



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

ADMINISTRATION, FINANCE & AUDIT COMMITTEE MEETING

Chair: H. Vitale
Vice-Chair: J. Foti
Committee Members:
A. Blackmon
J. Carroll
K. Cotter
A. Pappastergion
B. Peña
J. Walsh

to be held on

Wednesday, February 15, 2017

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

Time: 10:00 a.m.

AGENDA

A. Information

1. Second Quarter FY17 Orange Notebook
2. Delegated Authority Report – January 2017
3. FY17 Financial Update and Summary as of January 2017
4. FY2017 Mid-Year Capital Project Spending Report
5. FY2017 Sewer Assessment Adjustments
6. Preliminary FY18 Water and Sewer Assessments

B. Approvals

1. Transmittal of the FY18 Proposed Current Expense Budget to the MWRA Advisory Board
2. Appointment of Proxy for Fore River Railroad Corporation

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the
Administration, Finance and Audit Committee

December 14, 2016

A meeting of the Administration, Finance and Audit Committee was held on December 14, 2016 at the Authority headquarters in Charlestown. Chairman Vitale presided. Present from the Board were Messrs. Blackmon, Carroll, Cotter, Flanagan, Foti, and Walsh. Among those present from the Authority staff were Fred Laskey, Steve Remsberg, Mike Hornbrook, Tom Durkin, Michele Gillen, Cori Barrett, Carolyn Francisco Murphy, Karen Gay-Valente, Kathy Soni, John Vetere, Mary Flynn, Victor L'Esperance, Andrew Hildick-Smith and Linda D'Addario. The meeting was called to order at 10:25 a.m.

Information

MWRA's Climate Change Strategy

This item was referred to the full Board for discussion.

Construction Site Safety

Staff provided information on construction site safety, both by MWRA staff and contractors, including: OSHA 10 and OSHA 40 certifications, confined space entry; lockout/tag out; safety awareness; construction zone traffic safety; employee right to know; and excavation safety. There was general discussion and question and answer.

Delegated Authority Report – November 2016

There was question and answer on a couple of items contained in the report.

FY17 Financial Update and Summary – November 2016

Staff gave a presentation on the financials, and there was general discussion and question and answer.

Approvals***Approval of the Transmittal of the FY18 Proposed Capital Improvement Program to the MWRA Advisory Board**

Staff gave a presentation on the FY18 Proposed CIP, and there was general discussion and question and answer. The Committee recommended approval of transmittal of the FY18 Proposed Capital Improvement Program to the Advisory Board for its 60 day review and comment period. (ref. agenda item B.1).

Contract Awards*** Janitorial Services at the Chelsea Facility: S.J. Services, Inc., Contract WRA-4302Q**

There was general discussion and question and answer. The Committee recommended approval of the contract award (ref. agenda item C.1).

Contract Amendments/Change Orders***Assignment and Assumption of Contract EXE-033 Security Guard Services for Various MWRA Facilities from AlliedBarton Security Services, Inc. to Universal Protection Service, LLC d/b/a Allied Universal Security; and Contract EXE-033, Amendment 1**

There was general discussion and question and answer. The Committee recommended approval of the contract assignment and Amendment 1.

The meeting adjourned at 11:30 a.m.

* Approved as recommended at December 14, 2016 Board of Directors meeting.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the
Administration, Finance and Audit Committee

January 18, 2017

A meeting of the Administration, Finance and Audit Committee was held on January 18, 2017 at the Authority headquarters in Charlestown. Chairman Vitale presided. Present from the Board were Messrs. Blackmon, Cotter, Pappastergion, Peña, and Walsh; Messrs. Foti and Carroll joined the meeting in progress. Among those present from the Authority staff were Fred Laskey, Steve Remsberg, Mike Hornbrook, Rick Adams, Michele Gillen, Carolyn Francisco Murphy, Laurie Allen, Tom Durkin, Kathy Soni, Emily Dallman, Robert Belkin, Steve Perry, and Bonnie Hale. The meeting was called to order at 10:15 a.m.

Information

Delegated Authority Report – December 2016

There was question and answer on one of the items in the report.

(Mr. Foti joined the meeting.)

MWRA Compliance with the Amended Massachusetts Public Records Law

Staff summarized the amended law and MWRA's compliance with it.

FY17 Financial Update and Summary

Staff summarized the financial update and gave a report on the status of the cross-harbor cable work. (Mr. Carroll joined the meeting.) There was general discussion and question and answer.

Contract Awards

*Audit Services: CliftonLarsonAllen LLP, Contract F242

Staff summarized the history of previous audit services providers and the current RFP and selection recommendation. The Committee recommended approval of the contract award (ref. agenda item B.1).

* Approved as recommended at January 18, 2017 Board of Directors meeting.

*Drug and Alcohol Testing Program: Advantage Drug Testing, Contract A610

There was brief discussion, and the Committee recommended approval of the contract award (ref. agenda item B.2).

The meeting adjourned at 11:00 a.m.

* Approved as recommended at January 18, 2017 Board of Directors meeting.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: February 15, 2017
SUBJECT: FY17 Second Quarter Orange Notebook



COMMITTEE: Administration, Finance & Audit

INFORMATION
 VOTE

Carolyn M. Fiore, Deputy Chief Operating Officer
Stephen Estes-Smargiassi, Director, Planning & Sustainability
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

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 second quarter are highlighted below.

Lower Flows and Impacts at Deer Island WWTP

The extreme dry weather has affected both water and wastewater systems. A detailed discussion of the drought's impact on the water system during calendar year 2016 was presented to the Board in January. At the Deer Island Wastewater Treatment Plant, the continued dry weather and low groundwater levels, continued to result in record setting low average day plant flows. Calendar year low flow records for 2016 included:

- Total Plant Average Day Flow – 282.34 MGD (previous calendar year record was 295.30 MGD in CY15);
- North System Flow – 188.11 MGD (previous calendar year record was 192.62 MGD in CY15); and
- South System Flow – 94.23 MGD (previous calendar year record was 99.05 MGD in CY12).

CY16 precipitation was the second lowest amount of precipitation post Secondary startup (July 1998) with a total of 33.05 inches of precipitation. As indicated on page 1, 2 and 27, the plant performed well despite the lower flows and stronger influent concentrations.

Deer Island Cross-Harbor Power Cable Work

The combustion turbine generators (CTGs) which provide backup power to the cross harbor power cable were used extensively in November and December (and continued into January) as the cable was de-energized to allow Eversource to perform cable location work under the harbor in preparation for protection work later in 2017. This can be seen in the self-generation graphs on Page 1, with the CTG's generating 456 megawatt hours (MWh) in November, and 3,388 MWh in December, offsetting purchased power.

Using the CTGs for extended periods of time, and disconnecting and then later re-connecting the plant to grid power at the end of each work day required additional staff hours and overtime. (Pages 5 and 42)

The additional diesel fuel need to power the CTGs is not reflected directly in the Orange Notebook charts, but is being tracked. This will impact MWRA's greenhouse gas inventory for CY2016 and 2017, interrupting the downward trend resulting from MWRA's efficiency and green power generation efforts, as reported to the Board in November and December of 2106.

MWRA staff are tracking each of the impacts of the Eversource cable interruptions as reported to the Board in January.

Workforce Management

The staff turnover during the first half of FY17 has been higher than recent years, with 120 vacancies filled (including promotions and external hires) so far this year. That represents about ten percent of current filled positions. If the current rate continues through the second half of the fiscal year, turnover will be about 67 percent higher than the average of the past five years. As has been the case in recent years, approximately two-thirds are being filled internally by promotions and transfers and approximately one-third of positions are being filled with outside hires. (Page 42)

MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report
On
Key Indicators of MWRA Performance
For
Second Quarter FY2017

Q1	Q2	Q3	Q4



Frederick A. Laskey, Executive Director
Michael J. Hornbrook, Chief Operating Officer
February 15, 2017

Board of Directors Report on Key Indicators of MWRA Performance

Second Quarter FY17

Table of Contents

Operations and Maintenance

DITP Operations-	1
Total Power Use/Self-Generation	
Plant Flow & Precipitation	
Total Cost of Electricity/Pricing	
DITP Operations-	2
DI Sodium Hypochlorite Use	
Disinfection Dosage	
Secondary Blending Events	
DI Operations & Maintenance Report	3
Residuals Processing	4
Sludge Detention Time in Digesters &	
Total Solids Destruction	
Digester Gas Production & % Utilized	
Sludge Pumped From Deer Island	
Monthly Average % Capture of Processed Sludge	
DITP Maintenance	5
Operations Division–Metering & Leak Detection	6
Water Distribution System–Valves	7
Wastewater Pipeline/Structures	8
FOD Metro Facility & Equipment Maintenance	9
Renewable Electricity Generation-1	10
Renewable Electricity Generation-2	11
Toxic Reduction and Control	12
Field Operations– Narrative Topics	13
Laboratory Services	15

Construction Programs

Projects in Construction	16
CSO Control Update	18
CIP Expenditures	19

Drinking Water Quality and Supply

Source Water – Microbial Results	20
Source Water – Turbidity, pH and Alkalinity	21
Treated Water – Disinfection Effectiveness	22
Source Water – Algae, Complaints	23
Bacteria and Chlorine Residual Results	24
Disinfection By-Products, UV 254	25
Water Supply/Source Water Management	26

Wastewater Quality

NPDES Permit Compliance	
-Deer Island TP	27
-Clinton TP	28

Community Flows and Programs

Total Water Use Revenue Customers	29
Community Wastewater Flows	30
Community Support Programs	
-Infiltration/Inflow Local Financial Assist. Progr.	31
-Water-Local Pipeline & System Assist. Progr.	32
-Lead Service Line Replacement Loan Progr.	33
-Community Water System Leak Detection and Conservation Outreach	34

Business Services

Procurement	35
Materials Management	36
MIS Program	37
Legal Matters	38
Internal and Contract Audits	41

Other Management

Workforce Management	42
Workplace Safety Program	43
Job Group Representation	44
MBE/WBE Expenditures	45
CEB Expenses	46
Cost of Debt	47
Investment Income	48

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.

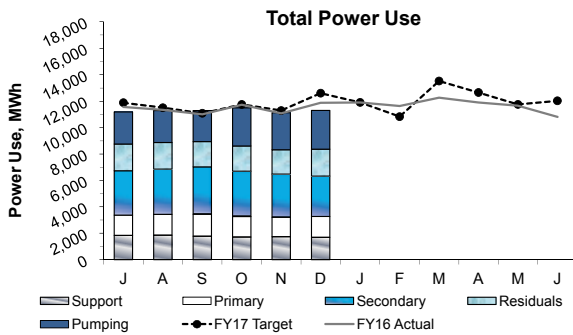
Frederick A. Laskey, Executive Director
Michael J. Hornbrook, Chief Operating Officer
February 15, 2017

OPERATIONS AND MAINTENANCE

Deer Island Operations

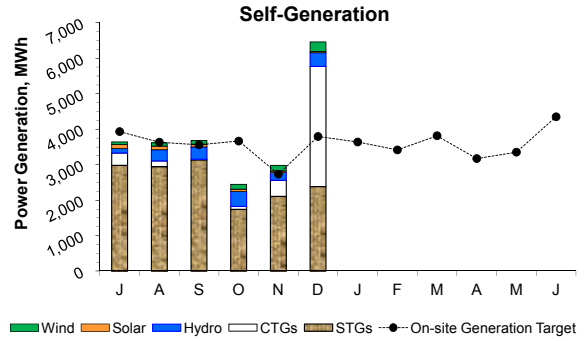
2nd Quarter - FY17

Page 1 of 4



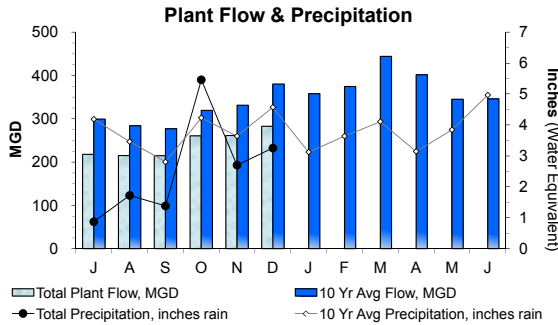
Total power usage in the 2nd Quarter was 4.9% below target as Total Plant Flow was 10.7% below target with the 3 year average plant flow. Power usage throughout the plant has been at our below target for the entire quarter.

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

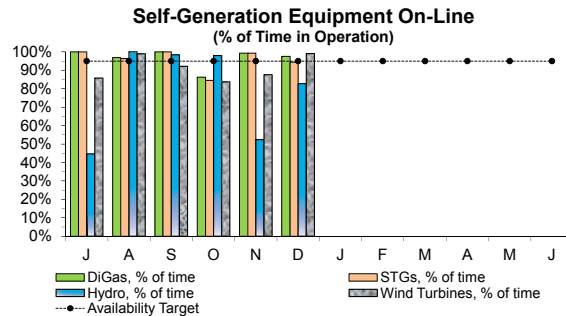


Power generated on-site during the 2nd Quarter was 16.6% above target. While generation by the Solar Panels and Wind Turbines exceeded their targets, generation by the STGs was below target due to scheduled annual maintenance in October and generation by the Hydro Turbines was below target due to mechanical issues and lower than expected plant flow. The CTGs generated significantly more power than expected during the quarter as the CTGs were operated for extended periods of time in November and December as DITP was taken off utility power to allow Eversource to de-energize the cross-harbor power cable in order to perform cable location work in the Reserved Channel.

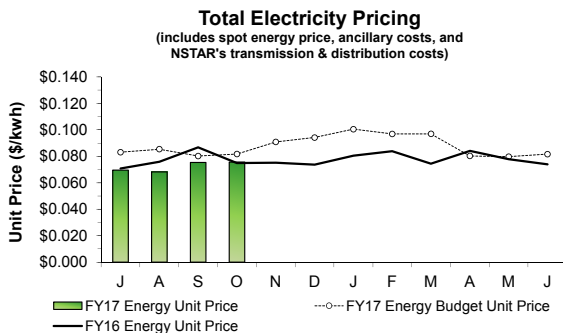
Note: Power generation data for the Solar Panels and the Wind Turbines may be difficult to see as the amount of power generated is low within the current scale of this graph; a total of 135.6 MWh was generated by the Solar Panels and 566.6 MWh was generated by the Wind Turbines in the 2nd Quarter.



Total Plant Flow for the 2nd Quarter was 22.0% below target with the 10 year average plant flow (268.2 MGD actual vs. 343.6 MGD expected) as precipitation for the quarter was 8.3% lower than target (11.41 inches actual vs. 12.44 inches expected).

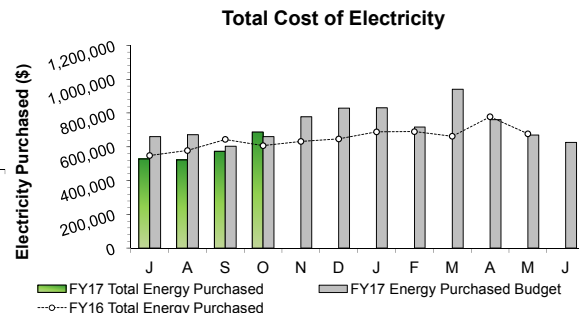


The DiGas system met the 95% availability target for the 2nd Quarter. However, the STGs, fell below target due to scheduled annual maintenance outage of the Thermal Power Plant in October. The Hydro Turbines and Wind Turbines fell below target due to electrical and mechanical issues.



Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The actual Total Energy Unit Price in the 2nd Quarter (actuals for October only) was 7.4% lower than the FY17 budget estimate for the same period. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges.

Note: Only the actual energy prices are reported. Therefore, the dataset lags by two (2) month due to the timing of invoice receipt.



