and key accomplishments by the major program categories and projects:

#### **Waterworks System – Drinking Water Quality Improvements and Transmission**

Total FY14 spending for Drinking Water Quality Improvements and Transmission projects was \$30.2 million and \$4.5 million, respectively. The largest spending occurred on the following:



Key accomplishments included:

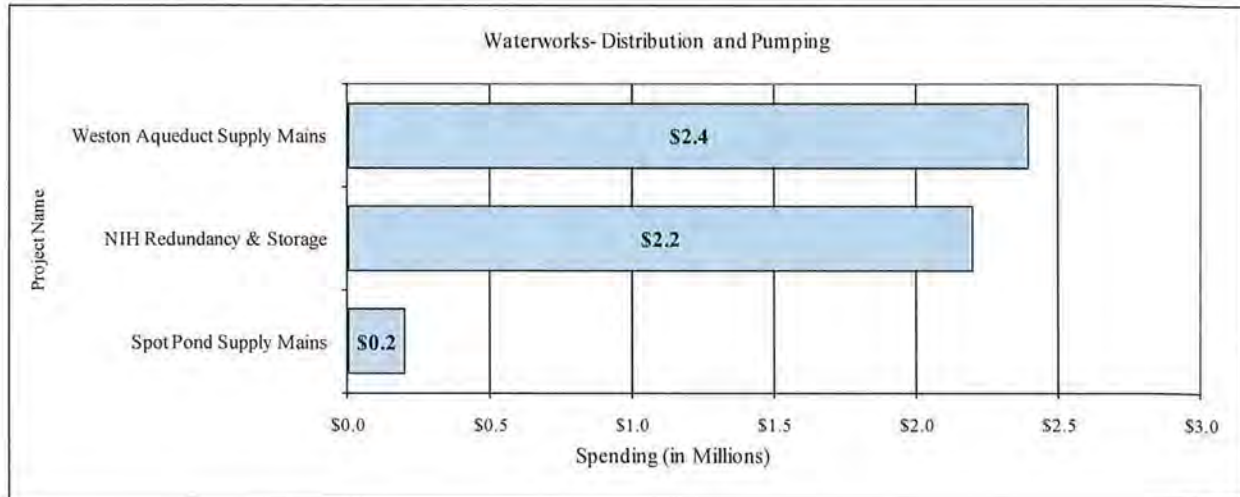
- Carroll Water Treatment Plant Ultraviolet System was put into service and declared substantially complete in February 2014.
- Significant progress has been made on the Spot Pond Storage Facility Design/Build contract.
- Wachusett Aqueduct Emergency Interconnections Valves was substantially complete in July 2013.
- Significant progress has been made on the Quabbin Ultraviolet Disinfection Construction contract.
- Chicopee Valley Aqueduct Repair Notice to Proceed was issued in March 2014.

**Waterworks - Transmission**

- Quabbin Transmission System Oakdale Phase 1A Electrical Construction was substantially complete in July 2013.
- Winsor Dam Hatchery Pipeline Design/Engineering Services During Construction/Resident Inspection Notice to Proceed was issued in August 2013.

## Waterworks System - Distribution and Pumping

Total FY14 spending for Distribution and Pumping projects totaled \$4.8 million. The largest spending occurred on the following:



Key accomplishments included:

- Spot Pond Supply Mains Section 4 Webster Ave Bridge Rehabilitation Design Notice to Proceed was issued in October 2013.
- Weston Aqueduct Supply Mains Watertown Section Rehabilitation was substantially complete in December 2013.
- Southern Extra High Redundancy & Storage Concept Plan/Preliminary Design/Environmental Review was completed in February 2014.
- Southern Extra High Redundancy & Storage Redundancy/Storage Phase 1 Final Design/Construction Administration/Resident Inspection Notice to Proceed was issued in February 2014
- Northern Intermediate High Redundancy & Storage West Street Pipeline Construction Phase 1A Notice to Proceed was issued in April 2014.

## Waterworks – Other

This category includes the community assistance program for the local water pipelines.

In FY14, MWRA distributed \$22.7 million in Local Water Pipeline Assistance Program loans to member communities offset by repayment of prior-period loans of \$21.3 million which resulted in total net spending of \$1.4 million.



## **Business & Operations Support**

Total FY14 spending for Business and Operations Support totaled \$5.5 million.

Key accomplishments included:

- Information Technology Storage Upgrades, Back-up Upgrades, and Service Delivery & Best Practices were awarded in July 2013.
- Miscellaneous Fencing Notice to Proceed was issued in August 2013.
- Information Technology Server Management was awarded in October 2013.
- Information Technology GIS Applications & Integration and Enterprise Data Management were awarded in January 2014.
- As-Needed Design Contracts 9 and 10 were substantially complete in January 2014 and February 2014, respectively.
- As-Needed Design Contracts 12 Notice to Proceed was issued in January 2014 and Contracts 11 and 13 Notice to Proceeds were issued in February 2014.
- Security Improvements at Various Facilities Notice to Proceed was issued in March 2014.
- Information Technology Mobile Integrations was awarded in April 2014.
- Technical Assistance Consulting Services - Surveying Notice to Proceed was issued in April 2014.

### FY14 Spending and Schedule Variances

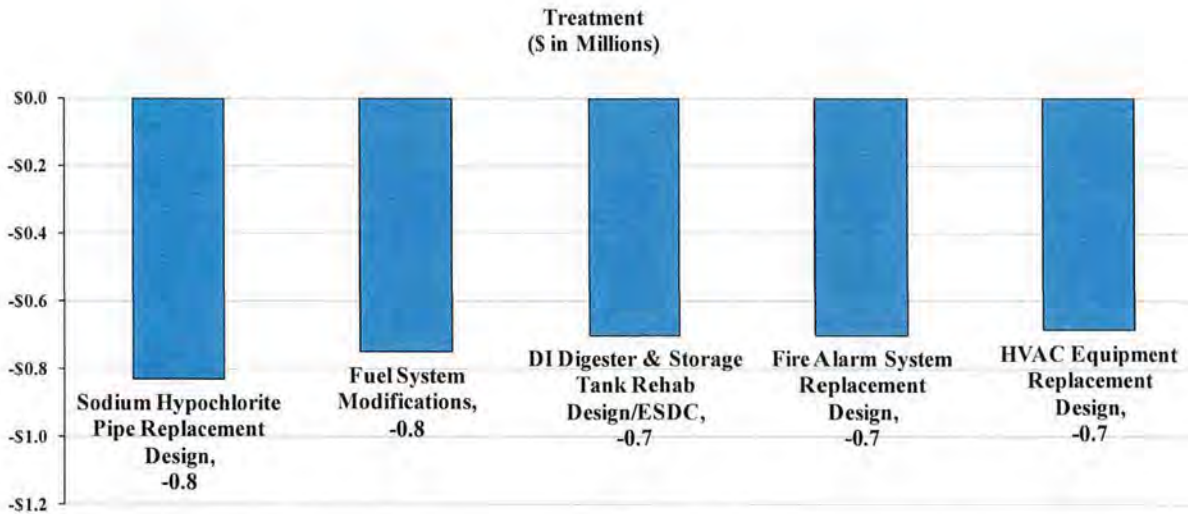
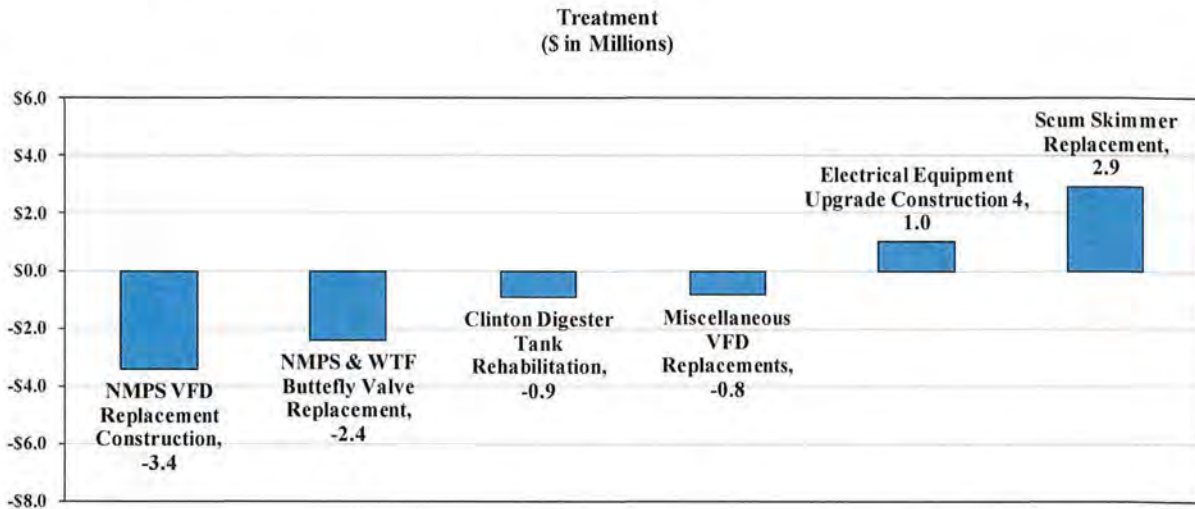
Total FY14 capital spending was \$102.2 million which was \$47.9 million or 31.9% less than the \$150.0 million budgeted including contingency. Excluding the contingency budget, the variance is \$39.9 million or 28.1% less than the \$142.1 million budget and is primarily due to underspending for the Cambridge Sewer Separation and Deer Island Treatment Plant Asset Protection projects partially offset by greater community requests for loans and grants for the Infiltration/Inflow (I/I) Local Financial Assistance Program and greater community requests for loans for the Local Water Pipeline Assistance Program (LWPAP).

<b>FY14 Capital Improvement Program Spending (\$000s)</b>					
<b>Program</b>	<b>Budgeted Spending</b>	<b>Actual Spending</b>	<b>Variance to Budget</b>		<b>% of Total Spending</b>
			<b>\$</b>	<b>%</b>	
<b>Total Wastewater System</b>	<b>\$84,251</b>	<b>\$55,690</b>	<b>(\$28,562)</b>	<b>-34%</b>	<b>55%</b>
Interception & Pumping	\$13,073	\$6,874	(\$6,199)	-47%	7%
Treatment	\$39,419	\$28,658	(\$10,762)	-27%	28%
Residuals	\$371	\$532	\$161	44%	1%
Combined Sewer Overflow	\$32,273	\$15,579	(\$16,694)	-52%	15%
Other Wastewater Programs	-\$885	\$4,047	\$4,932	-557%	4%
<b>Total Waterworks System</b>	<b>\$49,839</b>	<b>\$40,966</b>	<b>(\$8,872)</b>	<b>-18%</b>	<b>40%</b>
Drinking Water Quality Improvements	\$32,336	\$30,232	(\$2,104)	-7%	30%
Transmission	\$6,386	\$4,463	(\$1,923)	-30%	4%
Distribution and Pumping	\$10,038	\$4,817	(\$5,221)	-52%	5%
Other Waterworks Programs	\$1,078	\$1,454	\$376	35%	1%
<b>Business &amp; Operations Support</b>	<b>\$7,971</b>	<b>\$5,507</b>	<b>(\$2,464)</b>	<b>-31%</b>	<b>5%</b>
<b>Total MWRA (without Contingency)</b>	<b>\$142,061</b>	<b>\$102,163</b>	<b>(\$39,898)</b>	<b>-28%</b>	<b>100%</b>

Refer to Attachment B for the FY14 CIP variance explanations.

**FY14 Major Project Variances**

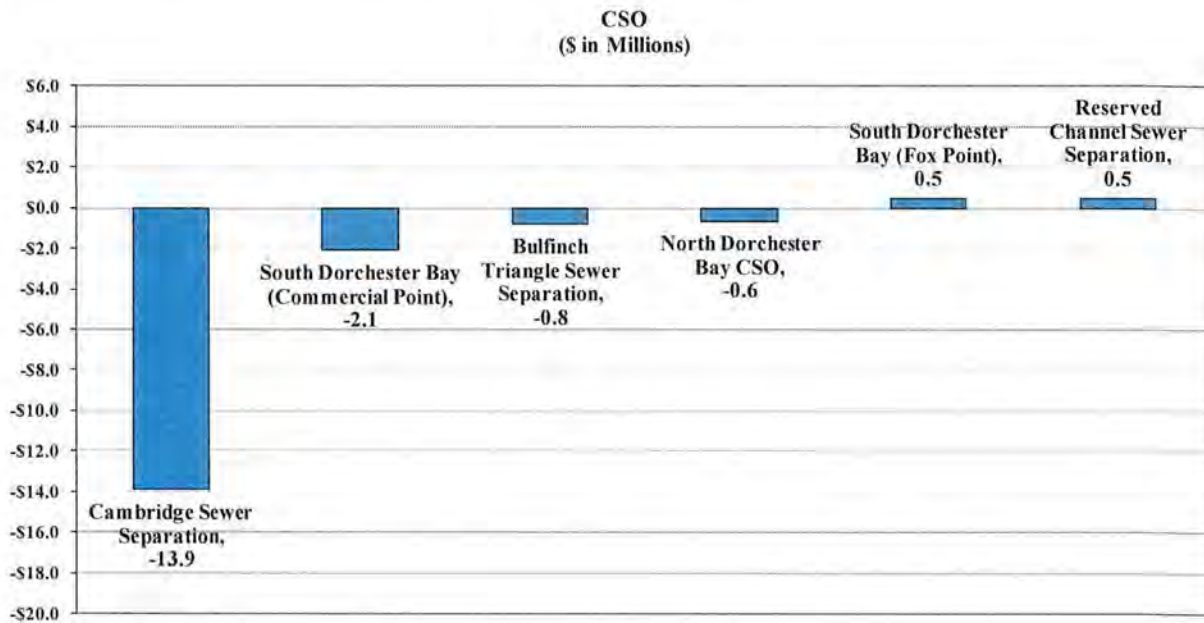
**Wastewater – Treatment**



Deer Island Treatment Plant Asset Protection: \$9.9 million less than budgeted spending primarily due to delays/schedule shifts for North Main Pump Station Variable Frequency Drives (VFDs) Construction, North Main Pump Station & Winthrop Terminal Facility Butterfly Valve Replacement, Miscellaneous VFD Replacements, Sodium Hypochlorite Pipe Replacement Design, Fuel System Modifications, Digester & Storage Tank Rehabilitation Design/Engineering Services During Construction, Fire Alarm System Replacement Design, and HVAC Equipment Replacement Design. This underspending was partially offset by timing of equipment delivery on the Scum Skimmer Replacement and Electrical Equipment Upgrade Construction 4 contracts.

Clinton Wastewater Treatment Plant: \$0.9 million less than budgeted spending primarily due to updated schedule for the Clinton Digester Tank Rehabilitation contract.

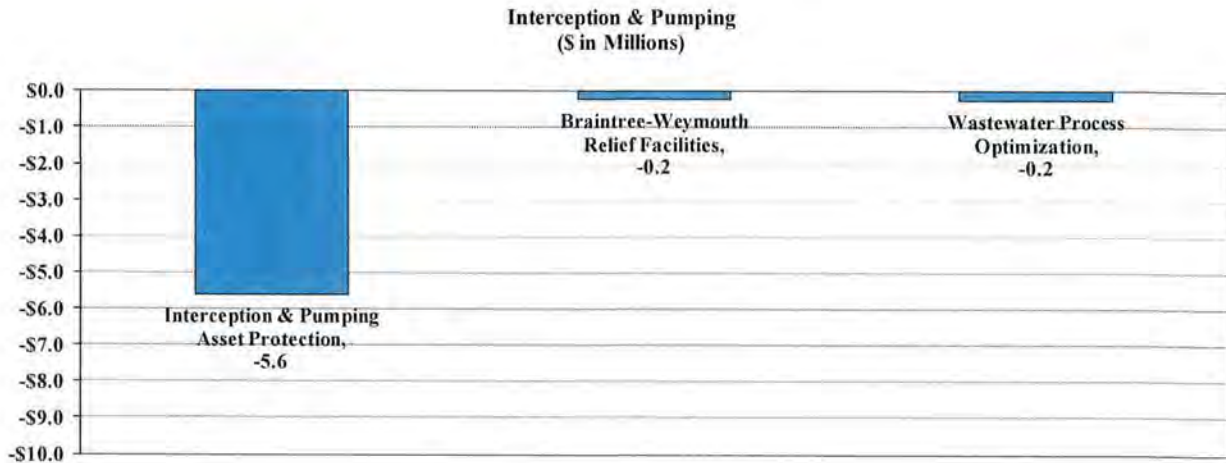
**Wastewater - Combined Sewer Overflows (CSO's)**



- Cambridge Sewer Separation: \$13.9 million less than budgeted spending primarily due to timing of anticipated expenditures for Contracts 8B and 9. Also, contractor progress and Engineering Services During Construction was less than anticipated, in part due to severe winter weather.
- South Dorchester Bay (Commercial Point) Sewer Separation: \$2.1 million less than budgeted spending primarily due to revised Boston Water & Sewer Commission schedule for inflow removal work and to final contract adjustments for completed sewer separation work.
- Bulfinch Triangle: \$0.8 million less than budgeted spending due to final contract adjustments by Boston Water & Sewer Commission.
- North Dorchester Bay: \$0.6 million less than budgeted spending primarily due to reduced scope for Outfall Design/Construction Administration/Resident Inspection resulting in less than anticipated design services.
- South Dorchester Bay (Fox Point) Sewer Separation: \$0.5 million more than budgeted spending primarily due to final cost adjustments by Boston Water & Sewer Commission.

- Reserved Channel Sewer Separation: \$0.5 million more than budgeted spending primarily due to unforeseen conditions and additional work for Contracts 3B and 4.

**Wastewater - Interception & Pumping**

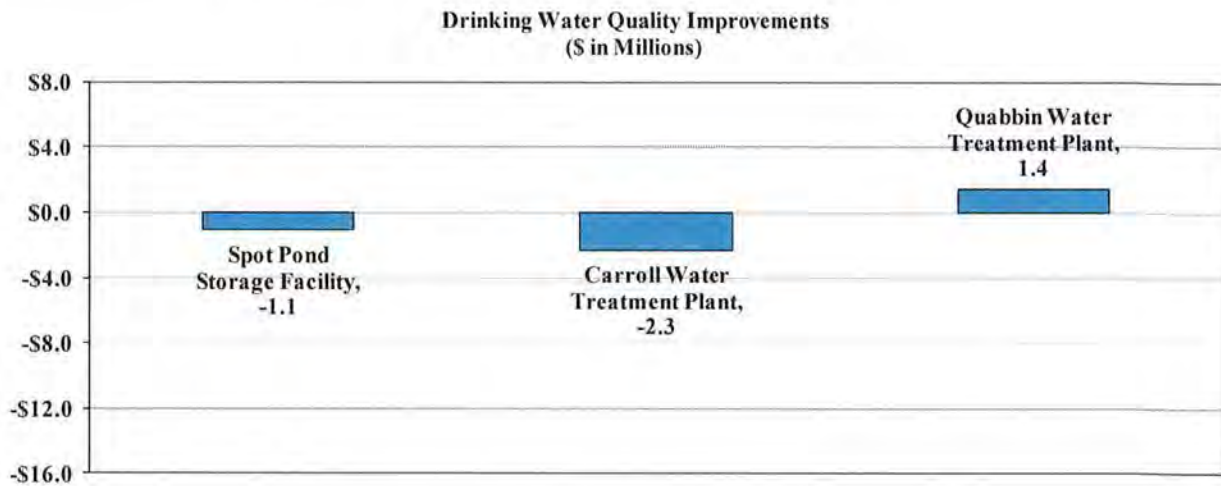


- Interception & Pumping Facility Asset Protection: \$5.6 million less than budgeted spending primarily due to timing of work for Prison Point Pump/Gearbox Rebuilds/Diesel Engine Upgrades, Nut Island Headworks Electrical & Grit/Screenings Conveyance System Construction was awarded less than budget, and updated schedule for Rehabilitation of Sections 186 & 4 Construction contract.
- Braintree-Weymouth Relief Facilities: \$0.2 million less than budgeted spending primarily due to updated cost estimates for Land Acquisition phase.
- Wastewater Process Optimization: \$0.2 million less than budgeted spending due to time extension for the North System Hydraulic Study.

**Wastewater - Other**

- I/I Local Financial Assistance: \$4.9 million more than budgeted spending which resulted from \$2.2 million in grant distributions and \$2.8 million in no-interest loans offset by repayment of prior period loans of \$0.1 million.

## Waterworks - Drinking Water Quality Improvements



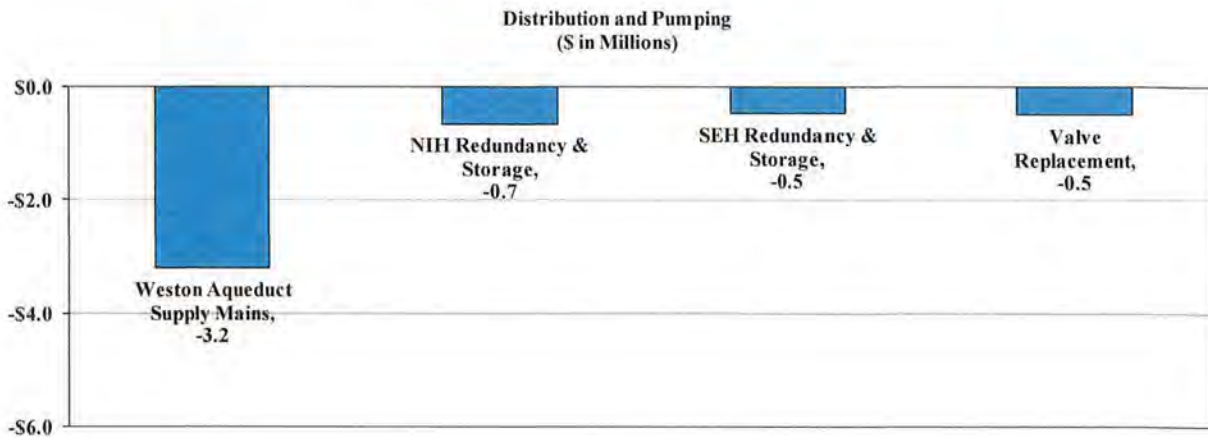
- Spot Pond Storage Facility: \$1.1 million less than budgeted spending primarily due to delay in equipment delivery and site issues.
- Carroll Water Treatment Plant: \$2.3 million less than budgeted spending primarily due to updated schedule for CP-7 Existing Facilities Modifications partially offset by greater than anticipated progress for the Ultraviolet Disinfection Construction contract.
- Quabbin Water Treatment Plant: \$1.4 million greater than budgeted spending primarily due to unanticipated work for Chicopee Valley Aqueduct Leak Repair and the Quabbin Ultraviolet Disinfection Construction contracts.

## Waterworks – Transmission



- Watershed Land: \$1.0 million in underspending due to lower than budgeted land purchases.
- Hultman Rehabilitation: \$0.4 million less than budgeted spending primarily due to final rehabilitation costs being less than originally anticipated.

## Waterworks - Distribution and Pumping



- Weston Aqueduct Supply Mains (WASMs): \$3.2 million less than budgeted spending primarily due to WASM 3 Massachusetts Environmental Policy Act/Design/Construction Administration/Resident Inspection award being less than budget.

- Northern Intermediate High (NIH) Redundancy and Storage: \$0.7 million less than budgeted spending primarily due to less than anticipated Section 89 & 29 design services due to change in pipe alignment. Also, less than anticipated easements were needed.
- Southern Extra High (SEH) Redundancy and Storage: \$0.5 million less than budgeted spending primarily due to delay in start of geotechnical program due to time needed to meet with local communities.
- Valve Replacement: \$0.5 million less than budget due to timing of equipment purchases.

#### **Waterworks - Other**

- Local Water Pipeline Improvement Loan Program: \$1.0 million more than budgeted spending which resulted from \$2.6 million in loan distributions and \$1.6 million in higher than projected repayment of prior period loans.

#### **Business & Operations Support**

- Alternative Energy Initiatives: \$1.2 million less than budgeted spending primarily mainly due to Deer Island Wind Turbine repairs being funded via warranty and lower than projected as-needed technical assistance.
- Management Information Systems (combined): \$0.7 million more than budgeted spending primarily due to progress of the Information Technology Strategic Plan implementation.
- Capital Maintenance Planning/Development: \$1.0 million less than budgeted spending primarily due to schedule changes for As-Needed Design contracts 11-13.
- Equipment Purchase: \$0.9 million less than budgeted spending due to timing of equipment and purchases.

#### **FY14 CIP Contract Awards**

During FY14, the MWRA awarded 30 contracts valued at \$69.9 million. The FY14 CIP planned to award 49 contracts with a value of \$133.0 million. Of the planned awards, 18 were awarded, 24 are expected to be awarded in FY15, 7 have slipped beyond FY15. In addition to FY14 planned awards, 12 additional contracts were awarded: 5 projects originally expected in FY13 and 6 sub-phases were broken out from existing phases, and one new phase bringing the total award amount to 30.



A comparison of the FY14 budgeted projects, the mid-year re-projection based on the FY15 Proposed CIP, and the FY14 actual contract awards are detailed below:

<b>FY14 Contracts (\$ in Millions)</b>						
<b>Program</b>	<b>Budget</b>		<b>Projected (Based on FY15 Proposed CIP)</b>		<b>Actual</b>	
	<b>#</b>	<b>\$</b>	<b>#</b>	<b>\$</b>	<b>#</b>	<b>\$</b>
<b>Total MWRA</b>	<b>49</b>	<b>133.0</b>	<b>42</b>	<b>90.6</b>	<b>30</b>	<b>69.9</b>
Wastewater	23	50.4	19	59.9	13	54.2
Waterworks	7	63.7	5	17.2	4	9.8
Business Operations & Support	19	18.9	18	13.5	13	5.9

As shown above, a total of 30 projects valued at \$69.9 million were awarded against a budget of 49 projects valued at \$133.0 million thus, we successfully awarded 61.2% of contracts and 52.6% of contract funding. It should be noted that one project, the Wachusett Aqueduct Pump Station Construction, valued at \$45.6 million, slipped into FY15. Had this been awarded, we would have reached 86.8% of contract funding.

Please refer to Attachment C for additional information.

### **Change Orders and Consultant Performance Review**

Management of change orders remains a top priority. Total change orders for MWRA-managed capital projects were 8.8% of award value through June 2014. Change orders as a percent of award value for completed and ongoing work in the FY14 CIP are 6.1% and 9.0%, respectively. These percentages remain within the target of 10% for change orders as a percentage of award.

### **Master Plan and the FY14 CIP Process**

The draft updated Master Plans were used in Fall 2013 to help guide development of the spending cap for the FY14-18 time period. Planning staff worked with Operations and Engineering staff to update information, identify additional capital projects, and to review priorities for the most critical projects. The 2013 Water and Wastewater System Master Plans were presented to the Board of Directors in 2013 and finalized.

The updated Master Plans are focused on the updated capital needs for MWRA's Water and Wastewater Systems over the next 40-year period and are intended to be the principal framework for annual capital planning. The plans focused on projects that are proposed to require capital spending during the next two 5-year CIP cap cycles, FY14-18 and FY19-23. Following these two five year periods, potential capital needs during additional 10-year (FY24-33) and 20-year (FY34-53) planning periods are also identified.

The FY14 CIP included 6 new projects or sub-phases with a contract value of \$18.6 million that were added from the Master Plan. These projects or sub-phases were prioritized and included in

the CIP for the repair or replacement of existing infrastructure (water distribution lines, wastewater interceptors, and facility equipment), although water system redundancy is also a major theme.

The number and estimated cost of projects included in the Master Plan based on FY08-14 CIP are listed below:

Budget Cycle	Projects/Sub phases Added	\$ in Millions
FY08 Final	67	\$ 955.0
FY09 Final	11	\$ 31.3
FY10 Final	14	\$ 58.7
FY11 Final	9	\$ 19.7
FY12 Final	13	\$ 38.9
FY13 Final	2	\$ 1.1
FY14 Final	6	\$ 18.6
<b>Total from the Master Plan</b>	<b>122</b>	<b>\$ 1,123.3</b>

### FY14 Final CIP FY14-18 Cap Spending

#### *Base-Line Cap*

The FY14 Final CIP established the FY14-18 Base-Line Cap at \$791.7 million. This is the third five-year Cap established by the Authority since FY04 and is significantly lower than the prior two five-year Cap periods which exceeded \$1.1 billion each. The following is a breakdown of the Cap components:

FY14-18 Base-Line Cap		FY14	FY15	FY16	FY17	FY18	Total FY14-18
	Projected Expenditures	\$142.5	\$147.6	\$149.3	\$141.8	\$136.8	\$718.0
Contingency	7.6	9.5	10.1	9.8	9.3	46.1	
Inflation on Unawarded Construction	0.8	4.2	8.4	11.1	13.5	37.9	
Less: Chicopee Valley Aqueduct Projects	(5.0)	(2.2)	(1.4)	(1.3)	(0.4)	(10.3)	
<b>FY14-18 Base-Line Cap</b>	<b>\$145.8</b>	<b>\$159.1</b>	<b>\$166.4</b>	<b>\$161.3</b>	<b>\$159.1</b>	<b>\$791.7</b>	

#### *FY14-18 Cap Spending*

The FY15 Final CIP budget anticipates capital expenditures in the FY14-18 timeframe to total \$756.3 million. Including contingency of \$40.1 million and inflation of \$27.5 million offset by \$51.3 million in Community Loan Program Support and Chicopee Valley Aqueduct adjustments of \$7.5 million, the FY15 Final FY14-18 Cap totals \$765.1 million which is \$26.5 million or 3.4% less than the FY14 Final FY14-18 Base-Line Cap.

## FY15 Final Cap FY14-18 Comparison

FY15 Draft Final		FY14	FY15	FY16	FY17	FY18	Total FY14-18
	Projected Expenditures	\$89.8	\$137.6	\$171.4	\$180.1	\$177.4	\$756.3
Contingency	0.0	7.5	10.0	11.4	11.2	40.1	
Inflation on Unawarded Construction	0.0	0.7	4.4	9.5	12.8	27.5	
Less: I/I Program	0.0	(11.2)	(13.4)	(15.5)	(14.7)	(54.8)	
Less: Water Loan Program	0.0	1.3	1.4	1.7	(0.9)	3.5	
Less: Chicopee Valley Aqueduct Projects	(6.2)	(0.7)	(0.2)	(0.2)	(0.2)	(7.5)	
<b>FY15 Draft Final FY14-18 Spending</b>	<b>\$83.5</b>	<b>\$135.3</b>	<b>\$173.6</b>	<b>\$187.0</b>	<b>\$185.7</b>	<b>\$765.1</b>	

FY15 Draft Final vs FY14-18 Base-Line Cap		FY14	FY15	FY16	FY17	FY18	Total FY14-18
	Projected Expenditures	(\$52.7)	(\$10.0)	\$22.0	\$38.3	\$40.6	\$38.3
Contingency	(7.6)	(2.0)	(0.1)	1.6	2.0	(6.0)	
Inflation on Unawarded Construction	(0.8)	(3.4)	(4.0)	(1.6)	(0.6)	(10.4)	
Less: I/I Program	0.0	(11.2)	(13.4)	(15.5)	(14.7)	(54.8)	
Less: Water Loan Program	0.0	1.3	1.4	1.7	(0.9)	3.5	
Less: Chicopee Valley Aqueduct Projects	(1.2)	1.5	1.3	1.1	0.2	2.9	
<b>FY14-18 Cap (\$ Change)</b>	<b>(\$62.3)</b>	<b>(\$23.8)</b>	<b>\$7.3</b>	<b>\$25.7</b>	<b>\$26.6</b>	<b>(\$26.5)</b>	
<b>FY14-18 Cap (% Change)</b>	<b>-42.7%</b>	<b>-15.0%</b>	<b>4.4%</b>	<b>15.9%</b>	<b>16.7%</b>	<b>-3.4%</b>	

It is important to note that the community managed financial assistance programs are for the first time excluded from the Cap calculation at the recommendation of the Authority's Advisory Board.

This Cap complies with both the annual and overall Cap requirements.

### FY15 Outlook Based on FY15 CIP

Projected capital spending for FY15 is \$137.6 million excluding contingency. The ten contracts with the greatest budgeted spending in FY15 are noted below. Planned spending on these ten contracts account for 86.7% of the \$137.6 million budgeted for capital spending in FY15.

Project	FY15 Spending
DI Treatment Plant Asset Protection	\$ 36.9
Spot Pond Storage Facility	16.0
Cambridge Sewer Separation	14.9
Facility Asset Protection	12.0
Infiltration/Inflow Local Financial Assistance	11.2
Long Term Redundancy	10.5
Carroll Water Treatment Plant	6.3
Weston Aqueduct Supply Mains	4.3
Reserved Channel Sewer Separation	4.1
Equipment Purchases	3.1

Top 10 Projects \$ 119.3

Total FY15 Spending \$ 137.6

Top Ten projects as a percent of FY15 Spending 86.7%

In Fiscal Year 2015, 33 contracts or phases of projects with a total budget of \$128.6 million are expected to be awarded (see Attachment E). Staff will be completing the design and progressing to the bid and award stage on several major projects. The following projects or phases of projects account for over 80% of total projected value:

Project	Subphase	Budget
Long Term Redundancy	Wachusett Aqueduct Pump Station Construction	\$ 50.6
Weston Aqueduct Supply Mains	Section 36/W11/S 9 - All Valve	10.5
Facility Asset Protection	Alewife Brook Pump Station Rehabilitation Construction	10.4
Carroll Water Treatment Plant	Existing Facilities Modifications - CP7	6.3
DI Treatment Plant Asset Protection	Gravity Thickener Rehabilitation	5.8
DI Treatment Plant Asset Protection	Digester Sludge Pump Replacement Phase 2	4.7
Carroll Water Treatment Plant	Carroll Water Treatment Plant Storage Tank Roof Drainage*	4.2
DI Treatment Plant Asset Protection	Winthrop Terminal Facility VFD Replacement - Construction	4.1
Facility Asset Protection	Chelsea Screenhouse Upgrades	3.3
DI Treatment Plant Asset Protection	Fuel System Modifications	3.0
<b>Top Ten Budget Planned Awards in FY15</b>		<b>\$ 102.9</b>

\* Work expected to be done under Wachusett Aqueduct Pump Station Construction contract.

**Other major initiatives in FY15 include:**

- Completion of several construction contracts including Spot Pond Storage Facility Design/Build, Quabbin Ultraviolet Water Treatment Plant, Gillis Pump Station Improvements, Northern Intermediate High Redundancy & Storage West Street Pipeline Reading Phase 1A, DI Centrifuge Back-drive Replacement, Nut Island Electrical & Grit/Screenings Conveyance System, Chicopee Valley Aqueduct Shea Ave Leak Repair, and DI Pipe Supports;
- Award of several construction contracts including Caruso Pump Station Improvements, Barge Berth and Facility Replacement, Thermal Power Plant Boiler Control Replacement, Clinton Roofing Rehabilitation, and DeLauri Pump Station Upgrades.