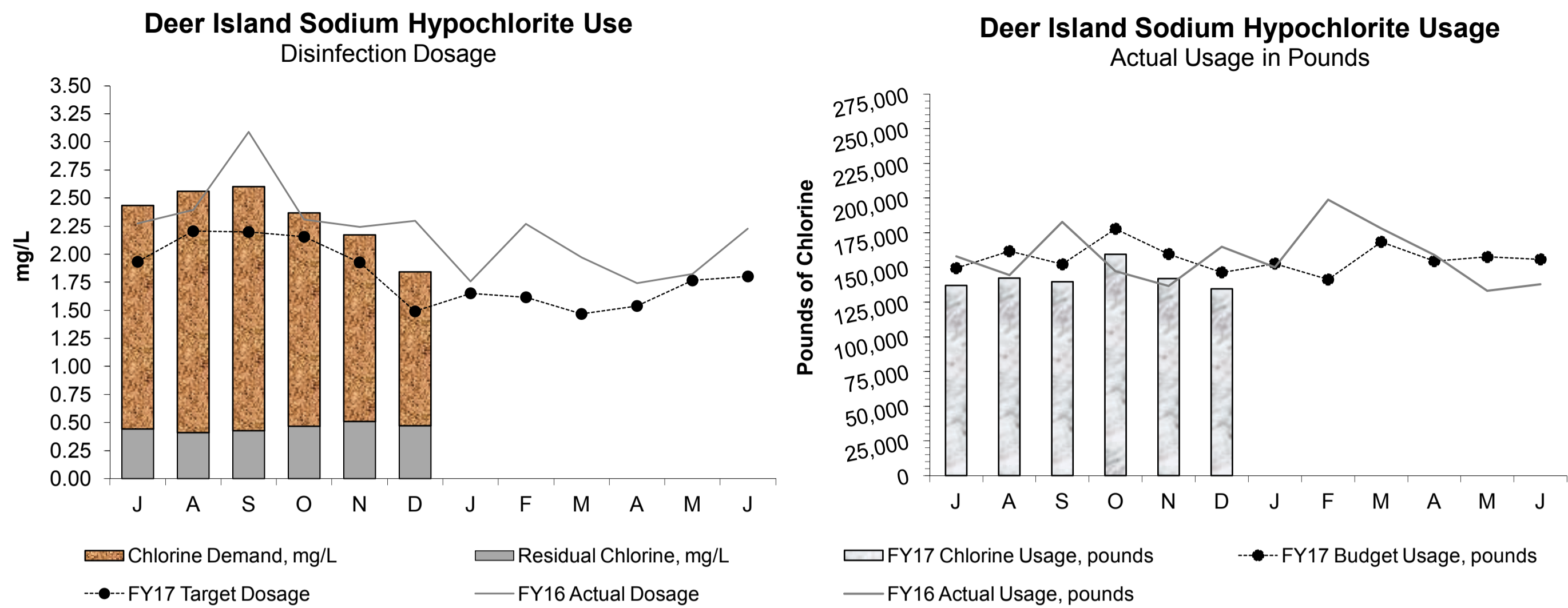
The total cost of Electricity Purchased during the 2nd Quarter (actuals for October only) was 4.1% higher than budget due to higher than expected volume of electricity purchased as a result of lower than expected generation during the month of October. Year-to-date costs however, are \$284,225 lower than budgeted through October as the Total Energy Unit Price is lower than budgeted by 12.6% through October. The cost data for Electricity Purchased in November and December are not yet available as of reporting time.

Note: Only months with complete Electricity Purchased data are reported. Therefore, the dataset lags by two (2) months due to the timing of invoice receipt.

Deer Island Operations

2nd Quarter - FY17

Page 2 of 4



The disinfection dosing rate in the 2nd Quarter was 15% higher than the target. DITP maintained an average disinfection chlorine residual of 0.48 mg/L this quarter with an average dosing rate of 2.13 mg/L (as chlorine demand was 1.64 mg/L). Chlorine dosing was higher than expected due to lower than expected plant flow resulting in a higher chlorine demand. However, actual sodium hypochlorite usage in pounds of chlorine was 9.9% below target this quarter.

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	0	0	0	100.0%	0.00
A	0	0	0	100.0%	0.00
S	0	0	0	100.0%	0.00
O	2	2	0	99.7%	3.94
N	2	2	0	99.7%	4.50
D	1	1	0	99.9%	2.30
J					
F					
M					
A					
M					
J					
Total	5	5	0	99.9%	10.74

99.8% of all flows were treated at full secondary during the 2nd Quarter. There were a total of five (5) secondary blending events that were all due to high plant flow resulting from heavy rain. The five (5) combined blending events resulted in a total of 10.74 hours of blending and 57.63 Mgal of flow blended with secondary effluent. The Maximum Secondary Capacity for the entire month was 700 MGD.

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

Deer Island Operations & Maintenance Report

Environmental/Pumping:

The continued low flows, due mainly to ongoing drought conditions, produced a number of calendar year low flow records for 2016 (since plant startup, July 1998). Precipitation in 2016 was the second lowest post plant startup with a total of 33.05 inches of precipitation. The lowest calendar year total precipitation post plant startup was 31.71 inches set in 2001. The following are the new calendar year low flow records -

- Average Total Plant Flow – 282.34 MGD set in CY16 (previous calendar year record was 295.30 MGD in CY15),
- Average North System Flow – 188.11 MGD set in CY16 (previous calendar year record was 192.62 MGD in CY15),
- Average South System Flow – 94.23 MGD set in CY16 (previous calendar year record was 99.05 MGD in CY12).

The plant achieved a peak flow rate of 959.9 MGD at midnight on October 22 during a rain event that produced 1.34 inches of precipitation. Overall, Total Plant Flow in the 2nd Quarter was 22.0% below the 10 year average plant flow target for the quarter.

Essential maintenance and rehabilitation activities involving the replacement of butterfly flow control valves, discharge isolation valves, flow meters, and associated piping for each of the 10 wastewater pumps in the North Main Pump Station (NMPS) continued in Quarter 2. All equipment is original and dates back to the facility upgrades in 1995. Over time, the valves in these facilities have sustained damage from age and wear and must be replaced to allow proper isolation of pumps and equipment for maintenance. There were a total of five (5) force main isolation events during the second quarter of FY17, to remove and install the new equipment for Pumps #1 and #4, and to remove the old equipment for Pump #3.

Deer Island Operations

2nd Quarter - FY17

Page 3 of 4

Deer Island Operations & Maintenance Report (continued)

Environmental/Pumping (continued):

NMPS, Winthrop Terminal Headworks Facility, and South System Pump Station continued to operate during these events. No interruptions or restrictions in flow occurred during this work as all north system flow was handled through the other force main in the facility. Flow through the isolated force main in NMPS was suspended at approximately 3:30 a.m. and was restored before 3:00 p.m. once this portion of the work was completed each day.

Secondary Treatment:

Annual turnaround maintenance was performed on Train #1 in the Cryogenic Oxygen Facility in mid-October. This turnaround maintenance is performed on roughly half of the components and systems in the Cryo Facility and allows the remaining half of the facility to continue to operate and produce oxygen uninterrupted. During this turnaround maintenance, the contractor calibrated all the instrumentation on Cold Box unit #1 as well as, a number of other components of the oxygen plant.

Energy and Thermal Power Plant:

Overall, total power generated on-site accounted for 35.1% of Deer Island's total power use for the 2nd Quarter. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 23.5% of Deer Island's total electrical power use for the quarter.

The annual maintenance at the Thermal Power Plant took place starting on October 2 and continued through October 14. Various maintenance activities on both Steam Turbine Generators (STGs), the two Zurn boilers, and the common systems occurred and involved maintenance on various pumps, valves, and instruments throughout the power plant.

Eversource and its subsidiary Harbor Electric Energy Company ("HEEC") is currently undertaking a project to more precisely locate the depth of the Reserved Channel portion of HEEC's 115kV power line which is used to provide primary power to the DITP. The HEEC project consists of Phase 1 and Phase 2. The first part of Phase 1 consisted of precisely locating the cable in the Reserved Channel, which took place November 2 to November 5 and required DITP to be isolated from the grid and operate using backup CTG power from approximately 6:00 a.m. to 7:00 p.m. each day while the cable was de-energized to safely carry out this work. The second part of Phase 1, which began December 8 and continued into January, involves test pit dredging to verify the location of the cable. The CTGs were operated for various periods of time on 12 days in December for this portion of the work. Phase 2 will involve dredging and installing protective mats over the 1,200 foot section of cable in the Reserved Channel, currently planned for the summer of 2017.

An unanticipated plant-wide power outage occurred at 9:06 a.m. on December 8 as a result of CTG #2 tripping offline while DITP was disconnected from utility power for an Eversource power cable outage. Power was restored within 8 minutes of the outage when CTG #1 was placed into operation. DITP reconnected to the grid (utility power) later in the afternoon once Eversource was able to re-energize the power cable. Staff and the CTG service contractor were able to pinpoint and correct the cause of the issue, and the Eversource cable work resumed on December 13.

Regulatory:

Based on the treatment plant's performance in 2016, Deer Island is expected to receive NACWA's (National Association of Clean Water Agencies) Platinum Award for Peak Performance which recognizes member agency facilities for outstanding compliance of their National Pollutant Discharge Elimination System (NPDES) permit limits. The Platinum award is given to agencies in recognition of 100% compliance with NPDES permits over a consecutive five year period. Deer Island is qualified for a Platinum Award¹⁰ for having operated with no permit violations from 2007 through 2016. Deer Island's last permit violation occurred in August 2006 due to an acute toxicity test result that failed to meet the permit limits.

Clinton AWWTP:

Based on the treatment plant's performance in 2016, Clinton Treatment Plant is expected to receive NACWA's (National Association of Clean Water Agencies) Gold Award for Peak Performance which recognizes member agency facilities for compliance of their National Pollutant Discharge Elimination System (NPDES) permit limits. The Gold Award is given to facilities with no NPDES permit violations for the entire calendar year. Clinton Treatment Plant is qualified for its second consecutive Gold Award for having operated with no permit violations in 2015 and 2016.

Phosphorus Reduction Facility:

Work completed or in progress during the second quarter: Placed concrete for mix tank outlet channel slab, electric room floor slab, roof deck, girders and beams; installed new plant water line, yard hydrant, and channel slide gates; prepared wet well and applied epoxy base coats; installed floor drains and vent piping in bathroom area; Mason constructed "mock-up" panel; preparing for coatings in rapid mix tank; mobilized and erected staging and enclosure and completed block work; placed waterproofing and commenced exterior brick work.

Trickling Filter # 3:

Assembled machined components on trickling filter center column. Crane was used to lift column onto center pedestal. Reattached distribution arms and adjusted support cables to level arms.

Outfall Composite Sampler Shed:

Purchased and installed sampling shed for outfall composite samplers. Electricians pulled wiring and instrumentation technician installed flow paced signal splitter to accommodate central lab composite samplers and Toxic Reduction and Control samplers.

Removing scale in Soda Ash Feed Line:

Chelsea Vactor truck was used to dispense high pressure water in soda ash line to remove build-up and flush debris from line reducing back pressure to feed pump.

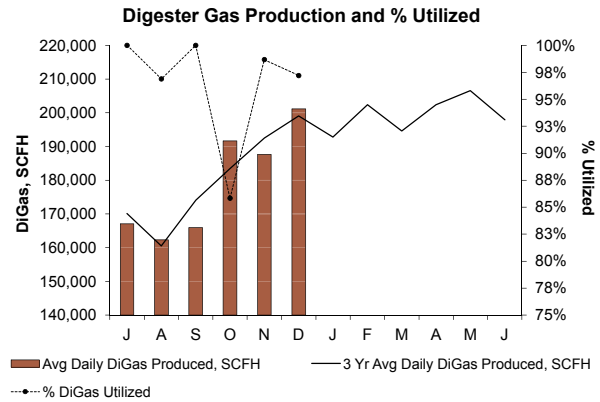
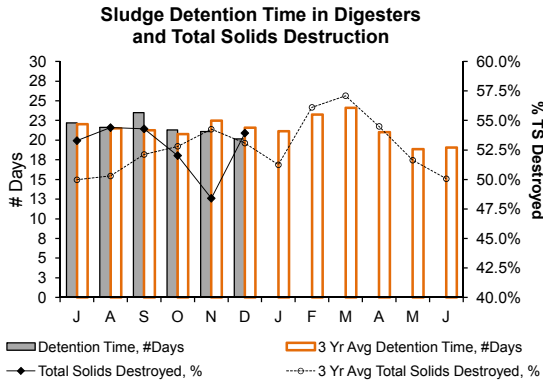
Clarifloculator #3:

Replaced 12 existing 4 inch ground water relief valves with new Tideflex EPDM check valves. Valves are used to relieve ground water pressure from the outside of the tank when it is empty.

Deer Island Operations and Residuals

2nd Quarter - FY17

Page 4 of 4



Total solids (TS) destruction following anaerobic sludge digestion averaged 51.5% during the 2nd Quarter, lower than the 3 year average of 53.4% for the same period, as the sludge detention time in the digesters was 20.9 days, slightly lower than the 3 year average of 21.6 days. DI operated with an average of 8.0 digesters during the 2nd Quarter in comparison to the 3 year average of 7.8 digesters.

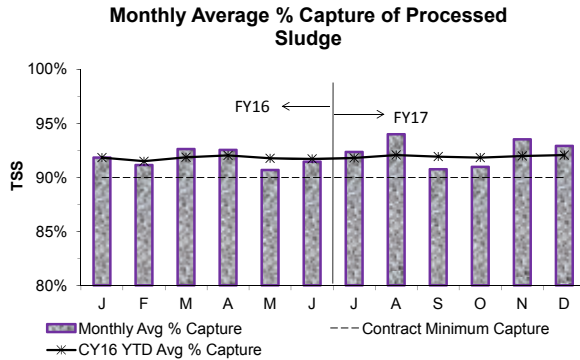
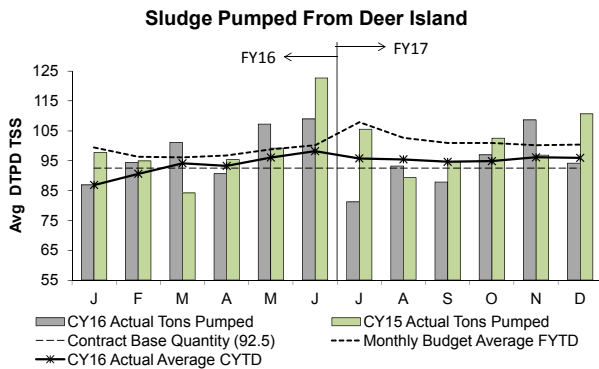
The Avg Daily DiGas Production in the 2nd Quarter was 0.9% above target with the 3 Year Avg Daily DiGas Production for the same period even though sludge production was lower than expected. On average, 93.9% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant. DiGas utilization was a low of 85.8% in October due to a scheduled annual maintenance outage of the Thermal Power Plant.

The lower sludge detention time, and therefore the lower solids destruction, was a result of thinner sludge and a higher sludge volume in November, a side effect of several rain events during the month. Sludge detention times and solids destruction in October and December were more typical based on historical trends.

Total solids (TS) destruction is dependent on sludge detention time which is determined by primary and secondary solids production, plant flow, and the number of active digesters in operation. Solids destruction is also significantly impacted by changes in the number of digesters and the resulting shifting around of sludge.

Residuals Pellet Plant

MWRA pays a fixed monthly amount for the calendar year to process up to 92.5 DTPD/TSS as an annual average. The monthly invoice is based on 92.5 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 90.0 DTPD/TSS was changed to 92.5 DTPD/TSS starting on January 1, 2016 with the terms of the new contract. On average, MWRA processes more than 92.5 DTPD/TSS each year (FY16's budget was 100.2 DTPD/TSS and FY17's budget is 100.6 DTPD/TSS).



The average total quantity of sludge pumped to the Pellet Plant in the 2nd Quarter of FY17 was 100.0 DTPD - on target with FY17's average budget of 100.6 DTPD.

The contract requires NEFCo to capture at least 90.0% of the solids delivered to the Biosolids Processing Facility in Quincy. The CY16 average capture is 92.06%.

Deer Island Maintenance

2nd Quarter FY17

Productivity Initiatives

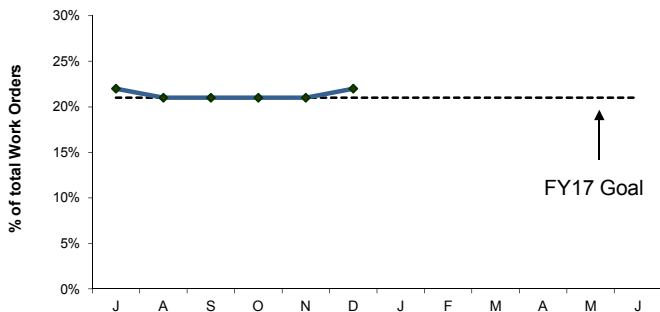
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in overall maintenance backlog.

Predictive Maintenance Compliance



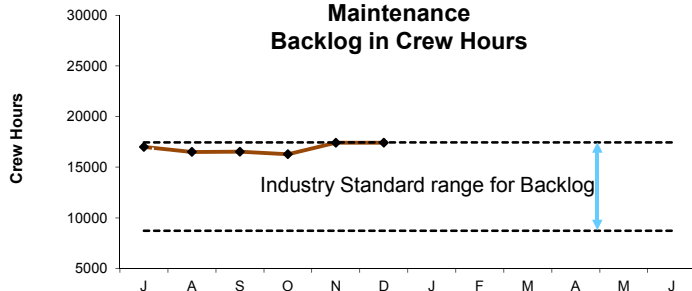
Deer Island's FY17 predictive maintenance goal is 100%. DITP completed 100% of all PdM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program.

Predictive Maintenance



Deer Island's FY17 predictive maintenance goal is 21% of all work orders to be predictive. 21% of all work orders were predictive maintenance this quarter. The industry is moving toward increasing predictive maintenance work to reduce downtime and better predict when repairs are needed.

Maintenance Backlog in Crew Hours



DITP's maintenance backlog at Deer Island is 17,043 hours this quarter. DITP is within the industry average for backlog. The industry Standard for maintenance backlog with 97 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog is affected by five vacancies; two M&O Specialists, Instrument Technician, Electrician and a HVAC Specialist. Management continues to monitor backlog and to ensure all critical systems and equipment are available.

Proactive Initiatives

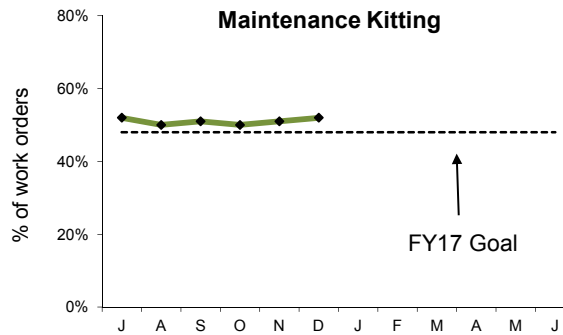
Proactive initiatives include completing 100% of all preventative maintenance tasks and increasing preventative maintenance kitting. These tasks should result in lower maintenance costs.

Preventative Maintenance Compliance



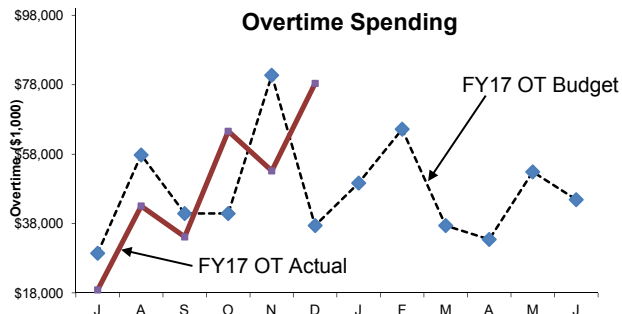
Deer Island's FY17 preventative maintenance goal is 100% completion of all work orders from Operations and Maintenance. DITP completed 100% of all PM work orders this quarter.

Maintenance Kitting



Deer Island's FY17 maintenance kitting goal is 48% of all work orders to be kitted. 51% of all work orders were kitted this quarter. Kitting is staging of parts or material necessary to complete maintenance work. This has resulted in more wrench time and increased productivity.

Overtime Spending



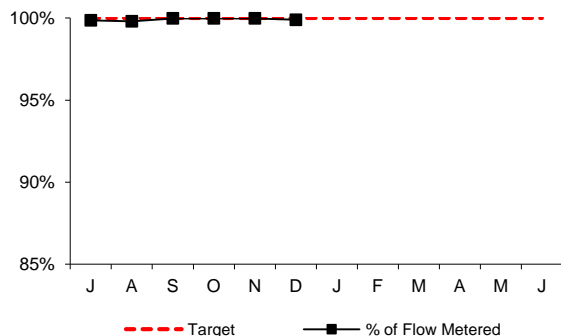
Maintenance overtime was over budget by \$20K this quarter and \$22k under for the year. Management continues to monitor backlog and to ensure all critical equipment and systems are available. This quarters overtime was predominately used for Island Wide HVAC work, Eversource Cable Outage, Maintenance Warehouse Heating Coil Replacement, Rebuild Residuals Odor Control Fan #4, and Winthrop Terminal Facility VFD #6.

Operations Division Metering

2nd Quarter - FY17

WATER METERS

Percent of Total Revenue Water Deliveries Calculated Using Meters

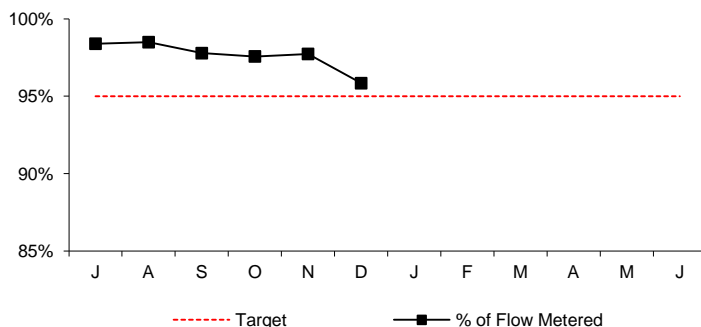


The target for revenue water deliveries calculated using meters is 100%. Estimates are generated for meters that are out of service due to instrumentation problems or in-house and capital construction projects. During the 2nd quarter of FY17, meter actuals accounted for 99.96% of flow; only 0.04% of total revenue water deliveries were estimated. The following is the breakdown of reasons for estimations:

- In-house and Capital Construction Projects - 0.01%
- Instrumentation Failure - 0.03%

WASTEWATER METERS

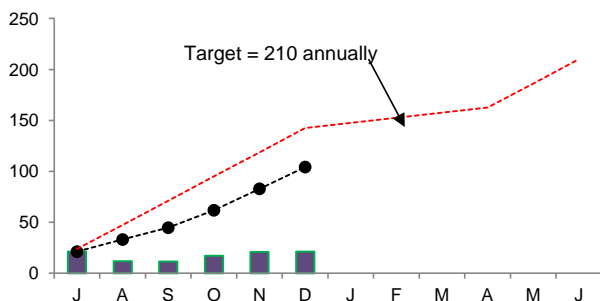
Percent of Total Wastewater Transport Calculated Using Meters



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 2nd quarter of FY17, meter actuals accounted for 97.05% of flow; only 2.95% of wastewater transport was estimated.

WATER DISTRIBUTION SYSTEM PIPELINES

Miles Surveyed for Leaks



During the second quarter, 59.49 miles of water mains were inspected. The total inspected for the fiscal year to date is 104.22 miles. Miles surveyed is below target due to training of new staff.

Leak Backlog Summary

Month	J	A	S	O	N	D	J	F	M	A	M	J
Leaks Detect	3	2	2	3	3	0						
Leaks Repair	1	1	1	4	2	2						
Backlog	7	8	9	8	9	7						
Avg. Lag Tim	24.9	42.3	36.7	41.3	45.2	58.6						

During the second quarter, six new leaks were detected. All six leaks detected during the second quarter were repaired, as well as one detected in June and one in July. Refer to FY17 Leak Report below for details. Also, community service ranging from individual leak location to hydrant surveys were conducted for: Arlington, Boston, Malden, Medford, Milton, Lynn, Newton, Somerville, and Waltham.

FY17 Leak Report as of 2nd Q FY17

Date Detected	Location of Leaks	Repaired
7/22/2016	69 Riverside Avenue, Medford	7/29/2016
1/11/2015	Arborway @ St. Joseph St., West Roxbury	8/15/2016
9/15/2016	West Squantum @ Amsterdam Ave., Quincy	9/20/2016
10/12/2016	Prospect St at Sun St, Waltham	10/13/2016
10/13/2016	1025 West Roxbury Parkway, Brookline	10/17/2016
8/11/2016	Lee St at Boylston St, (Rte 9), Brookline	10/20/2016
10/18/2016	West St at Lagrange St, West Roxbury	10/26/2016
11/2/2016	Morton St at Blue Hill Ave, Dorchester	11/7/2016
6/1/2016	Commonwealth Ave at Oakland Ave, Newton	11/30/2016
11/6/2016	2 Lynn Fells Parkway, Near W. Wyoming, Stoneham	12/22/2016
11/6/2016	122 Lynn Fells Parkway at Youle St, Melrose	12/30/2016

Date Detected	Location of Leaks/Unrepaired
6/8/2015	Allandale Rd. @ Grove St., Brookline. This leak will be addressed early spring, 2017 and to be coordinating with CIP and 8M permit water main isolations.
6/17/2015	Washington St at East St, Dedham; Single main in SEH service area.
7/16/2015	#56 Capt Robert Cook Dr, Needham - Sched for late Winter early Spring.
7/1/2016	241 Forest St., Winchester - Late Winter 2017 - difficult Main to close.
7/26/2016	Res Playground Cleveland Cir., - Dec/Jan/Feb Pipe is in Ball Pk, wait until frozen.
8/30/2016	Morton Street @ American Legion, W. Roxbury - repair scheduled during January.
9/28/2016	Quinobequin Road @ Rt 128, Newton - scheduled for Winter

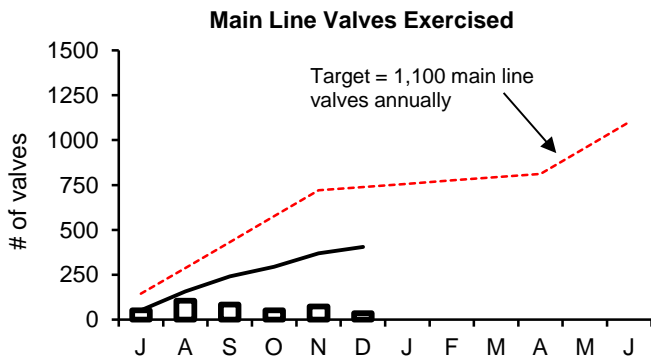
Water Distribution System Valves

2nd Q FY17

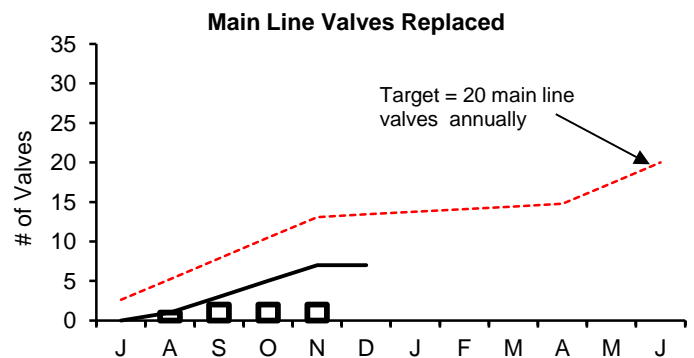
Background

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.

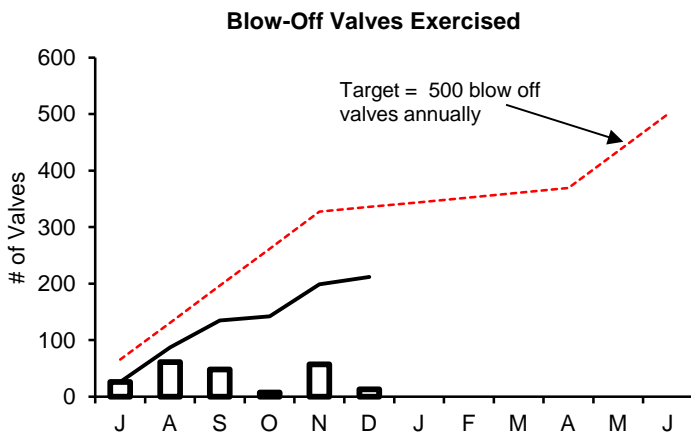
Type of Valve	Inventory #	Operable Percentage	
		FY17 to Date	FY17 Targets
Main Line Valves	2,159	97.2%	95%
Blow-Off Valves	1,317	95.7%	95%
Air Release Valves	1,380	94.3%	95%
Control Valves	49	100.0%	95%



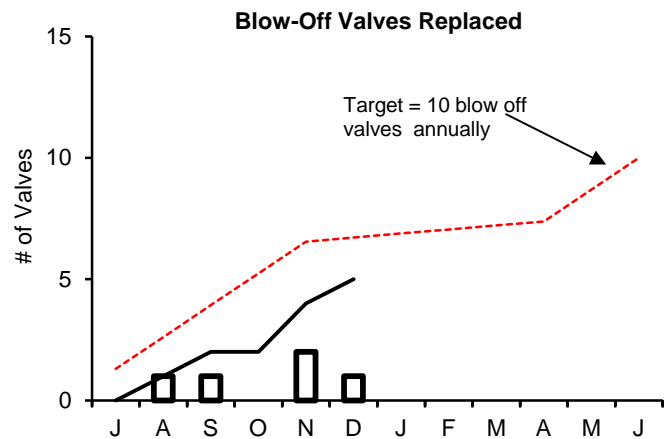
During the second quarter, 163 main line valves were exercised. The total exercised for the fiscal year is 405. Below target due to staffing vacancies and CIP/8M permit construction contract support.



During the second quarter, four main line valves were replaced. The total replaced for the fiscal year is seven.



During the second quarter, 76 blow off valves were exercised. The total exercised for the fiscal year is 211.

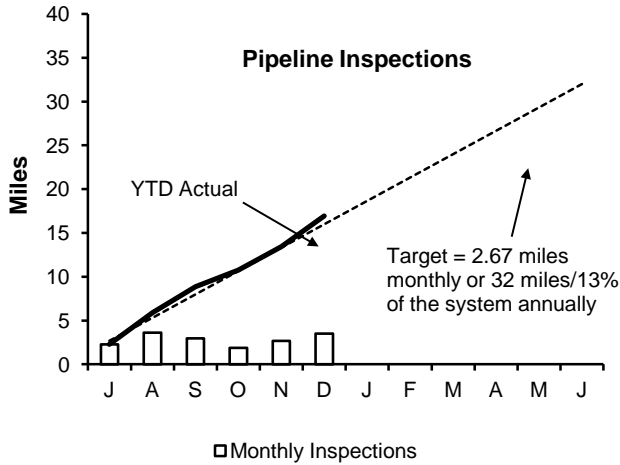


During the second quarter, 3 blow off valves were replaced. The total replaced for the fiscal year is five.