**ATTACHMENT B**  
**FY14 CIP VARIANCE EXPLANATIONS THROUGH JUNE (Q4) - PROGRAM SUMMARY (\$000s)**

	BUDGET	ACTUALS	VARIANCE		MAJOR PROJECT
			(\$)	%	
<b>Total MWRA</b>	\$ 142,061	\$ 102,163	\$ (39,898)	-28%	
<b>Variance by Program</b>					
<b>Total Wastewater</b>	\$ 84,251	\$ 55,690	\$ (28,562)	-34%	
Interception and Pumping	\$ 13,073	\$ 6,874	\$ (6,199)	-47%	Interception & Pumping Facility Asset Protection (\$5.6M), Wastewater Process Optimization (\$247k), and Braintree-Weymouth Relief Facilities (\$225k).
Treatment	\$ 39,419	\$ 28,658	\$ (10,762)	-27%	Deer Island Treatment Plant Asset Protection (\$9.9M), and Clinton Wastewater Treatment Plant (\$864k).
Residuals	\$ 371	\$ 532	\$ 161	44%	Residuals Asset Protection (\$161k).
CSO	\$ 32,273	\$ 15,579	\$ (16,695)	-52%	
MWRA Managed	\$ 1,399	\$ 698	\$ (701)	-50%	North Dorchester Bay (\$639k).
Community-Managed	\$ 32,017	\$ 16,057	\$ (15,960)	-50%	Cambridge Sewer Separation (\$13.9M), Bulfinch Triangle Sewer Separation (\$803k), and Dorchester Bay Sewer Separation/Commercial Pt. (\$2.1M). Offset by Dorchester Bay Sewer Separation (Fox Pt.) +\$473k, and Reserved Channel Sewer Separation +\$461k.
Planning & Support	\$ (1,143)	\$ (1,176)	\$ (33)	3%	
Other	\$ (885)	\$ 4,047	\$ 4,932	-	I/I Local Financial Assistance +\$4.9M.
<b>Total Waterworks System Improvements</b>	\$ 49,839	\$ 40,966	\$ (8,872)	-18%	
Drinking Water Quality Improvements	\$ 32,336	\$ 30,232	\$ (2,104)	-7%	Carroll Water Treatment Plant (\$2.3M), and Spot Pond Storage Facility (\$1.1M). Offset by Quabbin Water Treatment Plant +\$1.4M.
Transmission	\$ 6,386	\$ 4,463	\$ (1,923)	-30%	Watershed Land (\$960k), Metro West Tunnel (\$433k), Dam Projects (\$327k), and Winsor Station/Pipeline Improvements (\$155).
Distribution and Pumping	\$ 10,038	\$ 4,817	\$ (5,221)	-52%	Weston Aqueduct Supply Mains (\$3.2M), NIH Redundancy & Storage (\$651k), Valve Replacement (500k), SEH Redundancy & Storage (\$470k), Southern Spine Distribution Mains (\$289k), and Lynnfield Pipeline (\$165k).
Other	\$ 1,078	\$ 1,454	\$ 376	-	Local Water Pipeline Improvement Loan Program +\$1.0M. Offset by Central Monitoring System (\$629k).
<b>Business and Operations Support</b>	\$ 7,972	\$ 5,507	\$ (2,465)	-31%	Alternative Energy Initiatives (\$1.2M), Capital Maintenance Planning & Development (\$950k), Equipment Purchase (\$940k), Application Improvements Program (\$276k), and Information Technology Management Program (\$218k). Offset by IT Infrastructure Program +\$1.2M.
<b>Total Variance by Program</b>	\$ 142,061	\$ 102,163	\$ (39,898)	-28%	

**ATTACHMENT B**  
**FY14 CIP VARIANCE EXPLANATIONS THROUGH JUNE (Q4) - BY PROJECT (\$000s)**

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
<i>Total MWRA</i>	\$ 142,061	\$ 102,163	\$ (39,898)	-28%	
<i>Wastewater System Improvements</i>	\$ 84,251	\$ 55,690	\$ (28,562)	-34%	
<b>Interception &amp; Pumping</b>	\$ 13,073	\$ 6,874	\$ (6,199)	-47%	
Braintree-Weymouth Relief Facilities	\$ 225	\$ (0)	\$ (225)	-100%	Final land acquisition costs less than budgeted.
Wastewater Central Monitoring	\$ -	\$ (0)	\$ (0)	-	
Wastewater Process Optimization	\$ 259	\$ 11	\$ (247)	-96%	
North System Hydraulic Study	\$ 259	\$ 11	\$ (247)	-96%	Underspending due to schedule change.
Wastewater Metering Study	\$ 100	\$ -	\$ (100)	-	Underspending due to schedule change.
Interception & Pumping (I&P) Facility Asset Protection	\$ 12,489	\$ 6,863	\$ (5,626)	-45%	
NI Electrical & Grit/Screenings Conveyance - Construction	\$ 4,470	\$ 2,735	\$ (1,736)	-39%	Underspending due to lower than budgeted award.
PP/CF Engine Pumps & Gearboxes	\$ 4,079	\$ 1,859	\$ (2,220)	-54%	Underspending due to timing.
Rehab of Sects 186 and 4 - Construction	\$ 1,180	\$ -	\$ (1,180)	-	
Prison Point Piping Rehab	\$ 331	\$ -	\$ (331)	-	Underspending due to schedule changes.
DeLauri Pump Station Upgrades	\$ 313	\$ -	\$ (313)	-	
<b>Treatment</b>	\$ 39,419	\$ 28,658	\$ (10,762)	-27%	
DITP Asset Protection	\$ 38,280	\$ 28,383	\$ (9,897)	-26%	
NMPS VFD Replacement - Construction	\$ 13,833	\$ 10,436	\$ (3,396)	-25%	Underspending due to timing of equipment delivery.
Scum Skimmer Replacement	\$ 4,000	\$ 6,894	\$ 2,894	72%	Overspending due to timing of equipment delivery and review and approval by MWRA staff.
NMPS & WTF Butterfly Valve Replacements	\$ 2,600	\$ 250	\$ (2,350)	-90%	
Miscellaneous VFD Replacement	\$ 846	\$ -	\$ (846)	0%	
Sodium Hypochlorite Pipe Replacement - Design	\$ 830	\$ -	\$ (830)	-	
Power System Improvements - Construction	\$ 750	\$ -	\$ (750)	-	
Fire Alarm System Replacement - Design	\$ 700	\$ -	\$ (700)	-	
Digester and Storage Design	\$ 700	\$ -	\$ (700)	-	Underspending due to due to schedule shifts.
HVAC Equipment Replacement - Design/ESDC	\$ 1,021	\$ 334	\$ (687)	-67%	
Thermal Power Plant Boiler Controls Replacement	\$ 583	\$ -	\$ (583)	-	
Digester Sludge Line Replacement 2	\$ 500	\$ -	\$ (500)	-	
Cryogenic Chillers Replacement	\$ 450	\$ -	\$ (450)	-	
Digester Sludge Pump Replacement - Construction	\$ 489	\$ 43	\$ (446)	-91%	
Electrical Equipment Upgrades - Construction 4	\$ 2,701	\$ 3,747	\$ 1,046	39%	Overspending due to timing of equipment delivery.
Roof Replacement Phase 3	\$ 1,156	\$ 560	\$ (595)	-51%	Underspending due to lower than budgeted award.
As-Needed Design 7-3	\$ 619	\$ 272	\$ (348)	-56%	Underspending due to timing.
Digester Modules 1 & 2 Pipe Replacement	\$ 542	\$ 1,150	\$ 608	112%	Overspending due to work scheduled for FY13 performed in FY14.
Expansion Joint Repair - Construction 2	\$ 866	\$ 1,208	\$ 342	39%	
Clinton Wastewater Treatment Plant	\$ 1,140	\$ 275	\$ (864)	-76%	
Clinton Digester Cleaning & Rehab	\$ 930	\$ 22	\$ (908)	-98%	Underspending due to schedule shift. Contract awarded in March 2014.
<b>Residuals</b>	\$ 371	\$ 532	\$ 161	44%	
Residuals Asset Protection	\$ 371	\$ 532	\$ 161	44%	

**ATTACHMENT B**  
**FY14 CIP VARIANCE EXPLANATIONS THROUGH JUNE (Q4) - BY PROJECT (\$000s)**

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
<b>CSO</b>	\$ 32,273	\$ 15,579	\$ (16,694)	-52%	
<b>MWRA-Managed</b>	\$ 1,399	\$ 698	\$ (701)	-50%	
North Dorchester Bay	\$ 620	\$ (19)	\$ (639)	-	
North Dorchester Outfall - Design/CA/RI	\$ 538	\$ 3	\$ (536)	-100%	Underspending due to reduced scope resulting in less than anticipated design services.
MWR003 Gate & Siphon	\$ 779	\$ 725	\$ (53)	-7%	
East Boston Branch Sewer Relief	\$ -	\$ (9)	\$ (9)	-	
<b>Community-Managed</b>	\$ 32,017	\$ 16,057	\$ (15,960)	-50%	
Dorchester Bay Sewer Separation (Fox Point)	\$ -	\$ 473	\$ 473	-	Overspending due to final contract adjustments.
Dorchester Bay Sewer Separation (Commercial Pt.)	\$ 1,282	\$ (825)	\$ (2,107)	-	
Design	\$ 1,020	\$ 5	\$ (1,015)	-100%	Underspending due to schedule change for inflow removal work and final contract adjustments.
Construction	\$ 262	\$ (829)	\$ (1,091)	-	
Neponset River Sewer Separation	\$ -	\$ 105	\$ 105	-	
Constitution Beach Sewer Separation	\$ -	\$ (38)	\$ (38)	-	
Stony Brook Sewer Separation	\$ -	\$ 48	\$ 48	-	
BWSC Floatables Controls	\$ -	\$ 13	\$ 13	-	
Fort Point Channel Sewer Separation	\$ -	\$ (90)	\$ (90)	-	
Morrissey Boulevard Drain	\$ -	\$ (159)	\$ (159)	-	
Bulfinch Triangle Sewer Separation	\$ -	\$ (803)	\$ (803)	-	Underspending due to final contract adjustments.
Cambridge Sewer Separation	\$ 26,875	\$ 13,010	\$ (13,865)	-52%	
Design/CS/RI	\$ 4,247	\$ 2,724	\$ (1,523)	-36%	Underspending due to timing of payments for contracts 8B and 9.
Construction	\$ 22,628	\$ 10,286	\$ (12,342)	-55%	
Reserved Channel Sewer Separation	\$ 3,860	\$ 4,321	\$ 461	12%	
Design	\$ 1,025	\$ 1,246	\$ 221	22%	Overspending due to additional work for contracts 3B and 4.
Construction	\$ 2,835	\$ 3,075	\$ 240	8%	
<b>Planning and Support</b>	\$ (1,143)	\$ (1,176)	\$ (33)	-	
<b>Other</b>	\$ (885)	\$ 4,047	\$ 4,932	-	
I/I Local Financial Assistance	\$ (885)	\$ 4,047	\$ 4,932	-	
Grants	\$ 3,473	\$ 5,738	\$ 2,265	65%	Overspending due to community requests for grants and loans being greater than planned. Total community repayments will equal total loan distributions by the end of the program (FY26).
Loans	\$ 4,245	\$ 7,014	\$ 2,768	65%	
Repayments	\$ (8,604)	\$ (8,705)	\$ (101)	1%	
<b>Waterworks System Improvements</b>	\$ 49,839	\$ 40,966	\$ (8,872)	-18%	
<b>Drinking Water Quality Improvements</b>	\$ 32,336	\$ 30,232	\$ (2,104)	-7%	
Spot Pond Storage Facility	\$ 21,386	\$ 20,246	\$ (1,140)	-5%	
Design/Build	\$ 20,352	\$ 19,726	\$ (627)	-3%	Underspending primarily due to site issues and delay in equipment delivery.
Easement/Land Acquisition/Permits	\$ 338	\$ 10	\$ (328)	-97%	Underspending due to site issues. Less than anticipated permits, etc. were needed.
Carroll Water Treatment Plant	\$ 6,578	\$ 4,276	\$ (2,302)	-35%	
Existing Facilities Modifications, CP7	\$ 2,239	\$ -	\$ (2,239)	-	Underspending due to schedule shifts.
Existing Facilities Modifications, CP7 - Design	\$ 300	\$ -	\$ (300)	-	
Blue Hills Covered Storage	\$ 178	\$ 120	\$ (58)	-33%	

**ATTACHMENT B**  
**FY14 CIP VARIANCE EXPLANATIONS THROUGH JUNE (Q4) - BY PROJECT (\$000s)**

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
Quabbin Water Treatment Plant	\$ 4,194	\$ 5,590	\$ 1,396	33%	
CVA Shea Ave Leak Repair	\$ -	\$ 723	\$ 723	-	Overspending due to emergency leak repair at CVA Shea Avenue not budgeted in FY14.
Quabbin UVWTP - Design/CA/RI	\$ 400	\$ 709	\$ 309	77%	
Quabbin UVWTP Construction	\$ 3,790	\$ 4,141	\$ 351	9%	Overspending due to unanticipated additional work.
<b>Transmission</b>	<b>\$ 6,386</b>	<b>\$ 4,463</b>	<b>\$ (1,923)</b>	<b>-30%</b>	
Quabbin Transmission System	\$ 276	\$ 254	\$ (22)	-8%	
Watershed Land	\$ 1,500	\$ 540	\$ (960)	-64%	
Land Acquisition	\$ 1,500	\$ 540	\$ (960)	-64%	Underspending due to timing of land acquisitions.
Long Term Redundancy	\$ 1,958	\$ 1,941	\$ (17)	-1%	
Sudbury Aqueduct Pressurization/MEPA Review	\$ 1,105	\$ 697	\$ (408)	-37%	Underspending due to ongoing alternatives analysis.
Wachusett Aqueduct Pump Station - Design/ESDC/RI	\$ 853	\$ 1,246	\$ 393	46%	Overspending due to expanding the scope of work.
Winsor Station/Pipeline Improvements	\$ 494	\$ 339	\$ (155)	-31%	
Dam Projects	\$ 336	\$ 10	\$ (327)	-97%	
Dam Safety Modifications & Repairs - Design/ESDC	\$ 336	\$ 10	\$ (327)	-97%	Underspending due to less than anticipated design services.
MetroWest Tunnel	\$ 1,821	\$ 1,378	\$ (443)	-24%	
Upper Hultman Rehabilitation - CP6B	\$ 467	\$ 296	\$ (171)	-37%	Underspending due to final costs being less than budgeted. Contract is reduced in FY15 Final budget.
Hultman Interconnection - RI Services	\$ 320	\$ 150	\$ (170)	-53%	Underspending due to final contract cost being less than anticipated.
<b>Distribution And Pumping</b>	<b>\$ 10,038</b>	<b>\$ 4,817</b>	<b>\$ (5,221)</b>	<b>-52%</b>	
Southern Spine Distribution Mains	\$ 279	\$ (10)	\$ (289)	-	
Sections 21, 43 & 22 - Design/REI	\$ 279	\$ (10)	\$ (289)	-	Underspending due to completion of resident engineering and inspection services under budget.
Valve Replacement	\$ 500	\$ -	\$ (500)	-	
Equipment Purchase	\$ 500	\$ -	\$ (500)	-	Underspending due to timing of equipment purchases.
Northern High Service - Section 27 Improvements	\$ 1	\$ -	\$ (1)	-	
Spot Pond Supply Mains Rehab	\$ 80	\$ 187	\$ 107	133%	
NIH Redundancy & Storage	\$ 2,822	\$ 2,171	\$ (651)	-23%	
Section 89/29 Redundancy - Design	\$ 700	\$ 204	\$ (496)	-71%	Underspending due to less than anticipated design services due to change in pipe alignment.
Easements	\$ 275	\$ -	\$ (275)	-	Underspending due to timing.



**ATTACHMENT B**  
**FY14 CIP VARIANCE EXPLANATIONS THROUGH JUNE (Q4) - BY PROJECT (\$000s)**

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
Weston Aqueduct Supply Mains	\$ 5,685	\$ 2,447	\$ (3,238)	-57%	
WASM 3 - MEPA/Design/CA/RI	\$ 2,554	\$ 183	\$ (2,371)	-93%	Underspending due to lower than budgeted award.
Watertown Section Rehab	\$ 2,581	\$ 1,960	\$ (621)	-24%	Underspending due to work anticipated in FY14 but completed in FY13. Contract is substantially complete.
Section 36/WS/Waltham Connection - Design/CA/RI	\$ 460	\$ 214	\$ (246)	-54%	Underspending due to pending review of additional alternatives.
SEH Redundancy & Storage	\$ 544	\$ 74	\$ (470)	-86%	
Redundancy/Storage Phase 1 - Final Design/CA/RI	\$ 386	\$ 61	\$ (325)	-84%	Underspending due to boring program being delayed as a result of additional time needed to meet with local communities.
Lynnfield Pipeline	\$ 113	\$ (52)	\$ (165)	-	
Construction Phase 2	\$ -	\$ (112)	\$ (112)	-	Underspending due to timing. Contract is completed.
Northern Extra High Service - New Pipelines	\$ 13	\$ -	\$ (13)	-	
<b>Other</b>	\$ 1,078	\$ 1,454	\$ 376	35%	
Local Water Pipeline Improvement Loan Program	\$ 450	\$ 1,454	\$ 1,005	-	Overspending due to community requests for loans being greater than planned.
Community Loans	\$ 20,131	\$ 22,717	\$ 2,587	13%	Slightly offset by repayments being greater than anticipated. Total community repayments will equal total loan distributions by the end of the program (FY30).
Repayments	\$ (19,681)	\$ (21,263)	\$ (1,582)	8%	
Central Monitoring System	\$ 629	\$ -	\$ (629)	-	
Quabbin Power Communication & Security	\$ 500	\$ -	\$ (500)	-	Underspending due to schedule shift.
<b>Business &amp; Operations Support</b>	\$ 7,972	\$ 5,507	\$ (2,465)	-31%	
Business Systems Plan	\$ 12	\$ 64	\$ 52	-	
Application Improvement Program	\$ 569	\$ 293	\$ (276)	-49%	
Maximo Upgrade	\$ 328	\$ -	\$ (328)	-	Underspending due to schedule shift.
Information Technology Management Program	\$ 218	\$ -	\$ (218)	-	
IT Infrastructure Program	\$ 1,292	\$ 2,500	\$ 1,208	93%	Overspending due to progress of IT Strategic Plan implementation.
Information Security Program	\$ 392	\$ 285	\$ (107)	-27%	
Alternative Energy Initiatives	\$ 1,423	\$ 191	\$ (1,232)	-87%	
DI Wind	\$ 400	\$ -	\$ (400)	-	Underspending due to Deer Island Wind Turbine repairs being funded via warranty.
Technical Assistance	\$ 878	\$ 191	\$ (687)	-78%	Underspending due Technical Assistance work was less than anticipated.
Equipment Purchase	\$ 2,181	\$ 1,241	\$ (940)	-43%	
Security Equipment & Installation	\$ 827	\$ 259	\$ (568)	-69%	Underspending due to the timing of purchases.
FY14-18 Vehicle Purchases	\$ 1,354	\$ 982	\$ (372)	-27%	
Capital Maintenance Planning & Development	\$ 1,884	\$ 934	\$ (950)	-50%	Underspending due to lower than projected use of as-needed technical assistance.
Environmental Remediation	\$ -	\$ (0)	\$ (0)	-	

**ATTACHMENT C**  
**FY14 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Subphase	NTP	Revised NTP based on FY15 Final Budget	FY14 Budget Amount	Award Amount	Vendor	Schedule Change Reason Code
Application Improvement Program	Maximo Upgrade	Jul-13	Sep-14	\$ 1.8			3
<b>Information Technology Mgmt Program</b>	<b>Service Delivery &amp; Best Practices</b>	<b>Jul-13</b>	<b>Jul-13</b>	<b>0.4</b>	<b>0.1</b>	<b>IBM Corporation</b>	<b>1</b>
Information Technology Mgmt Program	Reorganize MIS Department	Jul-13	Jul-14	0.2			3
<b>IT Infrastructure Program</b>	<b>Storage Upgrades</b>	<b>Jul-13</b>	<b>Jul-13</b>	<b>0.9</b>	<b>0.6</b>	<b>Hub Technical Services, Inc.</b>	<b>1</b>
<b>IT Infrastructure Program</b>	<b>Backup Upgrades</b>	<b>Jul-13</b>	<b>Jul-13</b>	<b>0.6</b>	<b>0.6</b>	<b>Advizex Technologies</b>	<b>1</b>
<b>IT Infrastructure Program</b>	<b>Server Management</b>	<b>Jul-13</b>	<b>Oct-13</b>	<b>0.5</b>	<b>0.2</b>	<b>Myphics Inc.</b>	<b>1</b>
IT Infrastructure Program	Enterprise Applications Integration	Jul-13	Jul-14	2.1			3
<b>Facility Asset Protection</b>	<b>Prison Point/Cottage Farm Pump Gearbox Rebuilds</b>	<b>Jul-13</b>	<b>Oct-13</b>	<b>5.1</b>	<b>6.1</b>	<b>IPC Lydon</b>	<b>1</b>
<b>Capital Maintenance Planning</b>	<b>As-Needed Design Contract 11</b>	<b>Aug-13</b>	<b>Feb-14</b>	<b>1.6</b>	<b>0.6</b>	<b>Dewberry Engineers, Inc.</b>	<b>1</b>
<b>Capital Maintenance Planning</b>	<b>As-Needed Design Contract 12</b>	<b>Aug-13</b>	<b>Jan-14</b>	<b>1.6</b>	<b>0.6</b>	<b>Fay Spofford &amp; Thorndike</b>	<b>1</b>
<b>Capital Maintenance Planning</b>	<b>As-Needed Design Contract 13</b>	<b>Aug-13</b>	<b>Feb-14</b>	<b>1.6</b>	<b>0.6</b>	<b>Hazen and Sawyer, P.C.</b>	<b>1</b>
<b>DI Treatment Plant Asset Protection</b>	<b>HVAC Equipment Replacement - Design/Engineering Services During Construction</b>	<b>Aug-13</b>	<b>Mar-14</b>	<b>3.5</b>	<b>1.9</b>	<b>Arcadis U.S., Inc.</b>	<b>1</b>
DI Treatment Plant Asset Protection	Thermal Power Plant Boiler Control Replacement	Aug-13	Jul-14	1.0			3
<b>Application Improvement Program</b>	<b>Mobile Integrations</b>	<b>Sep-13</b>	<b>Apr-14</b>	<b>0.2</b>	<b>0.2</b>	<b>IntraSystem, Inc.</b>	<b>1</b>
<b>MWR003 Gate &amp; Siphon</b>	<b>Construction 1</b>	<b>Sep-13</b>	<b>Sep-13</b>	<b>0.3</b>	<b>0.3</b>	<b>R. Zoppo Corp.</b>	<b>1</b>
Wastewater Meter System-Equip. Repl.	Planning /Study/Design	Sep-13	Jan-15	0.1			3
<b>Residuals Asset Protection</b>	<b>Co-Digestion Pilot</b>	<b>Sep-13</b>	<b>Sep-13</b>	<b>0.3</b>	<b>0.4</b>		<b>1</b>
DI Treatment Plant Asset Protection	Fire Alarm System Replacement-Design	Sep-13	Aug-14	2.1			3
DI Treatment Plant Asset Protection	Thermal Power Plant Fuel System Modifications Resident Engineer Inspection	Sep-13	Jul-14	0.8			3
DI Treatment Plant Asset Protection	Barge Berth and Facility Replacement	Sep-13	Nov-14	2.3			3
DI Treatment Plant Asset Protection	Cryogenics Chillers Replacement	Sep-13	Jun-14	1.1			3
<b>Spot Pond Supply Mains Rehabilitation</b>	<b>Section 4 Webster Ave Bridge Pipe Rehabilitation Design</b>	<b>Sep-13</b>	<b>Oct-13</b>	<b>0.5</b>	<b>0.6</b>	<b>Dewberry Engineers, Inc.</b>	<b>1</b>
Carroll Water Treatment Plant	Existing Facilities Modifications - CP7	Sep-13	Jul-14	6.1			3
Facility Asset Protection	Prison Point Piping Rehab	Oct-13	Jul-15	0.3			6
DI Treatment Plant Asset Protection	Digester Sludge Pump Replacement Phase 2	Oct-13	Oct-14	4.7			3
DI Treatment Plant Asset Protection	Digester & Storage Tank Rehabilitation Design/Engineering Services During Construction	Oct-13	Oct-16	3.0			5
DI Treatment Plant Asset Protection	Fuel System Modifications	Oct-13	Sep-14	3.0			5 & 3
DI Treatment Plant Asset Protection	Sodium Hypo Pipe Replacement - Design	Nov-13	Jun-16	2.2			2
DI Treatment Plant Asset Protection	Clarifier Phase 2 Design	Nov-13	Jun-14	3.0			3

**ATTACHMENT C**  
**FY14 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Subphase	NTP	Revised NTP based on FY15 Final Budget	FY14 Budget Amount	Award Amount	Vendor	Schedule Change Reason Code
Winsor Dam Pipeline Improvements	Hatchery Pipeline Design/Engineering Services During Construction/Resident Inspection	Nov-13	Aug-13	0.8	0.7	Fay Spofford & Thorndike	1
Application Improvement Program	GIS Applications & Integration	Dec-13	Jan-14	0.4	0.02	ESRI Inc.	1
Application Improvement Program	PIMS Enhancements	Dec-13	Jun-14	0.4			3
Facility Asset Protection	Rehabilitation of Sects 186 and 4 Construction	Dec-13	Aug-18	3.5			6
DI Treatment Plant Asset Protection	Cryogenics Plant-Equipment Replacement-Design	Dec-13	Dec-16	1.6			6
<b>July 2013-December 2013</b>	<b>34 Contracts Planned</b>			<b>\$ 57.2</b>	<b>\$ 13.4</b>		
Information Technology Mgmt Program	Implement IT Task Force	Jan-14	Jun-14	0.1			3
Information Technology Mgmt Program	IT Project Management Methodology	Jan-14	Jun-14	0.5			3
Information Technology Mgmt Program	Implementation Approach (Software Develop. Life Cycle)	Jan-14	Jun-14	0.4			3
<b>IT Infrastructure Program</b>	<b>Enterprise Data Mgmt</b>	<b>Jan-14</b>	<b>Jan-14</b>	<b>1.5</b>	<b>1.0</b>	<b>McInnis Consulting/SHI International</b>	<b>1</b>
Residuals Asset Protection	Residual Facility Plan/Environmental Impact Report	Jan-14	Jan-20	1.0			6
<b>SEH Redundancy &amp; Storage</b>	<b>Redundancy/Storage Phase 1 Final Design/Construction Administration/Resident Inspection</b>	<b>Jan-14</b>	<b>Jan-14</b>	<b>5.7</b>	<b>7.7</b>	<b>Fay Spofford &amp; Thorndike</b>	<b>1</b>
Central Monitoring System	Winsor Dam High Line Replacement (now Quabbin Power Communications & Security)	Jan-14	Jul-15	1.0			5
<b>DI Treatment Plant Asset Protection</b>	<b>Electrical Equipment Upgrade 4 Resident Engineer Inspection</b>	<b>Feb-14</b>	<b>May-14</b>	<b>1.2</b>	<b>1.0</b>	<b>AECOM Technical Services</b>	<b>1</b>
DI Treatment Plant Asset Protection	Gravity Thickener Rehabilitation	Feb-14	Sep-14	5.8			5 & 3
Facility Asset Protection	Nut Island Fire Pump Building - Study	Mar-14	Jan-15	0.6			3
Application Improvement Program	Enterprise Content Mgmt	Apr-14	Jun-14	4.0			3
Long Term Redundancy	Wachusett Aqueduct Pump Station Construction	Apr-14	Oct-14	45.6			5 & 3
Carroll Water Treatment Plant	Carroll Plant Storage Tank Roof Drainage System	May-14	Jul-14	4.1			2
Information Security Program ISP	Electronic Security Implementation	Jun-14	Jun-14	0.4			3
DI Treatment Plant Asset Protection	Winthrop Terminal Facility Variable Frequency Drive Replacement - Construction	Jun-14	Jun-15	4.0			3
<b>January 2014-June 2014</b>	<b>15 Contracts Planned</b>			<b>\$ 75.7</b>	<b>\$ 9.7</b>		
<b>Total July 2013 - June 2014</b>	<b>49 Contracts Planned</b>			<b>\$ 133.0</b>	<b>\$ 23.1</b>		

**Additional Unplanned Awards:**

DI Treatment Plant Asset Protection	DI Roof Replacement	Jul-13		1.3	0.6	Titan Roofing	1
DI Treatment Plant Asset Protection	DI Pipe Supports	Jul-13		0.8	0.6	Walsh Construction	1
DI Treatment Plant Asset Protection	DI Scum Skimmer Replacement	Sep-13		20.0	20.2	Walsh Construction	1

**ATTACHMENT C**  
**FY14 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Subphase	NTP	Revised NTP based on FY15 Final Budget	FY14 Budget Amount	Award Amount	Vendor	Schedule Change Reason Code
Equipment Purchase	Miscellaneous Fencing	Aug-13		0.5	0.5	Premier Fence, LLC	1
Clinton Wastewater Treatment Plant	Phosphorus Reduction Design/Engineering Services During Construction	Oct-13		0.9	1.1	Fay, Spofford & Thorndike	1
Facility Asset Protection	Engineering Services During Construction for Pump Gearbox and Diesel Engine Upgrades at Cottage Farm and Prison Point	Feb-14		0.0	0.3	Fay, Spofford & Thorndike	1
Quabbin Water Treatment Plant	Shea Ave CVA Leak Repair	Feb-14		0.0	0.8	J. D'Amico, Inc.	1
Clinton Wastewater Treatment Plant	Rehabilitation of Anaerobic Digesters, Primary Clarifiers, and New Influent Gates	Mar-14		3.1	4.3	R.H. White Construction	1
Clinton Wastewater Treatment Plant	Engineering Services During Construction of the Rehabilitation of Anaerobic Digesters, Primary Clarifiers, and New Influent Gates	Mar-14		0.0	0.4	Fay, Spofford & Thorndike	1
Equipment Purchase	Security Improvements at Various Facilities	Mar-14		0.8	1.0	Ewing Electrical Co. Inc.	1
Technical Assistance	Technical Assistance Consulting Services-Surveying	Apr-14		0.2	0.1	GEOD Consulting, Inc.	1
DI Treatment Plant Asset Protection	North Main Pump Station & Winthrop Terminal Facility Butterfly Valve Replacements	May-14		10.0	17.0	Carlin Contracting Co., Inc.	1

**Unplanned Awards** \$ 37.5 \$ 46.8

<b>49 FY14 Contract Awards Planned</b>	<b>\$ 133.0</b>
<b>30 FY14 actual awards as of 6/14</b>	<b>\$ 69.9</b>

**ATTACHMENT C  
FY14 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Subphase	NTP	Revised NTP based on FY15 Final Budget	FY14 Budget Amount	Award Amount	Vendor	Schedule Change Reason Code
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**\* Reason Codes:**

1. NTP issued in FY14.
2. Project/Phase eliminated or being performed in-house; or phase completed but on hold.
3. NTP expected in FY15.
4. Schedule change due to permitting.
5. Scope changes.
6. Changes in priorities.

**ATTACHMENT D**

**Linear Footage Of Rehabilitated Or New Pipelines  
FY14 (July 2013-June 2014)**

	<u>Contract #</u>	<u>Type</u>	<u>Linear Feet</u>
<b><u>WASTEWATER PROJECTS</u></b>			
CSO Community Managed-Reserved Channel Sewer Separation (1)	6994	New	17,563
CSO Community Managed-Cambridge Sewer Separation (1)	6255	New	16,689
<b><u>WATERWORKS PROJECTS</u></b>			
Weston Aqueduct Supply Mains Watertown Section	7222	Rehab	5,648
Spot Pond Storage Facility Design/Build	6457	New	2,878
Gillis Pump Station Improvements	7260	New	300
Chicopee Valley Aqueduct Shea Ave Leak Repair	6468	New	18
Quabbin Water Treatment Plant Ultraviolet Disinfection	6776	New	8
(1) Project involves storm drain construction for sewer separation and CSO control, and the new pipelines are owned by BWSC or Cambridge.			
<b><u>TOTAL PIPELINE REHABILITATED OR CONSTRUCTED IN FY14</u></b>			
	<b><u>Linear Feet</u></b>		<b><u>Miles</u></b>
Wastewater Projects	34,252		6.5
Water Projects	8,852		1.7
<b>Total</b>	<b>43,104</b>		<b>8.2</b>

**ATTACHMENT E**  
**FY15 PLANNED CAPITAL**  
**CONTRACT AWARDS (\$ in Millions)**


<b>Project</b>	<b>Subphase</b>	<b>Notice To Proceed</b>	<b>Substantial Completion</b>	<b>FY15 Budget</b>
Applications Improvements Program	LIMS Enhancement	Jul-14	Jun-17	\$0.6
Information Technology Mgmt Program	Reorganize MIS Department	Jul-14	Jun-17	0.2
IT Infrastructure Program	Enterprise Application Integration	Jul-14	Dec-18	2.1
DI Treatment Plant Asset Protection	Thermal Power Plant Fuel System Modifications Resident Engineer Inspection	Jul-14	Jul-16	0.8
DI Treatment Plant Asset Protection	Thermal Power Plant Boiler Control Replacement	Jul-14	Jul-15	1.0
Carroll Water Treatment Plant	Existing Facilities Modifications - CP7	Jul-14	Jul-16	6.3
Carroll Water Treatment Plant	Carroll Water Treatment Plant Storage Tank Roof Drainage System	Jul-14	Dec-15	4.2
Central Monitoring System	Quabbin Power Design	Jul-14	Dec-17	0.7
MWR003 Gate & Siphon	Construction 2	Aug-14	Oct-15	1.9
Facility Asset Protection	DeLauri Pump Station Upgrades	Aug-14	Aug-15	0.3
DI Treatment Plant Asset Protection	North Main Pump Station Winthrop Terminal Facility Engineering Services During Construction/Resident Engineer Inspection	Aug-14	Jun-16	2.2
DI Treatment Plant Asset Protection	Fire Alarm System Replacement-Design	Aug-14	Jul-19	2.1
Waterworks Facility Asset Protection	Beacon St Repair Design Construction Administration/Resident Inspection	Aug-14	Jun-16	0.4
Applications Improvements Program	Maximo Upgrade	Sep-14	Mar-18	2.5
Facility Asset Protection	Cottage Farm PCB Abatement Design/Construction Administration/Resident	Sep-14	Sep-17	0.5
DI Treatment Plant Asset Protection	Grav Thickener Rehabilitation	Sep-14	Sep-16	5.8
DI Treatment Plant Asset Protection	Fuel System Modifications	Sep-14	Mar-16	3.0
Clinton Wastewater Treatment Plant	Clinton Roofing Rehabilitation	Sep-14	Sep-15	0.5
Alternative Energy Initiatives	Shaft E Hydro In-Conduit Construction	Oct-14	Jun-15	0.6
DI Treatment Plant Asset Protection	Digester Sludge Pump Replacement Phase 2	Oct-14	Oct-16	4.7
Weston Aqueduct Supply Mains	Sect 36/W11/S 9-All Valve	Oct-14	Sep-16	10.5
Long Term Redundancy	Wachusett Aqueduct Pump Station Construction	Oct-14	Oct-17	50.6
DI Treatment Plant Asset Protection	Barge Berth and Facility Replacement	Nov-14	Apr-19	2.3
DI Treatment Plant Asset Protection	Future Misc. Variable Frequency Drive Replacements-Design	Dec-14	May-20	1.3
<b>July 2014 - December 2013</b>	<b>24 Contracts Planned</b>			<b>\$104.9</b>
Wastewater Meter System-Equipment	Planning/Study/Design	Jan-15	Dec-15	0.3
Facility Asset Protection	Alewife Brook Pump Station Rehabilitation - Construction	Jan-15	May-17	10.4
Facility Asset Protection	Interceptor Renewal 1-Design/Construction Administration/Resident Engineer Inspection	Jan-15	Dec-18	0.7
Facility Asset Protection	Nut Island Fire Pump Building - Study	Jan-15	Mar-16	0.3
Facility Asset Protection	Caruso Pump Station Improvements - Construction	Jan-15	Apr-16	2.4
Facility Asset Protection	Chelsea Greenhouse Upgrades	Jan-15	Jan-16	3.3

**ATTACHMENT E  
FY15 PLANNED CAPITAL  
CONTRACT AWARDS (\$ in Millions)**

<b>Project</b>	<b>Subphase</b>	<b>Notice To Proceed</b>	<b>Substantial Completion</b>	<b>FY15 Budget</b>
NHS - Revere & Malden Pipeline Improvements	Sect 53 Connections Design Construction Administration/Resident Inspection	Jan-15	Jun-18	1.6
Carroll Water Treatment Plant	Technical Assistance 8	Jan-15	Jan-17	0.6
DI Treatment Plant Asset Protection	Winthrop Terminal Facility Variable Frequency Drive Replacement - Construction	Jun-15	Jun-17	4.1
<b>January 2014 - June 2014</b>	<b>9 Contracts Planned</b>			<b>\$23.7</b>
<b>Total July 2014 - June 2015</b>	<b>33 Contracts Planned</b>			<b>\$128.6</b>




## STAFF SUMMARY


**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Approval of the Sixty-Eight Supplemental Resolution

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COMMITTEE: Administration, Finance & Audit

VOTE  
 INFORMATION

Thomas J. Durkin, Treasurer  
Matthew R. Horan, Deputy Treasurer   
Preparer/Title

  
Rachel C. Madden  
Director, Administration & Finance

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### RECOMMENDATION:

To adopt the Sixty-Eighth Supplemental Resolution authorizing the issuance of up to \$315,000,000 of Massachusetts Water Resources Authority General Revenue Bonds and Massachusetts Water Resources Authority General Revenue Refunding Bonds and the supporting Issuance Resolution.

### DISCUSSION:

The bonds to be issued under this authorization include both new money and refunding bonds. Staff anticipate that the bonds to be issued under this authorization would be sold in October, with a closing on the transaction in late October or early November. The new money issuance accounts for \$85 million of the \$315 million authorization and will be used to fund ongoing capital improvements and retire outstanding commercial paper. The new money deposited into the construction fund will be used to pay for projects including Deer Island asset protection, and water system distribution improvements.

In addition to the \$85 million in new money, MWRA has approximately \$198.6 million in outstanding bonds which can be refunded for interest savings based on current market conditions. However, staff are seeking a total refunding authorization of up to \$230 million in the event market conditions improve which allows additional bonds to be refunded for interest savings. The \$230 million to allow for a potential refunding, plus the \$85 million in new money results in a total requested authorization of \$315 million. All of the potential refunding candidates will be refunded solely for interest rate savings, with the transaction meeting MWRA's refunding standards<sup>1</sup>, with little to no change to the principal amortization.

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<sup>1</sup> Under MWRA's debt policy refunding candidates are considered when the overall savings has a present value of 4.0% or greater; individual maturities have a 3% present value savings or an option value above 70%; and efficiency of the escrow as determined by dividing the present value savings by the negative arbitrage on the escrow is over 50%.

While the amount which could be refunded for savings is currently lower than the total authorization being sought at this meeting, staff believe that this additional authorization is important to ensure that MWRA can respond to market changes. If the favorable market conditions should improve even more by the time of pricing, there may be an opportunity to refund additional candidates and staff want to ensure that they have the necessary authorization from the Board to take maximum advantage of the refunding for savings.

The series which are currently viable refunding for interest rate savings candidates are 2004 Series B (\$38.4 million), 2005 Series A (\$6.1 million), 2006 Series A (\$87.7 million), 2006 Series B (\$41.5 million), 2009 Series A (\$12.2 million), 2010 Series A (\$8.8 million), and 2011 Series B (\$4.0 million) bonds. These series are the most advantageous for refunding primarily because the 2004 Series B bonds can be called in December 2014, and the other bonds in a relatively short period of time, thereby providing the most savings. Shorter periods of time between the issuance of the refunding and the retirement of the old bonds results in less interest expense. Typically, the cost of paying double interest for a discrete period of time would be offset by the escrow's earnings. However, given the historically low governmental securities interest rates which comprise the escrow, earnings are not sufficient to offset the additional interest. Therefore, while interest rates on the new refunding bonds are at historical lows, the lack of escrow earnings to fund the extra interest precludes MWRA from being able to refund additional series of bonds and realize adequate savings at this time.

Based on the current interest rates, staff anticipate that the refunding will yield \$34.7 million in budgetary savings, with a net present value savings of \$25.5 million or 9.2%. The following table details the changes in debt service as a result of the refunding by fiscal year.