Wastewater Pipeline and Structure Inspections and Maintenance

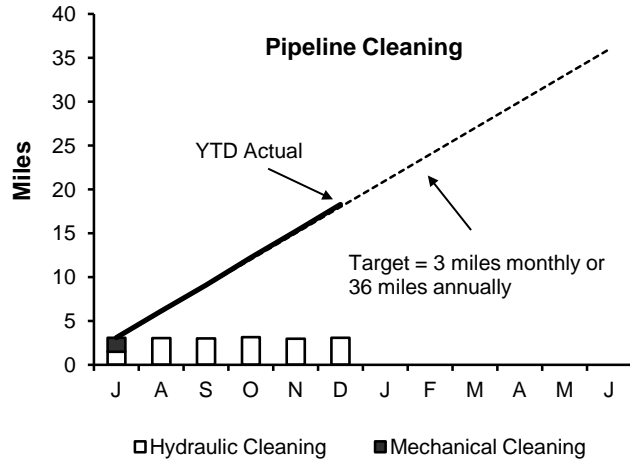
2nd Quarter - FY 17

Inspections



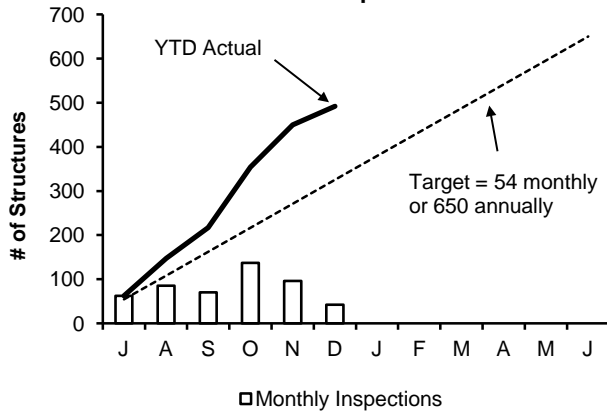
Staff internally inspected 8.06 miles of MWRA sewer pipeline during the second quarter. The year to date total is 16.94 miles. No Community Assistance was provided this quarter.

Maintenance



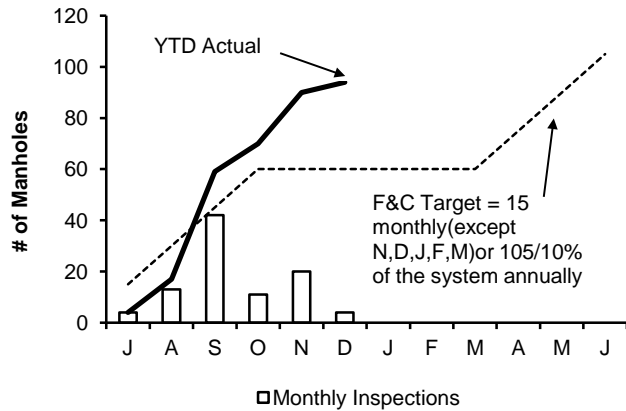
Staff cleaned 9.19 miles of MWRA's sewer system and removed 54 yards of grit and debris during the second quarter. The year to date total is 18.28 miles. Community Assistance was provided to the city of Malden. Staff cleaned 1,410 linear feet of a 10" diameter sewer line that was blocked with debris this quarter.

Structure Inspections



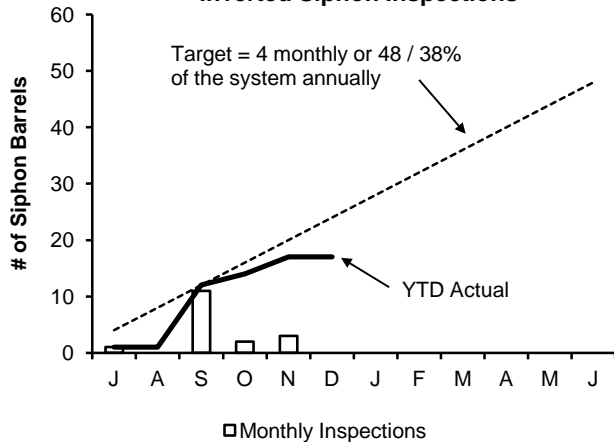
Staff inspected 36 CSO structures and performed 239 additional manhole/structure inspections during the second quarter. The year to date total is 492 inspections.

Manhole Rehabilitation



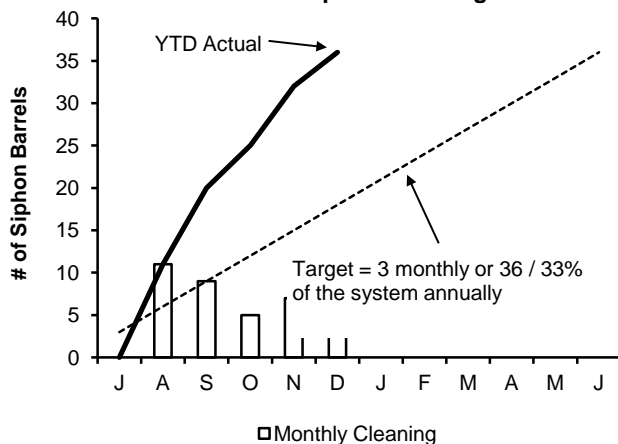
Staff replaced 35 frames & covers during the second quarter. The year to date total is 94.

Inverted Siphon Inspections



Staff inspected 5 siphon barrels during the second quarter. Year to date total is 17 inspections.

Inverted Siphon Cleaning



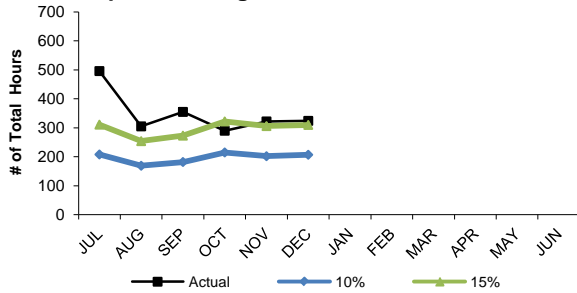
Staff cleaned 16 siphon barrels during the second quarter. Year to date total is 36.

Field Operations' Metropolitan Equipment & Facility Maintenance

2nd Quarter - FY17

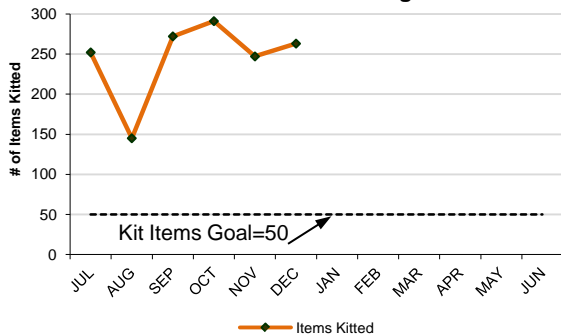
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus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

Operations Light Maintenance PM Hours



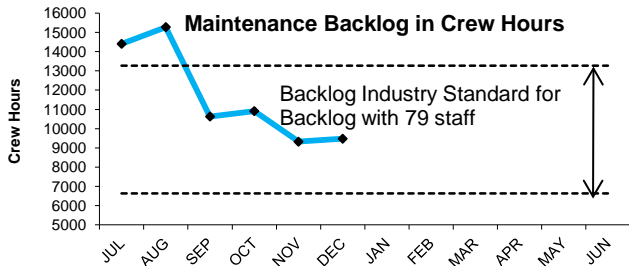
Operations staff averaged 312 hours of preventive maintenance during the 2nd Quarter, an average of 15% of the total PM hours for the 2nd Quarter, which is within the industry benchmark of 10% to 15%.

Items Kitted Utilizing Maximo



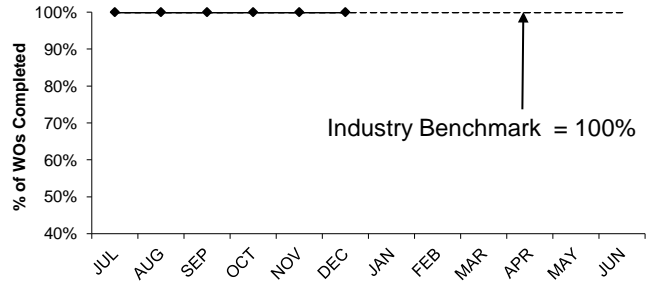
In an effort to more efficiently complete work, maintenance staff and work coordination staff have utilized the Lawson/Maximo interface to better kit stock and non stock material. The goal for FY17 is to "kit" 50 stock and non stock items total per month. An average of 267 items were kitted during the 2nd Quarter

Maintenance Backlog in Crew Hours



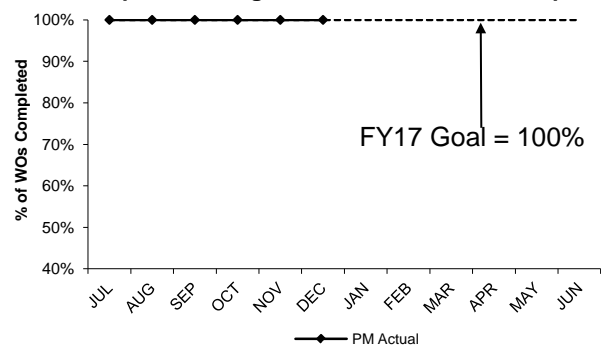
The 2nd Quarter backlog average is 9902 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6450 to 12,940 hours.

Overall Preventive Maintenance



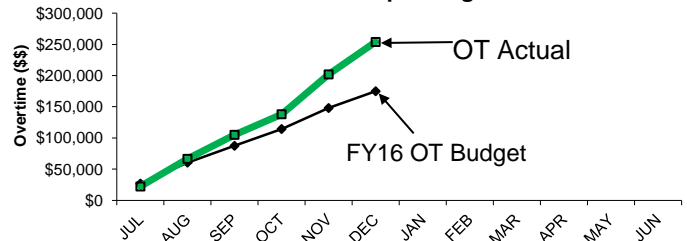
The Field Operations Department (FOD) preventive maintenance goal for FY17 is 100% of all PM work orders. Staff completed an average of 100% of all PM work orders in the 2nd Quarter.

Operations Light Maintenance % PM Completion



Wastewater Operators complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY17 PM goal is completion of 100% of all PM work orders assigned. Operations completed an average of 100% of PM work orders in the 2nd Quarter.

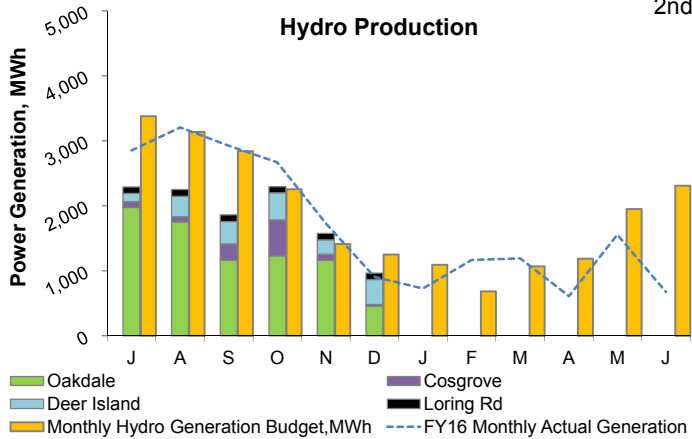
Overtime Spending



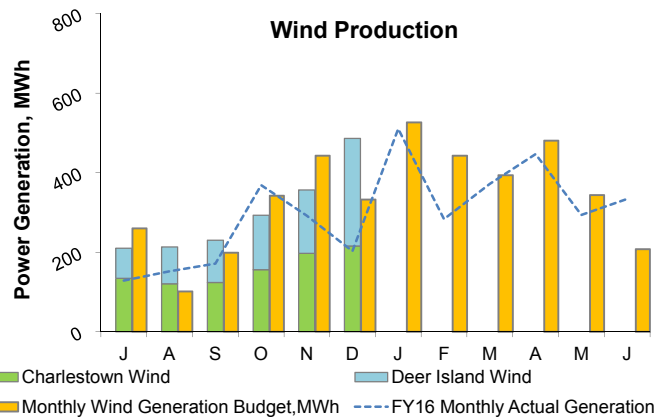
Maintenance overtime was \$61k over budget for the 2nd Quarter. Overtime was used for staging weather events and performing critical maintenance repairs.

Renewable Electricity Generation: Savings and Revenue

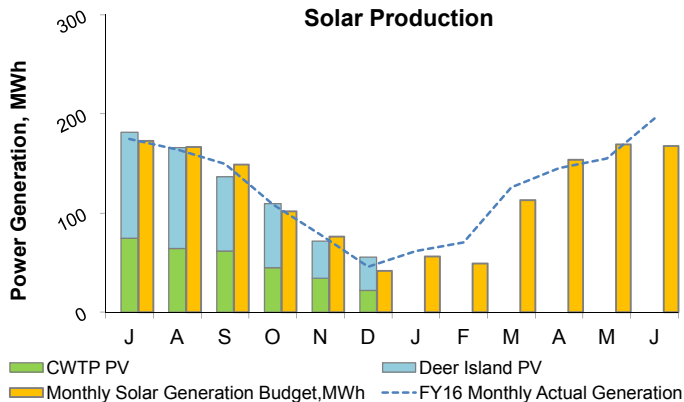
2nd Quarter - FY17



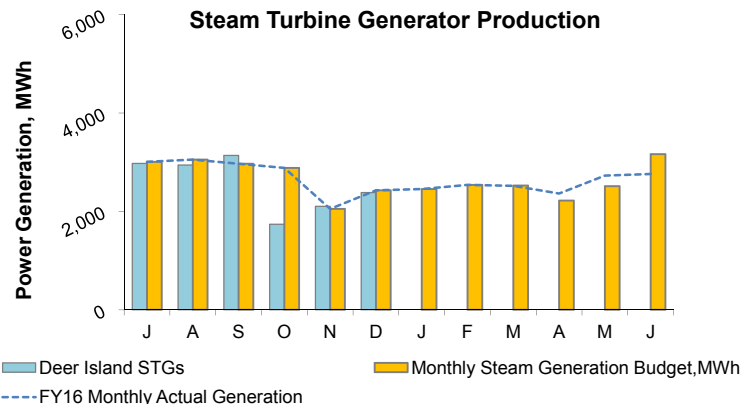
In the 2nd quarter, the renewable energy produced from all hydroelectric facilities totaled 4,835 MWh; 2% below budget³. The total energy produced to date in FY17 is 11,238 MWh; 21% below budget³, partly due to Oakdale generation values being underestimated by the utility for September; the utility data corrections will be reconciled in later months. Also, Cosgrove was operating at a lower rate for scheduled testing, and both Deer Island hydro turbines were temporarily off-line due to mechanical issues. The total savings and revenue² to date in FY17 (actuals through October¹) is \$259,976; 55% below budget³, partly due to the fact that the actual electricity unit price for Deer Island has been 12% below the budgeted³ estimate for the same period and due to the three reasons stated above. The savings and revenue value does not include RPS REC revenue (see next page).



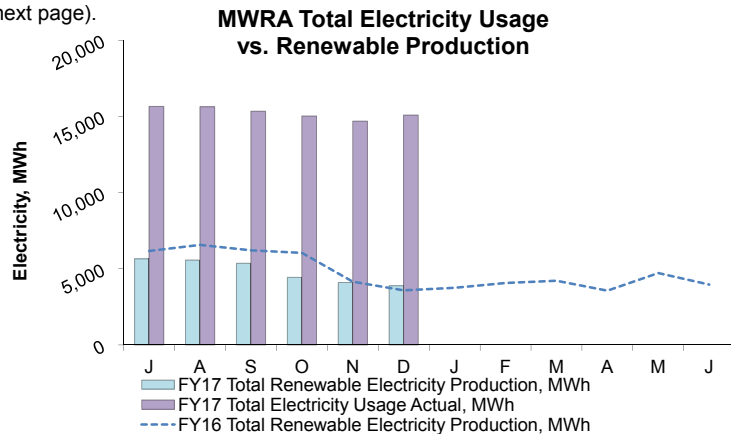
In the 2nd quarter, the renewable energy produced from all wind turbine generators totaled 1,135 MWh; 2% above budget³. The total energy produced to date in FY17 is 1,788 MWh; 7% above budget³. The total savings and revenue² to date in FY17 (actuals through October¹) is \$136,095; 4% above budget³. The savings and revenue value does not include RPS REC revenue (see next page).