Fiscal Year	Prior Debt Service	Refunding Debt Service	Difference	Fiscal Year	Prior Debt Service	Refunding Debt Service	Difference
2015	\$ 9,934,225	\$ 8,892,316	\$ (1,041,909)	2029	\$ 4,400,750	\$ 3,262,000	\$ (1,138,750)
2016	\$ 9,934,225	\$ 8,536,250	\$ (1,397,975)	2030	\$ 4,397,500	\$ 3,262,000	\$ (1,135,500)
2017	\$ 20,040,100	\$ 18,644,650	\$ (1,395,450)	2031	\$ 4,408,000	\$ 3,262,000	\$ (1,146,000)
2018	\$ 10,505,975	\$ 9,111,300	\$ (1,394,675)	2032	\$ 4,406,500	\$ 3,262,000	\$ (1,144,500)
2019	\$ 20,152,000	\$ 18,754,550	\$ (1,397,450)	2033	\$ 11,758,500	\$ 10,362,000	\$ (1,396,500)
2020	\$ 23,569,750	\$ 22,172,400	\$ (1,397,350)	2034	\$ 11,786,250	\$ 10,387,000	\$ (1,399,250)
2021	\$ 37,403,750	\$ 36,006,400	\$ (1,397,350)	2035	\$ 10,987,500	\$ 9,588,000	\$ (1,399,500)
2022	\$ 6,578,250	\$ 5,773,600	\$ (804,650)	2036	\$ 2,482,500	\$ 2,180,250	\$ (302,250)
2023	\$ 9,483,250	\$ 8,088,600	\$ (1,394,650)	2037	\$ 11,422,500	\$ 10,025,250	\$ (1,397,250)
2024	\$ 31,908,000	\$ 30,511,000	\$ (1,397,000)	2038	\$ 11,450,500	\$ 10,053,000	\$ (1,397,500)
2025	\$ 13,159,250	\$ 11,759,500	\$ (1,399,750)	2039	\$ 11,464,750	\$ 10,069,750	\$ (1,395,000)
2026	\$ 13,839,250	\$ 12,443,500	\$ (1,395,750)	2040	\$ 11,494,750	\$ 10,100,000	\$ (1,394,750)
2027	\$ 8,880,250	\$ 7,485,000	\$ (1,395,250)	2041	\$ 11,518,500	\$ 10,122,000	\$ (1,396,500)
2028	\$ 8,891,500	\$ 7,493,500	\$ (1,398,000)	<b>Total</b>	<b>\$336,258,275</b>	<b>\$301,607,816</b>	<b>\$ (34,650,459)</b>

As always, market conditions drive the size of a refunding, therefore staff are requesting authorization to issue up to \$230 million to provide capacity to maximize the refunding

for savings should the market conditions favor it and the Board approves it. While the \$315 million is a not-to-exceed amount, should market conditions change, the refunding could be smaller than the \$198.6 million identified here. An increase of 50 basis points in long-term fixed interest rates over the current levels would reduce the advance refunding bonds (2005A, 2006A, 2009A, 2010A and 2010B) below MWRA's typical present value savings threshold of 4.0%. The one exception is the 2004 Series B bonds, which since they are currently callable would require long-term fixed interest rates to increase by 270 basis points to fall below the 4.0% threshold. Staff will continue to work with MWRA's financial advisors to determine the most appropriate size and structure for the refunding. Staff will provide the Board with an update on the progress of the refunding.

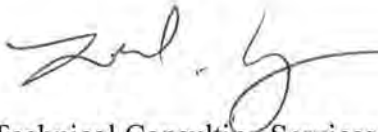

MWRA is intending to sell these bonds through a competitive process, rather than a negotiated transaction with one of the senior underwriters selected during the last procurement. Given the stable market conditions and the certainty of the current refunding, staff believe this provides an opportunity to complete a competitive transaction. In less stable markets or when refundings require a greater level of structuring and timing in the market, a negotiated transaction becomes more important.

MWRA, its financial advisor, bond counsel and disclosure counsel will develop a notice of sale which will layout the requirements including information such as principal maturities, call dates, and the date and time for the sale. Bids for the new money and refunding transactions will be received on an electronic portal customarily used in the municipal market, such as the service offered by I-Preo. The new money and refunding pieces will be awarded to the bank offering the lowest true interest cost to MWRA, which could result in the new money transaction going to one bank and the refunding going to another.

**BUDGET/FISCAL IMPACT:**


There are sufficient funds available in the FY15 CEB to pay the debt service costs associated with these borrowings. Any potential refunding for savings would reduce future debt service. The amount of the potential reduction will be determined based upon market conditions and the ultimate pricing of the refunding transaction.

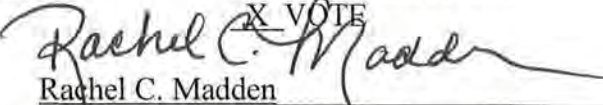
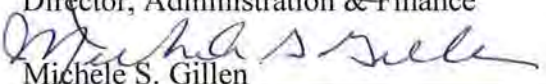
### STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Purchase Order Contract for eDiscovery Technical Consulting Services  
PeopleSERVE PRS, Inc.  
State Blanket Contract ITS53 Cat2b  
Bid WRA-3869Q 

**COMMITTEE:** Administration, Finance, & Audit

\_\_\_\_ INFORMATION

Janice B. Watts, Buyer  
Steven Remsberg, General Counsel  
Russell J. Murray, MIS Director   
Joe Barrett, IS Custom Support Manager  
Preparer/Title

  
Rachel C. Madden  VOTE  
Director, Administration & Finance  
  
Michele S. Gillen  
Deputy Director, Administration & Finance

#### RECOMMENDATION:

To approve the award of a purchase order contract for technical consulting services to implement eDiscovery Solution, Symantec Enterprise Vault File System Archiving and Clearwell Identification and Collection Services to the lowest responsive bidder under Bid WRA-3869Q, PeopleSERVE PRS, Inc., and to authorize the Executive Director to execute said purchase order contract in an amount not to exceed \$156,160 under State Blanket Contract ITS53 Cat2b.

#### BACKGROUND:

The MIS Five-Year Strategic Plan, under the IT Infrastructure Program contains funds to implement the Archiving and eDiscovery solution for the Authority. The software will provide the MWRA with the following:

- Rigorous and efficient electronic archiving
- Purge and discovery processes to comply with the records retention requirements of the Commonwealth of Massachusetts
- The ability to meet the requirements associated with public records requests and litigation document/e-discovery production
- Improvements in the accessibility of documents throughout the Authority.

#### DISCUSSION:

In May 2014, the MWRA procured Enterprise Vault File System Archiving and Clearwell Identification and Collection software licenses through a competitive bid process. Currently, the MIS Department is in the process of implementing the technology.

The project will provide an automated and integrated solution for archiving electronic content that will allow the Authority to intelligently store, manage and discover email and all critical business information sources across all applications, while providing easy and intuitive access for end users. It will also provide a cost effective approach to efficiently manage email storage via automated, policy-controlled archiving.

The scope of the requested service includes configuration, testing and a production pilot. The selected vendor will implement eDiscovery using Enterprise Vault File System Archiving and Clearwell Identification and Collection Services; and develop business policy definition workflows and implement and validate them in the development and production environments.

**Procurement Process:**

In order to procure these services, staff accessed the State Blanket Contract ITS53 Cat2b. Under this contract, three prequalified vendors were solicited under WRA-3869Q.

On June 6, 2014, two bids were received and publicly opened with the following results:

<b>Vendor</b>	<b>Amount</b>
<b>PeopleSERVE PRS, Inc.</b>	<b>\$156,160</b>
WebJect Sytems, Inc.	\$164,600

The selected vendor, PeopleSERVE PRS, Inc. provided a consultant possessing all the qualifications necessary to complete the work including knowledge and experience with eDiscovery Solution, Enterprise Vault File System Archiving, and Clearwell Identification and Collection Systems. Staff reviewed PeopleSERVE PRS' bid including the proposed consultant credentials and determined that the bid meets all of the requirements of the specifications. Therefore, staff recommends the award of this purchase order to PeopleSERVE PRS, Inc. as the lowest responsive bidder.

**BUDGET/FISCAL IMPACT:**

Sufficient funds are included in the FY14 Current Expense Budget under Professional Services.

**MBE/WBE PARTICIPATION:**

PeopleSERVE PRS, Inc. is not a certified Minority- or Women-owned business.


## STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director  
**DATE:** September 17, 2014  
**SUBJECT:** Dental Insurance  
Delta Dental of Massachusetts  
Contract A591, Amendment 1



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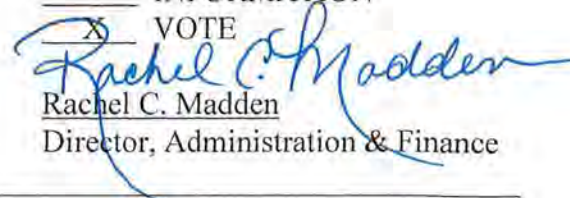
COMMITTEE: Administration & Finance



Robert Donnelly, Director of Human Resources  
Preparer/Title

INFORMATION

VOTE



Rachel C. Madden  
Director, Administration & Finance

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### RECOMMENDATION:

To approve Amendment 1 to Contract A591, with Delta Dental of Massachusetts, exercising the first option to renew and increasing the amount the Authority will pay by \$336,000 for a total amount of \$656,000 and extending the term for twelve months from January 1, 2015 to December 31, 2015 for a total contract term of 24 months.

### DISCUSSION:

MWRA has been providing dental insurance to all non-union employees since July 1, 1985. This benefit covers Non-Union and Unit 6 (Steelworkers Local 9360) employees as well as a small number of other employees who accreted into other collective bargaining units in 1994. Other MWRA union employees receive coverage through the Health and Welfare plans of their respective unions.

This contract would maintain the level of coverage currently offered to eligible employees in the areas of diagnostic, preventive, basic and major restorative services as well as limited orthodontic coverage. The dollar amount requested is the estimated amount of the MWRA's share of the premium and does not include the employee's share of the premium or the amount reimbursed by those insured under COBRA. This amount was derived using the assumptions outlined in the chart below.

In November 2013, the Board of Directors approved a contract with Delta Dental of Massachusetts under which the Authority would pay \$320,000 to provide dental insurance to eligible employees for a period of twelve months (Calendar Year 2014) with options to renew the contract for up to three additional twelve-month periods subject to Board approval.

This amendment is for the first extension covering Calendar Year 2015 and would maintain the level of coverage currently offered to eligible employees in the areas of diagnostic, preventive, basic and major restorative services as well as limited orthodontic coverage.

Delta Dental of Massachusetts has proposed an increase in monthly premiums which results in an increased employer cost of 5% for the calendar year.

<b>Contract Summary</b>			
	Amount	Time	Dated
Original Contract	\$320,000	One Year	01/01/2014
Amendment 1	\$336,000	One Year	01/01/2015

**BUDGET/FISCAL IMPACT:**

This contract involves the second half of FY15 and the first half of FY16. The FY15 Current Expense Budget includes the estimated cost of dental insurance for eligible employees. The total cost of the plan is dependent upon the number of employees enrolled. The remaining cost of the dental insurance program will be budgeted for FY16.



# MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard  
100 First Avenue, Building 39  
Boston, MA 02129

Frederick A. Laskey  
Executive Director

Telephone: (617) 242-6000  
Fax: (617) 788-4899  
TTY: (617) 788-4971

## **WASTEWATER POLICY & OVERSIGHT COMMITTEE MEETING**

*Chair:* J. Walsh  
*Vice-Chair:* P. Flanagan  
*Committee Members:*  
J. Carroll  
J. Foti  
A. Pappastergion  
B. Swett  
H. Vitale

to be held on

Wednesday, September 17, 2014

Location: 100 First Avenue, 2nd Floor  
Charlestown Navy Yard  
Boston, MA 02129

Time: Immediately following AF&A Comm.

## **AGENDA**

### **A. Information**

1. Progress of Cambridge-Implemented CSO Projects and Projected Financial Assistance through March 2015
2. Deer Island Energy Update – Existing and Future Combined Heat and Power Systems

### **B. Contract Awards**

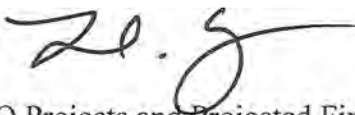
1. Struvite, Scum, Sludge, and Grit Removal Services at the Deer Island Treatment Plant: Moran Environmental Recovery, Contract WRA-3862
2. Deer Island Treatment Plant Clarifier Rehabilitation, Phase II, Design/Engineering Services During Construction: CDM Smith Inc., Contract 7394

### **C. Contract Amendments/Change Orders**

1. Agency-Wide Technical Assistance Consulting Services: Fay, Spofford & Thorndike, LLC, Contract 7437, Amendment 1; and Hazen and Sawyer, P.C., Contract 7456, Amendment 1



## STAFF SUMMARY


**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Progress of Cambridge-Implemented CSO Projects and Projected Financial Assistance through March 2015

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COMMITTEE: Wastewater Policy & Oversight

INFORMATION  
 VOTE

Anandan Navanandan, P.E., Chief Engineer  
David A. Kubiak, P.E., Sr. Program Manager  
Preparer/Title

  
Michael J. Hornbrook  
Chief Operating Officer

*MWRA acknowledges with pride the recent award bestowed upon the City of Cambridge for CSO projects in MWRA's long-term control plan. The City of Cambridge's Alewife stormwater wetland was named a 2014 Public Works Project of the Year by the American Public Works Association (APWA) and Best Water/Environment Project in Engineering News Record New England's (ENR/NE) 2014 Best Projects Competition. It also received a National Recognition Award in the American Council of Engineering Companies/Massachusetts' (ACEC/MA) 2014 Engineering Excellence Awards competition.*

*On a related note, the Town of Brookline's sewer separation project, funded by MWRA, was also named a 2014 Public Works Project of the Year by APWA, and received a Silver Award for Engineering Excellence from ACEC/MA, and a 2014 Merit Award from ENR/NE.*

### RECOMMENDATION:

For information only. This staff summary presents the status of the projects in the Long-Term CSO Control Plan that are funded in part by MWRA and implemented by the City of Cambridge. Staff plan to transfer \$7,104,250.75 into the City of Cambridge CSO account to cover MWRA's cost share of eligible work scheduled by Cambridge in the period October 2014 through March 2015, bringing the total amount of MWRA funds transferred into the Cambridge CSO account to \$71,684,979.98.

### DISCUSSION:

Pursuant to the terms of the CSO Memorandum of Understanding and Financial Assistance Agreement ("MOU" and "FAA"), Cambridge is responsible for implementing four of the six projects that comprise the MWRA's long-term control plan for Alewife Brook (see maps, Attachments 2 and 3), as well as a project Cambridge completed in 2007 that eliminated CSO discharges or provided floatables control for remaining discharges at the City's CSO outfalls along the Charles River. Table 1 presents a description of each of the six Alewife Brook CSO

projects, as well as implementation status. CAM004 Sewer Separation is the only Cambridge-implemented CSO project that is not yet complete.

**Table 1: Alewife Brook CSO Control Plan Projects and Status**

Project	Cambridge Contract No.	Benefit	Project Status
CAM004 Stormwater Outfall and Wetland Basin	12	Convey stormwater flows to wetland system for attenuation and treatment.	Completed Apr 2013
CAM004 Sewer Separation	8A, 8B, 9	Remove large quantities of stormwater from the sewer system; Close Outfall CAM004.	8A: substantially complete 8B: 22% complete 9: 13% complete
CAM400 Manhole Separation	4/13	Remove stormwater from the sewer system; eliminate CSO at Outfall CAM400.	Completed Mar 2011
Interceptor Connection Relief and Floatables Control at CAM002 and CAM401B and Floatables Control at CAM001		Upgrade connections between Cambridge and MWRA systems to provide relief; add floatables control.	Completed Oct 2010
MWR003 Control Gate and Rindge Ave. Siphon Relief	MWRA Contracts	Optimize hydraulic conveyance; minimize overflows while controlling system flooding in large storms.	Construction NTP Aug 2014
Interconnection Relief and Floatables Control at Outfall SOM01A		Upgrade connection to MWRA system and provide floatables control.	Substantial completion Dec 2013

CAM004 Sewer Separation Progress

Remaining work on the CAM004 Sewer Separation project involves three major construction contracts by the City of Cambridge, all presently underway. The contracts primarily include the installation of new storm drains in a 211-acre area of neighborhoods along and near Huron and Concord avenues, east of Fresh Pond Parkway (see map, Attachment 2). Cambridge is managing the work of all three contracts and related extensive utility relocations and traffic management to complete all CSO-related construction by December 2015, in compliance with Schedule Seven.

Storm drain and sewer installations in Cambridge’s Contract 8A (Huron West), which commenced in September 2012, are substantially complete. Surface restoration work and plantings, not directly related to CSO control, will continue into the spring of 2015.

Cambridge issued the Notice to Proceed for Contract 8B (Huron East) in September 2013, and the contract is approximately 25% complete. Cambridge continues to coordinate with private utilities to relocate infrastructure in conflict with proposed storm drain and sewer installations. NStar Gas relocations are extensive, and related schedule delays, in part due to severe winter conditions, have compromised the Contract 8B contractor’s original schedule. The contractor’s ongoing work includes the installation of storm drains and sewers on Huron Avenue and Blakeslee, Gurney, Fayerweather streets and Vassal and Lincoln lanes. Drain laterals are being installed on Reservoir Street. The contractor has also commenced the installation of storm drains

on Saville Street. Private inflow removal is ongoing on Chilton, Fayerweather, and Reservoir streets.



**Contract 8B work has required extensive road closings in the Huron Avenue neighborhood**



**Drain Manhole 21 installation on Concord Avenue under Contract 9**

Contract 8B holds the contractor responsible for two schedule milestones: Milestone 1 - completion of all CSO-related work by September 20, 2015, and Milestone 2 - completion of the other contract work, including surface restoration, by September 19, 2016. The CSO-related work must be complete at least three months before the court milestone (December 2015), to allow follow-up CSO work in Contract 9 to be complete by December 2015. Cambridge recently reported to MWRA that the contractor's schedule had slipped by three months primarily due to delays with NStar Gas' relocation of gas lines last winter and beyond. Cambridge requested and received a recovery schedule by which the contractor proposes to meet the Milestone 1 work on schedule (September 2015) by concentrating on sewer and drain installations and postponing surface restoration work. The recovery schedule also calls for a 103-day contract extension, shifting Milestone 2 from September 2016 to December 2016.

Cambridge's preliminary estimate of the cost impact of the recovery schedule is approximately \$1.5 million, which includes the contractor's additional costs for temporary road and sidewalk paving and the work extension, as well as extended engineering services during construction and police details. Staff have authorized Cambridge to pursue change order and amendment negotiations with its contractor and its engineering consultant to implement the recovery schedule. Staff have also requested additional information from Cambridge, including a more detailed explanation of delays and detailed cost estimates and justification, before MWRA can issue a final eligibility authorization. MWRA's approved FY15 CIP budget and its MOU/FAA with Cambridge include a \$1.7 million placeholder for Contract 8B change orders. Staff previously authorized a Change Order No. 1 in the amount of \$515,575 (of which \$359,587 is MWRA-eligible) to account for higher costs for baseline surveys, preconstruction building surveys, dust control and traffic management on the original \$29,975,395 contract, of which \$16,727,469 was eligible for MWRA funding.

Cambridge issued the Notice to Proceed for Contract 9 (Concord) in February 2014, and the contract is approximately 13% complete. The contractor's ongoing work includes continuing excavations of exploratory test pits at various locations and the installation of water lines,

sewers, and storm drains along Concord Avenue and Fayerweather and Saville streets. NStar Gas is relocating gas mains ahead of sewer and drain work. Cambridge expects Contract 9 to be substantially complete by December 2015, in compliance with Schedule Seven, assuming effective implementation of the Contract 8B recovery schedule.

As previously reported, Cambridge was unable to include in Contract 9 the originally planned contract work along Concord Lane, a short private way serving commercial properties, because Cambridge was unable to secure right of entry for design investigations. With assistance from MWRA, Cambridge has since secured rights of entry that have allowed it to complete field, utility and building surveys, soil borings and the installation and monitoring of observation wells and provide for a future right of entry for construction. Cambridge may bid the Concord Lane work as a separate (fourth) construction contract, which it expects can be completed within the court schedule.

### **MWRA Oversight and Financial Assistance**

The FAA establishes eligible and ineligible costs. Generally, all reasonable force account and contract costs incurred by Cambridge as a direct result of implementing the CSO projects are funded by MWRA. The FAA calls for MWRA to disburse grant funds to Cambridge semiannually, based on a detailed, documented estimate of work progress and eligible costs for each projected six-month period. MWRA's review and acceptance of the spending estimate is required prior to disbursement of funds to the Cambridge CSO account.

Staff continue to review the scope and costs of engineering and construction contracts that are issued by Cambridge, including amendments and change orders. Staff also maintain regular contact with Cambridge staff, hold monthly coordination meetings, and routinely review the progress of the Cambridge projects and expenditures. Cambridge submits semi-annual reports that describe actual work progress and expenditures (force account and contract-related) for each project.

MWRA's Internal Audit Department reviews Cambridge's compliance with the terms and conditions of the FAA. The latest audit, completed in April 2013, reviewed whether force account costs claimed by the City for years 2010 through 2011 were supported by the records of the City and were eligible for MWRA funding under the terms of the FAA. The audit determined a net amount of \$1,657.95 being owed to the City from the CSO account. The Internal Audit Department is presently reviewing Cambridge's consultant and contractor invoices for years 2009 through 2013.

### **Funding and Eligible Expenditures through September 2014**

Cambridge pays the eligible costs of the project from a general city account and periodically reimburses its general account from the CSO account. Since execution of the MOU and FAA in 1996, MWRA has transferred a total of \$64,580,729 to Cambridge's CSO account to cover eligible design and construction costs through September 2014. In addition, the FAA allows Cambridge to use accumulated interest in the account to fund eligible costs.

The estimated eligible cost incurred by Cambridge from MOU/FAA inception through September 2014 is \$64,389,424.98, not including retainage on construction contract invoices, and the estimated available balance in the CSO account as of the end of September 2014 is \$191,304.25. The balance is primarily associated with slower spending on contracts 8A and 8B and later than anticipated release of retainage for Contract 12 (CAM004 stormwater outfall and wetland basin) and Contract 4/13 (interceptor connection relief, floatables control and common manhole separation). This lower spending was offset by higher spending on engineering services during construction and by Cambridge's inadvertent use of CSO account funds to pay the first three invoices for Contract 9, contrary to the City's plan to cover the early Contract 9 costs with its own funds. As part of Amendment 8 to the MOU/FAA in 2008, Cambridge agreed to pay \$8 million of otherwise eligible cost for the CAM004 Sewer Separation project. Cambridge's full \$8 million share of eligible cost will be accounted for in its payment of Contract 9 invoices going forward.

Staff are closely monitoring Cambridge's spending and regularly coordinating the review with Cambridge to ensure that spending (and the work) do not continue to fall behind.

#### MWRA Funding through March 2015

Cambridge recently submitted a projected work progress report and estimate of eligible contract and force account spending for the period October 2014 through March 2015, totaling \$7,295,555.00. Over this period, Cambridge will continue with construction and construction supervision services for Contracts 8A, 8B and 9, design and early construction activity for work along Concord Lane, and closeout of contracts 4/13 and 12.

Staff have reviewed Cambridge's request and have approved a transfer of \$7,104,250.75, after applying the balance in the account. Table 2, in Attachment 1, shows a breakdown of previously transferred funds and the pending transfer.

#### **BUDGET/FISCAL IMPACT:**

The approved FY15 CIP budget includes \$91,973,845 for design and construction of the Cambridge CSO projects. Sufficient funds are available in the budget for this transfer payment and for City of Cambridge's current estimate of the Contract 8B recovery schedule's cost impact.

#### **MBE/WBE PARTICIPATION:**

In accordance with the MOU, MBE and WBE participation in the Cambridge Sewer Separation and Floatable Controls projects will comply with DEP requirements and City of Cambridge policy.

#### **ATTACHMENTS:**

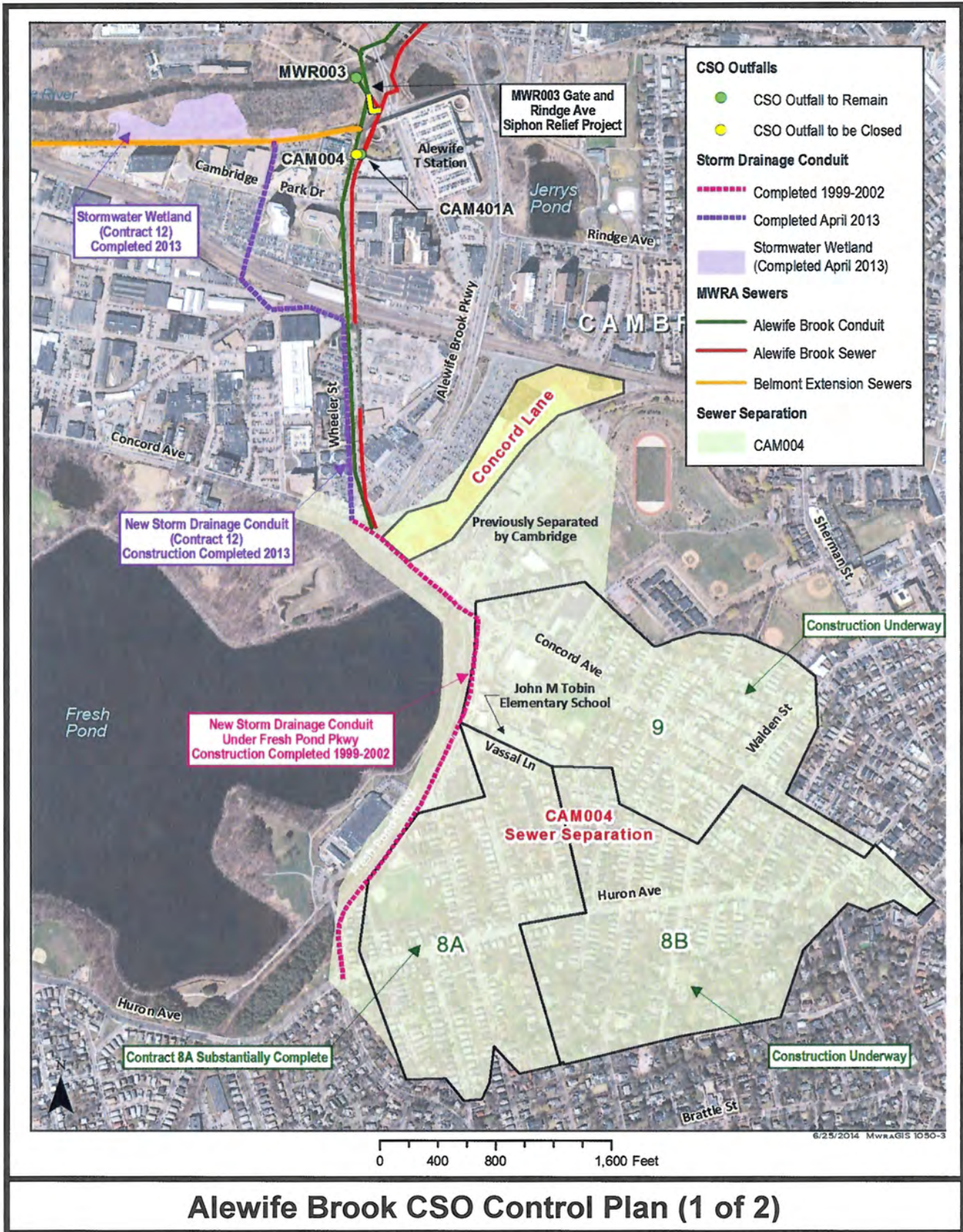
- Attachment 1 – Table 2: Breakdown of MWRA Fund Transfer by Contract and Activity
- Attachment 2 – Map of Alewife Brook CSO Control Plan (1 of 2)
- Attachment 3– Map of Alewife Brook CSO Control Plan (2 of 2)

## Attachment 1

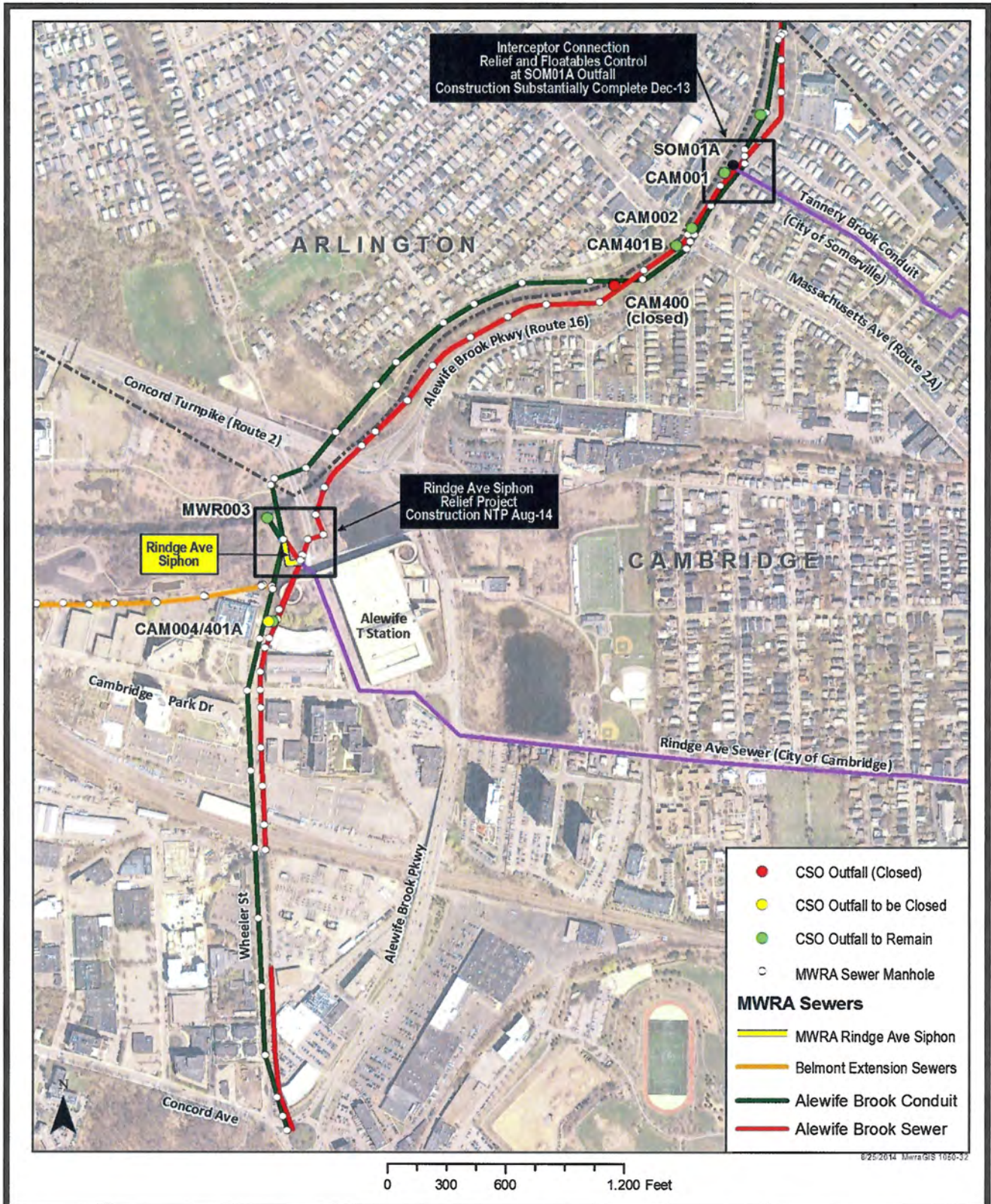
**Table 2: Breakdown of MWRA Fund Transfer by Contract and Activity**

Engineering Services and Construction Contracts	Funds Previously Provided	Pending Transfer for Oct-14 - Mar-15	Funding through Mar-2015
Preliminary/Final Design for Contracts 1, 2A, 2B and 3	\$ 1,650,270.00	\$ -	\$ 1,650,270.00
Construction Phase Services for Contracts 1, 2A, 2B and 3	\$ 1,787,068.00	\$ -	\$ 1,787,068.00
CAM002-004 Sewer Separation (Contracts 1, 2A, 2B and 3)	\$ 10,411,903.37	\$ -	\$ 10,411,903.37
Final Design/Field Investigations for Contracts 8, 9, and 12 (including Notice of Project Change and Supplemental Design Reports)	\$ 1,498,117.38		\$ 1,498,117.38
Design/ESDC Floatables & CAM400 Manhole Separation Contract 4/13	\$ 2,113,462.65	\$ 0.05	\$ 2,113,462.70
Design 8A, 8B, & 9	\$ 4,665,378.30	\$ 27,688.90	\$ 4,693,067.20
ESDC 8A, 8B, & 9	\$ 4,037,990.22	\$ 2,218,513.56	\$ 6,256,503.78
Final Design 12	\$ 3,924,885.65	\$ (0.05)	\$ 3,924,885.60
ESDC Contract 12	\$ 3,872,494.76	\$ 11,540.83	\$ 3,884,035.59
Construction of Floatables Controls (Charles and partial Alewife)	\$ 658,639.00		\$ 658,639.00
Construction/Police Contract 4/13	\$ 4,996,118.39	\$ (65,000.00)	\$ 4,931,118.39
Construction/Police Contract 12	\$ 5,533,906.25	\$ (77,439.88)	\$ 5,456,466.37
Easements Contract 12	\$ 289,000.00		\$ 289,000.00
Construction 8A	\$ 10,306,786.00	\$ 568,622.30	\$ 10,875,408.30
Construction 8B	\$ 7,026,958.00	\$ 3,186,316.32	\$ 10,213,274.32
Construction 9	\$ 67,137.00	\$ 712,498.22	\$ 779,635.22
Police 8A, 8B, & 9	\$ 903,036.00	\$ 463,977.50	\$ 1,367,013.50
City of Cambridge Force Account/Expenses	\$ 880,956.82	\$ 57,533.00	\$ 938,489.82
Interest	\$ (43,378.56)		\$ (43,378.56)
<b>Total</b>	<b>\$ 64,580,729.23</b>	<b>\$ 7,104,250.75</b>	<b>\$ 71,684,979.98</b>

# Attachment 2




# Attachment 3



**Alewife Brook CSO Control Plan (2 of 2)**




## STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Deer Island Energy Update  
Existing and Future Combined Heat and Power Systems

COMMITTEE: Wastewater Policy & Oversight

INFORMATION  
 VOTE

John P. Vetere, Deputy Chief Operating Officer  
David Duest, Director, Deer Island WWTP  
John Colbert, P.E., Deputy Director, Deer Island WWTP  
Preparer/Title

  
Michael J. Hornbrook  
Chief Operating Officer

*MWRA's Deer Island Wastewater Treatment Plant has been reducing its overall energy demand by implementing process optimization efforts and installing new energy-efficient equipment. On-site renewable generation has increased significantly over the years with the use of digester gas, hydropower, solar, and wind energy. The largest single renewable energy source is the use of digester gas (digas). Staff have recently implemented new systems to boost Deer Island's current energy production from its combined heat and power systems. Overall, renewable generation from all Deer Island's assets provides 62.5% of Deer Island's electrical and heating requirements at an annual savings of \$20.8 million.*

*On June 27, 2012, the Board approved the award of Contract 7147A to CDM Smith Inc. to conduct a residuals technology assessment study. One of the subtasks of this contract was to evaluate possible improvements to Deer Island's Thermal/Power Plant to increase the quantity and efficiency of electrical power produced on site and more fully utilize the digas generated by the plant. This study also considered the potential increased biogas generation from the implementation of a co-digestion program. This staff summary discusses the results of the study and also provides the Board with an update on the performance of Deer Island's combined heat and power systems and next steps staff will be taking regarding this important system.*

### RECOMENDATION:

For information only.

### BACKGROUND:

The Deer Island Wastewater Treatment Plant is one of the largest wastewater treatment plants in the country. It requires significant amounts of electricity to pump and process the wastewater flows it receives from the 43 communities it serves. Since start-up, staff have been focused on reducing overall energy demand and optimizing and increasing renewable energy generation to decrease the quantity of purchased power and reduce operating expenses while increasing non-rate revenue through the sale of green energy credits. As reported previously to the Board, significant reductions in electrical demand have been achieved through a number of different no-cost and low-cost process

optimization efforts (pump station shaft level adjustments, secondary aeration/cryogenic oxygen production optimization), coupled with energy-efficient equipment installation and lighting improvements. Figure 1 below shows the Deer Island Wastewater Treatment Plant's electrical power demand decreasing over time.

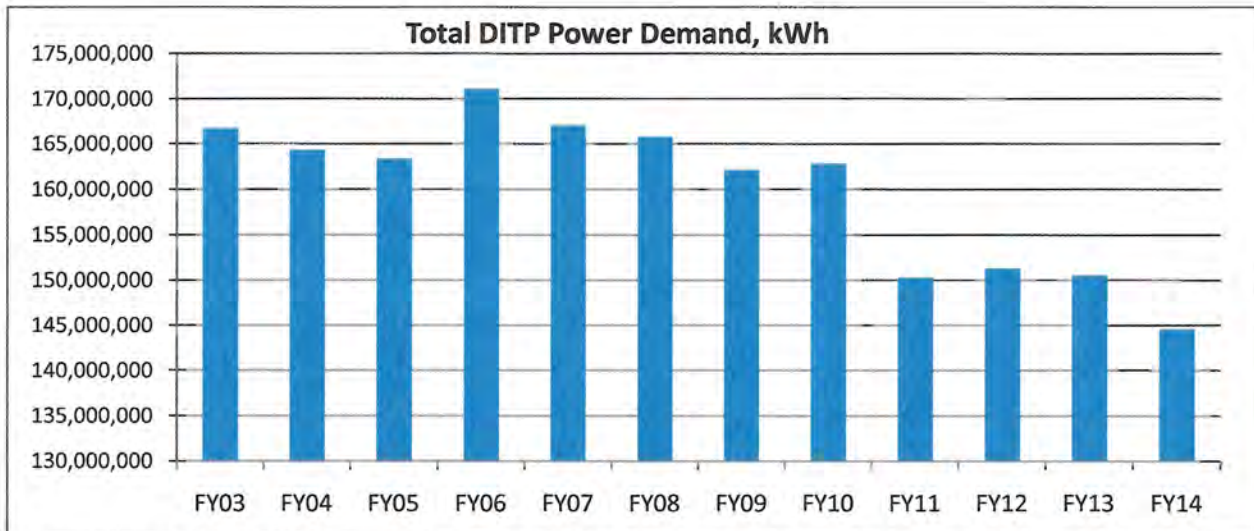


Figure 1: Total DITP Power Demand - Staff efforts have reduced plant electrical demand by 10%.

Maximizing on-site generation with renewable energy assets is a priority for MWRA. The following graph (Figure 2) shows on-site generation has stabilized at fairly high levels, around 34 million kWh or roughly 23% of Deer Island's total electrical energy demand. Average total Deer Island annual electric cost savings of approximately \$3.2 million have been achieved. The original facility design included renewable energy through the use of digas in Deer Island's combined heat and power systems, and also hydro-electric power that recovers energy from the flow of treated effluent as it drops into the outfall tunnel. During FY08-FY11, more than 730 kW (approximate annual savings of \$82,000) of solar photovoltaic panels were installed and in FY10-FY11, 1300 kW (approximate annual savings of \$250,000) from three wind turbines were installed. The largest single source of renewable energy is derived through the on-island use of digas.

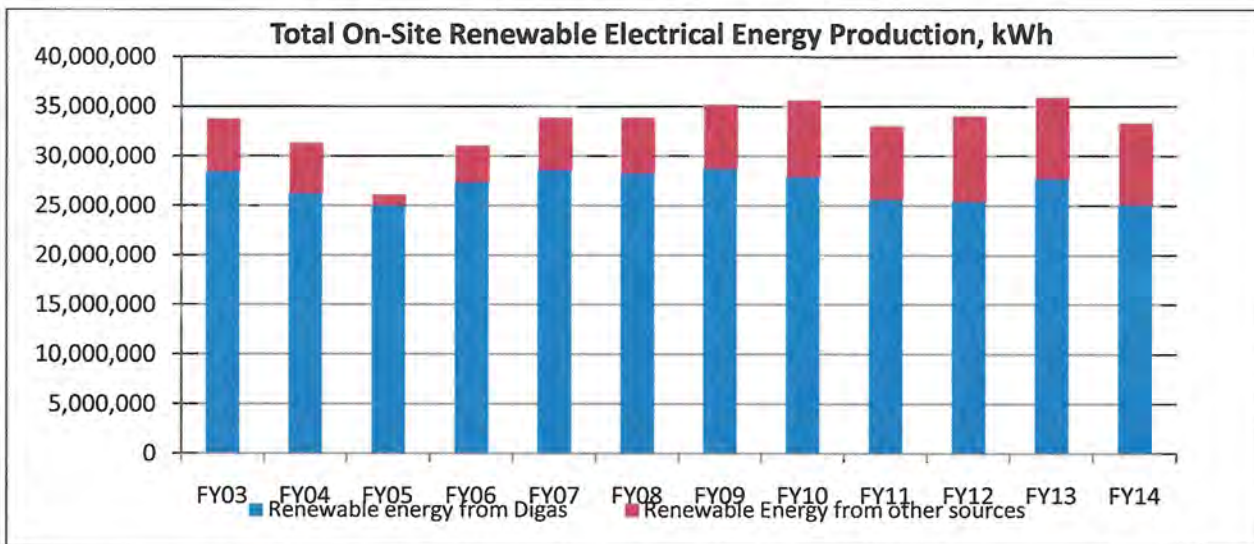


Figure 2: Total On-Site Renewable Energy Production

The anaerobic digestion of wastewater sludges reduces the volume of sludge required to be converted to fertilizer pellets. This process also produces a useable renewable energy end-product in the form of digas. Digas is similar in characteristics to natural gas except it contains lower methane concentrations and has a lower BTU value than natural gas (Natural Gas – 1,000 BTU/cuft, Digas 600 BTU/cuft). Digas is used as the primary fuel source in the plant’s combined heat and power system primarily to heat the facility and also to generate power and offset electricity purchases with the excess heat.

**DISCUSSION:**

The original Deer Island Thermal Power Plant consisted of two steam boilers (215 MMBTU capacity) and one 18 MW (maximum capacity) steam turbine commissioned in 1998.

One boiler operates at a time and burns all the digester gas that is generated from the anaerobic digestion process. The boiler produces heat in the form of steam which is followed by a steam topping turbine to produce electrical power in what is called

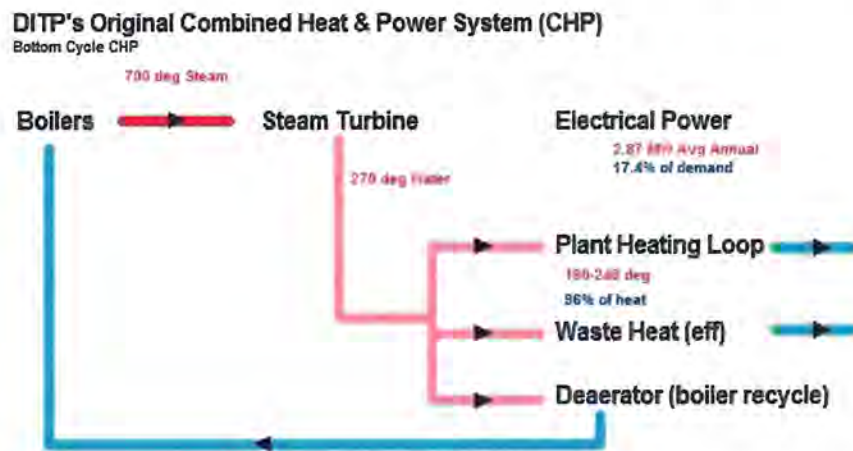


Figure 3

a “bottom cycle” process. (Figure 3 above depicts the process.) The heat efficiency of DI’s bottom cycle process is fairly high at approximately 60% however the electrical efficiency is low at approximately 9%. In the summer with significantly lower facility heat demands, the Deer Island thermal plant wastes heat to the plant effluent. In FY14, greater than 95% of all digester gas produced was utilized in the boilers, meeting greater than 95% of the plant’s total heat demand (the less than 5% of the heat produced by fuel oil translates to almost 350,000 gallons of #2 low sulfur diesel.) The steam turbines generated 25.1 million kilowatt-hours (“M kWh”) of electricity for FY14. Overall, 60% of DI’s energy needs (heat plus electricity) were met by the use of digester gas and represents roughly \$20M in avoided costs to MWRA.

Recent equipment additions to the electrical generation systems of DI’s combine heat and power systems have enabled staff to improve the efficiency of the steam to electricity conversion process by approximately 18%. Figure 4 on the following page depicts the changes in the overall process. The equipment that enabled this performance improvement is the addition of a second steam turbine or back-pressure turbine and a steam by-pass valve. The combination of the two have allowed staff to operate the main steam turbine at higher efficiencies by operating the main turbine in a vacuum, extracting the most amount of heat possible from the steam.

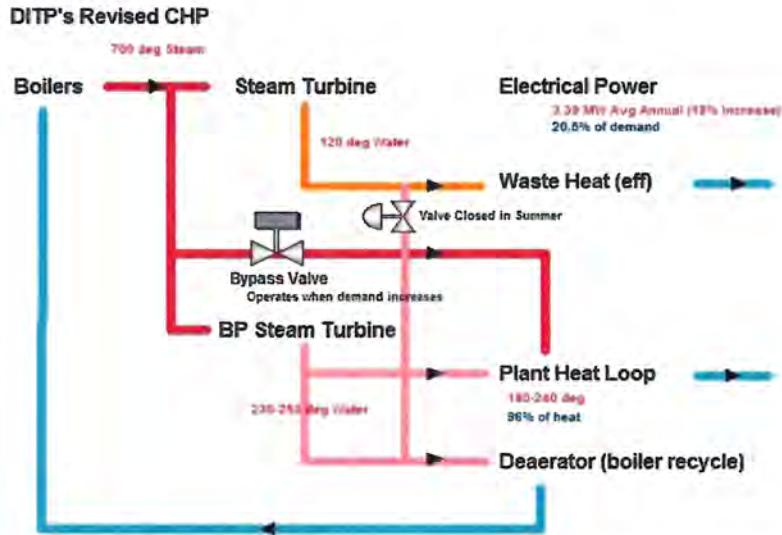


Figure 4

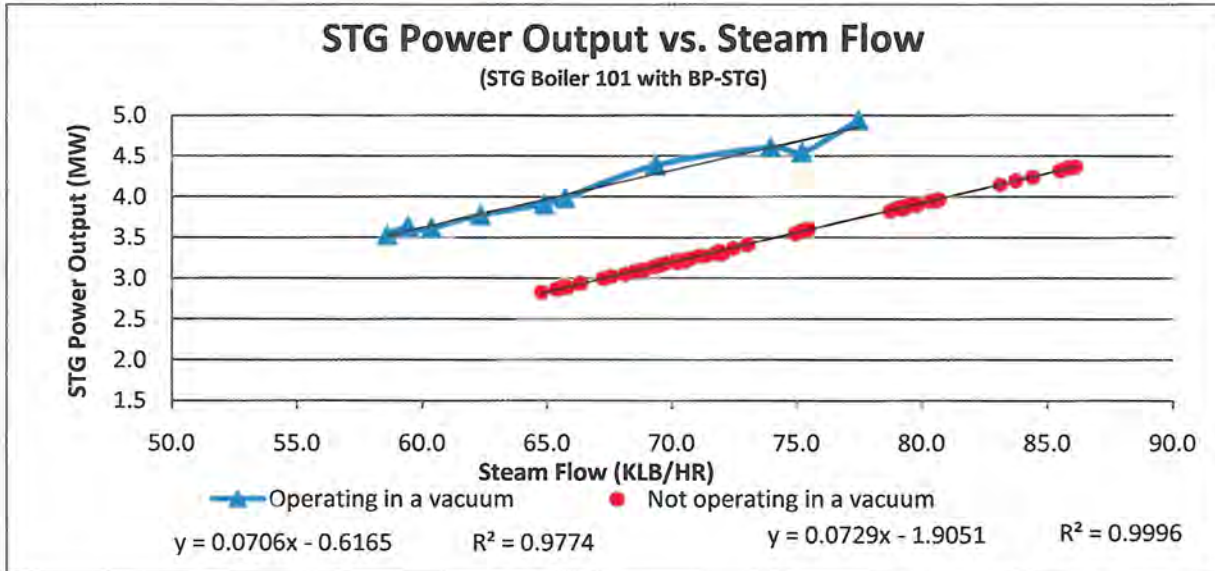


Figure 5

Figure 5 above shows the increased output per unit of steam. This trend was developed during performance testing in August 2014. The performance trend shows that for average digas production (180,000 cuft/hr, which produces 66.0 klb/hr of steam), the original system would generate roughly 2.84 MW of power, while the revised system will generate upwards of 4.04 MW of power, a 1.3 MW increase in electrical production. Staff estimate this increase will be sustainable from May through November each year, and will provide an additional 4.5 million kWh of renewable energy for MWRA annually.

### The Future

MWRA staff have worked with CDM Smith to develop a conceptual, technical, and financial analysis (simple payback) to evaluate the potential of installing new combined heat and power equipment. The goal of the analysis was to maximize the efficiency of producing additional electric

power and heat for on-site use. The study considered the current digas production levels and the additional digas production increase (29-42% approximately) from co-digestion. The study investigated options for both long-term and short-term operations and provided a phased approach for implementation.

Two combined heat and power technologies were investigated for initial screening: gas turbines and internal combustion engines. The capital costs for each technology are similar per power unit produced. The screening evaluation concluded that gas turbine technology (Figure 6 on the right) was better suited to be used at Deer Island because of lower operation and maintenance costs, a smaller footprint, easier permitting because of lower emissions, improved flexibility for heat production, and the possibility of incremental phasing of implementation.

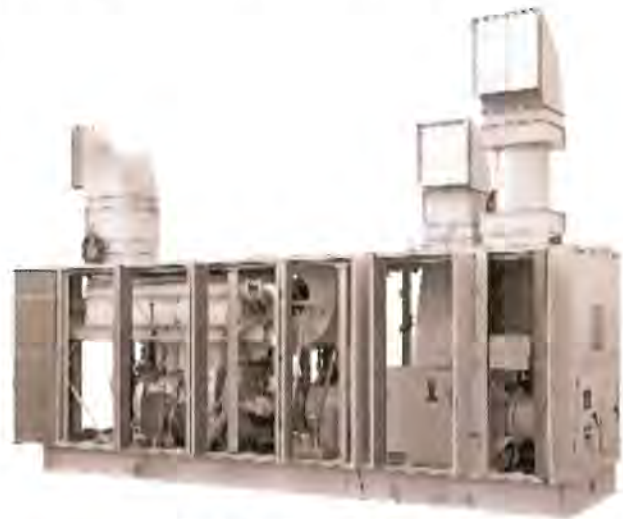


Figure 6: Gas Turbine

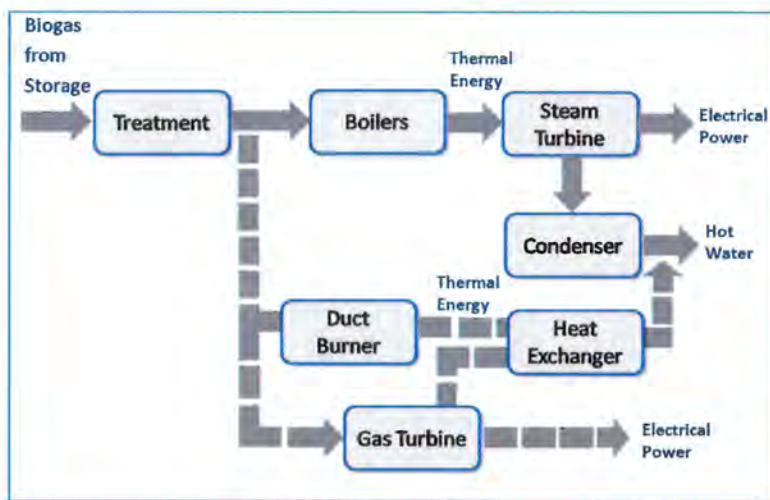
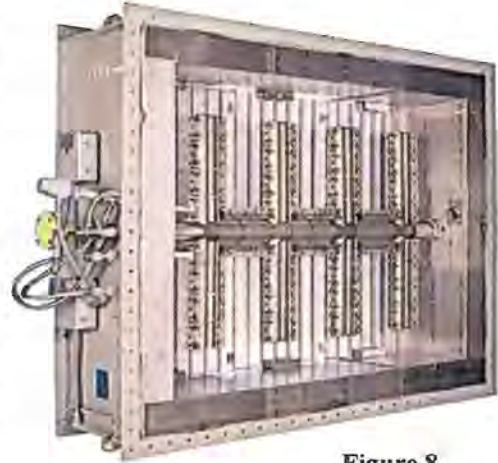


Figure 7

The combined heat and power study was undertaken to evaluate new modern power plant technologies to take advantage of the higher power and thermal efficiencies of new equipment. The existing Thermal/Power Plant was designed in the late 1980s and commissioned in 1998 with a major focus to meet the heating needs of the digesters and digested sludge storage tank contents, as well as the large plant heating requirements. The Thermal/Power Plant has been operational for approximately 16 years and several major areas need refurbishment,

including the digester gas treatment equipment and the replacement of aging pumps, equipment, and valves. As the plant ages, additional reinvestment in the plant will be required. Typical life expectancies of large industrial boilers range from 30 to 40 years. However, maintenance spending can increase dramatically as the boilers age.

The proposed combined heat and power system is a “topping cycle” that uses a gas turbine and a duct burner as the main components. This design produces electricity first, and heat as a by-product as compared Deer Island’s current bottom cycle generator. The electrical efficiency overall is between 35% to 40% over that of Deer Island’s current 9% efficiency. The thermal efficiency is 40% to 45% (a reduction from Deer Island’s current 60% efficiency). However, a duct burner (pictured in Figure 8 to the right) can be added to boost thermal efficiencies to more than 90%. This newer technology will result in an increase in electric and heat production that will then translate into significant cost avoidance.



**Figure 8**

Integrating a gas turbine into Deer Island’s infrastructure will require several modifications to the plant as proposed by CDM Smith, including:

- Removal of the surplused Enterprise Engines and modifications to the building to accommodate the new gas turbine(s). MWRA has been attempting to remove these obsolete Enterprise Engines independent of this study. MWRA has declared these units as “surplus” and already advertised for and awarded a contract to sell them. The buyer did not remove them within the specified time. The MWRA will continue efforts to remove them again independent of this project.
- Installation of improved di-gas treatment systems for hydrogen sulfide, siloxanes, and moisture, that are present in digester gas. These contaminants need to be removed to prevent fouling of the gas turbine during normal operation and to meet air emissions permit requirements;
- Installation of a new multi-stage compressor to boost the gas pressure from approximately 5 psig to 200 psig as required by gas turbine manufacturers;
- Integration of the new turbine system into the existing mechanical, electrical, and instrumentation systems; and
- Potential installation of a gas turbine exhaust treatment system to meet air permit requirements.

The use of gas turbines is a proven technology in the wastewater industry and power industry. Several wastewater treatment plants across the country are installing or presently have operational gas turbines. These utilities include: LA County Sanitation District, East Bay Municipal Utility District, King County South Treatment Plant, Denver Metro, San Antonio Water System, and DC Water Blue Plains.

The general pros and cons of implementing the proposed combined heat and power system follow:

Pros	Cons
Higher net energy efficiency with modern technology.	Capital costs range of \$25 million for a single unit to \$75 million for the full three units.
Potential for increased total electrical and thermal efficiency by using topping cycle design.	Backup heat generation will be needed if three gas turbines are installed for heat generation and the Thermal/Power Plant shutdown (costs included in the estimated capital costs) or retain one boiler in the Thermal/Power Plant to provide heat only.
Potential to efficiently use additional digester gas from co-digestion.	Integration with existing Thermal/Power Plant will require significant engineering effort.
Save spending on maintenance and capital on aging Thermal/Power Plant.	New gas treatment system will be required.
Cost savings from \$3 million (single gas turbine) to \$10 million per year (three gas turbines).	

Staff and CDM Smith have preliminarily identified two different implementation sequences for new gas turbines: 1) Initially installing a single gas turbine with the ability to expand to a total of three gas turbines in the future. This single gas turbine would work in parallel with the existing CHP plant and would increase on-site electrical generation. This would lower the initial capital investment (to \$25 million) but also lower on-site generation and annual cost savings compared to implementation of all three turbines; and 2) Install all three gas turbines at the same time and decommission the existing Thermal/Power Plant or parts of it. This would result in some construction savings as all three units would be installed at the same time. It would initially have higher capital cost investment (total \$75 million) but higher annual cost savings. Regardless of the implementation schedule, at this time staff recommend the installation of three gas turbines due to the significant annual electrical cost savings.

Cost Summary of Gas Turbine Install Options without Co-digestion

Parameter	Existing Plant with One Gas Turbine	Three Gas Turbines, Replacing Existing Plant
Capital Cost	\$24.9 M	\$75.0 M
Annual O&M Cost	\$2.2 M/year	\$ 1.6 M/year
Annual Electrical Savings	\$5.2 M/year	\$ 11.4 M/year
Net Annual Savings	\$ 3.0 M/year	\$ 9.8 M/year
Simple Payback	8 years	8 years

The result is that for an investment of \$25 million for a single 4.6 MW gas turbine, savings of \$3 million per year is possible with a simple payback of 8 years. The payback assumes renewable energy credits are part of the electrical savings.

The resulting overall annual savings is approximately \$11.4 million per year as compared to the current operation with a capital cost of approximately \$75 million. Three gas turbines would produce approximately 70% of Deer Island’s total electrical demand with existing gas production levels while still meeting 100% of the plant’s thermal demand.

## Co-Digestion and Combined Heat and Power

MWRA staff and CDM Smith also conceptually evaluated the potential impacts of increased digester gas as a result of co-digestion, and how that may impact the proposed combined heat and power system. Increased gas production from co-digestion would not increase any capital costs associated with the Thermal/Power Plant replacement with gas turbines. Increased gas from co-digestion would complement the replacement and would result in even more on-site electrical generation, thereby providing more annual cost savings and electricity. A conceptual cost summary of the recommended combined heat and power system with additional gas produced from co-digestion follows:

Cost Summary of Gas Turbine Install Options with Co-digestion

Parameter	Existing Plant with One Gas Turbine	Three Gas Turbines, replacing existing plant
Capital Cost	\$24.9 M	\$75.0 M
Annual O&M Cost	\$2.2 M/year	\$ 1.6 M/year
Annual Electrical Savings	\$6.95 M/year	\$14.7 M/year
Net Annual Savings	\$ 4.75 M/year	\$ 13.1 M/year
Simple Payback	5 years	6 years

The result is that for an investment of \$25 million, savings of \$4.75 million per year is possible with a payback of five years. The payback assumes renewable energy credits are part of the electrical savings.

If three gas turbines are installed, the existing Thermal/Power Plant can be decommissioned. The resulting overall annual savings is approximately \$13.1 million per year as compared to the current operation with a capital cost of approximately \$75 million.

### NEXT STEPS

The concepts provided in the study need to be further investigated and detailed. Staff will be preparing bid documents to prepare a design and further refine capital and operating costs. The design will work to develop the following concepts:

- Investigate air permit issues/costs with the addition of gas turbine(s) ;
- Investigate incentives under the Mass Save programs that may be available to offset the costs associated with this project;
- Further the design concepts presented to refine the capital costs, economic benefits, implementation plan of pursuing installation of one turbine in a phased approach or full implementation to install three turbines, and operation with both gas turbine and Thermal/Power Plant equipment;
- Perform a condition assessment of the existing on-site Thermal/Power Plant to better understand the necessary short-term and long-term required capital expenditures; and



- Further define economic benefits of the installation of gas turbines with and without co-digestion biogas. Estimate economic benefits for both alternatives and provide a full life cycle cost analysis of the different options

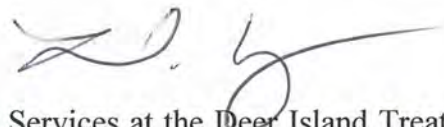
It should be noted that the addition of a redundant gas line from the residual compressors to the Thermal/Power Plant is under consideration under a separate CIP project. The existing single gas line is a single point of failure that could result in the loss of all digas to the Thermal/Power Plant and resulting energy. The installation of the redundant gas line is needed with or without the implementation of co-digestion. Downtime of this single line due to failure or maintenance will result in loss of energy of approximately \$55,000 per day.

**BUDGET/FISCAL IMPACT:**

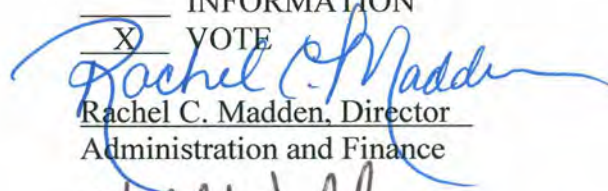
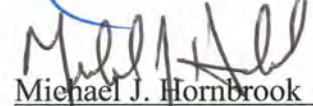
There are sufficient funds in the approved FY15 CIP to fund the combined heat and power design project, including the installation of one gas turbine (\$25 million). Award of the design contract will require Board approval. Additional funds are included in the future CIP budget should MWRA decided to move forward with construction of the other two units. MWRA will include the CEB impacts of this project into future rate projections if the project moves forward.

**STAFF SUMMARY**

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director  
**DATE:** September 17, 2014  
**SUBJECT:** Struvite, Scum, Sludge, and Grit Removal Services at the Deer Island Treatment Plant  
Moran Environmental Recovery  
Contract WRA-3862



COMMITTEE: Wastewater Policy & Oversight

INFORMATION  
 VOTE  
  
Rachel C. Madden, Director  
Administration and Finance  
  
Michael J. Hornbrook  
Chief Operating Officer

David F. Duest, Director, Deer Island WWTP  
Michele S. Gillen, Deputy Director, Administration and Finance  
Preparer/Title

*MSG*

**RECOMMENDATION:**

To approve the award of a two-year purchase order contract to provide struvite, scum, sludge and grit removal services at the Deer Island Treatment Plant to the lowest responsive bidder, Moran Environmental Recovery, and authorize the Director of Administration and Finance to execute said purchase order for an amount not to exceed \$929,025.

**DISCUSSION:**

Staff have previously informed the Board of past issues concerning the precipitation of struvite, a by-product of anaerobic sludge digestion, within the sludge centrifuges and digested sludge pipelines. Struvite is a crystallized compound forming from solubilized phosphate, ammonia, and magnesium, which can form a matrix with digested sludge solids and coat pipelines or other surfaces. One example of removed struvite build-up can be seen in the picture on the right.



Struvite is a concern because of the operational problems that it can cause. Struvite can impact process equipment and piping and can result in the loss of digester and sludge thickening capacity. Another example of struvite build-up is shown in the picture on the right, which depicts an almost completely occluded pipe.



Staff routinely mitigate struvite build-up by adding ferric chloride to the digesters, which binds up soluble phosphates preventing the formation of struvite. However, even with aggressive measures, struvite build-up can still occur and when it does, it typically requires the specialized services and industrial equipment of specialty contractors, often working in confined spaces. MWRA has competitively bid these services several times in the past.

Staff also have used these specialized services to clean severe blockages and the build-up of scum, sludge, and grit in a number of other process areas of the plant. While struvite build-up has only occurred in Deer Island's Residuals complex, staff have found other types of scum, grit, and rag build-up blockages in the gravity thickeners, primary clarifiers, influent channels, and scum receiving wells.



**Scum and Rag Build-up in Secondary Influent Channel**

**Rag Build-up in Gravity Thickener Scum and Overflow Well**

Contracted services are utilized only as a last-resort measure as MWRA staff are generally the first option in clearing these types of blockages. Deer Island has utilized MWRA vector trucks to clean some of the blockages, but contracted services are required when the blockages reach a level that is beyond in-house capability or when the scum/sludge/grit material is of such a thick consistency that processing it through the plant could cause plant upset conditions or the potential for equipment damage.

The thickness, weight, and, in some cases, the location of the material that creates these blockages make it impractical and potentially unsafe for MWRA staff to remove by conventional methods, without the availability of the specialized equipment that is specifically designed for this purpose.

MWRA has budgeted for the purchase of an additional vactor truck for use on Deer Island. After staff training is completed, Deer Island will have the capability of removing normal scum and rag build-up throughout the plant, which would reduce the need for contracted services. In addition, the primary and secondary scum tip tube replacement project is in construction. This project is replacing all the tip tubes that remove grease and scum from the primary and secondary clarifiers. These tip tubes, over time, have become corroded and are no longer operational. Completion of this project should also reduce the quantity of scum and grease required to be removed by vactoring. Although contracted services should be reduced in the future, staff anticipate that there will be a continuing need for some level of specialized contracted services to address struvite and other types of blockages throughout the plant.

### **Procurement Process**

Bid WRA-3862 was advertised in the Boston Herald, Central Register, Goods & Services, Dodge Reports, El Mundo, and Banner Publications. In addition, bids were made available for public downloading on MWRA's e-procurement system and potential bidders were notified of the bid opportunity.

On July 27, 2014, three bids were received and publicly opened with the following results:

<b>Vendor</b>	<b>Total Bid Price</b>
<b>Moran Environmental Recovery</b>	<b>\$929,025</b>
Clean Harbors Environmental Services	\$1,037,300
Tradebe Environmental Services	\$1,596,800

The scope of services and estimated quantities for this contract includes 280 days of field work as defined by MWRA, 140 days with a five-person work crew and 140 days with a three-person work crew, and all necessary special cleaning equipment, to be used on an as-needed basis. In addition, bid prices were submitted for the hauling and disposal of an estimated 600 tons of solid material and 150,000 gallons of wet material during a two-year period based on previous contracts. These are estimates only and not a guaranteed commitment to the vendor; MWRA will incur costs only for the services provided and satisfactory documentation of quantities removed (e.g., weight slips from licensed landfills or disposal sites) during the two-year contract term.

In addition, the contract includes 1,000 hours of off-hour work, of which 500 hours are with a five-person crew and 500 hours with a three-person crew. Again, these bid items will only be used on an as-needed basis if treatment processes are impacted such that crews need to be either extended beyond the normal working day or if crews need to be called in during off-hours. The estimated cost of these as-needed, off-hours is \$252,500.

Staff have reviewed Moran Environmental's bid and have determined that it meets all of the requirements of the bid specifications. Moran Environmental has previously performed these services and staff were satisfied with the vendor's performance. Therefore, staff recommend the award of this purchase order contract to Moran Environmental Services as the lowest responsive bidder.


**BUDGET/FISCAL IMPACT:**

The FY15 Current Expense Budget includes sufficient funds for the first portion of this contract. Appropriate funding will be included in subsequent Proposed CEB requests for the remaining term of this two-year contract.

**MBE/WBE PARTICIPATION:**

Moran Environmental Recovery is not a certified Minority- or Women-owned business.

## STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Deer Island Treatment Plant Clarifier Rehabilitation, Phase II, Design/Engineering Services During Construction  
CDM Smith Inc.  
Contract 7394


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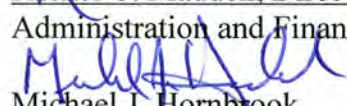
COMMITTEE: Wastewater Policy & Oversight

John P. Vetere, Deputy Chief Operating Officer  
David F. Duest, Director, Deer Island WWTP  
Richard J. Adams, Manager, Engineering Services  
Preparer/Title

\_\_\_ INFORMATION

VOTE

  
Rachel C. Madden, Director  
Administration and Finance

  
Michael J. Hornbrook  
Chief Operating Officer

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### RECOMMENDATION:

To approve the recommendation of the Consultant Selection Committee to select CDM Smith Inc. to provide preliminary design, final design, and engineering services during construction, for the Deer Island Treatment Clarifier Rehabilitation, Phase II project, and to authorize the Executive Director, on behalf of the Authority, to execute said contract with CDM Smith Inc. in an amount not to exceed \$2,237,401, for a contract term of 81 months from the Notice to Proceed.

### BACKGROUND:

The Deer Island Treatment Plant was built in several phases (Construction Packages) starting in 1987 and was completed in 2000. The treatment plant provides wastewater treatment for 43 Greater Boston communities and is designed to handle 1.3 billion gallons of wastewater per day during high-flow events.

The Primary Treatment facilities at Deer Island were constructed in the mid-1990s and include four primary clarifiers batteries identified from east to west as Batteries A, B, C, and D. There are 48 primary clarifiers in total located at the center of Deer Island and each of the four batteries contains 12 stacked sets (upper and lower) of primary clarifiers. Flows enters aerated primary battery influent channels and are equally distributed to each of the 12 stacked clarifiers through eight 14-inch-diameter inlet ports located at the same centerline elevation in the influent channel. Primary treatment is provided as flow moves slowly to the opposite end of the upper and lower clarifiers. Gravity separates sludge and scum from the wastewater and it is removed from the clarifiers using chain-driven longitudinal sludge and scum collectors.

Construction began on the Secondary Treatment facilities (pictured on the right) in the mid-1990s and was completed in 2001.

The biological secondary treatment facility at Deer Island is a high-purity, oxygen-activated sludge system. The secondary facilities consist of three oxygen reactor batteries followed by three clarifier batteries. These facilities provide secondary clarification to separate the liquid and solid components of what is referred to as the “mixed liquor” for the oxygen activated sludge process.



The three clarifier batteries each contain 18 stacked (upper and lower) clarifiers for a total of 54 clarifiers. Each clarifier battery receives flow from the corresponding oxygen reactor battery in an influent channel.

Much of the primary and secondary treatment equipment has been in operation for approximately 18 years. This equipment is subjected to very corrosive environments and is approaching the end of its useful life.

### **DISCUSSION:**

During a previous construction contract on Deer Island, Contract 6899, Primary and Secondary Clarifier Rehabilitation, which was approved by the Board and awarded to Daniel O’Connell’s Sons, Inc. in January 2009, in the amount of \$59,377,664, all of the sludge and scum collection chains and sprockets were replaced. To complete that work, all clarifiers (48 primary and 54 secondary) were sequentially dewatered and cleaned. During design of Contract 6899, it was known that the chain was corroded (due to numerous failures and repeated repair efforts) and the sprockets, which are expected to wear over time, had reached the end of their anticipated useful life. However, because the clarifiers could not be dewatered during design, assumptions were made as to the actual condition of the clarifiers and their associated systems.

As the work under Contract 6899 progressed, and as each clarifier was dewatered, additional equipment deficiencies were discovered (e.g., influent gates, aeration systems, etc.) that could not be practically addressed at that time without the issuance of change orders potentially into the millions of dollars. The condition of the concrete and concrete coating (shown on the right) in some areas of the clarifiers also was in a more deteriorated state than anticipated. Similarly, it was impractical to attempt to



properly address these structural deficiencies at that time under Contract 6899, so staff began the process of addressing all remaining deficiencies in the clarifiers by developing a design contract for a second phase of rehabilitation work, Contract 7394.

Contract 7394 will include design, bidding and construction administration services for the Phase II Clarifier Rehabilitation Project (Construction Contract 7395), and engineering services during construction. It should be noted that this contract does not include resident inspection services. The level of effort for resident inspection services will not be fully known until final design is complete. At that time, staff will assess whether or not this work can be either performed in-house or under a separate, competitively bid contract.

The construction project will include the replacement of various equipment, such as clarifier influent, effluent, and dewatering gates, primary effluent cross channel gate actuators, and secondary scum influent gates and actuators. Also included will be the replacement of influent channel aerations systems, longitudinal and cross collection equipment and drive systems (not chain and sprockets), primary sludge pump suction piping, return sludge line vent piping, and various concrete and aluminum hatches. The work also includes various repairs and upgrades, such as installation of concrete cores for head shaft maintenance, concrete repairs around hatch openings, minor expansion joint repair, and miscellaneous electrical upgrades.

**Procurement Process**

Staff utilized a one-step/evaluative Request for Qualifications/Proposal (RFQ/P). Proposals were evaluated by using the following criteria: Cost (40 points), Qualifications and Key Personnel (25 points), Experience/Past Performance on Similar Non-Authority Projects (10 points), Past Performance on Authority Projects (10 points), Capacity/Organization and Management Approach (5 points), Technical Approach (5 points), Minority- and Women-Owned Business Enterprise Participation (5 points).

MWRA received proposals from the following four firms: Fay, Spofford & Thorndike, LLC (FS&T), CDM Smith Inc., Arcadis, and Hazen & Sawyer. Cost proposals with level of effort are presented below:

<u>Proposers</u>	<u>Proposed Contract Cost</u>	<u>Level of Effort</u>
FS&T	\$2,047,568	14,385 hours
CDM Smith Inc.	\$2,237,401	14,125 hours
Arcadis	\$2,739,030	20,170 hours
Hazen & Sawyer	\$2,882,888	21,021 hours



The five voting members on the Selection Committee then scored and ranked the proposals as follows:

<u>Proposers</u>	<u>Points</u>	<u>Total Score*</u>	<u>Final Ranking</u>
CDM Smith	393	5	1
FS&T	340	13	2
Arcadis	346	14	3
Hazen & Sawyer	311	18	4

\* Total Score represents the sum of the individual Selection Committee members' rankings. The firm receiving the highest number of points is assigned a "1"; the firm receiving the next highest number of points is assigned a "2," and so on.

The Selection Committee voted unanimously to rank CDM Smith Inc. as the best firm and the best value for MWRA to complete this project despite being the second lowest in overall cost. The firm proposed an excellent project team with excellent experience and past performance on MWRA and non-MWRA projects. The Selection Committee was in agreement that CDM Smith's technical approach was sound. CDM Smith's proposal included significant hours with appropriately experienced staff for the development of the Preliminary Design Report, and the preliminary and final design phases. The Selection Committee felt strongly that the Preliminary Design Report and design phases were the most critical aspects of this project and would be instrumental in ensuring the successful completion of the resulting construction project. Staff are of the opinion that the more experienced project team would produce well-defined bid plans and specifications.

Conversely, the Selection Committee was in agreement that although FS&T's overall cost proposal was the lowest, there was concern that FS&T's proposal included the lowest number of hours for the Preliminary Design Report and preliminary and final design tasks and an unusually high level of effort for the engineering services during construction task. This appropriation of hours played a significant role in the Selection Committee's final vote and ranking.

Although generally meeting the qualifications required for this project, the Selection Committee was of the opinion that the cost and level of effort included in the proposals submitted by Arcadis and Hazen & Sawyer were excessive for the scope of work in the RFQ/P.

The Selection Committee felt that CDM Smith's proposal represents the best overall value (total cost and level of effort by a highly qualified team) of the four proposals. The Selection Committee was of the opinion that it included the best design team and included the appropriate number of hours, by category, with the proper staffing mix (senior and junior level) to successfully complete the development of the technical specifications. Therefore, the Selection Committee recommends approval of this contract to CDM Smith Inc. in an amount not to exceed \$2,237,401.

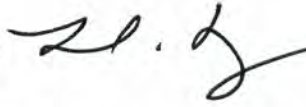
**BUDGET/FISCAL IMPACT:**

The FY15 CIP includes a budget of \$3,000,000 for Contract 7394. The recommended award amount is \$2,237,401.

**MBE/WBE PARTICIPATION:**

The minimum MBE and WBE participation requirements established for this project are 7.18 and 5.77%, respectively. CDM Smith has committed to 8.68% MBE and 5.82% WBE participation.

**STAFF SUMMARY**

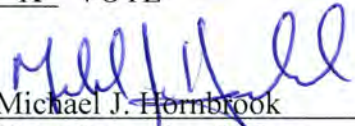
**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Technical Assistance Consulting Services  
Fay, Spofford & Thorndike, LLC, Contract 7437, Amendment 1  
Hazen and Sawyer, P.C., Contract 7456, Amendment 1

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COMMITTEE: Wastewater Policy & Oversight

     INFORMATION  
  X   VOTE

John Sabino, Contracts Manager  
John Vetere, Deputy Chief Operating Officer  
Preparer/Title

  
Michael J. Hornbrook  
Chief Operating Officer

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**RECOMMENDATION:**

To authorize the Executive Director, on behalf of the Authority, to approve Amendment 1 to two separate Technical Assistance Consulting Services Contracts: Contract 7437 with Fay, Spofford & Thorndike, LLC; and Contract 7456 with Hazen and Sawyer, P.C., each in an amount not to exceed \$550,000, increasing the contract amounts from \$550,000 to \$1,100,000, and extending each contract term by one year. Contract 7437 from January 28, 2015 to January 25, 2016; and Contract 7456 from February 25, 2015 to February 25, 2016.

**DISCUSSION:**

On November 13, 2013, the Board approved the award of two separate agency-wide Technical Assistance Consulting Services (not for Deer Island or the John J. Carroll Water Treatment Plant), Contract 7437, and Contract 7456, each for \$550,000 and a one-year term, to Fay, Spofford & Thorndike, LLC, and Hazen and Sawyer, P.C., respectively.

The purpose of technical assistance contracts is to make available, on a continuing, as-needed basis, the services of qualified, professional engineering firms to assist MWRA staff on engineering study and/or design initiatives. The contracts involve the engineering disciplines of architecture, civil, structural, geotechnical, surveying, environmental and sanitary, mechanical and process, fire protection, electrical, control systems, chemical, corrosion and odor control, permitting, and security. These agency-wide technical assistance contracts supplement in-house staff on high-priority or unanticipated projects, or provide expertise on short-term assignments requiring specialized disciplines that are not cost effective for MWRA to maintain on an in-house basis and will ensure that adequate resources are available to quickly and comprehensively respond to MWRA's needs, particularly when emergency or unanticipated situations arise.