In the 2nd quarter, the renewable energy produced from all solar PV systems totaled 237 MWh, 8% above budget³. The total energy produced to date in FY17 is 721 MWh; 2% above budget³. The total savings and revenue² to date in FY17 (actuals through October¹) is \$64,646; 3% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



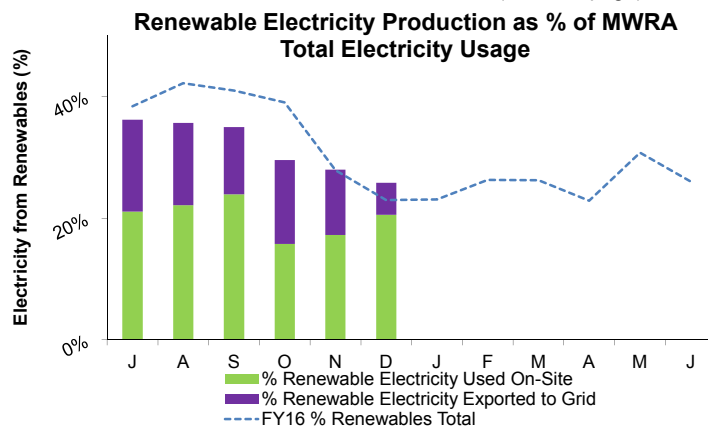
In the 2nd quarter, the renewable energy produced from all steam turbine generators totaled 6,224 MWh, 15% below budget³, due to STGs performing 40% below budget in October due to annual maintenance work on both STGs and the entire Thermal Power Plant. The total energy produced to date in FY17 is 15,282 MWh; 7% below budget³. The total savings and revenue² to date in FY17 (actuals through October¹) is \$775,465; 21% below budget³, partly due to the fact that the actual electricity unit price for Deer Island has been 12% below the budgeted³ estimate for the same period. The savings and revenue value does not include RPS REC revenue (see next page).



In the first 6 months of FY17, MWRA's electricity generation by renewable resources totaled 29,029 MWh. Oakdale hydro generation data was underestimated by the utility for September and will be reconciled in later months; this will be reflected in future reporting. MWRA's total electricity usage was approximately 91,410 MWh. The MWRA total electricity usage is the sum of all electricity purchased for Deer Island and FOD plus electricity produced and used on-site at these facilities. Approximately 99% of FOD electrical accounts are accounted for by actual billing statements; minor accounts that are not tracked on a monthly basis such as meters and cathodic protection systems are estimated based on this year's budget.

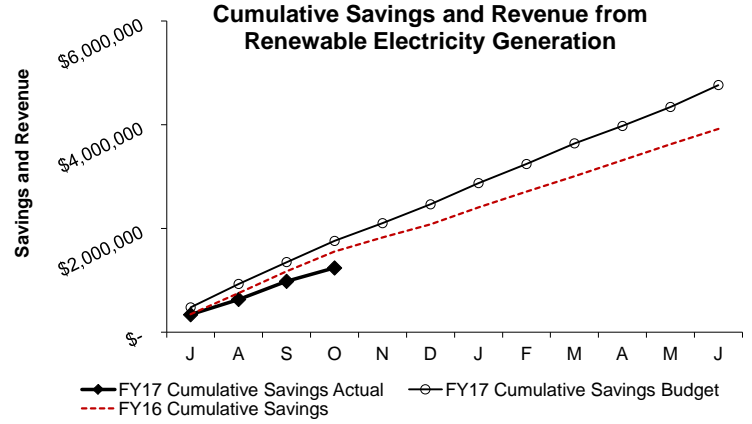
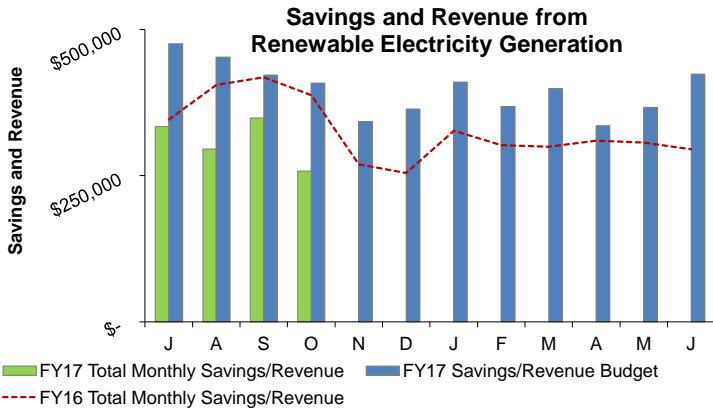
In the first 6 months of FY17, green power generation represented approximately 32% of total electricity usage. All renewable electricity generated on DI is used on-site (this accounts for more than 50% of MWRA renewable generation). Almost all renewable electricity generated off-DI is exported to the grid.

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

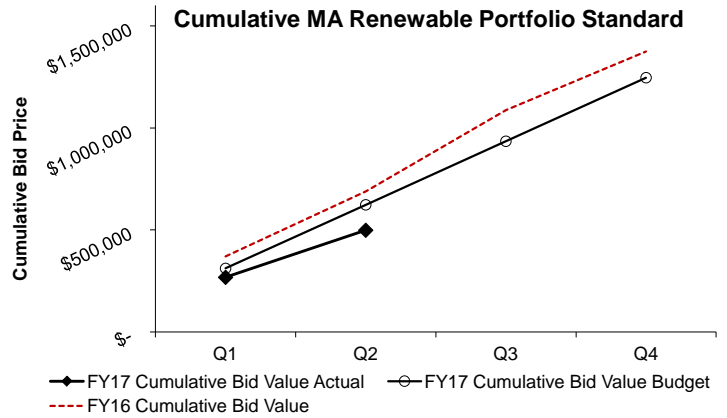
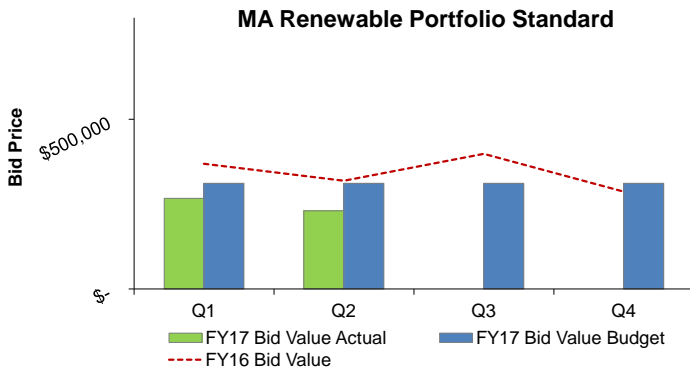


Renewable Electricity Generation: Savings and Revenue

2nd Quarter - FY17

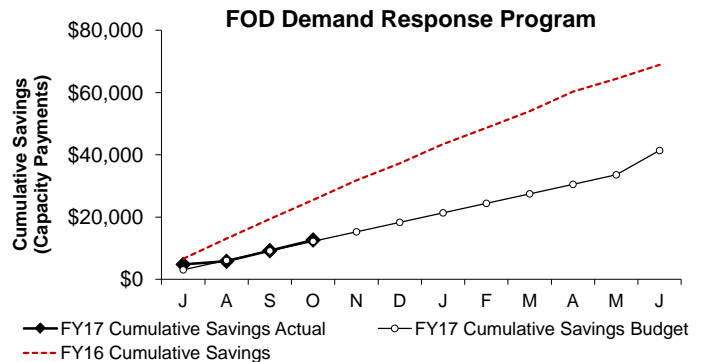
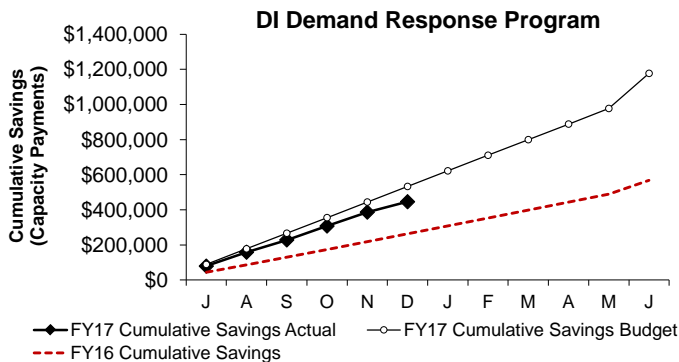


Savings and revenue from MWRA renewable electricity generation in the first 4 months of FY17 (actuals only through October¹) is \$1,236,181; which is 30% below the budget³, partly due to the fact that the actual electricity unit price for Deer Island has been 12% below the budgeted³ estimate for the same period. Also due to Oakdale hydro generation data being underestimated by the utility (this will be reconciled in later months and will be reflected in future reporting), and DI STGs performing 40% below budget in October due to annual maintenance work on both STGs and the entire Thermal Power Plant. Savings and revenue² from all renewable energy sources include wind turbines, hydroelectric generators, solar panels, and steam turbines (DI). This includes savings and revenue due to electricity generation (does not include avoided fuel costs and RPS RECs). The use of DITP digester gas as a fuel source provides the benefit of both electricity generation from the steam turbine generators, and provides thermal value for heating the plant, equivalent to approximately 5 million gallons of fuel oil per year (not included in charts above).



Bids were awarded during the 2nd Quarter¹ from MWRA's renewable energy assets; 6,073 Q2 CY2016 Class I Renewable Energy Certificates (RECs), 1,005 Q2 CY2016 Class II RECs, and 104 Q2 CY2016 Solar RECs were sold for a total value of \$230,776 RPS revenue; which is 26% below budget³ for the Quarter. REC values reflect the bid value on the date that bids are accepted, even though the RECs were produced during Q2 of CY2016. Cumulative bid values reflects the total value of bids received to date.

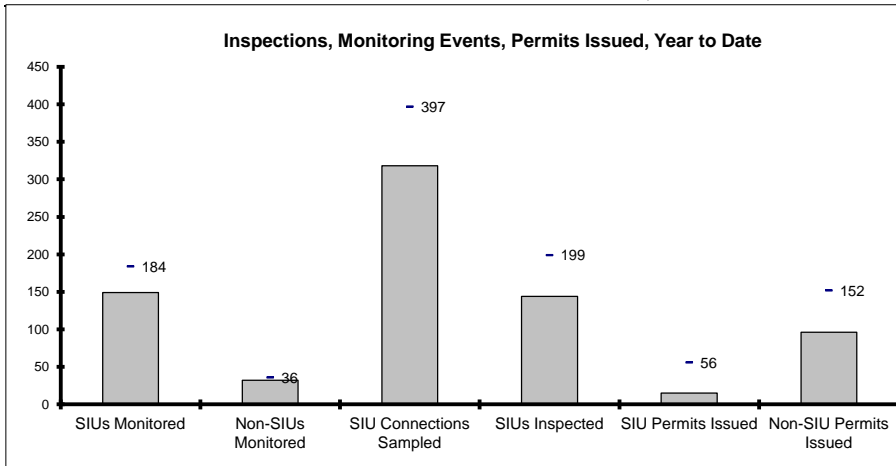
Note: Only Class I and Solar RECs were sold for Q1 CY2016 sales. All of the available Q1 CY2016 Class II RECS were transferred to the electricity supplier (Direct Energy) to meet MWRA's obligation to them.



Currently Deer Island, JCWTP, and Loring Rd participate in the ISO-New England Demand Response Programs⁴. By agreeing to reduce demand and operate the facility generators to help reduce the ISO New England grid demand during periods of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates the generators during an ISO-NE called event, MWRA also receives energy payments from ISO-NE. FY17 Cumulative savings (Capacity Payments only) through December¹ total \$445,966 for Deer Island and \$12,647 for FOD through October¹.

- Notes:
1. Only the actual energy prices are being reported. Therefore, some of the data lags up to 3 months due to timing of invoice receipt.
 2. Savings and Revenue: Savings refers to any/all renewable energy produced that is used on-site therefore saving the cost of purchasing that electricity, and revenue refers to any value of renewable energy produced that is sold to the grid.
 3. Budget values are based on historical averages for each facility and include operational impacts due to maintenance work.
 4. Chelsea Creek, Columbus Park, Ward St., and Nut Island participated in the ISO Demand Response Program through May 2016, until an emissions related EPA regulatory change resulted in the disqualification of these emergency generators, beginning June 2016. MWRA is investigating the cost-benefit of emissions upgrades for future possible participation.

Toxic Reduction and Control 2nd Quarter - FY17



EPA Required SIU Monitoring Events
for FY17: 184
YTD: **149**

Required Non-SIU Monitoring Events
for FY17: 36
YTD: **32**

SIU Connections to be Sampled
For FY17: 397
YTD: **318**

EPA Required SIU Inspections
for FY17: 199
YTD: **144**

SIU Permits due to Expire
In FY17: 56
YTD: **15**

Non-SIU Permits due to Expire
for FY17: 152
YTD: **96**

Significant Industrial Users (SIUs) are MWRA's highest priority industries due to their flow, type of industry, and/or their potential to violate limits. SIUs are defined by EPA and require a greater amount of oversight. EPA requires that all SIUs *with flow* be monitored at least once during the fiscal year.

The "SIU Monitored" data above, reflects the number of industries monitored in the month. However, many of these industries have more than one sampling point and the "SIU Connections Sampled" data reflect samples taken from multiple sampling locations at these industries.

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

	Number of Days to Issue a Permit						Total Permits Issued	
	0 to 120		121 to 180		181 or more		SIU	Non-SIU
	SIU	Non-SIU	SIU	Non-SIU	SIU	Non-SIU		
Jul	0	23	0	0	0	0	0	23
Aug	4	14	0	1	0	0	4	15
Sep	2	15	0	1	1	1	3	17
Oct	0	9	0	1	0	0	0	10
Nov	2	9	0	2	0	1	2	12
Dec	6	17	0	1	0	1	6	19
Jan								
Feb								
Mar								
Apr								
May								
Jun								
% YTD	93%	91%	0%	6%	7%	3%	15	96

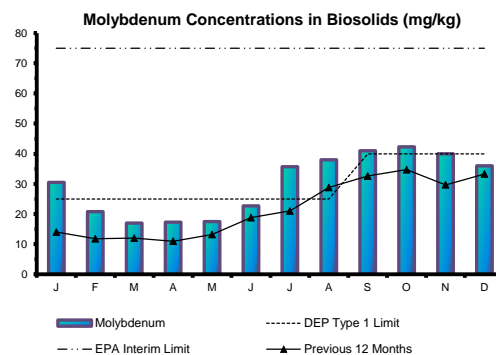
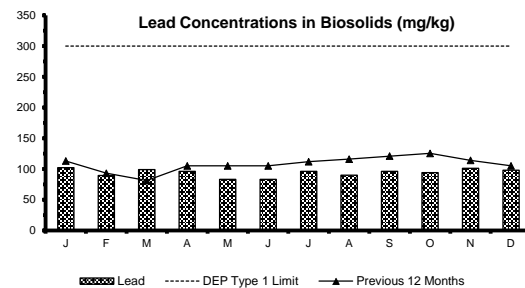
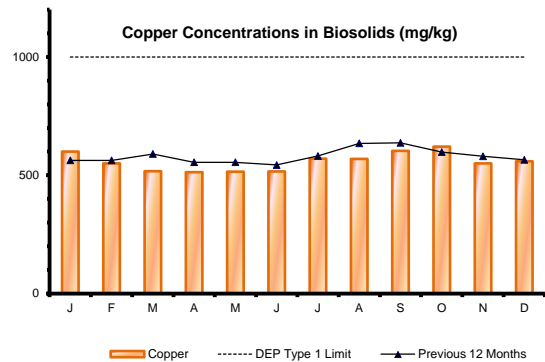
EPA requires MWRA to issue or renew 90% of SIU permits within 120 days of receipt of the application or the permit expiration date - whichever is later. EPA also requires the remaining 10% of SIU permits to be issued within 180 days. So far, for this fiscal year, the guidelines have been met regarding the timely issuing of SIU permits within 120 days.