In response to the Board's concerns, a working group consisting of MWRA staff from the Procurement and Engineering and Construction Departments examined MWRA's use of technical assistance contracts. The group has implemented the following three changes in how the contracts are utilized compared to previous practice: 1) staff will manage the contracts with the goal of obtaining competitive pricing (based on level of effort, staffing, and technical approach) from the consultants on up to one-half of all proposed task orders; 2) whenever possible, staff will limit task orders to smaller, short-term assignments that are considered high priority or are unanticipated, or when specific expertise on short-term assignments is required; and 3) require sign-off from the Chief Engineer for all task orders up to and including \$25,000; from the Deputy Chief Operating Officer for task orders up to and including \$50,000; and from the Chief Operating Officer on any task order up to and including \$100,000.

If the proposed amendments are approved, staff intend to begin the procurement process for additional technical assistance consulting services contracts six months prior to the expiration of the newly amended technical assistance contracts.

**This Amendment**

The current budget and contract duration for each of the subject contracts have limited the number of task orders that have been executed to date. The number of task orders executed for previous technical assistance contracts was greater because the duration from initiation to completion of a task order is often longer than one year. With an increase in the contract budget and duration, staff will be able to complete additional projects that would not be completed because of limited funds and/or contract duration. To ensure continued and uninterrupted use of these agency-wide Technical Assistance Contracts, staff recommend that the Board approve Amendment 1 to Contracts 7437, and 7456, which will increase each contract amount by \$550,000, and extend each contract by one year.

**CONTRACT SUMMARY:**

	<u>AMOUNT</u>	<u>TIME</u>	<u>DATED</u>
Original Contract 7437:	\$550,000.00	One Year	01/29/14
Proposed Amendment 1:	<u>\$550,000.00</u>	<u>One Year</u>	Pending
Amended Contract Totals:	\$1,100,000.00	Two Years	
Original Contract 7456:	\$550,000.00	One Year	02/26/14
Proposed Amendment 1:	<u>\$550,000.00</u>	<u>One Year</u>	Pending
Amended Contract Totals:	\$1,100,000.00	Two Years	

**BUDGET/FISCAL IMPACT:**

The FY15 Capital Improvement Program (CIP) budget includes \$1,000,000 for Contract 7437, and \$1,000,000 for Contract 7456.

**MBE/WBE PARTICIPATION:**

Due to the specialized and uncertain nature of this work, no minimum MBE or WBE participation requirements were established for these contracts.



# MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard  
100 First Avenue, Building 39  
Boston, MA 02129

Frederick A. Laskey  
Executive Director

Telephone: (617) 242-6000  
Fax: (617) 788-4899  
TTY: (617) 788-4971

## WATER POLICY AND OVERSIGHT COMMITTEE MEETING

*Chair:* A. Pappastergion  
*Vice-Chair:* B. Swett  
*Committee Members:*  
J. Barrera  
J. Carroll  
J. Foti  
H. Vitale  
J. Walsh  
J. Wolowicz

to be held on

Wednesday, September 17, 2014

Location: 100 First Avenue, 2nd Floor  
Charlestown Navy Yard  
Boston, MA 02129

Time: Immediately following Wastewater Comm.

## AGENDA

### **A. Contract Awards**

1. Beacon Street Line Water Pipeline Repair: Green International Affiliates, Inc., Contract 7474

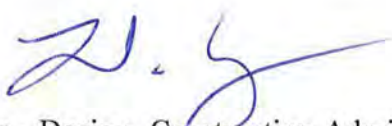
### **B. Contract Amendments/Change Orders**

1. Spot Pond Water Storage Facility Design/Build Project: Walsh Construction Co., Contract 6457, Change Order 7
2. Gillis Pump Station Short Term Improvements: Bay State Regional Contractors, Contract 7260, Change Order 3

### **C. Approvals**

1. Recommendation to Rename the Ware Disinfection Facility the William A. Brutsch Water Treatment Facility

## STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Beacon Street Line Water Pipeline Repair - Design, Construction Administration and Resident Inspection  
Green International Affiliates, Inc.  
Contract 7474


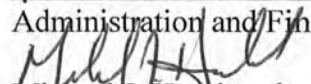
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COMMITTEE: Water Policy & Oversight

Patrick E. Smith, P.E., Project Manager  
A. Navanandan, P.E., Chief Engineer  
Preparer/Title

     INFORMATION

  X   VOTE

  
Rachel C. Madden, Director  
Administration and Finance  
  
Michael J. Hornbrook  
Chief Operating Officer

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### RECOMMENDATION:

To approve the recommendation of the Consultant Selection Committee to award Contract 7474, Beacon Street Line Water Pipeline Repair Design, Construction Administration and Resident Inspection Services to Green International Affiliates, Inc., and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the amount of \$425,440, for a contract term of 930 calendar days from the Notice to Proceed.

### BACKGROUND:

MWRA's Beacon Street Line water main is a 48-inch cement mortar lined cast-iron pipe constructed in the 1870s, located in Brookline. It is part of MWRA's Boston Low Service System and a significant portion of it is located underneath the MBTA's Beacon Street Green Line tracks. The Beacon Street Line supplies Boston Meter 44 and provides important water supply redundancy to Boston Meter 60, which services the Longwood Medical area.



In 2000, the Beacon Street Line water main was cleaned and mortar lined with cement. In June 2006, a sink hole was found along the trolley tracks near Borland Street, which was an indication of a leak (as shown in the picture to the right). Upon excavation, a longitudinal crack was identified in the 48-inch main that required replacement of an eight-foot section of ductile-iron pipe and couplings. The repair caused significant disruption requiring temporary removal of trolley tracks (see picture below right) and the use of buses as alternate transportation. In January 2013, a second leak was discovered in the vicinity of the 2006 leak.



This critical line is again out of service between St. Paul Street and St. Mary's Street, and flows are now rerouted through MWRA Meter 60. (See attached map.)

Access into this portion of the Beacon Street Line water main is extremely limited due to the MBTA tracks over the water main from St. Paul Street and St. Mary's Street. Available access points at St. Paul Street and St. Mary's Street are located approximately 3,000 feet apart, with the leak location approximately 1,400 feet from St. Paul Street.



In 2013, alternative methods were evaluated by Dewberry Engineers Inc. for slip-lining the entire 3,000-foot reach, as well as localized repair alternatives. MWRA requested an alternative that would not disrupt the MBTA's tracks. The engineering report concluded that conventional end-to-end slip-lining alternatives utilizing steel, cured-in-place-pipe, high-density polyethylene, or PVC could not be performed without intermediate access within the 3,000-foot reach, which would disrupt the tracks. Other issues preventing a continuous slipline included the inability to navigate the compound rolling alignment, and the need for intermediate access for grouting locations. Therefore, a localized repair from within the pipe was recommended using a carbon-fiber-reinforced polymer (CFRP) product approved for drinking water systems.

Many locations throughout the country have utilized this method for similar pipe sizes (48-inch to 78-inch) and pressures (60psi to 150psi). Miami-Dade Water & Sewer has hundreds of CFRP

installations; Washington Suburban Sanitary Commission performs CFRP repairs at approximately 70 locations per year; and within New England, CFRP repairs have been conducted by Providence RI Water (30 locations to date) and Springfield MA Water & Sewer (2 locations in 2011). With this recommended alternative, the Green Line will not be taken out of service, and major disruptions to street traffic will be avoided.

**DISCUSSION:**

Contract 7474 is a 930-day contract that will provide design, assistance with bidding, construction administration, and resident engineering/inspection services (through a one-year warranty period) for the repair of the 48-inch, cast-iron Beacon Street Line water main. The preliminary construction cost estimate is approximately \$1,000,000. The design will include a CFRP structural repair; access pits at St. Paul Street and St. Mary’s Street; coordination with MBTA and the City of Brookline; post inspection, and associated work to reactivate the Boston Low Service System Beacon Street Line. CFRP repair of water pipelines is a specialized design field and requires a team with past experience in the design and construction of this product. CFRP repair involves contractor personnel within the pipe (shown on the right) applying multiple layers of a carbon fiber mesh to the interior surface of the existing pipe in conjunction with a resin mixture to form a high-strength structural lining that adheres to the existing pipe wall. The existing cement lining and joint seals will be removed and surface cleaned and prepared for the CFRP. The CFRP liner is approved by the National Sanitation Foundation and the American National Standards Institute under Standard 61 for use in potable drinking water pipes.



The two access pits (approximately shown below) will be required to perform the CFRP repair. Access Pit 1, which will be located at the MBTA Green Line stop on St. Mary’s Street, is the



smaller of the two (4 feet by 6 feet) and is required for safety purposes as a second means of emergency egress. It is assumed that construction of the egress pit will be conducted during non-operation hours of the Green Line (12 AM - 5 AM). Although access pits are required, they will



not result in shut down of the MBTA's Green Line. Beyond this MBTA location is the connection to Meter 44 and a 48-inch mainline butterfly valve. Access Pit 2, slightly larger (8 feet by 10 feet), will be located in a landscaped area on St. Paul Street, and is required for equipment and personnel access. An additional 10-foot by 40-foot laydown area also will be required in the adjacent parking area.

**Procurement Process**

On June 11, 2014, MWRA issued a one-step Request for Qualifications Statements/Proposals (RFQ/P), utilizing the following criteria: Cost - 30 points; Capacity/Qualifications and Key Personnel - 20 points; Similar Experience/Past Performance on Non-Authority Projects - 20 points; Past Performance on Authority Projects - 15 points; and Technical Approach/Organization and Management Approach - 15 points;

On July 11, 2014, MWRA received two proposals, one from Green International Affiliates, Inc. and one from Dewberry Engineers Inc.

The proposal costs are presented below:

PROPOSER	PROPOSED CONTRACT COST	LEVEL OF EFFORT	COST PER HOUR
Green International Affiliates	\$425,440*	3,382 hours	\$125.78
Dewberry Engineers	\$444,095*	4,210 hours	\$104.26

\*Reflects corrections made due to mathematical errors.

The five voting members on the Selection Committee scored and ranked the proposals as follows:

PROPOSER	TOTAL POINTS	ORDER OF PREFERENCE* TOTAL SCORE	FINAL RANKING
Green International Affiliates	405	5	1
Dewberry Engineers	358	10	2

\*Order of Preference represents the sum of the individual Selection Committee members' rankings where the firm receiving the highest number of points is assigned a "1," the firm receiving the next highest number of points is assigned a "2," and so on.

Green International Affiliates, Inc. was unanimously ranked first by the Selection Committee. The Selection Committee was in agreement that Green International's proposal presented an appropriate level of effort and distribution of work. Green International's proposed project team has excellent qualifications, experience, technical approach and capacity. Its project team includes CDM-Smith, Inc. and Simpson Gumpertz & Heger, both firms with significant experience in CFRP design and construction.

Green International Affiliates' overall past MWRA and non-MWRA project performance has been very good. Additionally, references for its subconsultants on similar projects were also very strong, including references from Arizona Public Service, Providence, RI Water,

Springfield Water & Sewer Commission, Washington Suburban Sanitary Commission, and Miami-Dade Water & Sewer. The proposed Project Manager is also highly recommended with good references. The proposed lead designers for Simpson Gumpertz & Heger were noted as very good with experience on many previous CFRP projects. The proposed Resident Engineer/Inspector from CDM-Smith is currently working on MWRA's Spot Pond Project and has worked on previous MWRA pipeline rehabilitation projects.

The proposed contract with Green International Affiliates includes independent lab testing/evaluation/witness of CFRP tension and cure samples, and specialized field quality-control during the installation process.

Dewberry Engineers Inc. was ranked second. Dewberry proposed a slightly higher overall cost and level of effort, with a lower average cost per hour and weighted average hourly rates. The Selection Committee felt that although Dewberry presented a good technical approach, its overall references for past MWRA projects were rated lower than Green International Affiliates', and references on some on-going projects included deficiencies reported in project QA/QC, cost/budget control, and technical detail.

Based on final rankings, the Selection Committee recommends the award of this contract to Green International Affiliates, Inc. in an amount not to exceed \$425,440. In accordance with MWRA's Procurement procedures, staff entered into discussions with Green International Affiliates to confirm costs, level of effort, and project management. Based on those discussions, staff believe that Green International Affiliates can complete the project for the proposed cost.

**BUDGET/FISCAL IMPACT:**

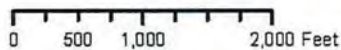
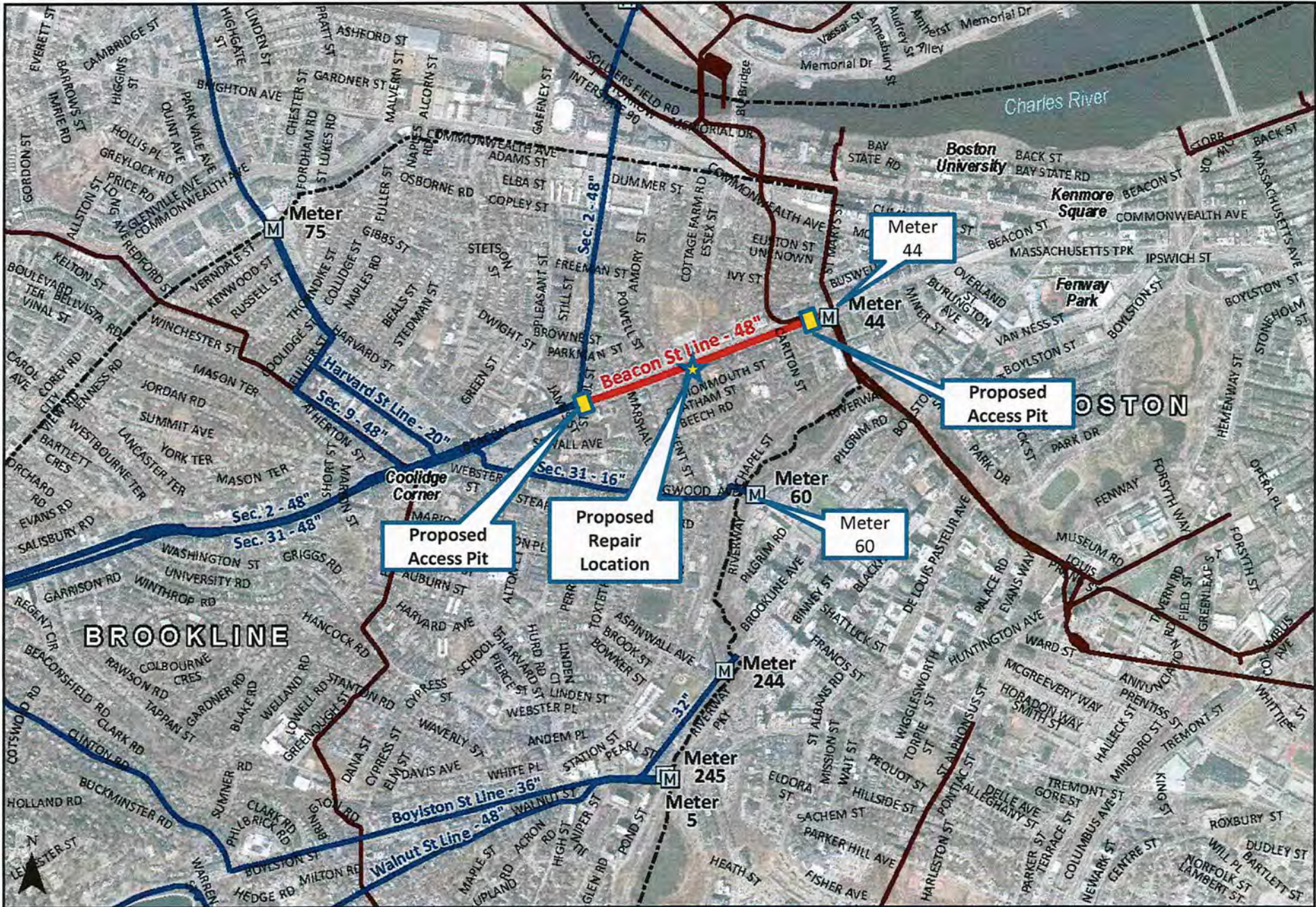
The FY15 CIP includes a budget of \$395,000 for Contract 7474. The contract award amount is \$425,440 or \$30,400 over budget. This amount will be covered within the five-year CIP spending cap.

**MBE/WBE PARTICIPATION:**

There were no MBE or WBE participation requirements established for this contract due to the specialized nature of the work and the limited opportunities for subcontracting. However, Green International Affiliates, Inc. is a Supplier Diversity Office-certified Minority Business Enterprise.

**ATTACHMENT:**

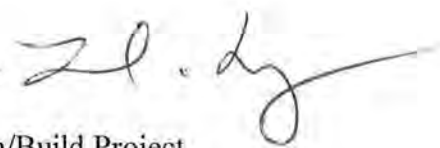
Locus Map of Beacon Street Line Water Pipeline Repair



- M Water System Meters
- Water Distribution Pipes
- Sewer Interceptors

## BEACON STREET LINE WATER PIPELINE REPAIR


**STAFF SUMMARY**

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Spot Pond Water Storage Facility Design/Build Project  
Walsh Construction Company  
Contract 6457, Change Order 7

COMMITTEE: Water Policy & Oversight

INFORMATION  
 VOTE

Lisa Hamilton, P.E., Construction Coordinator  
Corinne M. Barrett, Director, Construction  
Preparer/Title

  
Michael J. Hornbrook  
Chief Operating Officer

**RECOMMENDATION:**

To authorize the Executive Director, on behalf of the Authority, to approve Change Order 7 to Contract 6457, Spot Pond Water Storage Facility Design/Build Project, with Walsh Construction Company, for a lump sum amount of \$587,630.07, increasing the contract amount from \$49,740,309.67 to \$50,327,939.74, with no increase in contract term.

Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 6457 in amounts not to exceed the aggregate of \$250,000, in accordance with the Management Policies and Procedures of the Board of Directors.

**DISCUSSION:**

Under this contract, the Contractor is constructing an underground 20-million-gallon concrete drinking water storage facility and pump station at the former Boston Regional Medical Center site near Spot Pond in Stoneham. The project is intended to provide system storage for the Northern Low Service area and stabilize pressures in the area supplying Somerville, Malden, Medford, Everett, Chelsea, and Charlestown. The storage tank will also reduce flows in the City Tunnel System by lessening the use of pressure-reducing valves to feed the Northern Low Service area from the City Tunnel System during normal operations. The pump station will be partially underground and will supplement the Gillis Pump Station by providing pumping redundancy to the 21 communities served by the Northern High and Northern Intermediate High Service areas.

The project also includes a microwave radio system and a fiber optic communication system between Gillis Pump Station, the new facility, and a new radio tower and shelter at Fells Covered Storage Facility.

## **This Change Order**

Change Order 7 consists of the following four items:

Remove Ledge to Install 36-Inch Pipelines and Valve Vaults at Ravine Road \$279,172.97

Late in the bidding process for this contract, the Stoneham Conservation Commission required that the new 36-inch low service pipelines running from the tank site towards Ravine Road be re-routed to eliminate impacts to wetlands. Following DCR concurrence with the new pipeline route, the Owner's Representative (CDM Smith Inc.) reviewed available record drawings for pipelines in the vicinity of the new route which did not show the presence of ledge at any of the numerous pipeline locations adjacent to



and intersecting with the route of the new pipeline so no additional borings were performed. However, during installation, the Contractor encountered and was required to remove a significant amount of unanticipated ledge to install the new pipeline and valve vaults as can be seen in the picture above.

The approved PCO for this item of work has been identified by MWRA staff as an unforeseen condition. The Owner's Representative, MWRA staff, and the Contractor have agreed to a lump sum amount of \$279,172.97 for this additional work with no increase in contract term.

Furnish and Install a 560-Foot, Concrete-Encased Duct Bank Containing Two Four-Inch Conduits and Three Four-Foot Manholes \$160,884.00

The contract documents specify that Verizon's connection for service to the site would be from an existing telephone pole on Woodland Road. (Verizon service along Woodland Road is demarcated from a HUB at 5 Woodland Road in the abandoned hospital, which is owned by a developer.) During construction, it was determined after consultation with Verizon, that new services for the Spot Pond Facility should be routed from Ravine Road through a new duct bank for the following reasons: 1) the existing HUB at 5 Woodland Road is on private property inside an abandoned building and is not accessible for expansion; 2) although the existing HUB at 5 Woodland Road is to be relocated at an unknown time in the future, it is not currently available; 3) MWRA's new security protocol requires a higher band width service than would be provided by service from the Woodland Road connection; and 4) a new service from Ravine Road would provide a more reliable service to both Fells Reservoir and the Gillis Pump Station through fiber optic communication duct banks. Therefore, the Contractor was required to furnish and install a ductbank, with conduit and manholes along the alignment, to make the connection at Ravine Road.

The approved PCO for this item of work has been identified by MWRA staff as an unforeseen condition. The Owner's Representative, MWRA staff, and the Contractor have agreed to a lump sum amount of \$160,884.00 for this additional work with no increase in contract term.

Provide Revised Mechanical and Flanged Pipe Joint Restraint Systems \$76,962.15

The contract requires that mechanical or flanged pipe joint restraint systems meet the specified American Water Works Association (AWWA) standards, but does not provide named manufacturers. The Contractor selected Star Pipe Products (StarGrip and StarFlange) for restraint systems, which meet the AWWA standards. However, because of a history of failures of these products on other MWRA installations and on other projects overseen by the Owner's Representative, it was determined that they should not be installed except in concrete-encased installations since the concrete would prevent any movement in the restraint system. Therefore, the Contractor was required to provide EBAA Iron (MegaLug and MegaFlange) restraint systems in lieu of the Contractor's proposed Star Pipe restraint systems. The additional cost is only for the difference in materials.

The approved PCO for this item of work has been identified by MWRA staff as an unforeseen condition. The Owner's Representative, MWRA staff, and the Contractor have agreed to a lump sum amount of \$76,962.15 for this additional work with no increase in contract term.

Remove 87 Linear Feet of 16-Inch-Diameter, Cast-Iron Water Main and Replace with Restrained-Joint, Ductile-Iron Pipe and Appurtenances \$70,610.95

During installation of the two 36-inch-diameter connections to the existing 48-inch-diameter pipe (Section 7) on Ravine Road, under two live City of Melrose 16-inch-diameter cast-iron water mains, it was discovered that one had an unrestrained lead joint bend and the second was constructed with multiple offset joints. Record drawings showed the pipes in straight lines. Neither of the two Melrose mains could be safely supported in place because the forces from the



internal water pressure could cause movement in the bend and/or joints resulting in a failure of the mains. Therefore, the Contractor was required to remove a total of 87 linear feet of the existing 16-inch, cast-iron pipe and replace it with restrained-joint, ductile-iron pipe and appurtenances. (The two replaced 16-inch Melrose water mains are shown in the picture on the left.)

The approved PCO for this item of work has been identified by MWRA staff as an unforeseen condition.

The Owner's Representative, MWRA staff, and the Contractor have agreed to a lump sum amount of \$70,610.95 for this additional work with no increase in contract term.

The Contractor completed the work of all four of these change order items at its own risk in order to proceed with the remainder of the contract work.

**CONTRACT SUMMARY:**

	AMOUNT	TIME	DATED
Original Contract:	\$49,361,000.00	1,095 Days	11/10/11
Change Orders:			
Change Order 1*	\$0.00	0 Days	02/16/12
Change Order 2*	\$240,712.51	0 Days	12/26/12
Change Order 3	(\$44,075.34)	0 Days	11/06/13
Change Order 4*	(\$14,169.24)	0 Days	12/04/13
Change Order 5*	\$91,181.84	0 Days	02/19/14
Change Order 6*	\$105,659.90	0 Days	08/27/14
Change Order 7	<u>\$587,630.07</u>	<u>0 Days</u>	Pending
Total Change Orders	\$966,939.74	0 Days	
Adjusted Contract:	\$50,327,939.74	1,095 Days	

\*Approved under delegated authority

If Change Order 7 is approved, the cumulative total value of all change orders to this contract will be \$966,939.74 or 1.96% of the original contract amount. Work on this contract is approximately 85% complete.


**BUDGET/FISCAL IMPACT:**

The FY15 Capital Improvement Program budget includes \$50,276,650 for Contract 6457. Including this change order for \$587,630.07, the adjusted subphase total will be \$50,327,939.74 or \$51,289.74 over budget. This amount will be covered within the five-year CIP spending cap.

**MBE/WBE PARTICIPATION:**

The MBE and WBE participation requirements for this contract were established at 5.3% and 4.4%, respectively. The Contractor will be notified that these requirements are still expected to be met.

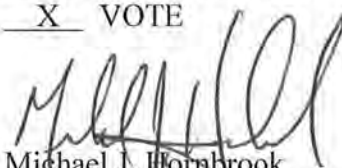
**STAFF SUMMARY**

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Gillis Pump Station Short-Term Improvements  
Bay State Regional Contractors, Inc.  
Contract 7260, Change Order 3

COMMITTEE: Water Policy & Oversight

Lisa Hamilton, P.E., Construction Coordinator  
Corinne M. Barrett, Director, Construction  
John P. Vetere, Deputy Chief Operating Officer  
Preparer/Title

           INFORMATION  
  X   VOTE

  
Michael J. Hornbrook  
Chief Operating Officer

**RECOMMENDATION:**

To authorize the Executive Director, on behalf of the Authority, to approve Change Order 3 to Contract 7260, Gillis Pump Station Short-Term Improvements, with Bay State Regional Contractors, Inc., for a not-to-exceed amount of \$235,933.19, increasing the contract amount from \$1,990,645.97 to \$2,226,579.16, and extending the contract term by 10 calendar days from July 26, 2014 to August 5, 2014.

Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 7260 in amounts not to exceed the aggregate of \$150,000 in accordance with the Management Policies and Procedures of the Board of Directors.

**DISCUSSION:**

MWRA's Northern Intermediate High (NIH) service area provides water to the communities of Reading, Stoneham, Wakefield, Wilmington, Winchester, and Woburn through a single 48-inch diameter pipeline (Section 89), which is fed by the Gillis Pump Station at Spot Pond in Stoneham.

The Pump Station boosts water pressure from MWRA's High service area to supply average day demands of 9.4 mgd to the NIH service area and 2.8 mgd to the High System Fells Covered Storage service area. The pump station is also designed to pump up to 60 mgd of untreated water out of the Spot Pond Reservoir in an emergency to serve the NIH and Northern High service areas.



The work of this contract includes the replacement of one 17-mgd, constant-speed pump with a smaller, more-energy-efficient 4.3-mgd pump with a variable frequency drive; the addition of two more variable frequency drives on two existing pumps; and the addition of a hydraulic pressure relief system to further protect the water distribution system from water hammer resulting from a sudden and unanticipated power failure.

Upon completion of this contract, all three “duty” pumps will have variable frequency drives. These improvements will result in more efficient operation and higher energy efficiency and will also provide flexibility to pump to the NIH service area under a wide range of emergency scenarios.

### **This Change Order**

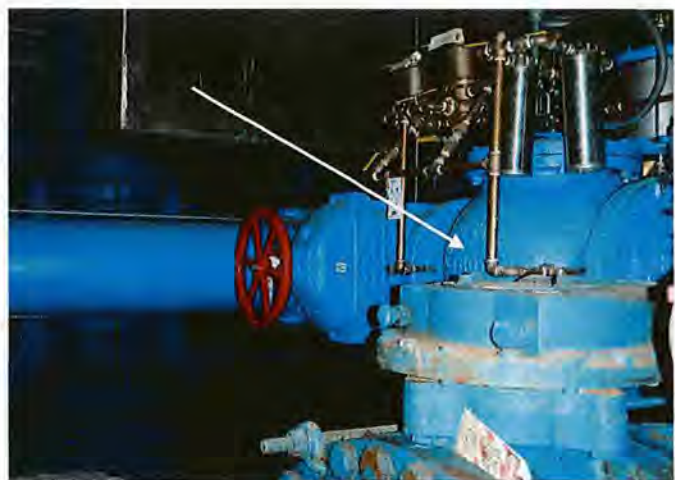
Work on this contract is approximately 91% complete. Per contract, the Contractor was required to reach Substantial Completion on July 26, 2014. Change Order 3 consists of four items. Staff are recommending not-to-exceed amounts for three of these items as negotiations continue with the Contractor to properly substantiate actual costs. The Contractor proceeded with or completed the work on all four items at its own risk in order to proceed with the remainder of the contract work. Change Order 3 will likely be executed unilaterally by MWRA.

These four items consist of a design error and three design omissions. Staff have compiled a list of all change order items in this contract that have resulted from an error or omission on the part of the Design Consultant, Dewberry Engineers Inc., and have notified Dewberry Engineers Inc., in writing, of the current status of these findings and of MWRA’s intention to seek appropriate cost recovery.

#### Perform Additional/Revised Valve Work

\$106,400

The contract requires installation of surge anticipator and isolation valves and associated piping along the discharge side of Pumps 1 through 8. During installation, the Contractor encountered interferences with existing conduits and junction boxes, which required installation of the contract-specified surge anticipator and isolation valves in a revised configuration. The Design Engineer did not verify the locations of existing equipment during design, which resulted in these interferences. The original design would have required a shutdown of all pumps during maintenance on any



**Surge Anticipator Valve**

individual surge anticipator valve to prevent a backflow surge. The reconfiguration of the piping created the additional space needed for the Contractor to furnish and install an additional isolation valve on the downstream side of each surge anticipator valve, which will allow for individual isolation of the surge anticipator valve while allowing the pump to remain in operation (a picture of one of the surge anticipator valves is shown in the picture above).

The approved Proposed Change Order (PCO) for this item of work has been identified by MWRA staff as a design error. MWRA staff and the Design Consultant recommend a not-to-exceed amount of \$106,400 for this work with no increase in contract duration. The Contractor has not agreed with this amount or the denial of additional time for this work.

Remove and Dispose of 70 Cubic Yards of Ledge \$94,600

While excavating for the installation of the new contract-specified butterfly valve, manhole, and tees for 8-inch and 12-inch connections on the north side of the Gillis Pump Station, the Contractor encountered ledge, which had to be removed to complete the installation (shown in the picture to the right). Record drawings for the site from a previous contract, which were provided to Dewberry Engineers Inc., indicated the presence of rock in the location specified for this installation. However, Dewberry failed to indicate the existence of rock on the drawings or include rock removal and disposal in the contract documents.



**Ledge Croppings Inside Excavated Pit**

The approved PCO for this item of work has been identified by MWRA staff as a design omission. MWRA staff and the Design Consultant recommend a not-to-exceed amount of \$94,600 for this work with no increase in contract duration. The Contractor has not agreed with this amount and the denial of additional time for this work.

Furnish and Install a Selector Switch for Three VFD Bypasses and Extend the Contract by 10 Calendar Days \$20,000

The contract documents specify a power supply “bypass” for the variable frequency drives (VFDs) of Pumps 1, 5 and 6, but omitted a pump motor control (ON/OFF) signal from the pump director panel to the VFD bypass for each pump. Therefore, the Contractor was required to furnish and install an additional relay, selector switch, and wiring so that each VFD is controlled by the pump director when in bypass mode. The Contractor is entitled to a 10-calendar-day time extension for this additional work.

The approved PCO for this item of work has been identified by MWRA staff as a design omission. MWRA staff and the Design Consultant recommend a not-to-exceed amount of \$20,000 for this work with a 10-calendar-day increase in contract term.

Perform Additional Conduit and Cabling Work

\$14,933.19

The resistance temperature detectors and the start/stop/lockout push button control station for the motors on Pumps 1, 5, and 6 are connected to the motor control center in the Electrical Room. Under the contract, VFDs are being added to control the pumps. The Design Engineer omitted the connections between the VFDs, the resistance temperature detectors, and the start/stop/lockout push button control station. Conduit and cable must be furnished to complete these necessary connections. The existing connection, which would not work with the new equipment, is no longer needed and must be removed.

The approved PCO for this item of work has been identified by MWRA staff as a design omission. MWRA staff and the Design Consultant recommend a lump sum amount of \$14,933.19 for this work with no increase in contract duration.

**CONTRACT SUMMARY:**

	AMOUNT	TIME	DATED
Original Contract:	\$1,858,000.00	300 Days	07/31/13
Change Orders:			
Change Order 1*	\$19,510.41	60 Days	05/22/14
Change Order 2*	\$113,135.56	0 Days	06/26/14
Change Order 3	<u>\$235,933.19</u>	<u>10 Days</u>	Pending
Total Change Orders	\$368,579.16	70 Days	
Adjusted Contract:	\$2,226,579.16	370 Days	

\*Approved under delegated authority

If Change Order 3 is approved, the cumulative total value of all change orders to this contract will be \$368,579.16 or 19.84% of the original contract amount.

**BUDGET/FISCAL IMPACT:**

The FY15 Capital Improvement Program budget includes \$2,103,000 for Contract 7260. Including this change order for an amount not to exceed \$235,933.19, the adjusted subphase total will be \$2,226,579.16 or \$123,579.16 over budget. This amount will be covered within the five-year CIP spending cap.

**MBE/WBE PARTICIPATION:**

There were no MBE or WBE participation requirements established for this contract due to limited opportunities for subcontracting.



# MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard  
100 First Avenue, Building 39  
Boston, MA 02129

Frederick A. Laskey  
Executive Director

Telephone: (617) 242-6000

Fax: (617) 788-4899

TTY: (617) 788-4971

## **PERSONNEL & COMPENSATION COMMITTEE MEETING**

*Chair:* K. Cotter  
*Vice-Chair:* J. Wolowicz  
*Committee Members:*  
J. Barrera  
J. Carroll  
P. Flanagan  
J. Foti  
A. Pappastergion  
H. Vitale  
J. Walsh

to be held on

Wednesday, September 17, 2014

Location: 100 First Avenue, 2nd Floor  
Charlestown Navy Yard  
Boston, MA 02129

Time: Immediately following Water Comm.

### **A. Approvals**

1. PCR Amendments – September 2014
2. Appointment of Superintendent, Clinton Advanced Wastewater Treatment Plant
3. Appointment of Program Manager, Process Monitoring, Deer Island
4. Appointment of Project Manager, Process Control, Deer Island
5. Appointment of Senior Staff Engineer, Structural
6. Appointment of Project Manager, Environmental Data
7. Appointment of Manager, Western Maintenance
8. Appointment of Manager, IT Security, Architecture and Engineering


## STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director  
**DATE:** September 17, 2014  
**SUBJECT:** September PCR Amendments

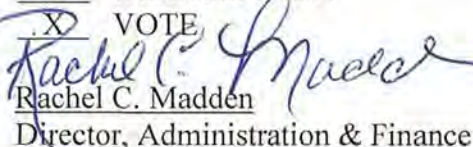


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COMMITTEE: Personnel and Compensation

  
Robert Donnelly, Director of Human Resources  
Joan C. Carroll, Manager Compensation  
Preparer/Title

INFORMATION

VOTE  
  
Rachel C. Madden  
Director, Administration & Finance

### RECOMMENDATION:

To approve the amendments to the Position Control Register (PCR) included in the attached chart<sup>1</sup>.

### DISCUSSION:

The PCR amendments included in this package reflect organizational changes aimed at improving the cost-effectiveness, structural soundness and staffing patterns within the Administration and Finance, Law and Operations Division.

These amendments are:

1. Title and grade change to a filled position (Administrative Manager to Sr. Contract Administrator) in DITP Capital Engineering, Operations Division, to reflect increased responsibilities and duties.
2. Title change to a filled position (Debt/Investment Analyst to Investment Manager) in Treasury, Administration and Finance Division as a result of a union agreement.
3. Title and grade change to a vacant position (Sr. Staff Counsel to Staff Counsel) in the Law Division to effect a reassignment of staff from Human Resources to Law.
4. Addition of a position (HVAC Specialist) at the Deer Island Treatment Plant, Operations Division to address staffing needs.

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<sup>1</sup> The Position Control Register lists all regular positions in this fiscal year's Current Expense Budget. Any changes to positions during the year are proposed as amendments to the PCR. The Personnel and Compensation Committee of the Board of Directors must approve all PCR amendments. In addition, any amendments resulting in an upgrade of a position by more than one grade level or increasing a position's annual cost by \$10,000 or more must be approved by the Board of Directors after review by the Personnel and Compensation Committee.

Three amendments require approval by the Personnel and Compensation Committee. The fourth amendment is an addition to the PCR and requires Board approval after review by the Personnel and Compensation Committee

**BUDGET/FISCAL IMPACT:**

The annualized budget impact of these PCR amendments will range from a savings of \$9,687 to a cost of \$8,288. The actual budget impact will be dependent on the salary placement of the future hire for the position of HVAC Specialist. Staff will ensure that any cost increases associated with these PCR amendments will not result in spending over the approved FY15 Wages and Salaries budget.

**ATTACHMENTS:**

New/Old Job Descriptions

**MASSACHUSETTS WATER RESOURCES AUTHORITY  
POSITION CONTROL REGISTER AMENDMENTS  
FISCAL YEAR 2015**

**PCR AMENDMENTS REQUIRING PERSONNEL & COMPENSATION COMMITTEE APPROVAL - September 17, 2014**


Number	Current PCR #	V/F	Type	Current Title	UN	GR	Amended Title	UN	GR	Current/Budget Salary	Estimated New Salary	Estimated Annual \$ Impact	Reason For Amendment	
P2	Operations Capital Engineering 2971012	F	T,G	Administrative Manager	6	9	Sr Contract Administrator	6	10	\$74,040	\$81,493 - \$81,493	\$7,453 - \$7,453	To reflect increased responsibilities associated with contract administration	
P3	Admin & Finance Treasury 4510009	F	T	Debt/Investment Analyst	6	12	Investment Manager	N/A	N/A	N/A	N/A - N/A	\$0 - \$0	Union Agreement	
P4	Law Law 7110005	V	T,G	Sr. Staff Counsel	6	13	Staff Counsel	C6	11	\$96,082	\$87,930 - \$87,930	-\$8,152 - -\$8,152	Reassignment of staff from Human Resources to Law	
<b>PERSONNEL &amp; COMP COMMITTEE TOTAL=</b>					<b>3</b>		<b>TOTAL:</b>					<b>-\$699 - -\$699</b>		

**PCR AMENDMENTS REQUIRING BOARD APPROVAL-September 2014**

Number	Current PCR #	V/F	Type	Current Title	UN	GR	Amended Title	UN	GR	Current/Budget Salary	Estimated New Salary	Estimated Annual \$ Impact	Reason For Amendment	
B2	Position To Be Added	N/A	N/A	N/A	N/A	N/A	HVAC Specialist	2	16	\$55,794	\$46,806 - \$64,781	-\$8,988 - \$8,987	To support staffing needs in department	
<b>BOARD TOTAL =</b>					<b>1</b>		<b>SUBTOTAL:</b>					<b>-\$8,988 - \$8,987</b>		
<b>GRAND TOTAL =</b>					<b>4</b>		<b>TOTAL ESTIMATED COSTS:</b>					<b>-\$9,687 - \$8,288</b>		

Legend:  
V = Vacant position, F = Filled position  
T = Title change, L = Location change, transfer to another Cost Center, G = Grade Change, SA= Salary Adjustment, E = Elimination.

## STAFF SUMMARY

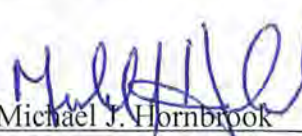
**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Appointment of Superintendent, Clinton Advanced Wastewater Treatment Plant

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COMMITTEE: Personnel & Compensation

INFORMATION  
 VOTE

John P. Vetere, Deputy Chief Operating Officer  
Robert G. Donnelly, Director, Human Resources  
David F. Duest, Director, Deer Island WWTP  
Preparer/Title

  
Michael J. Hornbrook  
Chief Operating Officer

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### RECOMMENDATION:

To approve the appointment of Mr. Robert E. Gorham, Area Manager (Unit 6, Grade 12), Clinton Advanced Wastewater Treatment Plant, to the position of Superintendent, Clinton Advanced Wastewater Treatment Plant (Non-Union, Grade 14), at an annual salary of \$114,699.25, commencing on September 20, 2014.

### DISCUSSION:

The position of Superintendent, Clinton Advanced<sup>1</sup> Wastewater Treatment Plant became vacant upon the promotion of the previous incumbent to the position of Director, Toxic Reduction and Control in February 2014.

The Superintendent, Clinton Advanced Wastewater Treatment Plant is responsible for all operations and maintenance of the Clinton Plant, including its landfill operation, permit compliance, staffing, and the plant's \$1.7 million operating budget. The Superintendent also is currently coordinating the construction of a \$4.3 million rehabilitation project with the daily operation of the plant. Staff anticipate that upon finalization of Clinton's new National Pollutant Discharge Elimination System (NPDES) permit, the Superintendent will be responsible for implementing the new permit, with stricter total phosphorus limits, and will oversee additional construction for new phosphorus treatment facilities at the plant.

The Superintendent, Clinton Advance Wastewater Treatment Plant reports to the Director, Deer Island Wastewater Treatment Plant.

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<sup>1</sup> Advanced wastewater treatment is defined as any process designed to produce an effluent of higher quality than normally required by the Federal Clean Water Act, which is secondary treatment. The Clinton plant performs nutrient (nitrogen and phosphorus) removal, as well as secondary treatment.



## **Selection Process**

Mr. Robert E. Gorham was the Clinton Plant's Area Manager, the second in charge of the treatment plant under the plant Superintendent since 1996. Because of his extensive experience and knowledge of the Clinton's Plant's operations and maintenance, Mr. Gorham was installed as the acting Superintendent when the position was vacated in February 2014. The Director of Deer Island recently interviewed Mr. Gorham and determined that Mr. Gorham's many years of experience and his record of successful operation of the Clinton Plant uniquely positioned him as the best possible candidate to fill the position permanently.

During his current tenure as the acting Superintendent, Mr. Gorham successfully oversaw the commencement of the plant's rehabilitation project, and he also successfully led the facility through a MaDEP annual audit and has maintained the plant's permit compliance.

Prior to becoming the acting Superintendent, Mr. Gorham was directly responsible for the plant's process control, making process adjustments to ensure permit compliance. He implemented operational performance logs to enhance operator feedback to improve the plant's communication and track issues. Mr. Gorham was also in charge of setting maintenance priorities at the plant and played a key role in helping to develop and manage the plant's operating budget each year. He developed the plant's monitoring program and continues to work with the Department of Laboratory Services to ensure adequate testing is performed to ensure permit compliance and optimal process control.

Mr. Gorham began working at MWRA as a skilled laborer in 1970 and has more than 44 years of experience working at the Clinton Plant in various positions of increasing responsibility. Through Mr. Gorham's efforts, the Clinton Plant and its assets have been well maintained and have required minimal major work over the decades, while maintaining permit compliance. While working in his previous positions as Area Manager, Operations Supervisor, and Operator, Mr. Gorham has always quickly responded to plant alarms during overnight and weekend shifts with dedication and expertise.

Mr. Gorham holds a Grade 7 Full-Active Wastewater Operator's License from the Commonwealth of Massachusetts' Department of Environmental Protection. He also has received numerous certificates at University of Lowell in Wastewater Treatment Plant Operations and Laboratory coursework.

Mr. Gorham's current salary as acting Superintendent is \$114,699.25 and the recommended salary is the same, \$114,699.25, which is commensurate with the Superintendent, Clinton Advanced Wastewater Treatment Plant position and its accompanying responsibilities. Staff plan to backfill Mr. Gorham's former position of Area Manager at a later date.

## **BUDGET/FISCAL IMPACT:**

There are sufficient funds for this position in the FY15 Current Expense Budget.

## **ATTACHMENTS:**

Resume of Mr. Robert Gorham  
Position Description  
Organization Chart

# Robert E. Gorham

## Experience

Massachusetts Water Resources Authority (MWRA) and Metropolitan District Commission (MDC): 1970 – Present

### **Acting Superintendent, Clinton Advanced Wastewater Treatment Plant: March 2014 – Present**

- Directs the operation and maintenance of the plant
- Manages \$1.7 million annual budget
- Currently oversee the construction of \$4.3 million rehabilitation of digesters, primary tanks, and influent gates

### **Area Manager of Clinton: 1996 – 2014**

- Supervised operating and maintenance staff.
- Supervised all operating functions for maximum treatment efficiency to ensure compliance with all Local, State, Federal regulations
- Managed process control of the plant
- Monitored the efficiency of the plant's operational procedures through review of logs, laboratory results, maintenance reports, and visual inspections
- Assumed duties and responsibilities of the Superintendent in his absence
- Assisted in preparation of the annual operating budget
- Responded to alarm conditions during off-hours

### **Operations Supervisor: 1992 – 1996**

- Supervised daily operating and maintenance functions and staff
- Provided troubleshooting of operation and maintenance functions
- Trained operations and maintenance staff
- Prepared monthly operating reports
- Met with local, state and federal officials on matters relating to treatment plant operations

### **Attendant/Operator: 1979 – 1992**

- Operated the plant during shift
- Performed repairs and preventative maintenance
- Supervised staff on shift

**Skilled Laborer: 1970 – 1979**

- Repaired equipment as needed
- Operated trucks and equipment

**Key Achievements:**

- Worked with Massachusetts DEP to change landfill ground water monitoring from quarterly to bi-annually
- Received Excellence in Performance Award in 1993 from MWRA for work on landfill sampling
- Started up the upgraded advanced plant in 1992, including seeding digesters
- Developed manual preventive maintenance system for 1992 plant upgrade
- Recommended the installation of four submersible pumps to provide additional flow capacity and redundancy for aging lift pumps
- Oversaw the \$1.8 million construction of the aeration basin's fine-bubble, diffused-air system, and the four submersible pumps

**Education:**

University of Lowell

- Wastewater Treatment Plant Operations 1 - 1981
- Wastewater Treatment Plant Operations 2 - 1982
- Wastewater Treatment Laboratory 1 - 1981
- Wastewater Treatment Laboratory 2 - 1982
- Wastewater Plant Management - 1983
- Numerous courses pertaining to Wastewater ranging from 8 hours to 40 hours taken from 1980 - 2013

**Licenses:**

- Wastewater Treatment Facilities Operators License, Mass. License #948, Full Grade 7
- CDL Drivers License, Class BM, Massachusetts

**MWRA  
POSITION DESCRIPTION**

**POSITION:** Superintendent  
**PCR#:** 2910001  
**DIVISION:** Operations  
**DEPARTMENT:** Clinton Advanced Wastewater Treatment Plant

**BASIC PURPOSE:**

Plans and directs all administrative and operating aspects of a major metropolitan sewage treatment plant. Has responsibilities for an operating budget over \$1 million.

**SUPERVISION RECEIVED:**

Works under the supervision of the Director, DIWWTP.

**SUPERVISION EXERCISED:**

Exercise close supervision a staff of professional with managerial, administrative and operating responsibilities. Supervises through subordinates a staff of approximately eight (8) employees, who perform technical, manual and clerical duties.

**ESSENTIAL DUTIES AND RESPONSIBILITIES:**

- Establishes operating policies and procedures for the operation and maintenance of the treatment plant.
- Analyzes and directs plant operations through view of logs, laboratory reports and personal observation.
- Prepares plans, specifications and cost estimates of maintenance, repair, construction and alteration projects.
- Directs through subordinates the training of plant personnel in operating, maintenance, health and safety program.
- Prepares budgets, reports, plans and specifications for changes in structures or equipment related to the treatment plant.
- Approves requisitions for material and equipment.

- Confers with local, state and federal officials and visiting professionals on matters relating to treatment plant operations.
- Implements training for start-up of any new treatment facilities at Clinton.
- Assesses construction impacts on a day-to-day operation and various construction schedules for compliance with court orders goals.
- Participates in preparing for collective bargaining and hears Step One grievances.

**SECONDARY DUTIES:**

- Performs related duties as required.

**MINIMUM QUALIFICATIONS:**

Education and Experience:

- (A) Knowledge of engineering and analytical principles and practices as normally attained through a four (4) year college program in civil engineering or related field; and
- (B) Understanding of the principles of construction, operation and maintenance of sewage treatment plants as acquired by eight (8) to ten (10) years with at least four (4) years in a supervisory capacity in a Grade 7 type wastewater treatment facility; or
- (C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Knowledge of Federal and State laws and regulations relative to wastewater treatment required.
- (B) Excellent administrative, interpersonal, management and written and oral communication skills required.

**SPECIAL REQUIREMENTS:**

A valid Massachusetts Class D Motor Vehicle Operators license required.

A Grade VII Wastewater Treatment Facilities Operators license is required.

**TOOLS AND EQUIPMENT USED:**

Office machines as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

### **PHYSICAL DEMANDS:**

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential duties.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms. The employee is regularly required to stand and walk. The employee is frequently required to sit and talk or hear.

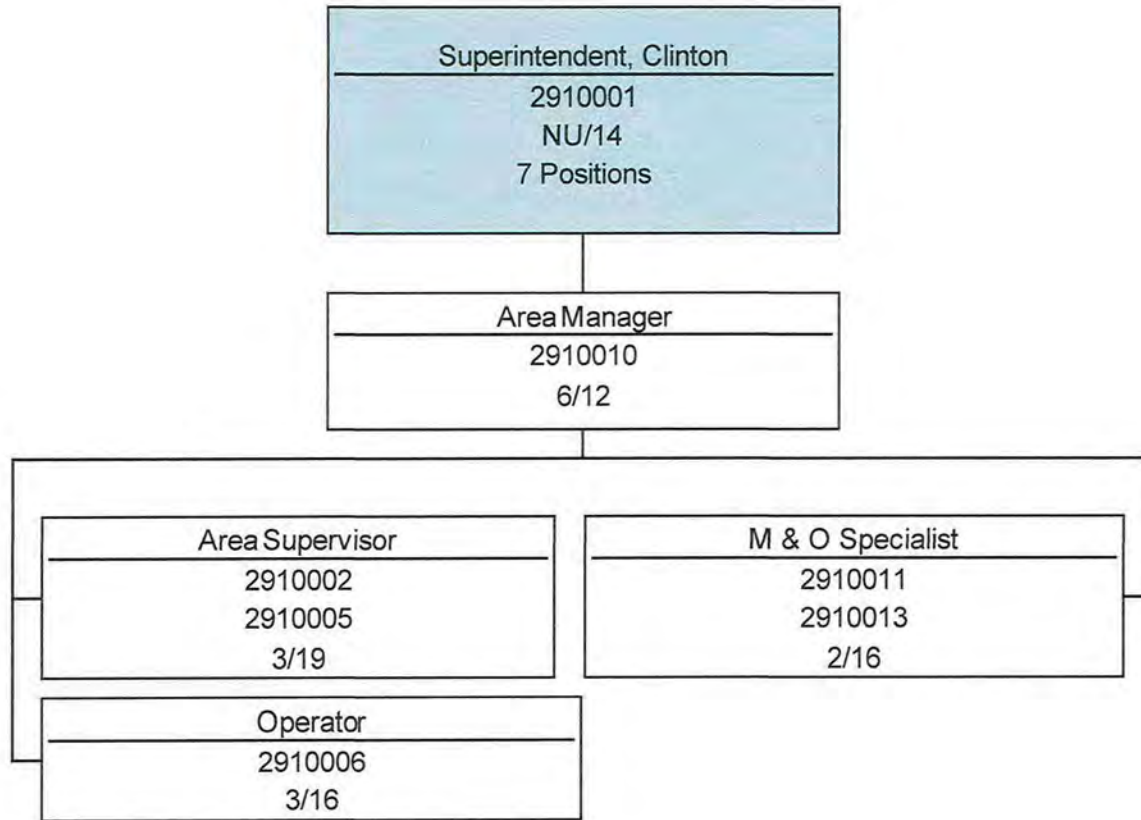
The employee must frequently lift and/or move up to 10 pounds and occasionally lift and/or move more than 50 pounds. Specific vision abilities required by this job include close, distance, color and peripheral vision, depth perception, and the ability to adjust focus.

### **WORK ENVIRONMENT:**


The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job. While performing the duties of this job, the employee regularly works in an office environment.

The noise level in the work environment is a moderately quiet office setting.

Operations- Wastewater Treatment  
**Clinton Wastewater Treatment Plant**  
September 2014



## STAFF SUMMARY

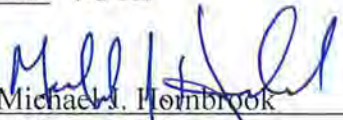
**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Appointment of Program Manager, Process Monitoring, Deer Island

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COMMITTEE: Personnel & Compensation

Robert G. Donnelly, Director, Human Resources  
John P. Vetere, Deputy Chief Operating Officer  
David F. Duest, Director, Deer Island WWTP  
Preparer/Title

INFORMATION  
 VOTE

  
Michael J. Hombrook  
Chief Operating Officer

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### RECOMMENDATION:

To approve the appointment of Ms. Lisa L. Wong, Project Manager, Process Monitoring (Unit 9, Grade 25) to the position of Program Manager, Process Monitoring (Unit 9, Grade 29), at an annual salary of \$100,808.66, commencing on September 20, 2014.

### DISCUSSION:

The Process Control Department on Deer Island is split among three functional groups: Monitoring & Compliance, Process Instrumentation & Control System (PICS), and Process Optimization. Monitoring & Compliance staff concentrate on treatment plant process performance monitoring, permitting, and compliance issues. PICS staff focus on plant equipment monitoring and plant automation, and Process Optimization staff concentrate on plant performance optimization, efficiency improvements, and energy use optimization strategies.

Upon the recent retirement of the Program Manager, Process Engineering, an internal staffing assessment was completed for Deer Island's Process Control Department. On June 25, 2014, to better meet the needs of the department, the Board approved a PCR Amendment, which changed the vacated position of Program Manager, Process Engineering to Program Manager, Process Monitoring. This staff summary recommends the appointment to this amended position. (A separate staff summary is being presented at this meeting for the appointment of Project Manager, Process Control.)

The Program Manager, Process Monitoring position reports to the Manager, Process Control and will manage all aspects of the Process Monitoring, including direct supervision of four staff. This position is responsible for directing the technical program for wastewater process data generation, collation, analysis, and reporting for the Deer Island Treatment Plant. The position is also responsible for the process sample collection and testing program at the treatment plant, as well as, providing technical support to the Manager, Process Control on all permit-related issues.



## **Selection Process**

The Program Manager, Process Monitoring position was posted internally and two candidates applied. The Manager, Process Control, the Deputy Director, Deer Island WWTP, and a representative from MWRA's Affirmative Action and Compliance Unit interviewed both candidates. Upon completion of those interviews Ms. Lisa Wong was identified as the best candidate for the position.

Ms. Wong has been working at MWRA for more than 24 years. First hired as an intern in the former Harbor Studies Department (now Environmental Quality), Ms. Wong has been working at the Deer Island Treatment Plant for the past 10 years. She currently holds the position of Project Manager, Process Monitoring in the Process Control Department, where she supervises two plant engineers and a secretary. In her current position, she is responsible for managing the preparation, review, and distribution of all regulatory and process data reporting at the Deer Island Treatment Plant. In addition, Ms. Wong maintains and manages the data within the Operations Management System (OMS) database, which stores all of the treatment plant's process monitoring and compliance monitoring data. Ms. Wong also manages Deer Island's Air Monitoring Program and she is responsible for all odor control testing, as well as responding to odor control complaints from the public. In addition, Ms. Wong manages all process laboratory and process sampling at Deer Island.

Prior to working in her current job, Ms. Wong held previous positions of increasing responsibility in the Department of Laboratory Services (DLS), where she managed a wide range of sampling, monitoring, and laboratory testing projects relating to drinking water and wastewater, managed contract laboratories, reported data, and evaluated testing results. Ms. Wong also supervised the Microbiology team where she supervised analysts and was responsible for collecting and analyzing wastewater and harbor samples. She was responsible for writing standard operating procedures, preparing quality control documents, and training staff.

Ms. Wong earned a Bachelor of Science Degree in Biology from the University of Massachusetts, Boston, and holds a Grade 6 Massachusetts Operator's License.

## **BUDGET/FISCAL IMPACT:**

There are sufficient funds for this position in the FY15 Current Expense Budget.

## **ATTACHMENTS:**

Resume of Lisa L. Wong  
Position Description  
Organization Chart

## Lisa L. Wong

### QUALIFICATIONS

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- Practical experience and understanding of wastewater, residuals, and odor control treatment, and the relevant environmental impacts, gained primarily through 23+ years of experience in various capacities within the MWRA including 9+ years with the DITP Process Control Department, 10+ years with the Department of Laboratory Services, and nearly 4 years with the Harbor Studies Group (currently the Environmental Quality Department).
- Comprehensive understanding of regulatory and reporting requirements specified in the National Pollutants Discharge and Elimination System (NPDES) Permit and the Title V Air Quality Operating Permit for DITP.
- Nearly 20 years experience supervising and managing teams consisting of three to six staff members of varying levels of experience and skills.
- Understanding of relational database technology, database management, and reporting systems.
- Demonstrated ability to manage special studies and investigations from design stage to summary reporting.
- Understanding of environmental monitoring methods and statistical analysis of data.
- Demonstrated ability to manage multiple projects and tasks while continuing to meet deadlines.
- Strong oral and written communications skills.
- Proven self-motivator and a dedicated team player with strong supervisory and leadership skills.

### EXPERIENCE

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MASSACHUSETTS WATER RESOURCES AUTHORITY, BOSTON, MA

July 1990 – Present

#### **Project Manager - Process Monitoring, DITP Process Control Department** (September 2004 – Present)

- Manage the Process Monitoring group comprised of a secretary for the Process Control Department and a team of Plant Engineers with responsibilities that include compliance and process control sampling, monitoring, and testing, in addition to data management, and reporting responsibilities.
- Responsible for managing the preparation, review, and distribution of all DITP wastewater and emissions regulatory compliance and non-regulatory operational performance reports, all monthly chemical usage budget reports, monthly and quarterly performance indicator reports (DITP Yellow and Orange Notebook pages), Secondary Blending reports, and bi-annual Landfill Monitoring reports.
- Responsible for providing timely notifications and supporting information and data to internal regulatory liaisons for blending events, plant upset conditions, shutdowns, or failures and exceedances, as specified in the NPDES and the Air Quality Operating Permits for DITP.
- Overall responsibility for maintaining the DITP process monitoring and reporting program and includes managing the collection, review, quality control, reporting, and archiving of over 13,000 operational data points and over 6,000 laboratory results in the DITP Operations Management System (OMS) and the CTG Emissions Reporting databases integrating data from the Process Information & Control System (PICS), the Central Laboratory Information Management System (LIMS), in addition to other sources of data.
- Manage the DITP Air Monitoring program to support both compliance and process control requirements by overseeing the sampling, reporting, and data management aspects of the program and providing timely front-line information to Process Control and Operations staff. Also includes investigating and tracking the inventory of resident Odor Complaints calls.

- Manage the process laboratory testing for wastewater processes and manage the supply inventory and equipment used in the two Process Control laboratories including the purchase of both consumables, as well as laboratory equipment and instruments such as samplers, sample refrigerators, solids drying ovens, solids analyzers, microscopes, balances, centrifuges, and field meters. Manage laboratory equipment service contracts.
- Collaborate with and provide assistance to other managers and engineers, in both Process Control and Operations, to support and optimize treatment plant operations and evaluate alternative treatment strategies. Provided sampling assistance, laboratory testing coordination, data review, and technical assistance on several special studies including a bench study to evaluate the effectiveness of various struvite remediation compounds; a study to evaluate the feasibility of a new biosolids screening unit process for possible future implementation at DITP; as well as several bench studies performed by consultants to evaluate the digestibility of DITP's wastewater sludge with varying concentrations of source separated organics ("SSO").
- Routinely compile operational and laboratory data to be used for evaluating future budgetary needs and the cost effectiveness of various process optimization efforts, as well as for use in predictive evaluations to determine the status of DITP with regards to possible future regulatory and environmental requirements.
- Provide continuous process monitoring by evaluating daily operating conditions using laboratory results, operational data, visual inspections, and direct communications with other Process Control and Operations staff.
- Develop and maintain systems for making data accessible to users and provide timely reports to Operations and Process Control staff for process monitoring and for evaluating alternative operational strategies.
- Responsible for all DITP routine and project specific sampling and testing programs and includes coordinating and monitoring such activities with Process Control, Central Laboratory, and Operations staff.
- Schedule and coordinate the periodic sampling and testing of process chemicals to ensure chemical deliveries meet minimum contract specifications.
- Oversee the processing of data requests for use by MWRA staff and for external parties or consultants.

**Project Manager, Department of Laboratory Services (August 2000 – September 2004)**

- Directed and managed a wide range of sampling, monitoring, and laboratory testing projects and studies relevant to drinking water, wastewater, and environmental issues.
- Communicated project objectives and client needs to laboratory personnel and provided project updates to clients as needed or as requested.
- Interacted with contract laboratories to coordinate sampling/testing projects.
- Responsible for reporting laboratory results to both interagency and intra-agency client groups.
- Prepared internal and external correspondence, reports, and graphics that are both technical and administrative in nature.
- Reviewed results and evaluated monitoring program testing procedures, frequency, and quality assurance protocols.

**Laboratory Supervisor I & II, Department of Laboratory Services (March 1994 – August 2000)**

- Supervised a team of Microbiologist(s), Biologist(s), Chemist(s), technicians and interns in the performance of a wide range of laboratory analyses and field sampling activities.
- Provided training, mentoring and guidance to team and other laboratory personnel.
- Responsible for implementing and maintaining a thorough microbiology QA/QC program that complies with the DEP and FDA laboratory certification requirements.
- Wrote and reviewed analytical, sampling, safety and QA/QC SOP's and documents.

**Junior Bacteriologist, Harbor Studies Group** (August 1991 – March 1994)

- Coordinated field and laboratory activities to meet the requirements of the Harbor Monitoring Project.
- Trained and supervised a staff of six interns each summer to assist in field and laboratory operations.
- Collected in-situ water quality monitoring data and samples.
- Conducted laboratory analyses for sewage indicator bacteria using the membrane filtration technique.
- Assisted in the preparation of reports and presentations by developing graphs and figures.

**Laboratory/Field Intern, Harbor Studies Group** (July 1990 – August 1991)

- Performed field and laboratory activities in support of the Harbor Monitoring Project.

UNIVERSITY OF MASSACHUSETTS, BOSTON, MA

July 1987 – July 1990

**Research Assistant, Psychology Department**

- Performed and assisted in the development of experiments to investigate a variety of aspects in the psychobiological development of *Rattus norvegicus*.
- Published manuscripts (furnished upon request).

**COMPUTER AND DATABASE SKILLS**

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**Languages:** PowerBuilder 6, Visual Basic 6, SQL, ANSI C

**Databases / OS:** Oracle, MS Access, Windows 7 and earlier, MS-DOS

**Applications:** Microsoft Office Suite (Excel, Word, PowerPoint, Outlook), OS/soft PI and PI  
ProcessBook, TopView Email Notification, Maximo Work Order Tracking System

**EDUCATION, LICENSES, AND CERTIFICATIONS**

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**MA Wastewater Treatment Plant Operator License (Grade VI) – Active Status**

January 2006

**Client/Server Technology Certificate Program** (Worcester Polytechnic Institute, Waltham, MA)

- Intensive hands-on technical certificate program focused on database and graphical user interface design methodologies utilizing Oracle, SQL, Visual Basic 6 and PowerBuilder 6.

**Introduction to Programming with C** (University of Massachusetts, Lowell, MA)

**Ocean Environments** (Harvard University Extension School, Cambridge, MA)

- Semester course in the study of marine ecology and coastal ecosystems management.

**Applied Statistics** (University of Massachusetts, Boston, MA)

**Bachelor of Science in Biology** (GPA 3.5/4.0)

September 1985 – June 1990

Minor in Psychology

Distinguished Honors in Biobehavioral Studies

**MWRA  
POSITION DESCRIPTION**

**POSITION:** Program Manager, Process Monitoring

**PCR#:**

**DIVISION:** Operations

**DEPARTMENT:** Process Control

**BASIC PURPOSE:**

Manages technical programs for wastewater process data generation, collation, analysis, and presentation as assigned.

**SUPERVISION RECEIVED:**

Works under the general supervision of the Manager, Process Control.

**SUPERVISION EXERCISED:**

Exercises close supervision of the Project Engineer, Process Data Specialist, Data Entry Clerk and Process Lab Supervisor.

**ESSENTIAL DUTIES AND RESPONSIBILITIES:**

- Manages all areas of wastewater data for the Operations Department of Deer Island.
- Manages the collection of data from all sources including Central Lab, Operator Logs, Process Labs, PICS, etc.
- Manages the review of all data including all unit process and plant balances.
- Manages the generation of all Operations reports including redesigned and ad hoc as requested. Designs all OMS and PICS reports including location codes and algorithms.
- Delivers process data back to the plant Operators such time and form as to provide

maximum process control value.

- Interfaces Operations data programs with other Deer Island and MWRA departments such as the Central Lab, FIS, ENQUAD, MIS, etc.
- Is responsible for all sampling programs of the Operations Department including odor control, groundwater monitoring, and sampler reliability.
- Is responsible for Operator training (in conjunction with the Training Department) with respect to sampling, including on-shift.
- Supervises the work of Project Engineers, Process Data Specialists, Data Entry Clerks and other data personnel.

**SECONDARY DUTIES:**

- Performs other related duties as required.

**MINIMUM QUALIFICATIONS:**

Education and Experience:

- (A) A four (4) year college program in environmental, chemical or civil engineering, or related field. A Masters degree in engineering or science is desired; and
- (B) Seven (7) to nine (9) years of experience in wastewater treatment process data generation, collation, analysis, and presentation is required; and
- (C) Five (5) years laboratory experience in wastewater chemistry and microbiology. Two (2) years experience in wastewater sampling including sample splitting and preservation; or
- (D) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Outstanding computer skills in preparation and presentation of wastewater data. Software experience must include spreadsheets, word processing, database, and graphics. PC and network skills required.

(B) Demonstrated ability to plan, organize, direct, train, and assign duties to subordinates is required.

(C) Demonstrated written and verbal communication skills.

**SPECIAL REQUIREMENTS:**

Massachusetts registration as professional engineer or eligible through reciprocity preferred.

Massachusetts Wastewater Treatment Plant Operations Grade VI certification, or ability to obtain within one (1) year.

**TOOLS AND EQUIPMENT USED:**

Office equipment as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

**PHYSICAL DEMANDS:**

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to stand, walk, climb or balance, stoop, kneel, crouch, or crawl, taste or smell.

The employee must frequently lift and/or move up to 10 pounds. Specific vision abilities required by this job include close vision, distance vision, color vision, depth perception, peripheral vision and the ability to adjust focus.

**WORK ENVIRONMENT:**

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee occasionally works in outside weather

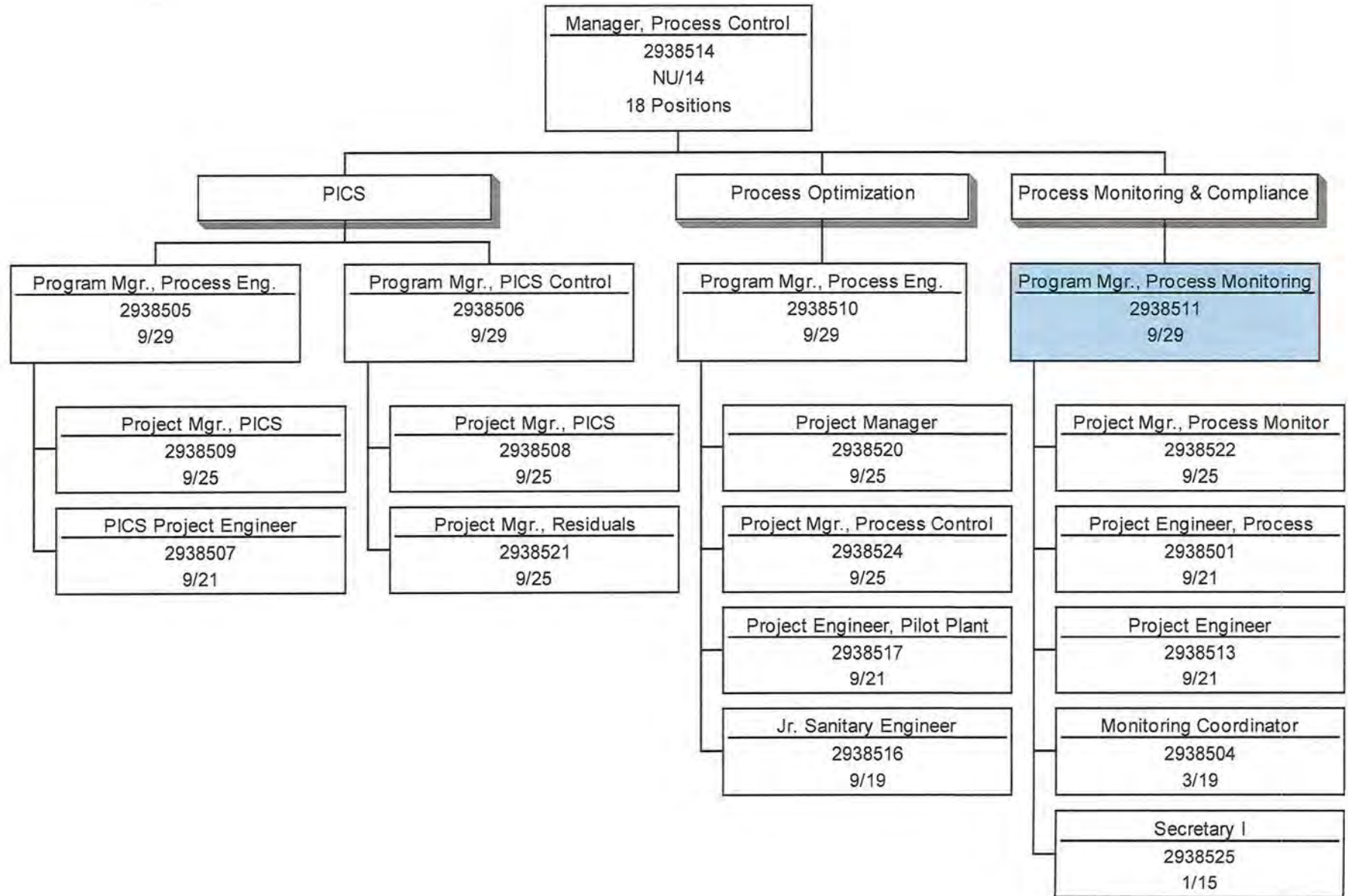
conditions. The employee occasionally works near moving mechanical parts, and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in high precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals and risk of electrical shock.

The noise level in the work environment is usually loud in field settings and moderately quiet in an office setting.

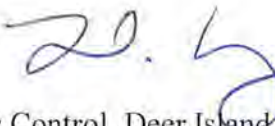
**May 2014**



Operations - Wastewater Treatment  
**Deer Island - Process Control**  
 September 2014



## STAFF SUMMARY


**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Appointment of Project Manager, Process Control, Deer Island

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COMMITTEE: Personnel & Compensation

INFORMATION  
 VOTE

Robert G. Donnelly, Director, Human Resources  
John P. Vetere, Deputy Chief Operating Officer  
David F. Duest, Director, Deer Island WWTP  
Preparer/Title

  
Michael J. Hornbrook  
Chief Operating Officer

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### RECOMMENDATION:

To approve the appointment of Mr. Timothy Beaulieu, Project Manager, Meter Data (Unit 6, Grade 11) to the position of Project Manager, Process Control (Unit 9, Grade 25), at an annual salary of \$93,955.64, commencing on September 20, 2014.

### DISCUSSION:

The Process Control Department on Deer Island is split among three functional groups: Monitoring & Compliance, Process Instrumentation & Control System (PICS), and Process Optimization. Monitoring & Compliance staff concentrate on treatment plant process performance monitoring, permitting, and compliance issues. PICS staff focus on plant equipment monitoring and plant automation, and Process Optimization staff concentrate on plant performance optimization, efficiency improvements, and energy use optimization strategies.

The position of Project Manager, Process Control became vacant upon the recent promotion of the previous incumbent to the position of Manager, Process Control.

The Project Manager, Process Control position reports to the Manager, Process Control, and is responsible for managing process improvement projects and providing problem-solving support for operations staff as-needed. The position also assists in coordinating activities with the Department of Laboratory Services and the Process Monitoring group, and coordinates on-island work activities between maintenance, operations, and contractors to ensure that Deer Island's wastewater process is not interrupted.

### Selection Process

The position of Project Manager, Process Control was posted both externally and internally, and a total of 15 candidates applied for this position, including one external candidate. The Deputy Director, Deer Island WWTP, the Manager of Process Control, and a representative from MWRA's Affirmative Action and Compliance Unit interviewed five internal candidates who met

the requirements of the position. Upon completion of the interviews, Mr. Timothy Beaulieu was identified as the best candidate for the position.

Mr. Beaulieu began working at MWRA in March 1996 as a Senior Lab Technician in the Central Laboratory on Deer Island and was promoted to the position of Quality Assurance Specialist shortly thereafter, where he performed audits, wrote procedures, and trained staff on various aspects of quality assurance and quality control. Since that time, Mr. Beaulieu has been promoted several other times into positions of increasing responsibility. Since January 1999, he has held three different positions in MWRA's Metering Unit at the Chelsea Facility, including Meter Maintenance Supervisor, where he supervised seven technicians responsible for maintaining metering instrumentation. Mr. Beaulieu currently holds the position of Project Manager, Meter Data and is responsible for managing the meter data for all MWRA drinking water and wastewater pipelines.

Coordinating work activities between maintenance, operations, and contractors is a focus of this position. In his position as Project Manager, Meter Data, Mr. Beaulieu coordinated daily work activities and long-term projects with maintenance, operations, and contractors. Coordination with the laboratory is necessary to ensure that Deer Island's process control issues are properly addressed. Mr. Beaulieu's previous experience with laboratory practices and personnel in Deer Island's Central Lab will serve him well in coordinating with lab staff. His knowledge and experience with laboratory process control will help improve data interpretation when evaluating monitoring issues. Problem solving with wastewater treatment process and equipment issues is another important aspect of the position and Mr. Beaulieu successfully worked daily to review metering flow data and identify and resolve problems with metering equipment so that accurate flow data was provided. Mr. Beaulieu has excellent skills managing process improvements. He recently coordinated and implemented a major upgrade to the wastewater and water metering hardware and software to improve reliability. He is qualified for and expected to obtain a Grade 6 Wastewater Operator's License within a year.

Mr. Beaulieu's unique combination of education and experience has afforded him an excellent understanding of NPDES permit compliance issues, wastewater plant process operation and analysis, fluid dynamics, instrumentation, data management, laboratory knowledge, and project management, all of which establish him as the ideal candidate for this position.

Mr. Beaulieu earned a Bachelor of Science Degree in Biology-Biochemistry from Brown University, where he graduated Magna Cum Laude.

**BUDGET/FISCAL IMPACT:**

There are sufficient funds in the Operations Division's FY15 Current Expense Budget for this position. The recommended salary is in accordance with guidelines established in Unit 9's collective bargaining agreement for promotional increases.

**ATTACHMENTS:**

- Resume of Timothy Beaulieu
- Position Description
- Organization Chart

## Timothy Beaulieu

### Professional History

#### **Massachusetts Water Resources Authority**

Project Manager, Meter Data

Sept 03-Present

Acting Meter Maintenance Supervisor

Feb 01-Sept 03

Statistical Supervisor, Water Metering

Jan 99-Feb 01

- Primary responsibility is to manage and maintain databases for Water Revenue, Transport pumping stations, ENS and Odor/Corrosion Control project Telog systems. Includes running maintenance routines in MS-Access, backing up data from server to other media, adding and appending records for new meter locations, and analyzing the database to ensure data completeness.
- Works closely with MIS to ensure adequate IT resources for Telog Enterprise software
- Supports clients who use Telog software, by providing training, updating software versions, and troubleshooting performance issues; provides 24 hour support to Water and Wastewater OCC's.
- Prepares and analyzes reports for Water Revenue on weekly, monthly and yearly basis
- Analyzes wastewater flow data for completeness and data integrity, and performs necessary corrections/edits to data when meter performance is not acceptable
- Assists with analysis of rain gauge data and storm response
- Develops and implements tools in MS-Access and other utilities to facilitate report generation and data analysis.
- Guides the scheduling of field maintenance activities in response to data anomalies.
- Maintains all database change records
- Prepares and tracks meter calibration scaling sheets.
- Reviews records of preventative maintenance to meters and assesses data quality pre- and post-maintenance. Directs re-calibration of meters when required.
- Recommends improvements to Telog software and performs testing of software revisions in development environment
- Tracks software bugs and desired features as the software undergoes frequent revisions. Assists software vendor in prioritizing requests for changes to software.
- Supervises Statistical Supervisor and Data Analyst.
- Provides technical support, training and SOP writing assistance to meter maintenance crews; analyzes real time data to determine success of corrective maintenance activity.
- While in the position of Meter Maintenance Supervisor, closely supervised all activities of 7 meter technicians, in addition to duties detailed above.