In the 2nd Quarter of FY17, forty-nine permits were issued, eight of which were SIUs. All of the eight SIU permits were issued in the 120-day timeframe. There were four non-SIU permits issued in the 120-day to 180-day timeframe and another two non-SIU permits issued beyond the 180-day period. The TRAC department was undergoing personnel assignment changes which resulted in a few delays in permit processing. Delays also are attributable to late payment of permit fees and processing issues.

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.

With the September 2016 change in the MassDEP regulations, increasing the molybdenum limits to 40 mg/kg for land use application, the MWRA may more often be able to sell its pellets in-state whereas the previous limits forced several months' worth of pellets to be shipped out of state. This made it an impractical source of fertilizer for local Massachusetts farms.

In the last three months, the level of molybdenum has been hovering around the new higher DEP limits, possibly a consequence of the hot days of 2016. MWRA and its contractor, NEFCO, do not distribute product that does not meet the suitability standards.



Field Operations Highlights

2nd Quarter – FY17

Western Water Operations and Maintenance

Carroll Water Treatment: Operations Staff initiated half plant operations by shutting down flow to the A Side of the treatment process. This annual shutdown allows for Operations and Maintenance staff to complete annual maintenance and cleaning tasks that cannot be completed during full plant operation. Staff cleaned and inspected the primary contactors as well as the A Side Storage Tank and the post treatment chemical tanks. Tasks during half plant also include replacing the rupture discs on the primary contactors and replacing all of the check valves in the chemical feed systems. Plant staff also supported the pump station work that coincides with the treatment plant process. This work included installing new larger ozone destruct fans that remove the ozone from head space of the primary contactors. A weir wall was also installed downstream of the primary contactors in the effluent chamber for flow control purposes when the pump station comes on line. The reactors on the A Side Ultra Violet Treatment Plant also received the annual maintenance. This included replacing the UV Lamps that had reached the service life as well cleaning of the quartz sleeves, inspection of the wiper assemblies and calibration of all of the sensors.

Metro Water Operations and Maintenance

Community Assistance - Canton Storage Tank Issue: On Tuesday, December 20th, Canton Water called to report that they were having an issue with the booster pump at the base of their Indian Hill Tank. Water Pipeline and Valve Staff responded to the site to assist in diagnosing the problem. The Mobile Pump Unit (MPU) was deployed and assembled to pump water in the service area. The root cause of the problem turned out to be a broken valve at the base of the tank. MWRA Staff assisted Canton with the replacement of the valve, which then allowed their booster pump to function normally.

Operations Engineering

Larz Anderson Bridge: The contractor isolated the 30-inch main on the Larz Anderson Bridge at Section 10 to conduct another pressure test. The test again failed and Barletta is discussing helium testing to help determine the location of the loss on the pipe.

Section 56: Staff coordinated isolation of Section 56 after a contractor working for DCAM drilled into the water main mistakenly thinking it was a gas main. This was on Broad Street in Lynn in front of North Shore Community College.

Sections 19 and 58: Staff coordinated the isolation of Section 58 and 19. DOT has demolished the Arborway Bridge near the Forest Hills Station and has rerouted a portion of MWRA Section 58 and 20. Portions of Sections 19, 20 and 58 are isolated to allow the Contractor, Barletta, to connect the new pipeline sections to the existing sections.

Community Support: Continued working with Lexington developing a system hydraulic grade line. Lexington and Bedford have areas within the community that have experienced very low pressures, due to the drought and increased summer demands. The development of the grade line may help determine what may be done within their system to help increase the pressures. In September, when the water demand dropped off, both Lexington's and Bedford's pressures increased. Also, due to the drought and increased summer demand, Winchester experienced areas with low pressures, in areas are supplied by MWRA Meter 130 located on Forest Street. Testing determined that the meter will need to be increased in size. Operations Engineering is working with Engineering on the meter design and the Pipeline Group during the installation. The new meter has been ordered and construction is tentatively scheduled for March. Staff continued working with the Lynn to create a plan to supply their reservoirs during a drought period. Operations Engineering coordinated with the Pipeline Section to retrofit two emergency connections, to allow the MWRA to supply Lynn's Reservoirs directly at their required flow rate.

Wastewater Operations & Maintenance

Alewife Brook Pump Station Rehabilitation-Contract #6797: Wastewater Operations staff is working with Construction staff and the Contractor for this project. The contractor installed one of the bypass pumping discharge pits and poured the walls for the discharge chamber. Operations staff attended multiple meetings to review the Contractor's Bypass Pumping Plan for this project. Operations Staff attended monthly Project Coordination Meetings onsite at the facility. Staff also attended several PCB Abatement Coordination Meetings in December with Union Leadership, the Contractor, Subcontractor (PCB Abatement), the Consultant and Authority Engineering & Construction Staff. Operations locked out/tagged out the Dry Weather Pump #4 on 12/22/16 so the contractor could inspect the downstream 24-inch sewer line.

Wastewater Operations & Maintenance (cont.)

Nut Island Standard Operating Procedures (SOPs): Operations staff wrote updated SOPs for putting screening channels and grit vortexes online and offline in remote control (via SCADA) and manual control (local controls). All Operations Staff will be trained on the updated SOPs. Training was ongoing during the month of December.

Metering

Meter Systems: Staff continues to work with Newton to assist with their leak detection efforts. Notified Chelsea, Everett (3), Milton, Nahant, Northboro, Norwood and Westwood of increases in flow. Staff continued to work with Arlington, Newton and Waltham to deal with their water loss issues.

TRAC

Compliance and Enforcement: TRAC previously issued a Penalty Assessment Notice (PAN) to Absolute Metal in response to their discharge of wastewater containing excessive levels of cyanide into the MWRA sanitary sewer in violation of EPA Limits, MWRA Sewer Use Regulations, Absolute Metal's MWRA Sewer Use Discharge Permit and the April 15, 2015 Notice of Noncompliance and Order issued to Absolute Metal by the MWRA. Absolute paid the \$15,500 penalty in full on November 29, 2016. The facility has returned to compliance.

Environmental Quality-Water

Community Support: Staff, in coordination with Operations Engineering and the Planning Department, continued to meet with Community Water Department staff in October. Discussions focus on a review of water meter data, total coliform sampling plans, chlorine residual data, storage tank monitoring and system hydraulics. During the Quarter, MWRA Staff met with Representatives from Brookline, Norwood, Reading, Lexington and Waltham.

Staff provided Emergency Response Training to communities that attended training in November and December. Presentations focused on ways in which communities can troubleshoot low chlorine residuals within their community and what parameters can be tested to possibly diagnose high water age or nitrification.

Staff provided drinking water sampling and testing support to Malden on December 9th. Staff sampled chlorine residual, pH and alkalinity from several samples throughout the community. Results were forwarded to the Malden Water Department and DEP-NERO.

Environmental Quality-Wastewater

Ambient Monitoring: Ambient monitoring field work for 2016 was completed and results are being delivered on an ongoing basis. All Contingency Plan (CP) Thresholds Tests for 2016 Ambient Monitoring are completed. There was only one exceedance of an Ambient Monitoring CP Threshold in 2016 for a potential nuisance algae. Evaluation of the data indicates that this was caused by natural factors unrelated to outfall discharge. Staff are preparing a proposal to regulators to eliminate this CP Threshold, as recommended to and approved by EPA's Outfall Monitoring Science Advisory Panel in October.

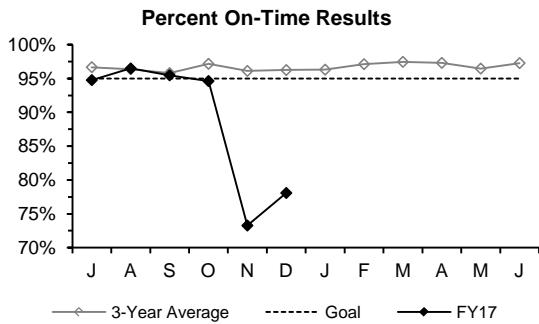
Monitoring results from 2014 and 2015 were summarized at a meeting of the EPA's Outfall Monitoring Science Advisory Panel in October. The Permit-Required *Outfall Monitoring Overview*, summarizing the results of 2015 monitoring, was presented to the Board in October and submitted to regulators in November as required by the permit.

Harbor/Beach/CSO Monitoring: Completed CSO receiving water sampling for the year included post-monitoring-season sampling of two storms. The CSO receiving water monitoring scope of work was submitted to DEP as required by the Variances for the Charles and Alewife/Mystic. In 2017 the monitoring will be further enhanced by weekend sampling following a limited number of storms. Completed a statistical analysis of the beach water quality data for summer 2016.

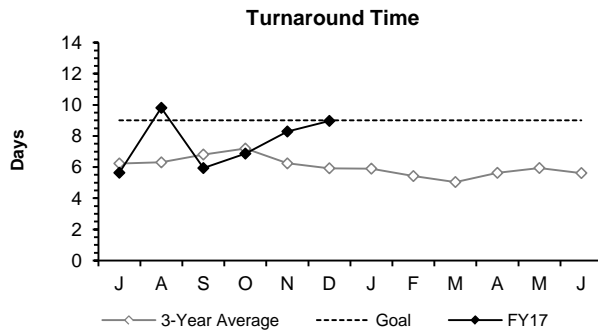
Coordination with Other MWRA Departments: Worked with Engineering & Construction, Planning, and Real Property & Environmental Management to assess NPDES permit requirements applicable to the Wachusett Aqueduct Pump Station which is currently under construction.

Cooperation with Other Agencies: Staff participated in meetings of the Massachusetts Bays Program and (with DLS) held a coordination meeting with Technical Staff from the four local watershed associations for which DLS provides laboratory support.

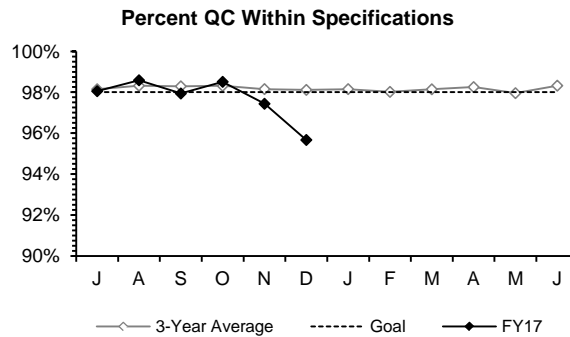
Laboratory Services 2nd Quarter - FY17



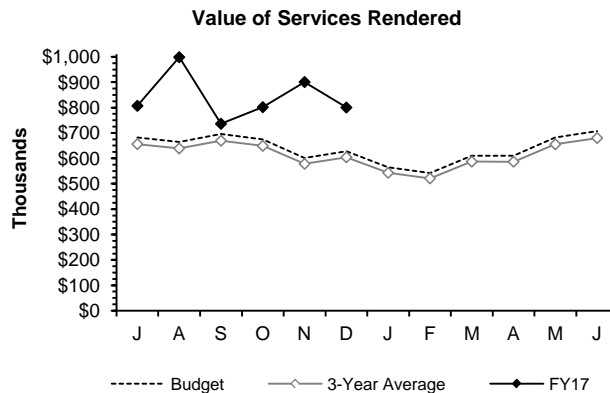
The Percent On-Time measurement was below the 95% goal due to the School Lead samples. Without these we were 96% on-time. Our goal for school samples is 14 days; due to the high volume, actual turn-around for school samples averaged samples was 25 days.



Turnaround Time was faster than the 9-day goal. Our TAT for the non-School Lead samples was 5.3 days.



Percent of QC tests meeting specifications was below the 98% in-house goal due to the learning curve for the new automated solid phase extraction sample preparation for semivolatiles. While this didn't affect regulatory reporting, it did require some re-work to obtain acceptable QC.



Value of Services Rendered was above the seasonally adjusted budget projection due to the School Lead project.

Highlights:

Southboro Lab:

Completed the move back into the renovated Southboro Lab on December 11th.

School Lead:

Continued to test school lead samples from communities as quickly as they came in. In December we received 2,049 lead and copper tests and completed 3,728 tests. By the end of December the heavy backlog had been reduced to 1,337. Staff have been consistently meeting or exceeding our target of completing at least 500 tests per week. In December the average turnaround time for School Lead samples was 25 days, so many of the samples weren't meeting the target turnaround time of 14 days. Through December we have completed 21,600 school and non-school lead and copper tests this calendar year.

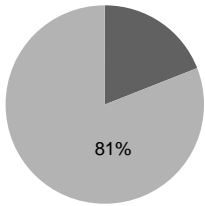
Percent QC Within Specifications:

In December, 484 of 11,174 QC checks didn't meet in-house requirements, so our percentage of QC within specifications dipped below our goal of 98%. While this didn't affect regulatory reporting, it did require re-work for 199 of these QC results. Most of these were associated with a new automatic sample extraction system for semivolatiles organic chemicals that is resulting in reduced solvent use and solvent emissions.

CONSTRUCTION PROGRAMS

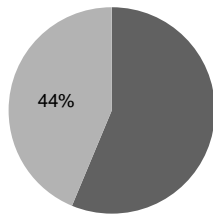
Projects In Construction 2nd Quarter – FY17

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

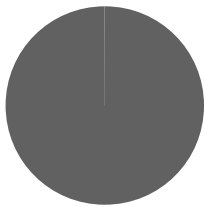
NIH Section 110 Reading & Woburn

Project Summary: This project involves the construction of 8,800 linear feet of 36-inch water transmission main in the City of Woburn and the Town of Reading.

Notice to Proceed: 12-Jan-2016 Contract Completion: 30-Mar-2018

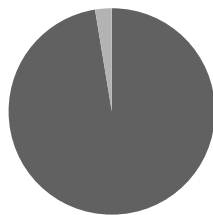
Status and Issues: As of December, the Contractor completed pipeline testing of the 36" mainline from West Street Sta. 100+00 to Sta. 115+58.5. Through December approximately 98% of the mainline pipe was installed. Contractor will work on meter vaults during winter months.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

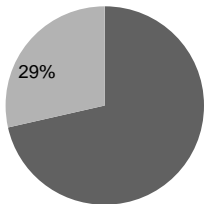
Chelsea Creek Headworks Upgrade

Project Summary: This project involves a major upgrade to the entire facility including: automation of screening collection & solids conveyance, replacement of the odor control, HVAC and electrical systems.

Notice to Proceed: 22-Nov-2016 Contract Completion: 21-Nov-2020

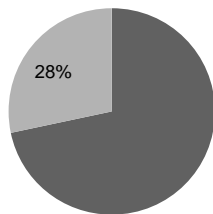
Status and Issues: As of December no physical work has begun. The Contractor and RE are now working out of their field office.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

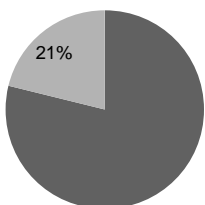
Wachusett Aqueduct Pumping Station

Project Summary: This project involves the construction of a 240 MGD pump station to supply water from the Wachusett Aqueduct to the Carroll Water Treatment Plant.

Notice to Proceed: 1-Mar-2016 Contract Completion: 14-Feb-2019

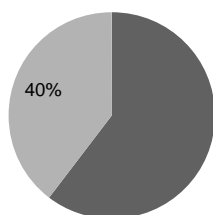
Status and Issues: As of December, the Contractor continued with formwork, steel and concrete for the wet well walls, BFV vault walls and the bottom of the roof slab.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Alewife Brook Pump Station Improvements

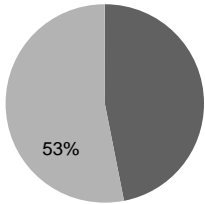
Project Summary: This project involves the replacement of wet-weather pumps, motors, gear drives, VFD's, MCC, screens, sluice gates, standby generator, roof, PLC's and HVAC. Also, the remediation of PCB's and asbestos and the installation of a flow meter on the 66-inch downstream Alewife Brook Conduit.

Notice to Proceed: 29-Jan-2016 Contract Completion: 31-May-2018

Status and Issues: As of December, the Contractor completed the construction of the Bypass Chamber/ Metering Vault. They continued installing electrical conduit for temporary construction/bypass pumping power.

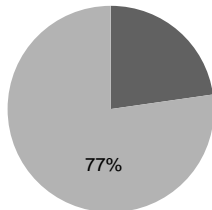
Projects In Construction 2nd Quarter – FY17

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

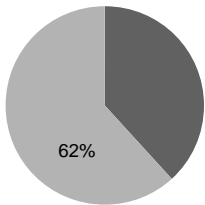
Caruso Pump Station Improvements

Project Summary: This project involves the replacement of the stand-by emergency generator and improvements to the HVAC, fire suppression and security systems at the Caruso Pump Station.

Notice to Proceed: 24-Mar-2016 **Contract Completion:** 24-Mar-2017

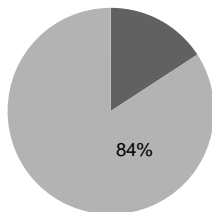
Status and Issues: As of December, the Contractor completed the installation of high roof and elevator penthouse. They replaced the existing generator exhaust and muffler. They cored a new opening and provided additional structural support at the generator roof.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

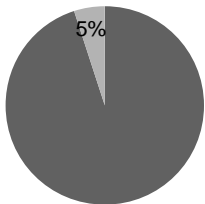
DITP Valves and Piping Replacements

Project Summary: This project involves the replacement of the twenty 60" butterfly valves and ten 60" flow meters in the NMPS; three 48", twelve 36" plug/check valves, six 30" flow meters and six 30-36" gate valves in the WTF.

Notice to Proceed: 23-Jun-2014 **Contract Completion:** 22-Jun-2017

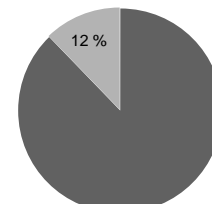
Status and Issues: The Contractor nearly completed the demolition and replacement of existing 14" PSL-B glass lined piping in the Residual Galleries; only needs to make the final tie in at the Gravity Thickener Distribution Box.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

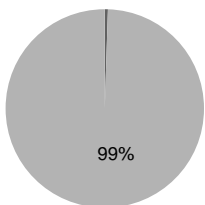
Winthrop Terminal VFD and Motor

Project Summary: This project involves the replacement of 6, 600-HP motors, VFDs and associated electrical components in the Winthrop Terminal Facility.

Notice to Proceed: 16-Jun-2016 **Contract Completion:** 12-Mar-2020

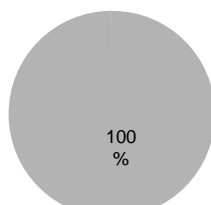
Status and Issues: The Contractor, JFW has begun preparing major equipment submittals. No physical work took place.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

DITP Replacement of Scum Skimmers

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.

Notice to Proceed: 9-Oct-2013 **Contract Completion:** 10-Oct-2016

Status and Issues: The punchlist work is on-going. The Contractor has submitted the necessary documentation required for a Partial Release of Retainage.

CSO CONTROL PROGRAM

2nd Quarter – FY17

All 35 projects in the Long-Term CSO Control Plan are complete, in compliance with Schedule Seven. Remaining CSO related capital spending totaling \$12.8 million is authorized and scheduled through December 2020. Remaining work includes Cambridge’s completion of surface restoration work associated with the Alewife/CAM004 sewer separation contracts, BWSC’s removal of additional inflow from its sewers in the South Dorchester Bay sewer separation areas of Dorchester, and the federal court mandated three-year CSO post-construction monitoring and performance assessment (2018-2020).

Project/Item	Status as of December 31, 2016
BWSC Memorandum of Understanding and Financial Assistance Agreement	BWSC attained substantial completion of its last project, Reserved Channel Sewer Separation, in December 2015 in compliance with Schedule Seven. MWRA staff are conducting final eligibility reviews of the BWSC construction contracts that were administered and managed by BWSC with MWRA funding. On December 14, 2016, the Board of Directors authorized Amendment 16 to the Financial Assistance Agreement extending the term of MWRA financial assistance by six months to June 2017 with no increase to the award amount. The amendment provides for BWSC use of CSO account funds as its staff continue to support and respond to the remaining MWRA final eligibility reviews.
South Dorchester Bay Sewer Separation Post-Construction Inflow Removal	As previously reported, BWSC has completed its investigation of alternatives for removing additional stormwater inflow from its Dorchester Interceptor, following completion of sewer separation and the closing of CSOs several years ago. MWRA’s CIP includes \$5.4 million for the inflow removal effort, of which \$2.7 million has been transferred to the BWSC CSO account and \$1.6 million of that has been withdrawn by BWSC to fund related design and construction work. Staff plan to remove the remaining \$3.8 million from the BWSC MOU/FAA, develop a separate financial agreement with BWSC for its use of these remaining funds, and close out the MOU/FAA when its term ends on June 30, 2017. Staff expect to seek Board approval for the new agreement this spring.
City of Cambridge Memorandum of Understanding and Financial Assistance Agreement	The City of Cambridge attained substantial completion of its last project, CAM004 Sewer Separation, in December 2015 in compliance with Schedule Seven. On December 14, 2016, the Board of Directors approved Amendment 13 to the MOU/FAA increasing the award amount by \$1,509,899 from \$98,668,856 to \$100,178,755 and extending the terms of the agreements by six months to June 30, 2018. Extensive surface restoration work eligible for MWRA funding at a remaining award amount of \$5.7 million is currently scheduled to continue through December 2017.
MWRA CSO Performance Assessment	Staff are evaluating system wet weather performance and performance predictions, including comparisons of MWRA and community meter data to MWRA model predictions, and are currently developing a supplemental metering approach that staff plan to implement during the assessment period 2018-2020. The Charles River and Alewife Brook/Upper Mystic River CSO variances recently extended by DEP to 2019 include a requirement that MWRA submit a draft scope of the post-construction monitoring program and performance assessment to DEP by May 2017. MWRA’s FY17 CIP includes funds for the three-year performance assessment.

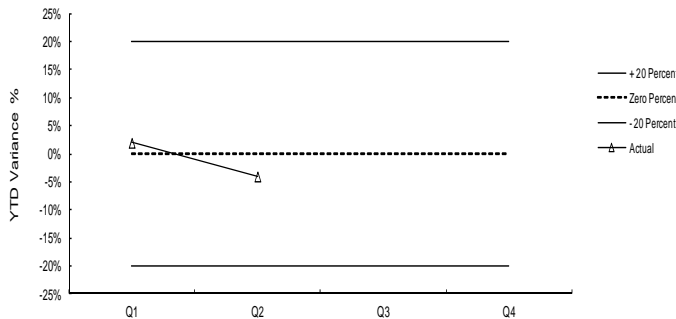
CIP Expenditures 2nd Quarter FY17

FY17 Capital Improvement Program Expenditure Variances through December by Program (\$ in thousands)				
Program	FY17 Budget Through December	FY17 Actual Through December	Variance Amount	Variance Percent
Wastewater	27,702	24,281	(3,422)	-12%
Waterworks	28,023	29,554	1,531	5%
Business and Operations Support	3,374	2,848	(526)	-15%
Total	\$59,099	\$56,682	(\$2,417)	-4%

Underspending within Wastewater is primarily due to a delay for final restoration work for the Cambridge Sewer Separation, and construction issues with the Caruso Pump Station Improvements, delay in the award of the Chelsea Creek Upgrade Construction, fewer than anticipated community requests for loans and grants for the Infiltration/Inflow (I/I) program and equipment delays for the Deer Island North Main Pump Station and Winthrop Terminal Facility Butterfly Valve Replacement. This was partially offset by construction progress on the Deer Island Fuel Oil System Upgrades, Alewife Brook Pump Station Rehabilitation, Winthrop Terminal Facility Variable Frequency Drives Replacement Construction, Clinton Phosphorus Reduction Construction, and timing of final work on the Chelsea Screenhouse and DI Electrical Upgrades contracts. Overspending in Waterworks is primarily due to contractor progress on Section 89/29 Redundancy Phase 1B Construction, Southern Extra High Section 111 Construction, Quabbin Release Pipeline Construction, and additional work for the Webster Avenue Bridge Pipe Replacement Construction. This was partially offset by construction issues resulting in less than anticipated progress for the Wachusett Aqueduct Pump Station Construction, Rosemary Brook Building Repairs, and Beacon Street Line Construction contracts.

Budget vs. Actual CIP Expenditures (\$ in thousands)

Total FY17 CIP Budget of \$155,702,000.



Construction Fund Management

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

Cash Balance 12/24/2016	\$64.9 million
Unused capacity under the debt cap:	\$1.243 billion
Estimated date for exhausting construction fund without new borrowing:	MAR-17
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper/Revolving loan outstanding:	\$128 million
Commercial paper capacity:	\$ 350 million
Budgeted FY17 capital spending*:	\$136 million

* Cash based spending is discounted for construction retainage.

DRINKING WATER QUALITY AND SUPPLY

Source Water – Microbial Results and UV Absorbance

2nd Quarter – FY16

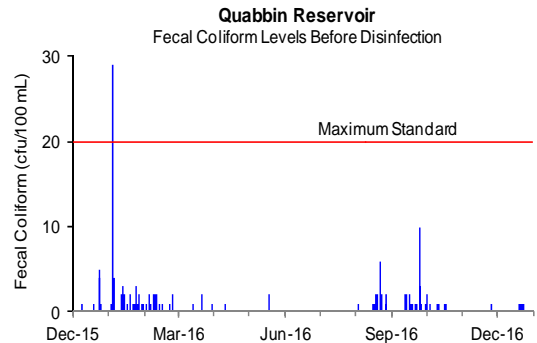
Source Water – Microbial Results

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

Sample Site: Quabbin Reservoir

Quabbin Reservoir water is sampled at the William A. Brutsch Water Treatment Facility (formerly Ware Disinfection Facility) raw water tap before being treated and entering the CVA system.

All samples collected during the 2nd 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, compared to the allowable 10%.**

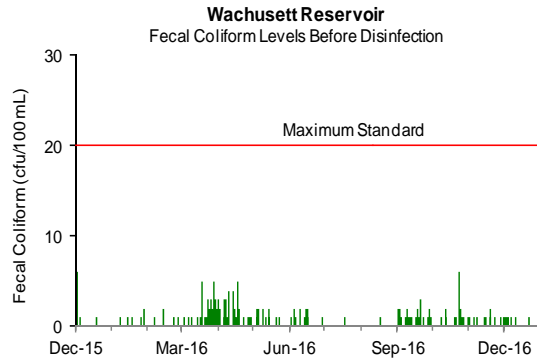


Sample Site: Wachusett Reservoir

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 2nd Quarter were below 20 cfu/100ml. **For the current six-month period, 0.0% of the samples exceeded a count of 20 cfu/100mL.**

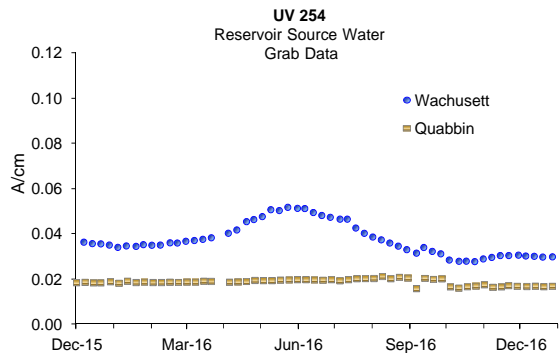


Source Water – UV Absorbance

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

Quabbin Reservoir UV-254 levels are currently around 0.017 A/cm.

Wachusett Reservoir UV-254 levels are currently around 0.030 A/cm.



Source Water – Turbidity

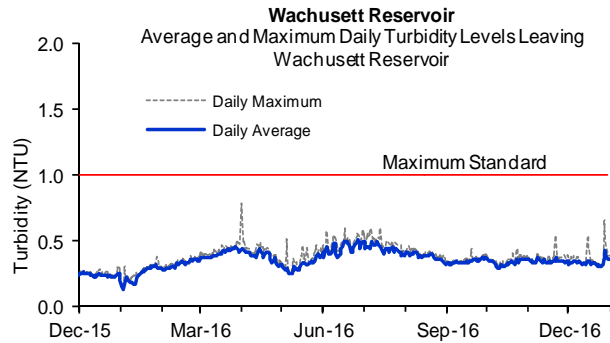
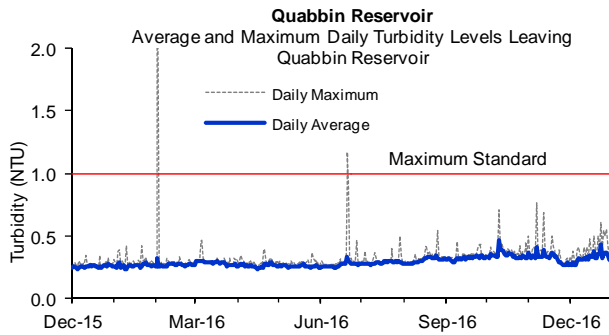
2nd Quarter – FY16

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 Brutsch Water Treatment Facility (BWTF) before UV and chlorine disinfection. Turbidity of Wachusett Reservoir is monitored continuously at the Carroll Water Treatment Plant (CWTP) before ozonation and UV disinfection.

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

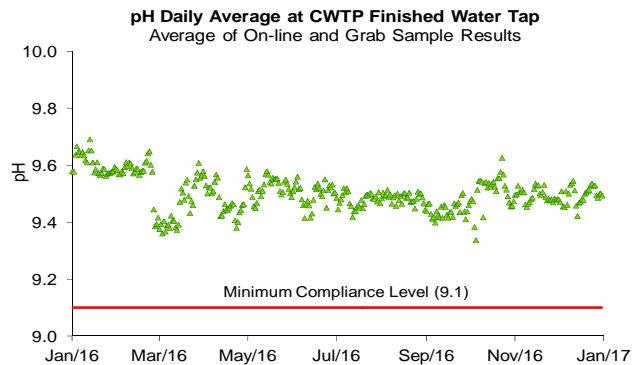
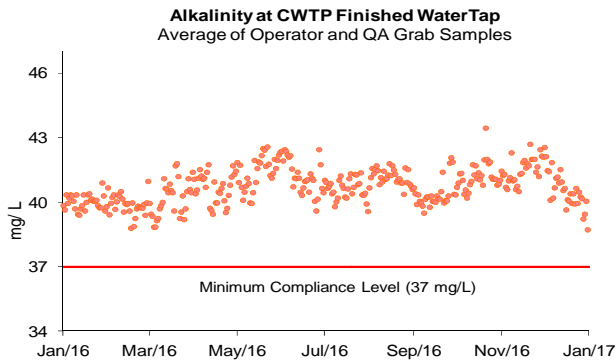


Treated Water – pH and Alkalinity Compliance

MWRA adjusts the alkalinity and pH of Wachusett water at CWTP 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 finished water samples have a minimum compliance level of 9.1 for pH and 37 mg/L for alkalinity. Samples from 27 distribution system locations have a minimum compliance level of 9.0 for pH and 37 mg/L for alkalinity. Results must not be below these levels for more than nine days in a six month period. Distribution system samples are collected in March, June, September, and December.

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

Distribution system samples were collected on December 7 and 8, 2016. Distribution system sample pH ranged from 9.3 to 9.6 and alkalinity ranged from 40 to 44 mg/L. No sample results were below DEP limits for this quarter.