**Massachusetts Water Resources Authority**

Quality Assurance Specialist, Central Lab-Deer Island

Jan 97-Dec 98

- Assisted the Lab Manager: Quality Assurance in all aspects of following the Quality Assurance Management Plan.
- Prepared reports to EPA on lab performance during semi-annual performance review studies.
- Performed spot lab audits to ensure compliance with state and federal regulations for sample analysis.
- Tracked monthly statistics for lab QA efforts and prepared reports for Orange and Yellow notebooks.
- Initiated, tracked and investigated Data Anomaly Reports and recommended actions.
- Guided lab chemists and technicians in preparation for outside audits (MADEP, NELAP, etc)
- Provided "train the trainer" sessions for lab staff who in turn taught classes in QA, safety and GLP, as well as acting as trainer for some modules.
- Supported Client Services and the individual lab departments as needed.
- Analyzed data and prepared reports from LIMS using available tools including ad hoc report generator.
- Weekend/holiday rotations on sample collection and analysis

**Massachusetts Water Resources Authority**

Senior Lab Technician, Central Lab-Deer Island

Mar 96-Dec 96

- Collected samples throughout Deer Island Treatment Plant while ensuring proper handling, preservation, and chain of custody of said samples.
- Worked with the Sample Management Team on all aspects of sample handling.

**Inchcape Testing Services/Aquatec**

Chemist/Lab Technician

Jan 93-Feb 96

- Performed a variety of chemical and biological analyses of water, wastewater, and solids samples.
- Performed sample collection and preservation at various sites including wastewater treatment plants, industries, landfills and excavations.

**Education**

**Brown University**

Bachelor's of Science, Biology-Biochemistry, 1990 (Magna Cum Laude)

**MWRA  
POSITION DESCRIPTION**

**POSITION:** Project Manager, Process Control

**PCR#:** 2938524

**DIVISION:** Operations

**DEPARTMENT:** Deer Island Process Control

**BASIC PURPOSE:**

Provides technical support to Operations and has overall project management responsibility for a variety of wastewater treatment process control/optimization initiatives.

**SUPERVISION RECEIVED:**

Works under the general supervision of a Manager, Process Control.

**SUPERVISION EXERCISED:**

May include close supervision of Project Engineer(s), contract staff and/or interns.

**ESSENTIAL DUTIES AND RESPONSIBILITIES:**

- Conducts process control studies with the objective of identifying process and/or equipment modifications which would improve process performance to include chemical and/or energy use optimization initiatives. Manages the implementation of modifications as directed.
- Assists with check out and start-up of new process control equipment and systems. Performs field investigations and recommends solutions to process control problems that arise during plant operation.
- Prepares specifications and oversees chemical supply and replacement contracts.
- Assists in the coordination of field sampling activities between the Department of Laboratory Services and the Process Monitoring Group within Process Control. Assists in sampling activities when required.
- Coordinates maintenance and capital work with operational staff to provide process oversight and assist Operations
- Assists in the determination of operating capability and associated performance criteria for existing and proposed wastewater processes.

- Reviews the plans, specifications, and process and instrumentation diagrams submitted by control system vendors and consultants for proposed engineering modifications.
- Oversees the activities of assigned Project Engineers, contract employees and interns. Evaluates assigned employees performance according to MWRA procedures.

**SECONDARY DUTIES:**

- Provides on-call emergency and routine assistance to support group objectives.
- Performs related duties as required.

**MINIMUM QUALIFICATIONS:**

Education and Experience:

- (A) Bachelor degree in a technical discipline: Environmental Engineering, Civil Engineering, or Chemical Engineering preferred
- (B) Five (5) to seven (7) years experience with wastewater or similar industrial process in an engineering, operation, maintenance, or laboratory role.
- (C) Any equivalent combination of education and/or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Ability to interpret Piping and Instrument Diagrams, process schematics, Logic Diagrams and Mechanical Diagrams.
- (B) Excellent interpersonal, oral and written communication skills.
- (C) Computer fluency to include the use of MS Word, Excel, Access and other related PC-based software.

**SPECIAL REQUIREMENTS:**

- A valid Class D Massachusetts Motor Vehicle Operators license or equivalent.
- A Massachusetts Grade 6 Wastewater Operators license or ability to obtain within one (1) year.

**TOOLS AND EQUIPMENT USED:**

Office equipment as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

### **PHYSICAL DEMANDS:**

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to walk; stand; climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 10 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision, distance vision, depth perception, peripheral vision and the ability to adjust focus.

### **WORK ENVIRONMENT:**

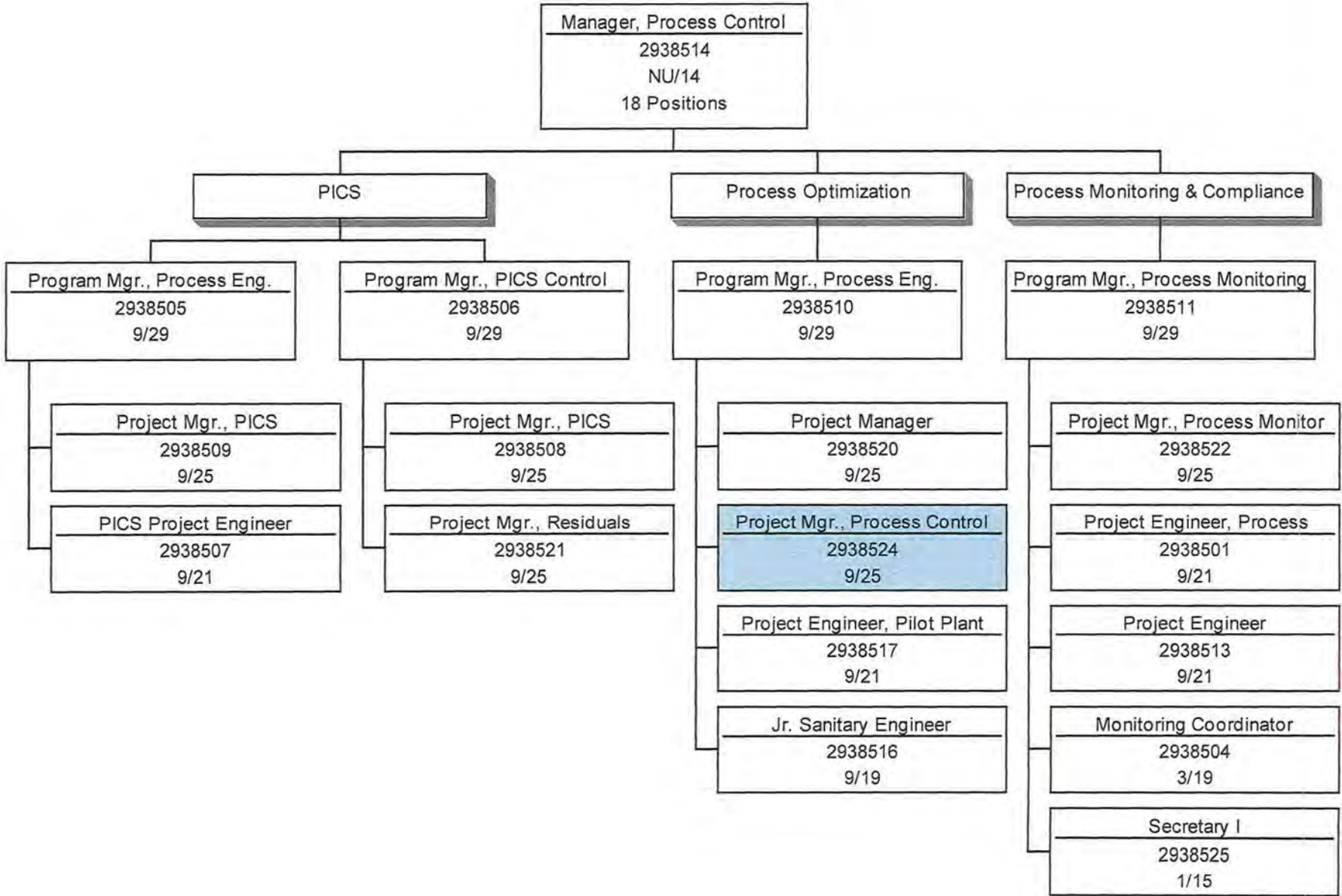
The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee frequently works in outside weather conditions. The employee occasionally works near moving mechanical parts, and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in high precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals and risk of electrical shock.


The noise level in the work environment is usually loud in field settings and moderately quiet in an office setting.



Operations - Wastewater Treatment  
**Deer Island - Process Control**  
 September 2014



## STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Appointment of Senior Staff Engineer, Structural

COMMITTEE: Personnel & Compensation

     INFORMATION  
  X   VOTE

Anandan Navanandan, P.E., Chief Engineer  
John P. Vetere, Deputy Chief Operating Officer  
Robert G. Donnelly, Director, Human Resources  
Preparer/Title

  
Michael J. Hornbrook  
Chief Operating Officer

*On June 4, 2014, the Board approved the appointment of a candidate to fill this position. Subsequent to Board approval, the recommended candidate informed MWRA of his decision to not accept the position. Staff reposted the position and interviewed additional candidates resulting in this new recommendation. This staff summary replaces and otherwise supersedes the staff summary approved by the Board on June 4, 2014 for this position.*

### RECOMMENDATION:

To approve the appointment of Ms. Andrea K. Adams to the position of Senior Staff Engineer, Structural (Unit 9/Grade 25), at the recommended salary of \$93,955.68, to be effective on a date to be determined by the Executive Director.

### DISCUSSION:

The position of Senior Staff Engineer, Structural, became vacant in January 2014 as a result of the retirement of the previous incumbent. This position provides structural engineering and project management for the Operations Division's capital and maintenance projects and technical services. This position also will perform 8(m) permit reviews, provide structural engineering support to the Engineering Unit, and will manage specific projects, including the Prison Point and Cottage Farm Rehabilitation Project, and other related projects as they arise.

### Selection Process

This position was posted internally and externally and 10 candidates applied, all from outside the MWRA. Five candidates were selected for interview; one candidate declined the interview and another had a visa issue. The three remaining candidates were interviewed by a committee that included the Program Manager, Monitor and Compliance from the Affirmative Action and Compliance Unit, an Assistant Director, a Senior Program Manager, and a Program Manager of

the Engineering Section. Upon completion of the interviews, a candidate was selected and on June 4, 2014, the Board approved the appointment of the selected candidate. However, subsequent to Board approval, the candidate informed MWRA that he would not be accepting the position. Staff then reposted the position and two additional external candidates were interviewed, including Ms. Andrea K. Adams. Upon completion of the interviews, Ms. Adams was selected as the best candidate to fill this position.

Ms. Adams has seventeen years experience in structural engineering working with Massachusetts consulting firms. She has worked on both public and private projects, including water and wastewater facilities. She is extremely knowledgeable of Massachusetts Building Code, as well as structural design codes.

Ms. Adams holds a Master of Science Degree in Civil Engineering from Worcester Polytechnic Institute and a Bachelor of Science in Civil Engineering Degree from the University of New Hampshire. Ms. Adams has passed the Fundamentals of Engineering Exam.

**BUDGET/FISCAL IMPACT:**

There are sufficient funds in the FY15 CEB for this position. The recommended salary is in accordance with the current Unit 9 collective bargaining agreement.

**ATTACHMENTS:**

Resume of Andrea K. Adams  
Position Description  
Organization Chart

## QUALIFICATIONS SUMMARY

A highly creative, goal-oriented professional with solid structural engineering design and management experience. Demonstrated strength in building structure design with experience in the analysis and design of a variety of floor framing and lateral load resisting systems. Highly organized with the ability to manage multiple projects and meet deadlines. A strong work ethic combined with a commitment to excellence in all projects undertaken. A team player that works effectively with management to accomplish objectives. Exemplary communication and presentation skills.

## AREAS OF STRENGTH

Foundation and Superstructure Design – Project Specification Review – Condition Assessment – Project Management – Creative Problem Solving

## PROFESSIONAL EXPERIENCE

**CDM Smith – Cambridge, MA**

**October 2003-Present**

### Structural Engineer

#### Responsibilities:

- Lead structural engineer tasked to analyze, design and develop structural Contract Drawings and Specifications for numerous water and wastewater treatment projects.
- Manage and mentor junior engineering staff.
- Prepare budgets and assist with proposal development.
- Review shop drawing submittals and provide construction support.
- Conduct condition assessments of existing structures and prepare reports including recommendations.
- Perform confined space entries into water and wastewater structures. Confined space entry certified.

**JOHNSON & SEAMAN ENGINEERING, INC. – Auburn, MA**

**July 1998 – August 2002**

### Structural Engineer

#### Responsibilities:

- Designed the foundations and superstructures of numerous public and private projects including schools, libraries, office facilities, fire stations and churches.
- Experienced with the design of concrete, steel, masonry and timber building materials.
- Analyzed existing concrete, timber and steel structures, examined the results, and wrote technical reports recommending repairs.
- Reviewed shop drawing submittals and performed frequent site inspections.
- Maintained client and architect relations.

**TETONIC ENGINEERING CONSULTANTS – Northborough, MA**

**August 1997 – June 1998**

### Staff Engineer

#### Responsibilities:

- Analyzed lattice towers to support telecommunication equipment using STAAD-III.
- Climbed existing lattice towers, monopoles, and water tanks to verify the adequacy of the structural connections of the telecommunication equipment to the structure.
- Developed AutoCAD drawings of lattice towers, monopoles and water tanks including civil/site, structural, mechanical and electrical plans and details.

## SOFTWARE PROFICIENCIES

**Proficient with:** Microsoft Office (Word, Excel, Powerpoint), Photoshop CSS, AutoCAD, STAAD-III, Risa-2D/3D, Algor, MathCAD

## EDUCATION

Worcester Polytechnic Institute    **Master of Science, Civil Engineering with concentration in Structural, May 2009**  
University of New Hampshire    **Bachelor of Science, Civil Engineering, May 1997**

Fundamentals of Engineering Exam, Passed, October 1998

**MWRA  
POSITION DESCRIPTION**

**POSITION:** Senior Staff Engineer, Structural

**PCR#:** 5525030

**DIVISION:** Operations

**DEPARTMENT:** Engineering & Construction

**BASIC PURPOSE:**

Provides structural engineering and project management for Operations Division capital and maintenance projects and technical services.

**SUPERVISION RECEIVED:**

Works under the general supervision of a Senior Program Manager/Engineering and Construction.

**SUPERVISION EXERCISED:**

Exercises close supervision and direction to engineers and drafters on assigned projects.

**ESSENTIAL DUTIES AND RESPONSIBILITIES:**

- Performs in-house planning, design, and management of various water, wastewater, and facilities repair, improvement and replacement projects, and in the investigation and resolution of construction and operations issues.
- Provides structural engineering support to the operating departments for the operations and maintenance programs of division facilities.
- Provides review and comments on 8(m) permit applications prepared by owners and/or consultants.
- Participates in the design of in-house projects including development of project plans, specifications, cost estimates and schedules.
- Maintains organized and detailed central files on assigned projects.

- Establishes design criteria and applicable code requirements and performs analytical calculations for assigned work.
- Develops procedures to ensure safe and efficient operations, maintenance and testing practices.
- Provides technical review of consultant prepared reports and design projects, contractor shop drawings and O&M manuals.
- Participates in the preparation of standard specifications.
- Participates in field investigations in order to verify and obtain information on existing facilities, structures, systems and equipment.
- Supervises and manages junior professional staff, including assignment of tasks and evaluation of performance, as assigned.
- Prepares equipment and material quantity takeoffs for cost estimates.

**SECONDARY DUTIES:**

- Performs other related duties as required.

**MINIMUM QUALIFICATIONS:**

Education and Experience:

- (A) Knowledge of principles of and practices of structural engineering as normally attained through a four (4) year college program in structural engineering or a related field; and
- (B) Demonstrated knowledge of water and wastewater treatment plant, pump station, and pipeline design and construction as acquired through six (6) to eight (8) years of experience, of which two (2) years must include supervisory experience; or

Necessary Knowledge, Skills and Abilities:

- (A) Knowledge of structural engineering work as related to water and wastewater infrastructure and facilities design required.
- (B) Knowledge of codes and standards such as ACI, AISC, PCA, PCI, BOCA, AASHTO, AREA, OSHA, Mass. State Building and Highway codes, NETWPC, ASCE and WEF Manual of Practice required.

- (C) Proficiency with personal computers and knowledge of word processing, spreadsheets and engineering applications software required.
- (D) Understanding of and experience with CADD systems preferred.
- (E) Excellent interpersonal, oral and written communication skills are required.

**SPECIAL REQUIREMENTS:**

Massachusetts Registered Professional Engineer license preferred.

Engineer-in-Training certificate required.

**TOOLS AND EQUIPMENT USED:**

Office machines as normally associated with the use of telephone, personal computer including word processing and other software, copy and machines.

**PHYSICAL DEMANDS:**

The physical demands described are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to sit and talk or hear. The employee is frequently required to use hands to finger, handle or operate objects, including office equipment, controls and reach with hands and arms. The employee is occasionally required to stand and walk.

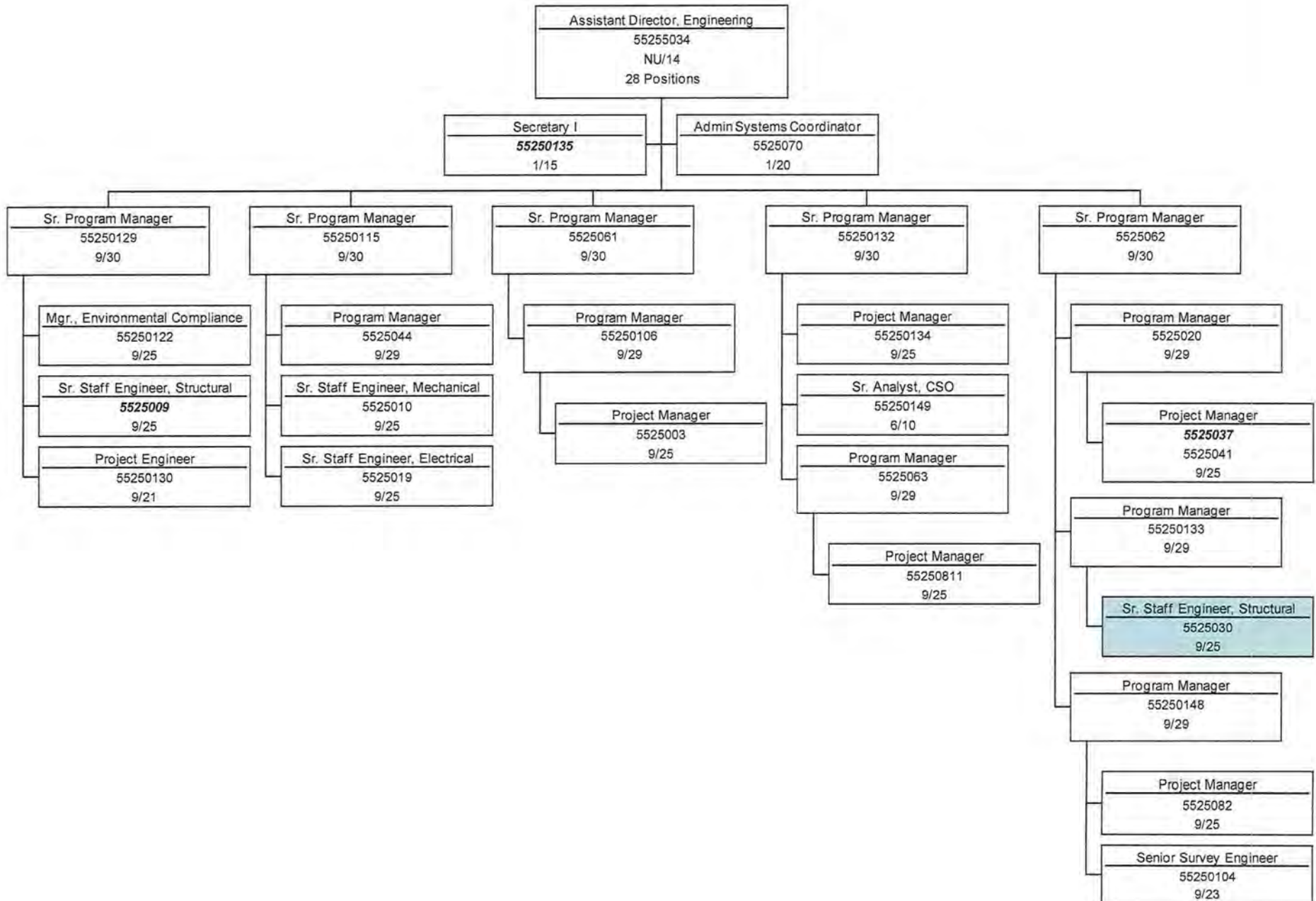
The employee may occasionally be required to lift and/or move up to ten pounds. Specific vision abilities required by this job include close vision, distance vision, depth perception, peripheral vision and the ability to adjust focus.

**WORK ENVIRONMENT:**

The work environment characteristics described here are representative of those employee encounters while performing the essential functions of this job. There are no specific environmental conditions noted.

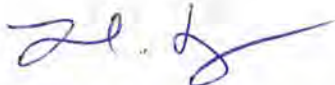
The noise level in the work environment is usually loud in a field setting and moderately quiet in an office setting.

Engineering & Construction  
**Engineering**  
 September 2014





## STAFF SUMMARY


**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Appointment of Project Manager, Environmental Data

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COMMITTEE: Personnel & Compensation

INFORMATION  
 VOTE

Betsy Reilley, Ph.D., Director, Environmental Quality  
Robert G. Donnelly, Director, Human Resources  
Carolyn M. Fiore, Deputy Chief Operating Officer  
Preparer/Title

  
Michael J. Hornbrook  
Chief Operating Officer

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### RECOMMENDATION:

To approve the appointment of Ms. Fang Yu (Programmer Analyst II, Unit 6, Grade 9) to the position of Project Manager (Unit 9, Grade 25), at the recommended salary of \$86,332, to be effective September 20, 2014.

### DISCUSSION:

The position of Project Manager in the Environmental Quality Department became vacant upon the retirement of the previous incumbent in May 2014. Organizationally, this position reports to the Program Manager, Marine Data.

The NPDES (National Pollutant Discharge Elimination System) Data group (within the Environmental Quality Department) consists of five staff positions and is responsible for the management and analysis of all data from wastewater treatment, Boston Harbor, tributaries, and Massachusetts Bay. This unit ensures that all reports are generated in compliance with MWRA's NPDES permits and also assists with the analysis and interpretation of the Boston Harbor Recovery, Deer Island Treatment Plant effluent impacts in Mass. Bay, and internal MWRA data requests and reports. The Project Manager position is responsible for developing maps, graphs, and figures, developing applications and automated procedures, downloading data and producing reports, as well as developing procedures to improve data exchange between internal and external laboratories and consultants.

### Selection Process

The position of Project Manager was posted both internally and externally. There were eleven applicants, of which four (three internal, and one external) were referred for interview as having met the minimum qualifications for the position. Environmental Quality senior staff and a

representative from Human Resources interviewed all four candidates. Upon completion of the interviews, Ms. Fang Yu was recommended as the best candidate for this position.

Ms. Yu began her career with MWRA in 1996 as an intern in the former Waterworks Division working on a Water Quality Complaint and WQ Sample Mapping system. Ms. Yu completed her internship in 1997 and was hired by MWRA on a full-time basis in 1998 where she has served as a Programmer Analyst II in the Operations Division's Planning Department. Ms. Yu has more than 20 years experience in developing databases, implementing quality control tools, and developing Geographic Information Systems (GIS) maps using MWRA's software applications such as ArcView and ArcMap. Notable projects that Ms. Yu has worked on include MWRA's Maps and Document Web Application, Request Management Database System, Valve Comparison Database, Data Request Reporting Database, MWRA Data Viewer Tool, and Water and Sewer Atlas Summaries and Indexes. Her knowledge and skills with application development, Oracle, programming, and data querying will be valuable skills in her new position. Her extensive application development and database experience, demonstrated ability to manage large data sets, ability to perform spatial analysis of data, and her skills in programming languages, set her apart as the ideal candidate to fill this position.

Ms. Yu earned a Bachelor of Science degree in Geographic Information and Cartography from the Nanjing University in China, a Master of Science degree in Natural Resources and Geographic Information Systems (GIS) from the Beijing Normal University, China, and a Master of Science degree in Computer Science from the University of Massachusetts, Boston.

**BUDGET/FISCAL IMPACT:**

There are sufficient funds in the Operations Division's FY15 Current Expense Budget for this position. The recommended salary is in accordance with guidelines established in Unit 9's collective bargaining agreement for promotional increases.

**ATTACHMENTS:**

- Resume of Fang Yu
- Position Description
- Organization Chart

## SUMMARY

- 20+ years programming and database application development experience
- Sole developer responsible for more than 5 currently used database applications including the popular “MWRA Maps and Documents” web application
- A proven record of analytical ability and automation skills for collecting, loading, managing and integrating water and sewer data within MWRA and MWRA communities
- Technical expertise in using databases and GIS to create maps, graphs and reports
- Extensive academic training and years of research experience in analyzing environmental data
- Effective team player with strong problem-solving and solutions-building skills working with engineers and scientists in and out the authority on daily basis

## COMPUTER SKILLS

**Language:** Visual Basic, Python, JavaScript, HTML, SQL, ArcObjects, Avenue, Java, C++  
**Database:** Oracle, Microsoft Access, ArcSDE, SQL Server  
**Software:** ArcGIS, MS Office, Adobe Suites, ArcView

## WORK EXPERIENCE

### Programmer Analyst II

1998 - present

Operations/Planning (GIS), Massachusetts Water Resources Authority, CNY, Boston, MA 02129

- Technical lead and primary developer in support of various GIS projects and database infrastructure design and database implementation
- Developed and maintained the database driven **MWRA Maps & Document Web Application** integrating water & sewer atlases, detail records, record plans and thousands of GIS maps for public access using *Visual Basic, Access/SQL, JavaScript, HTML, ArcGIS, Python and Adobe*
- Designed and implemented a **Request Management Database System** for data entry, search using *Visual Basic, SQL and Access*
- Developed the **Valve Comparison Database** for quality control and work order reporting between GIS and Maximo database with direct links to *Oracle and SDE*
- Built the **Data Request Reporting Database** to keep track of data requests from communities and consultants, and to generate formatted reports for further approval
- Developed procedures and created customized **Python** programs for checking, formatting and loading MWRA community sewer and water data using *ArcGIS*
- Designed and developed the **MWRA Data Viewer tool** for ArcMap using Visual Basic
- Led in various GIS projects including **Water Quality** and **Water Leak** mapping applications
- Perform spatial analysis and produce maps, graphics and statistics to support MWRA operations such as **Water & Sewer Atlas Summaries and Indexes** using *MWRA data integrated with MassGIS data and Census Data*
- Work effectively with people within and outside MWRA on daily basis delivering data and mapping products to support various business functions

**Research Analyst**

1997 - 1998

Research Department, SSR Realty Advisors, Inc. 1 North Broadway, White Plains, NY 10601

- Responsible for spatial database infrastructure design and GIS projects development for the realty investment firm under MetLife
- designed and implemented of **Web-Based Real Estate Factor Selection System** using *MapObjects, Visual Basic, VB Script, HTML and SQL Server 6.5*
- Developed algorithms for **Multi-factored MSA level Market Evaluation** using *Census Data*
- Provided spatial analysis and statistics report for **Property level GIS Peer Analysis and Decision Making** covering 80 properties all over USA

**GIS/Database Intern**

1995 - 1997

Waterworks Division, Massachusetts Water Resources Authority, Boston, MA 02129

- Developed a **Water Quality Complaint Call Location System** using *ArcView/Avenue*
- Designed and implemented a **Water Quality Sampling Mapping system** using *Avenue in UNIX* including GUI design and directly connection to *Oracle Water Quality Database*
- Worked on various GIS and database projects using *ArcView, ARC/INFO/AML and Oracle*

**Instructor/Lab Assistant/ Team Leader**

1996 - 1996

Department of Computer Science, University of Massachusetts at Boston, MA 02125-3393

Department of Geography, University of Massachusetts at Boston, MA 02125-3393

- Taught independently the course of “**C Programming Language for Geoscience applications**” including lecture and lab
- Taught the lab part of **Computer Cartography** course using various GIS software
- As the **Team Leader**, worked with four CS graduate students and a biology professor to develop an **Object-oriented Butterfly Identification Web System** using *Java and HTML*

**Assistant Professor**

1991 - 1995

Dept. of Natural Resources & Environmental Science, Beijing Normal University, Beijing, P.R.China

- Taught **four courses** on *Computer Technology, Computer Cartography and Digital Image Processing* using various GIS, DBMS and image processing software.
- Funded by **five-year national grant** in building a Forest Fire Warning and Monitoring system including database design, data integration and data conversion
- Published **seven research papers** in spatial analysis and information system management
- Maintained a **PC research lab** including hardware and software set up and trouble-shooting
- Developed a Spatial Database Management System for Soil Erosion using Turbo C

**EDUCATION**

**Master of Science** in Computer Science, University of Massachusetts at Boston, June 1997

**Master of Science** in Natural Resources & GIS, Beijing Normal University, P.R.China, July 1991

**Bachelor of Science** in Geo Info & Cartography, Nanjing University, P.R.China, July 1988

**MWRA  
POSITION DESCRIPTION**

**POSITION:** Project Manager, Environmental Data

**PCR#:**

**DIVISION:** Operations

**DEPARTMENT:** Environmental Quality

**BASIC PURPOSE:**

Analyzes environmental and operational monitoring data to produce information for NPDES permit compliance, and for decision-makers, Authority staff, and the public. Develops computer applications to automate loading, checking, and analysis of data in department Oracle databases and share data with other Division databases. Provides technical guidance and training to section staff.

**SUPERVISION RECEIVED:**

Works under the general direction of the Program Manager.

**SUPERVISION EXERCISED:**

May direct the work of contract employees and/or interns.

**ESSENTIAL DUTIES AND RESPONSIBILITIES:**

- Develops maps, graphs, and figures that usefully summarize environmental and wastewater monitoring data for NPDES permit compliance, and for decision-makers, Authority staff, and the public.
- Develops applications and automated procedures for downloading data and producing reports, and for loading, checking, and documenting corrections to data sets.
- Develops procedures and applications to increase data exchange and promote data quality within and outside MWRA, including between the Laboratory Information Management System (LIMS), the Operations Management System (OMS), the environmental monitoring database, and NPDES permit reporting applications.
- Integrates ENQUAL databases with other Operations departments, including the Central

Laboratory and Deer Island Operations, and with MIS.

- Trains staff to use Oracle, LIMS, and OMS, and ArcView and other desktop tools, to access data.
- Produces graphics and statistics to assist scientific review of data sets.
- Assists in oversight of consultant data management; reviews consultant data analyses.
- Drafts internal and external correspondence and reports of both technical and administrative nature.

**SECONDARY DUTIES:**

- Performs related duties as required.
- Presents results to internal staff and outside groups.

**MINIMUM QUALIFICATIONS:**

Education and Experience:

- (A) Analytical skills and understanding of natural science and information technology as normally obtained in an graduate program in biology, chemistry, geography, earth science, engineering, environmental science, or related field.
- (B) Knowledge and understanding of computer application development and object-oriented programming, and of computer databases and electronic transfer of information, as acquired through four (4) to six (6) years of experience in application development or database management.
- (C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Familiarity with environmental monitoring methods and with spatial analysis of data. Demonstrated ability to use statistical principles to present and analyze environmental data.
- (B) Demonstrated ability in programming and troubleshooting in a variety of computing environments, particularly Linux and Windows. Knowledge of Visual Basic or other object-oriented programming language strongly preferred. Knowledge of structured query language (SQL) strongly preferred. Knowledge of Microsoft Access and Oracle Discoverer preferred.
- (C) Experience with geographic information systems preferred.

(D) Demonstrated ability to communicate and work effectively in a team of scientists, engineers, and computer professionals.

**SPECIAL REQUIREMENTS:**

None.

**TOOLS AND EQUIPMENT USED:**

Office equipment as normally associated with the use of telephone, personal computer including word-processing and other software, copy and fax machine.

**PHYSICAL DEMANDS:**

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger handle feel or operate objects, including office equipment or controls, and reach with hands and arms. The employee frequently is required to sit, talk, and hear. The employee is occasionally required to stand and walk, stoop, kneel, crouch or crawl, taste or smell.

There are no requirements that weight be lifted or force be exerted in the performance of this job, although the employee will have the opportunity to participate in field activities that involve lifting weight (e.g. water, sediment, or other environmental samples) or exerting force. Specific vision requirements required by this job include close vision, distance vision, depth perception, and the ability to adjust focus.

**WORK ENVIRONMENT:**

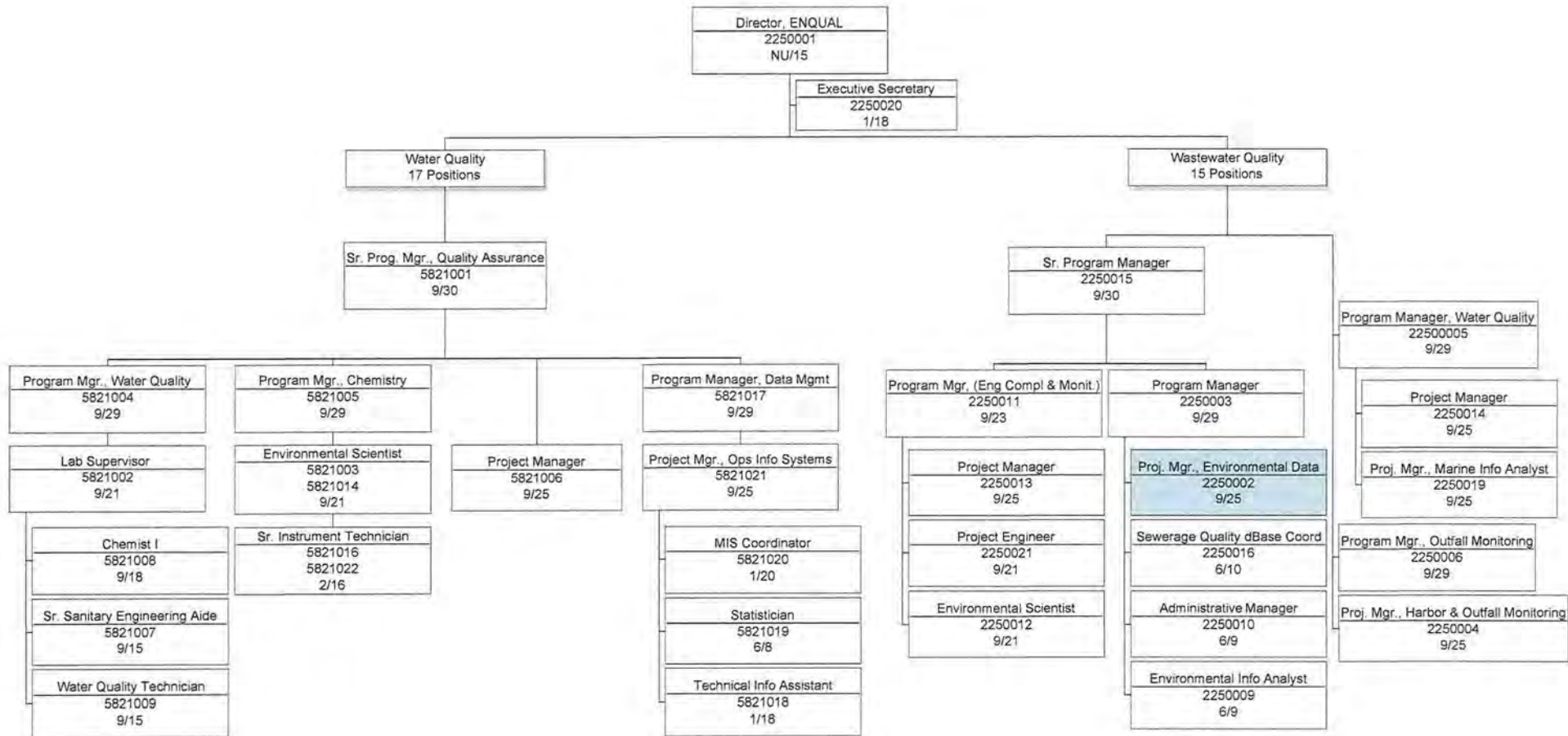
The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in an office environment.

The noise level in the work environment is a moderately quiet office setting.


**May 2014**

**Programs, Policy & Planning**  
 Environmental Quality  
 September 2014





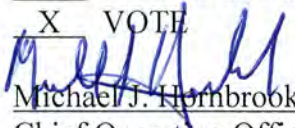
## STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Appointment of Manager, Western Maintenance

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COMMITTEE: Personnel & Compensation

Robert G. Donnelly, Director, Human Resources  
David W. Coppes, P.E., Director of Waterworks  
Preparer/Title

\_\_\_\_ INFORMATION  
 VOTE  
  
\_\_\_\_  
Michael J. Hornbrook  
Chief Operating Officer

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### RECOMMENDATION:

To approve the appointment of Mr. Eben A. Nash, Sr. Program Manager, Western Maintenance (Unit 9, Grade 30), to the position of Manager, Western Maintenance (Non-Union, Grade 14), at an annual salary of \$123,252.47, commencing on September 20, 2014.

### DISCUSSION:

The position of Manager, Western Maintenance became vacant upon the Board's approval of promotion of the previous incumbent to the position of Manager of Treatment and Transmission on June 4, 2014. The Manager, Western Maintenance position reports to the Director of Western Operations and Maintenance and is responsible for directing and managing all of the staff and maintenance programs for Western Operations' facilities, grounds, and equipment, including intakes, aqueducts, the John J. Carroll Water Treatment Plant, the Quabbin UV Facility, hydroelectric facilities, and other water supply-related structures. Responsibilities include budget management for assigned units, development of procedures and improvement programs, condition assessment of facilities, labor management, and maintenance contract management.

### Selection Process

The position of Manager, Western Maintenance was posted internally and two candidates applied. The Director of Waterworks, the Director of Western Operations and Maintenance, and a representative from MWRA's Affirmative Action and Compliance Unit interviewed both candidates. Upon completion of the interviews, a determination was made that Mr. Eben A. Nash was the best candidate to fill this position.

Mr. Nash currently holds the position of Senior Program Manager, Western Operations, and in his position he oversees all in-house maintenance activities in western operations and manages all western trade staff and supervisors at the John J. Carroll Water Treatment Plant, the Norumbega Covered Storage Facility, and the Southborough and Barre facilities.

In the 10 years Mr. Nash has been working at MWRA, he has developed an excellent working knowledge of MWRA's water treatment and transmission facilities. During start-up of the John J. Carroll Water Treatment Plant, Mr. Nash was part of a rotational crew that worked in 12-hour shifts operating the plant for functional testing and for training of staff. For the past eight years, Mr. Nash has been a key member of the on-call coverage team for Western Operations and has worked closely with Operations staff in troubleshooting and maintenance activities. He is very knowledgeable and proficient in computerized maintenance management and condition assessment, both key components of MWRA's overall maintenance protocols. Mr. Nash has excellent organizational and communications skills and has earned the respect of management and his peers.

Prior to coming to MWRA, Mr. Nash spent seven years as a Field Service Manager providing predictive maintenance services to a variety of industrial customers and manufacturers.

Mr. Nash is a graduate of the Massachusetts Maritime Academy and he earned a Bachelor of Science degree in Marine Engineering in 1991. He holds a Massachusetts Grade 4D drinking water operator distribution system license. He recently passed the Grade 1T treatment license exam and has submitted the application for a full 1T license.

Mr. Nash's current salary as Sr. Program Manager, Western Maintenance (Unit 9, Grade 30), is \$114,229. The recommended salary of \$121,430.92 is commensurate with knowledge and experience and the increased duties and responsibilities of the position of Manager, Western Maintenance (Non-Union, Grade 14).

**BUDGET/FISCAL IMPACT:**

There are sufficient funds available for this position in the Operations Division's FY15 Current Expense Budget.

**ATTACHMENTS:**

- Resume of Eben Nash
- Position Description, Manager Western Maintenance
- Organization Chart for Western Operations and Maintenance

## **Eben A. Nash**

**Objective:** To make a significant contribution to the Massachusetts Water Resources Authority in the role of Maintenance Manager for Western Operations

**Education:** Bachelor of Science in Marine Engineering, Massachusetts Maritime Academy, 1991.

### **Employment History:**

**2004 – Present – Massachusetts Water Resources Authority – Senior Program Manager, Western Maintenance** Responsible for the maintenance of MWRA's water transmission and treatment system including tunnels, aqueducts, treatment facilities, above ground storage tanks, hydro generation stations and administration buildings. Provide daily supervision of 65 staff members in the grounds, facility, and equipment maintenance fields. Participated in the start-up of John J. Carroll Water Treatment Plant Ozone and UV, Shaft 5 leak repair and Shea Ave. leak repair on the Chicopee Valley Aqueduct. Strong proponent of the PM optimization plan for Western Operations with a continued goal of maximizing the available maintenance staff and associated PM tasks.

**1997 – 2004 Field Service Manager, Lindskog Balancing** – Responsible for the daily operation of Field Service Division. Lindskog Balancing is an engineering service provider engaged in the field of mechanical repairs, vibration analysis, dynamic balancing and laser alignment. Responsibilities included the daily schedule of the technicians and engineers in the work group as well as customer relations, sales, recruiting, hiring, discipline, engineering support and report writing.

**1991 – 1997 Transoceanic Cable Ship Company** – Licensed Operating Engineering starting as Third assistant Engineering and working up to relief First Assistant Engineer. Responsibilities include the operations and maintenance of the ships propulsion and auxiliary cable laying equipment. As First assistant engineer, my responsibilities included the daily work assignment of the engineering department as well as insuring the equipment was properly maintained and ready for service. Also responsible for initiating vibration based condition monitoring and computerized maintenance management system.

### **Certifications and Licenses:**

Drinking Water Distribution Operators License 4D Full  
Class D Drivers license  
Certified Vibration Analyst level II  
Certified Substation Technician  
Incident Command Level 300/400 Trained  
United States Coast Guard Chief Engineer Motor Limited Horsepower and First Assistant Engineer Unlimited Horsepower (expired)

References Available upon request

**MWRA  
POSITION DESCRIPTION**

**POSITION:** Manager, Western Maintenance

**PCR#:** 3391011

**DIVISION:** Operations

**DEPARTMENT:** Western Operations

**BASIC PURPOSE:**

Directs and manages the maintenance programs for Western Operations facilities; equipment; and grounds including intakes, aqueducts, treatment facilities, hydroelectric facilities and other water supply related structures. Required to be on-call for emergencies 24 hours per day, seven days a week.

**SUPERVISION RECEIVED:**

Works under the general supervision of the Director, Western Operations.

**SUPERVISION EXERCISED:**

Exercises close supervision of maintenance program and project management staff.

**ESSENTIAL DUTIES AND RESPONSIBILITIES:**

- Manages all aspects of Western Operations maintenance program. Oversees emergency and preventative maintenance of facilities, equipment and grounds to ensure adequate and reliable water supply service and safe operations.
- Prepares for and hears Step-One grievances and pre-disciplinary hearings. Identifies organizational needs and proposes re-organization plans to address changing needs.
- Oversees planning and implementation of appropriate in-house or consultant-led training program.
- Oversees development, training, periodic review and updating of Standard Operating Procedures (SOPs), facility manuals and MWRA safety policies and procedures.
- Oversees budget management for assigned units. Ensures that budget resources are allocated appropriately between units. Monitors spending and ensures budget compliance.

- Oversees staff productivity monitoring and continual improvement through staff skills development, strategic planning, SOPs improvements and research and implementation of technology advances.
- Oversees the periodic assessment of buildings, facilities and equipment to define rehabilitation requirements including in-house and contractor supplemented projects as appropriate.
- Coordinates with Operations groups to assure that maintenance work is properly prioritized.
- Participates in capital project design, construction and start-up as needed to ensure that MWRA standards are met and ensure smooth transition to facility maintenance.
- Reviews assigned employees' performance per MWRA procedures.
- Assists in maintaining harmonious labor management relations through proper applications of collective bargaining agreement provisions and established personnel policies.
- Oversees personnel management. Ensures that major initiatives and policy changes are properly communicated to all staff. Identifies needed improvements to works with Operations Management and Labor Relations staff to bring about changes.
- Participates in collective bargaining negotiations.

**SECONDARY DUTIES:**

- Provides emergency coverage as required.
- Performs related duties as required.

**MINIMUM QUALIFICATIONS:**

Education and Experience:

- (A) Knowledge of engineering principles and practices as normally attained through a four (4) year college program in civil, mechanical or electrical engineering or a related technical discipline; and
- (B) Ten (10) to twelve (12) years of related experience in the water industry, of which at least five (5) years must be in the management of a large maintenance program related to water or wastewater systems; and

- (C) Understanding of planning and supervisory maintenance strategies such as Reliability Centered Maintenance and computerize maintenance management software such as Maximo; or
- (D) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Working knowledge of maintenance management systems and procedures and computerized maintenance management systems.
- (B) Experience in union environment required.
- (C) Proficiency in use of PC software for word processing, spreadsheets and databases is required.

**SPECIAL REQUIREMENTS:**

A valid Massachusetts Class D Motor Vehicle License.

A valid Grade 3D and 1T Drinking Water Supply Facilities Operators license is required or the ability to obtain them in 24 months.

A Certified Maintenance and Reliability Professionals (CMRP) certification preferred.

**TOOLS AND EQUIPMENT USED:**

Office equipment as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

**PHYSICAL DEMANDS:**

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, including office equipment or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to stand and walk; climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 10 pounds, occasionally lift/or move up to 25 pounds. Specific vision abilities required by this job include close vision, distance vision, depth perception and the ability to adjust focus.

**WORK ENVIRONMENT:**

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

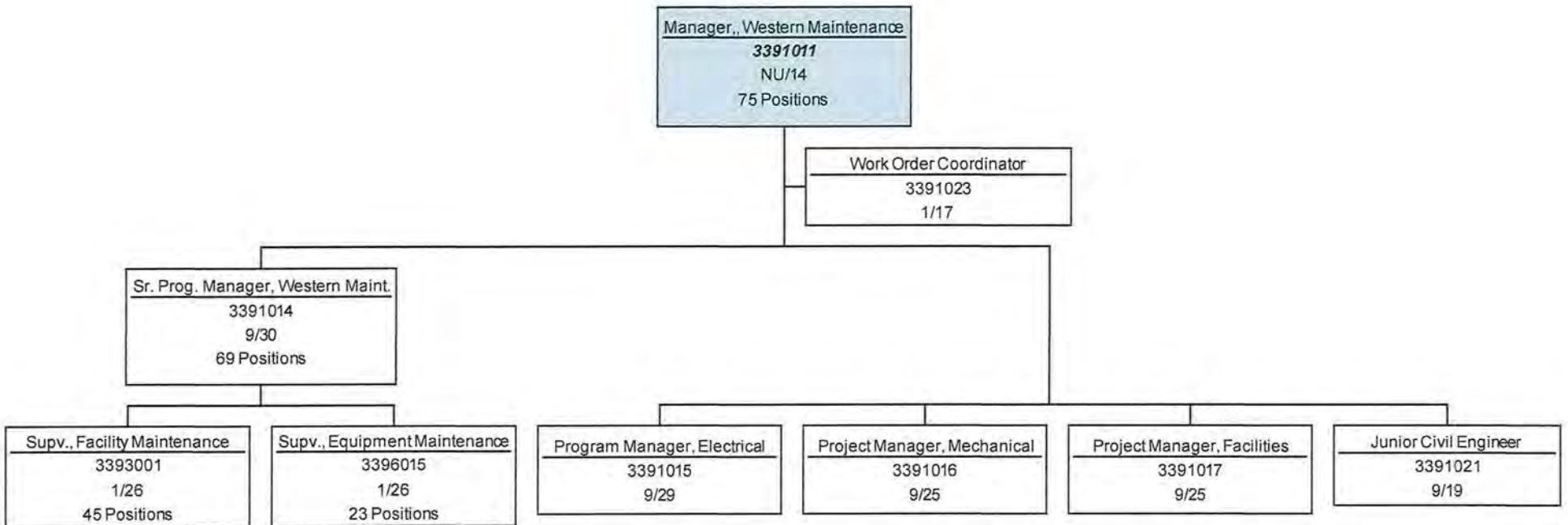
While performing the duties of this job, the employee regularly works in an office environment and occasionally in an industrial plant or field environment. The employee is occasionally exposed to outdoor weather conditions. The employee is occasionally exposed to fumes and airborne particles.

The noise level in the work environment is a moderately quiet in office setting and occasionally in a noisier industrial plant or field environment.

**May, 2014**

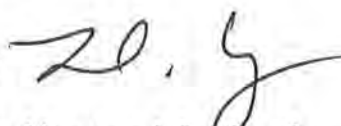
# Western Maintenance

September 2014





## STAFF SUMMARY

**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** September 17, 2014  
**SUBJECT:** Appointment of Manager, IT Security, Architecture & Engineering,  
Management Information Systems, A&F

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**COMMITTEE:** Personnel & Compensation

Russell J. Murray, Director, MIS  
Preparer/Title

INFORMATION

VOTE

  
Rachel C. Madden

Director, Administration & Finance

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### RECOMMENDATION:

That the Board approve the appointment of Ms. Paula Weadick to the position of Manager, IT Security, Architecture & Engineering (Non-Union, Grade 14), at an annual salary of \$123,252, commencing on a date to be determined by the Executive Director.

### DISCUSSION:

As part of the 5 Year MIS Strategic Plan, a recommendation was made to reorganize MIS based on functional groups. One of those functional groups was the Information Technology Design and Security group. MWRA finalized the responsibilities of this group and the Board approved the establishment of this position at the April 16, 2014 Board meeting.

Reporting to the Director of Management Information Systems, the Manager, IT Security, Architecture & Engineering, will develop, recommend and implement information technology policies, standards, architectural patterns and designs associated with the Authority's applications and the platforms on which they run. The Manager will oversee the development and implementation of the Information Security Program, IT Asset and Configuration Management Program, IT Technical Reference Model (ITTRM) and Application, Data Base, and Infrastructure Designs.

### Selection Process

The position was posted internally and externally and a five-person interview panel was formed to interview qualified candidates. The interview committee consisted of the Director of MIS, a representative from the Affirmative Action Compliance Unit, and three MWRA department directors from DITP, ENQUAL and the Office of Emergency Preparedness. The interview committee interviewed a total of seven candidates. The committee recommended that Ms.

Weadick and three other candidates go forward to a second round of interviews with the Director of A&F, the Special Assistant for Affirmative Action and the Director of MIS. At the conclusion of this process, Ms. Weadick was identified as the most qualified and best candidate for this management position.

Ms. Weadick possesses over twenty-five years of experience in information technology. For the past seven years, Ms. Weadick has been serving as the Manager of Information Technology for the Gem Group of Lawrence, Massachusetts, where she is responsible for the development, implementation and operation of corporate wide business applications, networks and telephony systems, as well as the management of technical staff assigned to those areas. She previously held the position of Technical Support and Helpdesk Manager where she was responsible for incident, problem, asset and patch management programs along with hardware procurement and maintenance.

Prior to her roles at Gem Group, Ms. Weadick was a Lead Systems Support Specialist and Project Manager for Avnet of Peabody, Massachusetts, where she managed projects associated with company acquisitions and consolidations. These projects required her to manage virtual teams across diverse geographical locations while integrating heterogeneous environments and consolidating systems and data. Earlier in her career, Ms. Weadick held the position of Sr. Network Administrator for M/A-COM of Burlington, Massachusetts.

Ms. Weadick possesses a Bachelor of Science in Electrical Engineering from the University of Massachusetts. Additionally, Ms. Weadick possesses certifications as a Microsoft Certified Solution Expert (MCSE) and a CITRIX Certified Administrator as required in the job description.

Based on her experience managing complex technical solutions for a variety of industries and ability to manage technical staff to successful solution implementations, Ms. Weadick is recommended for the position of Manager, IT Security, Architecture & Engineering.

**BUDGET/FISCAL IMPACT:**

Sufficient funds are included in the FY15 CEB for this position.

**ATTACHMENTS:**

Resume of Paula Weadick  
Position Description  
MIS Organization Chart

# PAULA WEADICK

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## IT Management

TECHNOLOGY & BUSINESS STRATEGY – PROJECT MANAGEMENT – TECHNOLOGY INFRASTRUCTURE  
FINANCIAL MANAGEMENT & COST CONTROL – PROCESS IMPROVEMENT – REGULATORY COMPLIANCE  
REMOTE AND ON-SITE SERVICE – CHANGE MANAGEMENT – VENDOR MANAGEMENT

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IT manager with experience providing strategic vision for and the delivery and support of information technology enabled business systems. Deep technical background with excellent business acumen, managerial expertise and interpersonal skills. Proven ability to bridge technology and business goals to provide productive solutions. Experience interfacing with key business units including Marketing, Finance, Operations and Sales. Excellent communicator, with emphasis on building strong client relationships.

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## PROFESSIONAL EXPERIENCE

**Gem Group, Lawrence, MA**

**2003 - 2014**

*The Gem Group is a premier supplier of bags, business accessories, gifts and writing instruments in the promotional products industry. Gem is ranked as the 17<sup>th</sup> largest supplier by Advertising Specialty Institute.*

### **Manager of Information Technology (2011-2014)**

Provide leadership as head of Information Technology department reporting directly to CFO. Manage a team of 5 in maintaining highly available infrastructure 24x7 and 450+ end-users. Define strategy for growth and scalability while minimizing costs and business risks. Manage the support of all computers, business systems, network, and telecommunications systems. Develop and document policies and procedures. Implement continuous improvement framework and training to ensure IT operations evolves to meet changing needs.

- Collaborate with functional department leaders and executive teams to develop annual strategic goals and objectives.
- Deliver IT services while achieving 99.9% system uptime and driving significant value through IT investments.
- Improved business continuity by implementing redundant internet connections and implementing internal server virtualization.
- Realized \$65,000 reduction in OpX by re-negotiated vendor contracts.
- Develop an extremely high performing team. Identifying individual and team development opportunities. Two team members have received the employee of the month award.
- Engaged team in Lean methodologies to realize efficiencies including reduced pc setup time by 40%.

- Designed and implemented wireless system to support growth in wireless devices and increase security
- Facilitate companywide Windows7 and Office 2010 rollout.

#### **Helpdesk Manager/Technical Support Manager (2007 - 2011)**

Manage a team of three technicians servicing 300 end users reporting to the IT Director. Responsible for all IT support services including asset management, patch management, hardware procurement and maintenance.

- Rapidly promoted from Helpdesk Supervisor after having been recruited to improve customer satisfaction in Helpdesk service deliver.
- Administration and maintenance of Citrix environment in support of remote users, vendors and third party contractors.
- Migrated server backups from tape to cloud
- Monthly reporting of Helpdesk statistics and server uptime.
- Implemented cloud backups solution for mission critical servers and mobile users.

#### **Helpdesk Supervisor**

- Developed service delivery goals, procedures and metrics to realize improved customer satisfaction rating by 25% in one year.
- Lead a team of three Helpdesk Technicians.
- Identified development opportunities to improve team effectiveness.
- Responsible for inventory management and procurement of end-user workstations.
- Lead enterprise wide desktop OS and hardware upgrade project within established timelines.
- Automated pc deployments utilizing script and checklist to decrease time to deploy and follow up requests.
- Received Employee of the Month award 8 months after hired

#### **Avnet, Peabody, MA**

**1994 - 2003**

*Avnet is a leading distributor of electronic components and computer products servicing customers worldwide.*

#### **Project Manager**

Promoted from Lead System Support Specialist. Recognized for excellence in customer focus and attention to detail. Managed multiple projects including company acquisitions, hardware and software upgrades.

- Implemented \$300,000 network upgrades project on time and under budget for a \$60,000 saving.
- Managed virtual team of 8-12 across multiple geographic locations.
- Coordinated technology efforts for 2 separate acquisitions including migrating information systems to Avnet systems. Converted a all sites on-time and on-budget.

**M/A-COM, Burlington, MA**

**1989 - 1994**

*Developer and manufacturer of military and commercial semiconductors and components.*

Sr. Network Administrator

- Transferred from Project Engineering role to Network Administrator.
- Sole support for 250 users, including pcs and AS400 terminals
- Generate monthly reports for business units utilizing Cognos software.

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#### TECHNICAL ACUMEN

Active Directory, Exchange, Citrix, Vmware, Windows 2003,2008, 2012, VPN, SAN technologies, Dell  
Kace, VOIP

MCSE, Citrix Certified Administrator

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#### EDUCATION

Bachelors of Science in Electrical Engineering

*University of Massachusetts – Amherst*

**MWRA  
POSITION DESCRIPTION**

**POSITION:** Manager, Information Technology Security, Architecture & Engineering

**PCR#:**

**DIVISION:** Administration & Finance

**DEPARTMENT:** Management Information Systems (MIS)

**BASIC PURPOSE:**

Plans, directs, and oversees the operations and budget of the Information Technology (IT) Security, Architecture & Engineering section. Plans and maintains work systems, procedures, and policies that enable and encourage the optimum performance of assigned staff and other IT resources. Oversees the development, implementation, deployment and operation of information systems and technology solutions to meet business and operational needs across the organization.

**SUPERVISION RECEIVED:**

Works under the general supervision of the Director of MIS

**SUPERVISION EXERCISED:**

Manages IT professional, technical and administrative employees assigned to the IT Security, Architecture & Engineering section.

**ESSENTIAL DUTIES AND RESPONSIBILITIES:**

- Provides oversight and direction to the employees in the operating section in accordance with the organization's policies and procedures. Identifies needed improvements to work practices and works with Director, MIS and Labor Relations staff to bring about changes.
- Manages the preparation and maintenance of reports necessary to carry out the functions of the department. Prepares periodic reports for management, as necessary or requested, to track strategic goal accomplishment.
- Develops and implements an enterprise technical reference model. Responsible for the establishment of technical standards associated with information technology domains required to implement the Authority's systems.
- Responsible for information technology architecture and engineering activities. Ensures that technical blue prints for specific IT solutions are provided.
- Responsible for the development and maintenance of data architecture models, policies and standards that govern which data are collected, and how it is stored, arranged, integrated, and put to use in data systems and in organizations.

- Responsible for the development and maintenance of the policies, standards and procedures associated with the Information Security Program.
- Responsible for the development and maintenance of the IT Asset and Configuration Management Program including policies, standards and procedures to ensure that assets are identified, controlled, and managed.
- Oversees capacity management. Responsible to ensure that cost-justifiable system capacity is available to meet current and future business needs.
- Oversees technical problem management. Responsible for developing and managing the lifecycle of all problems from identification to removal.
- Estimates the financial impact of technical architecture alternatives as required. Manages expenses to section budget.
- Responsible for the development and management of the IT change management process to ensure that all changes are prioritized, planned, tested, implemented, documented, and reviewed in a controlled manner.
- Provides final recommendation on staffing levels. Works with Human Resources staff to recruit, interview, select, hire, and employ an appropriate number of employees.
- Mentors and develops staff, including overseeing new employee on-boarding and providing career development planning and opportunities. Encourages employees to take responsibility for their jobs and goals. Delegates responsibility as appropriate and expects accountability and regular feedback.
- Fosters a spirit of teamwork that allows for disagreement over ideas, conflict and conflict resolution, as well as the appreciation of diversity. Communicates organizational information through department meetings, one-on-one meetings, and appropriate email, and regular interpersonal communication.
- Leads employees using a performance management and development process that provides an overall context and framework to encourage employee contribution and includes goal setting, feedback, and performance development planning. Leads employees to meet the organization's expectations for productivity, quality, and goal accomplishment.
- Maintains employee work schedules including assignments, job rotation, training, vacations and approved leaves. Provides coverage for absenteeism, and overtime scheduling as needed.
- Assist in maintaining harmonious labor management relations through proper applications of collective bargaining agreement provisions and established personnel policies.
- Prepare for and hears Step-One grievances and pre-disciplinary hearings.
- Participate in collective bargaining negotiations.

**SECONDARY DUTIES:**

- Performs related duties as required.

### **MINIMUM QUALIFICATIONS:**

#### Education and Experience:

- (A) A four (4) year college degree program in a computer science, information technology or related field is required. Advance degree preferred; and
- (B) Eight (8) to ten (10) years of experience in IT architecture, engineering and security of which 4 years must be in a supervisory or managerial capacity overseeing an IT multi-discipline functional section; or
- (C) Any equivalent combination of education and experience.

#### Necessary Knowledge, Skills and Abilities:

- (A) Excellent analytical and technical skills.
- (B) Excellent written and verbal communication skills. Exceptional interpersonal skills in areas such as teamwork, facilitation and negotiation.
- (C) Excellent planning and organizational skills.
- (D) Strong leadership skills.
- (E) Knowledge of all components of a technical architecture; understanding of network architecture, service oriented architecture and object-oriented analysis and design.
- (F) Skill with CSS, HTML, one or more JavaScript frameworks, and AJAX, Microsoft's .Net framework

### **SPECIAL REQUIREMENTS**

ITIL Foundations Certification version 3 and at least two from the following list:

IPRC - ITIL Practitioner - Release and Control  
MCSE - Microsoft Certified Solution Expert  
MCSD - Microsoft Certified Solution Developer  
CISM - Certified Information Security Manager  
CISSP - Certified Information Systems Security Professional  
VCP5-DCV: VMware Certified Professional 5 - Data Center Virtualization  
Cisco CCIE - Cisco Certified Internetwork Expert  
PMP - Project Management Professional  
CCP - Citrix Certified Professional  
Or the ability to obtain within one year.

### **TOOLS AND EQUIPMENT USED:**

Office equipment as normally associated with the use of telephone, personal computers including word processing and other software, copy and fax machines.



**PHYSICAL DEMANDS:**

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to walk and stand.

The employee must occasionally lift and/or move up to 10 pounds. Specific vision abilities required by this job include close vision and color vision, and the ability to adjust focus.

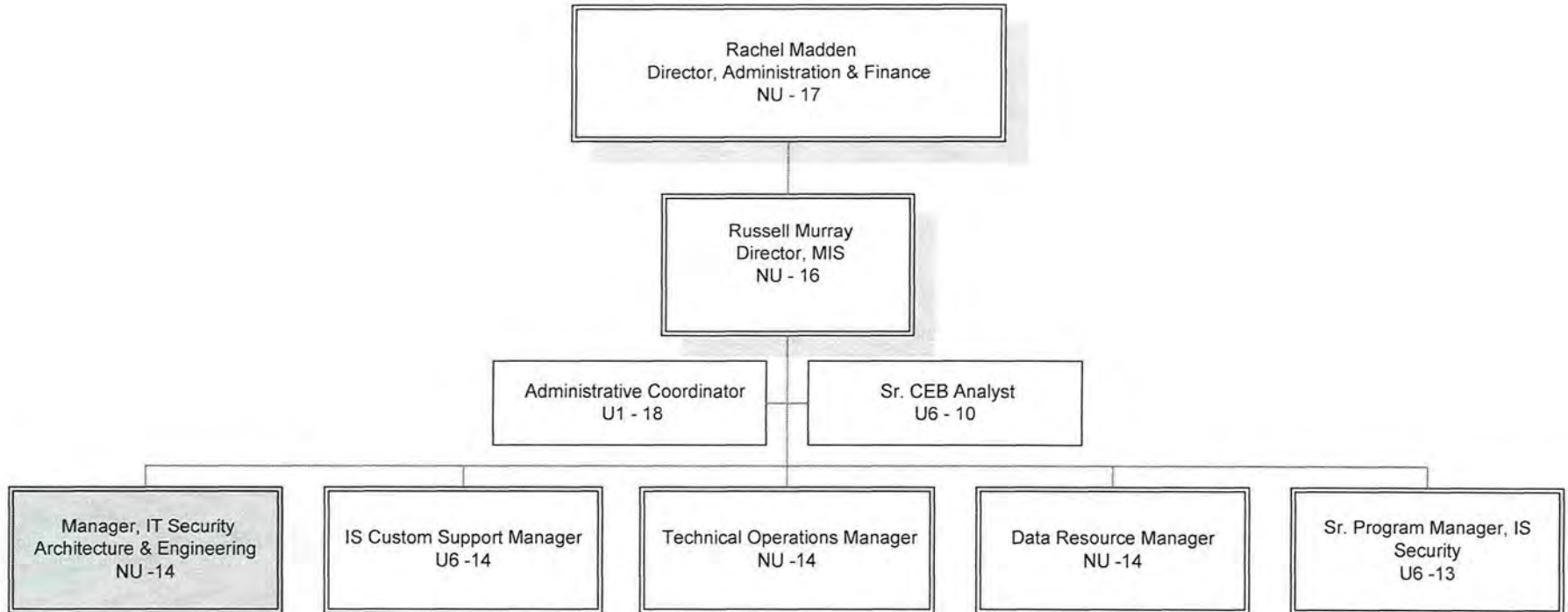
**WORK ENVIRONMENT:**

The work characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

The noise level in the normal work environment is quiet.

**April 2014**

MIS Organization  
September 2014





# MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard  
100 First Avenue, Building 39  
Boston, MA 02129

Frederick A. Laskey  
Executive Director

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*Chair:* M. Bartlett  
*Vice-Chair:* J. Carroll  
*Secretary:* J. Foti  
*Board Members:*  
J. Barrera  
K. Cotter  
P. Flanagan  
A. Pappastergion  
B. Swett  
H. Vitale  
J. Walsh  
J. Wolowicz

## **BOARD OF DIRECTORS' MEETING**

to be held on

Wednesday, September 17, 2014

Location: 100 First Avenue, 2nd Floor  
Charlestown Navy Yard  
Boston, MA 02129

Time: 1:00 p.m.

## **AGENDA**

### **I. APPROVAL OF MINUTES**

### **II. REPORT OF THE CHAIR**

### **III. REPORT OF THE EXECUTIVE DIRECTOR**

### **IV. BOARD ACTIONS**

#### **A. Approvals**

1. Approval of the Sixty-Eighth Supplemental Resolution (ref. AF&A B.1)
2. PCR Amendments – September 2014 (ref. P&C A.1)
3. Appointment of Superintendent, Clinton Advanced Wastewater Treatment Plant (ref. P&C A.2)
4. Appointment of Program Manager, Process Monitoring, Deer Island (ref. P&C A.3)
5. Appointment of Project Manager, Process Control, Deer Island (ref. P&C A.4)
6. Appointment of Senior Staff Engineer, Structural (ref. P&C A.5)
7. Appointment of Project Manager, Environmental Data (ref. P&C A.6)
8. Appointment of Manager, Western Maintenance (ref. P&C A.7)

9. Appointment of Manager, IT Security, Architecture and Engineering (ref. P&C A.8)
10. Recommendation to Rename the Ware Disinfection Facility the William A. Brutsch Water Treatment Facility (ref. W C.1)

**B. Contract Awards**

1. eDiscovery Technical Consulting Services: PeopleSERVE PRS, Inc., WRA-3869Q, State Blanket Contract ITS53 Cat2b (ref. AF&A C.1)
2. Struvite, Scum, Sludge, and Grit Removal Services at the Deer Island Treatment Plant: Moran Environmental Recovery, Contract WRA-3862 (ref. WW B.1)
3. Deer Island Treatment Plant Clarifier Rehabilitation, Phase II, Design/Engineering Services During Construction: CDM Smith Inc., Contract 7394 (ref. WW B.2)
4. Beacon Street Line Water Pipeline Repair: Green International Affiliates, Inc., Contract 7474 (ref. W A.1)

**C. Contract Amendments/Change Orders**

1. Dental Insurance: Delta Dental of Massachusetts, Contract A591, Amendment 1 (ref. AF&A D.1)
2. Agency-Wide Technical Assistance Consulting Services: Fay, Spofford & Thorndike, LLC, Contract 7437, Amendment 1; and Hazen and Sawyer, P.C., Contract 7456, Amendment 1 (ref. WW C.1)
3. Spot Pond Water Storage Facility Design/Build Project: Walsh Construction Co., Contract 6457, Change Order 7 (ref. W B.1)
4. Gillis Pump Station Short Term Improvements: Bay State Regional Contractors, Contract 7260, Change Order 3 (ref. W B.2)

**V. CORRESPONDENCE TO THE BOARD**

**VI. OTHER BUSINESS**

**VII. EXECUTIVE SESSION**

A. Real Estate:

1. Watershed Land Acquisition Approval

B. Litigation:

1. Estate of Marie Stewart v. MWRA

**VIII. ADJOURNMENT**

MASSACHUSETTS WATER RESOURCES AUTHORITY

**Meeting of the Board of Directors**

**July 16, 2014**

A meeting of the Board of Directors of the Massachusetts Water Resources Authority was held on July 16, 2014 at the Carroll Water Treatment Plant in Marlborough. Chair Bartlett presided. Present from the Board were Messrs. Carroll, Flanagan, Foti, Swett, Vitale and Walsh. Ms. Wolowicz and Messrs. Barrera, Cotter and Pappastergion were absent. Among those present from the Authority staff were Frederick Laskey, Executive Director, Steven Remsberg, General Counsel, Michael Hornbrook, Chief Operating Officer, Rachel Madden, Director of Administration and Finance, Russell Murray, MIS Director, John Corbin, MBE/WBE Program Manager, John Chinian, Associate General Counsel, Anandan Navanandan, Chief Engineer, Leon Lataille, Environmental Manager, Steven Davenport, Assistant Director, Engineering, David Kubiak, Senior Program Manager, Richard Adams, Manager, Engineering Services, and Bonnie Hale, Assistant Secretary. The meeting was called to order at 1:00 p.m.

(Mr. Foti temporarily left the meeting.)

**APPROVAL OF MINUTES**

Upon a motion duly made and seconded, it was

Voted to approve the minutes of the Board of Directors' meeting of June 25, 2014, as presented and filed with the records of the meeting.

**REPORT OF THE CHAIR**

Chair Bartlett praised the Ultraviolet Facilities Disinfection Facilities dedication event, and expressed her pleasure at meeting Judge Richard Stearns for the first time.

REPORT OF THE EXECUTIVE DIRECTOR

Mr. Laskey reported on various matters, including the receipt of a variance from EPA for the Mystic and Alewife Rivers, the closure of Ravine Road to make pipe connections for the Spot Pond tank, and the cancellation of the August 13th Board meeting.

ADMINISTRATION, FINANCE & AUDIT COMMITTEE

INFORMATION

Delegated Authority Report – June 2014

Staff summarized a number of MIS and energy efficiency-related items in the report, and there was general discussion and question and answer.

(Mr. Foti returned to the meeting.)

APPROVALS

Adoption of DEP's DMBE and DWBE Contracting Goals

Mr. Carroll requested a fuller explanation of the definition of a "disadvantaged" business, and there was general discussion and question and answer. He requested a list of DMBE and DWBE businesses and Mr. Swett requested an accounting of the actual MWBE goals the Authority had attained over the last several years. In view of the additional information requested, consideration was postponed until the next meeting.

Consent to Assignment and Assumption of Contract S484, Power Purchase and Site License Agreement Solar Photovoltaic System – Deer Island Treatment Plant, from Broadway Electrical Co., Inc. to Nexamp Deer Island I, LLC

Upon a motion duly made and seconded, it was

Voted to authorize the Executive Director, on behalf of the Authority, to execute a Consent to Assignment and Assumption for the purpose of assigning Contract S484 from Broadway Electrical Co., Inc. to Nexamp Deer Island I, LLC, with no increase in contract price or contract term.

CONTRACT AMENDMENTS/CHANGE ORDERS

Security Equipment Maintenance and Repair Services: Viscom Systems, Inc., Contract EXE-031, Change Order 5

Upon a motion duly made and seconded, it was

Voted to authorize the Executive Director, on behalf of the Authority, to approve Change Order 5 to increase the amount of Contract EXE-031 with Viscom Systems, Inc., Security Equipment Maintenance and Repair Services, in an amount not to exceed \$140,805, and to extend the contract term by 138 calendar days from August 15, 2014 to December 31, 2014; further, to authorize the Executive Director to approve additional change orders as may be needed to Contract EXE-031, in amounts not to exceed the aggregate of \$90,000 and 90 days, in accordance with the Management Policies and Procedures of the Board of Directors.

WASTEWATER POLICY & OVERSIGHT COMMITTEE

INFORMATION

PCB Removal/Abatement at Cottage Farm CSO Facility

Staff gave a presentation on this issue and its cost impacts prior to bringing the first of four contracts to the Board for approval in the Fall.

CONTRACT AWARDS

Gate, Siphon and Floatables Control at MWR003 CSO Outfall – Cambridge: P. Gioioso & Sons, Inc., Contract 7409

Upon a motion duly made and seconded, it was

Voted to approve the award of Contract 7409, Gate, Siphon and Floatables Control at MWR003 CSO Outfall, to the lowest responsible and eligible bidder, P. Gioioso & Sons, Inc., and to authorize the Executive Director, on behalf of the Authority, to execute and deliver said contract in the bid amount of \$2,674,835 for a term of 426 calendar days from the Notice to Proceed.

Environmental Compliance Assistance, Deer Island Treatment Plant and Pelletizing Facility: EnviroBusiness, Inc. d/b/a EBI Consulting, Contract S530

Upon a motion duly made and seconded, it was

Voted to approve the recommendation of the Consultant Selection Committee to select EnviroBusiness, Inc. d/b/a EBI Consulting to provide environmental compliance assistance at the Deer Island Treatment Plant and at the Pelletizing Facility, and to authorize the Executive Director, on behalf of the Authority, to execute Contract S530 with EBI Consulting in an amount not to exceed \$174,529.40 for a term of 36 months from the Notice to Proceed.

Cryogenic Chillers Replacement – Deer Island Treatment Plant: William M. Collins Co., Inc., Contract 7398

Upon a motion duly made and seconded, it was

Voted to approve the award of Contract 7398, Cryogenic Chillers Replacement - Deer Island Treatment Plant, to the lowest responsible and eligible bidder, William M. Collins Co., Inc., and to authorize the Executive Director, on behalf of the Authority, to execute and deliver said contract in the bid amount of \$3,235,800, for a term of 730 calendar days from the Notice to Proceed.

CONTRACT AMENDMENTS/CHANGE ORDERS

Centrifuge Services – Deer Island Treatment Plant: Alfa Laval, Inc., Contract S509, Change Order 1

There was question and answer on the reasons for the change order.

Upon a motion duly made and seconded, it was

Voted to authorize the Executive Director, on behalf of the Authority, to approve Change Order 1 to increase the amount of Contract S509 with Alfa Laval, Inc., Centrifuge Services, Deer Island Treatment Plant, in an amount not to exceed \$121,625, with no increase in contract term.



WATER POLICY & OVERSIGHT COMMITTEE

CONTRACT AWARDS

Quabbin Power, Communication and Security Improvements: EDA2, Inc., Contract 7461

Upon a motion duly made and seconded, it was

Voted to approve the recommendation of the Consultant Selection Committee to select EDA2, Inc., to provide Design, Engineering Services during Construction, and Resident Engineering and Inspection Services – for the Quabbin Power, Communication, and Security Improvements project, and to authorize the Executive Director, on behalf of the Authority, to execute Contract 7461 with EDA2, Inc. in the amount of \$813,905.08 for a term of 48 months from the Notice to Proceed. The Notice to Proceed for grant eligible work shall not be issued until a signed contract between MWRA and the Massachusetts Emergency Management Agency has been executed.

PERSONNEL & COMPENSATION COMMITTEE

APPROVALS

PCR Amendments – July 2014

Upon a motion duly made and seconded, it was

Voted to approve amendments to the Position Control Register, as presented and filed with the records of the meeting.

FY2015 Non-Union Compensation

Upon a motion duly made and seconded, it was

Voted to take the following actions in MWRA's FY15 Non-Union Compensation Program: (1) Authorize the Executive Director to implement a 1.5% across-the-board compensation adjustment for non-union managers effective July 1, 2014, and a 1.5% across-the-board adjustment for non-union managers effective

January 1, 2015; and (2) Approve a revision to the non-union salary ranges for FY15 as presented in Attachment A and filed with the records of the meeting.

EXECUTIVE SESSION

It was moved to enter executive session to discuss litigation and collective bargaining.

Upon a motion duly made and seconded, it was, upon a roll call vote in which the members were recorded as follows:

<u>Yes</u>	<u>No</u>	<u>Abstain</u>
Carroll		
Flanagan		
Foti		
Swett		
Vitale		
Walsh		
Bartlett		

Voted to enter executive session for the purpose of discussing strategy with respect to litigation and collective bargaining in that such discussion in open session may have a detrimental effect on the litigating and bargaining positions of the Authority.

It was stated that the meeting would return to open session to announce any action taken regarding collective bargaining agreements and then to adjourn.

\* \* \* \*

EXECUTIVE SESSION

\* \* \* \*

The meeting returned to open session at 2:30 p.m.

OTHER BUSINESS

Ratification of Ratification of Collective Bargaining Agreements with AFSCME Unit 2 and MOSES Unit 9

It was announced that collective bargaining agreements with the above two units had been approved and ratified in executive session.

The meeting adjourned at 2:35 p.m.