Treated Water – Disinfection Effectiveness

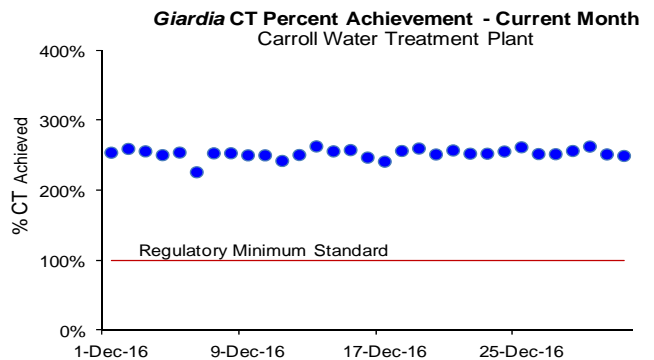
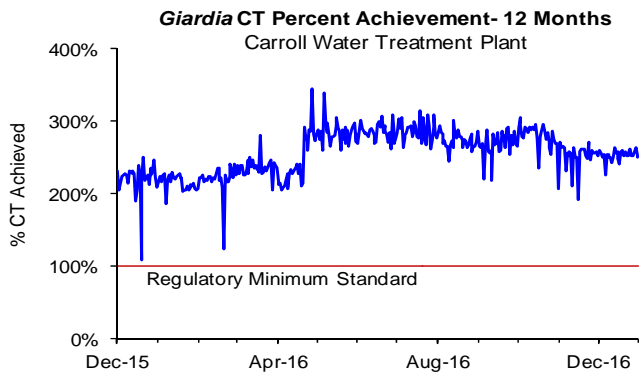
2nd Quarter – FY16

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

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

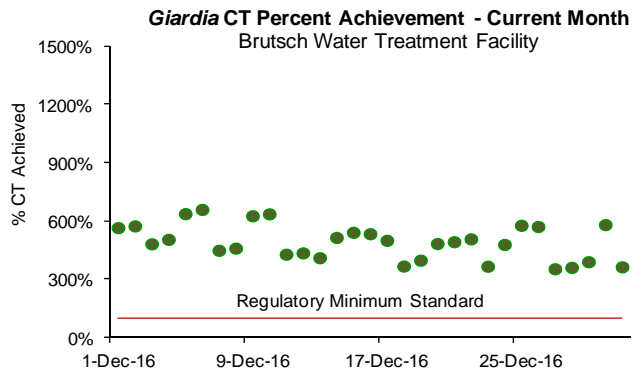
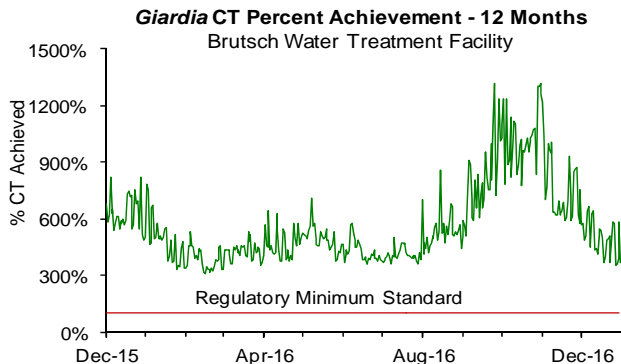
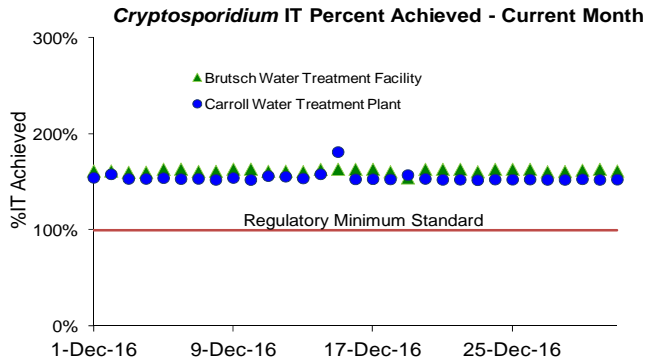
Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 0.9 to 1.1 mg/L for the quarter.
- Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system this quarter, as well as every day for the last fiscal year.
- Cryptosporidium* IT was maintained above 100% during the month. Off-spec water was less than 5%.



Quabbin Reservoir (CVA Supply) at: Brutsch Water Treatment Facility

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



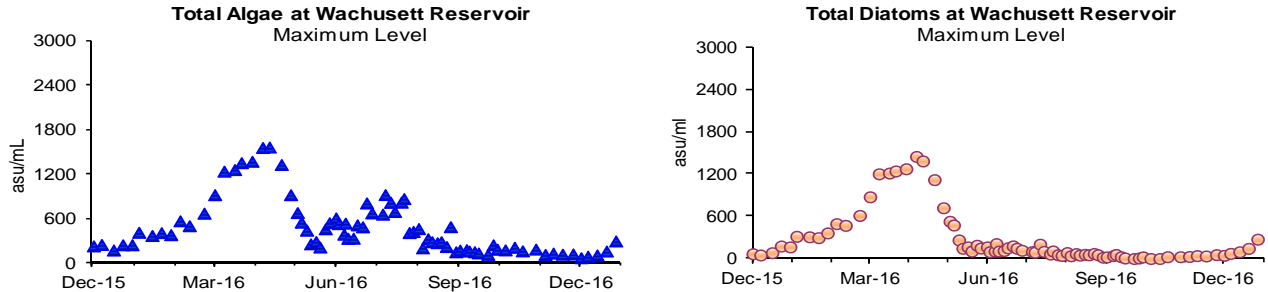
Source Water - Algae

2nd Quarter – FY16

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

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

In the 2nd Quarter, one complaint which may be related to algae was reported from a local water department.



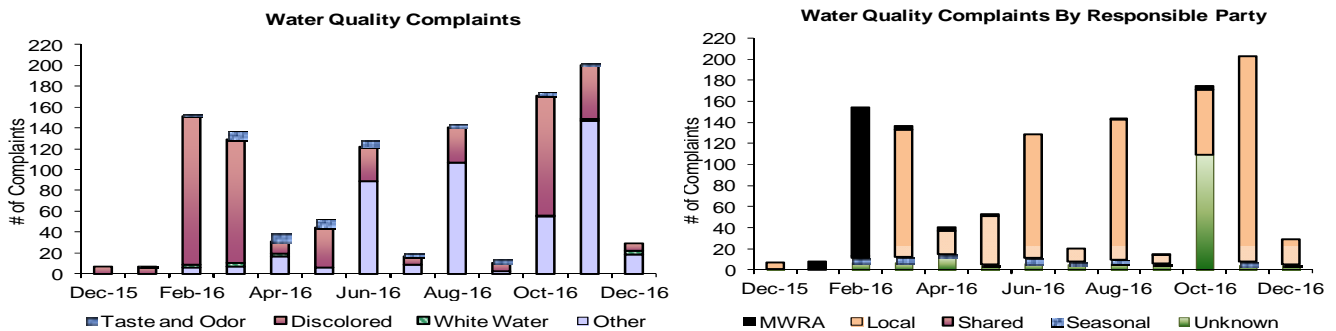
Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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 232 complaints during the quarter compared to 11 complaints for 2nd Quarter of FY15. Of these complaints, 58 were for “discolored water”, 3 were for “taste and odor”, 6 were for “white water”, and 165 were for “other”. Of these complaints, 219 were local community issues, 5 were seasonal in nature, and 8 were unknown in origin.

- On 10/25/2106, Marlborough reported fifty discolored water complaints due to a local water main break.
- On 10/25/2016, Winchester reported one hundred no water complaints which may be related to an ongoing local Flushing program initiated in early October 2016.
- On 11/1/2106, Brookline reported a combined fifty-five ‘no water’ and ‘discolored water’ complaints when a water main break occurred along West Roxbury Parkway. The Brookline WD was able to repair the break and have service restored to the area.
- On 11/1/2106, Quincy reported one hundred ‘no water’ complaints when a valve was blown during preventive maintenance work on a hydrant branch gate valve. The Quincy WD notified the customers of this event as they isolated and repaired the branch.
- On 11/10/2106, Swampscott reported a combined thirty-five ‘no water’ and ‘discolored water’ complaints when a water main break occurred. Swampscott WD was able to repair the break and have service restored to the area.



Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

2nd Quarter – FY17

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

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

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

Escherichia coli (*E. coli*) is a specific coliform species whose presence likely indicates potential contamination of fecal origin. If *E. coli* are detected in a drinking water sample, this is considered evidence of a potential public health concern. Public notification is required if follow-up tests confirm the presence of *E. coli* or total coliform.

A disinfectant residual is intended to maintain the sanitary integrity of the water; MWRA considers a residual of 0.2 mg/L a minimum target level at all points in the distribution system.

Highlights

In the 2nd Quarter, 14 of the 6,207 community (0.21% system-wide) samples submitted to MWRA labs for analysis tested positive for total coliform. Three of the 1,901 MWRA samples (0.16%), tested positive for total coliform (Bedford, Somerville, South Hadley FD1 – October; Boston, Framingham, Malden - November; Malden, Melrose, Marlborough - December). Bedford was required to conduct a Level 2 as this was their second exceedance in twelve months. Only 2.2% of the samples had a chlorine residual lower than 0.2 mg/L for the quarter.

	# Coliform Samples (a)	Total Coliform # (%) Positive	E. coli # Positive	Assessment Required ^e	Violation	Minimum Chlorine Residual (mg/L)	Average Chlorine Residual (mg/L)
MWRA	MWRA Locations	333	0 (0%)	0	Level	1.99	2.54
	Shared Community/MWRA sites	1568	3 (0.19%)	0	1 / 2	0.01	2.13
	Total: MWRA	1901	3 (0.16%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.01	2.21
Fully Served	ARLINGTON	156	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.21	1.91
	BELMONT	104	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.01	1.49
	BOSTON	783	1 (0.13%)	0	<input type="checkbox"/> / <input type="checkbox"/>	1.02	2.31
	BROOKLINE	224	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.58	2.10
	CHELSEA	169	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	1.60	2.51
	DEER ISLAND	62	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	1.94	2.24
	EVERETT	169	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.25	2.23
	FRAMINGHAM	237	1 (0.42%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.40	2.24
	LEXINGTON	117	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.10	2.19
	LYNNFIELD	18	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.32	1.11
	MALDEN	243	3 (1.23%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.00	1.89
	MARBLEHEAD	72	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.19	2.01
	MEDFORD	204	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	1.27	1.92
	MELROSE	123	2 (1.63%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.89	1.90
	MILTON	102	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.11	1.90
	NAHANT	30	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	1.12	1.96
	NEWTON	277	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.06	2.09
	NORTHBOROUGH	48	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.11	1.61
	NORWOOD	99	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.08	1.98
	QUINCY	299	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.29	1.93
	READING	130	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.18	1.61
	REVERE	180	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	1.61	2.19
	SAUGUS	104	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	1.37	1.82
	SOMERVILLE	276	1 (0.36%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.58	2.32
	SOUTHBOROUGH	30	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.14	1.91
	STONEHAM	91	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	1.51	2.27
	SWAMPSCOTT	54	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.24	1.63
	WALTHAM	216	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.75	2.32
	WATERTOWN	120	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.63	2.00
	WESTBORO HOSPITAL	15	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.05	0.17
	WESTON	45	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	2.20	2.56
	WINTHROP	73	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.36	1.96
	Total: Fully Served	4860	8 (0.16%)	0	<input type="checkbox"/> / <input type="checkbox"/>		
CVA & Partially Served	BEDFORD	66	4 (6.06%)	0	<input type="checkbox"/> / <input checked="" type="checkbox"/>	0.59	1.65
	CANTON	87	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.04	1.31
	HANSCOM AFB	27	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.24	1.64
	MARLBOROUGH	129	1 (0.78%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.06	2.21
	NEEDHAM	123	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.04	0.49
	PEABODY	234	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.36	2.01
	WAKEFIELD	146	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.97	2.07
	WELLESLEY	112	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.02	0.67
	WILMINGTON	86	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.22	1.79
	WINCHESTER	91	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.10	1.62
	WOBURN	195	0 (0%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.13	0.91
	SOUTH HADLEY FD1	51	1 (1.96%)	0	<input type="checkbox"/> / <input type="checkbox"/>	0.15	0.50
	Total: CVA & Partially Served	1347	6 (0.37%)	0	<input type="checkbox"/> / <input type="checkbox"/>		
Total: Community Samples	6207	14 (0.21%)	0	<input type="checkbox"/> / <input type="checkbox"/>			

(a) The number of samples collected depends on the population served and the number of repeat samples required.
 (b) These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.
 (c) Part of the Chicopee Valley Aqueduct System. Free chlorine system.
 (d) MWRA total coliform and chlorine residual results include data from 125 community pipe locations as described above. In most cases these community results are accurately indicative of MWRA water as it enters the community system; however, some are clearly strongly influenced by local pipe conditions. Residuals in the MWRA system are typically between 1.0 and 2.8 mg/L.
 (e) The TCR requires an assessment be completed if more than 5% of all samples in a month are total coliform positive (or two or more samples are positive when fewer than 40 samples are collected each month).
 (f) Some reasons a violation may occur: the required # of TCR samples is not collected; failure to report; an E.coli MCL violation; coliform treatment technique not followed properly; failure to conduct a level 1 or level 2 assessment within 30 days of trigger.

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

2nd Quarter – FY16

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 locational running annual average (LRAA) standard is 80 µg/L for TTHMs and 60 µg/L for HAA5s.

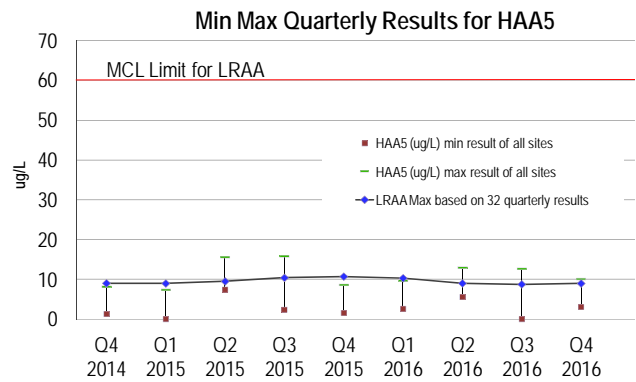
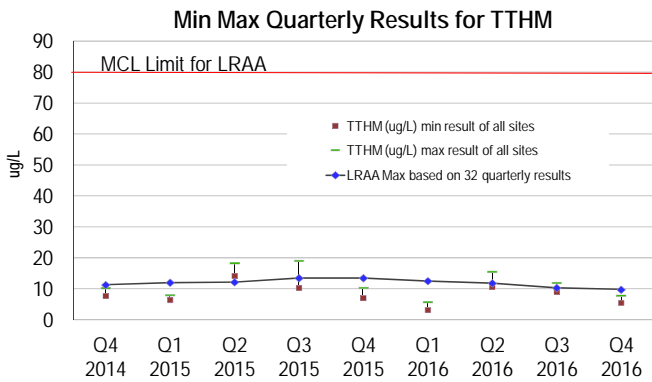
The locational running annual average at each individual sampling location must be below the standard. The charts below show the highest and lowest single values for all sites, and the LRAA of the highest location each quarter.

Partially served and CVA communities are responsible for their own compliance monitoring and reporting, and must be contacted directly for their individual results. The chart below combines all three CVA communities data (Chicopee, Wilbraham and South Hadley FD1).

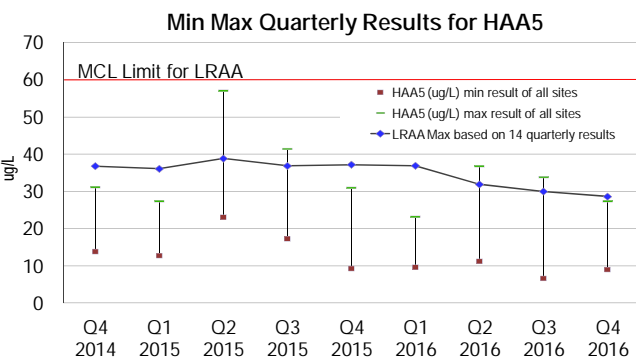
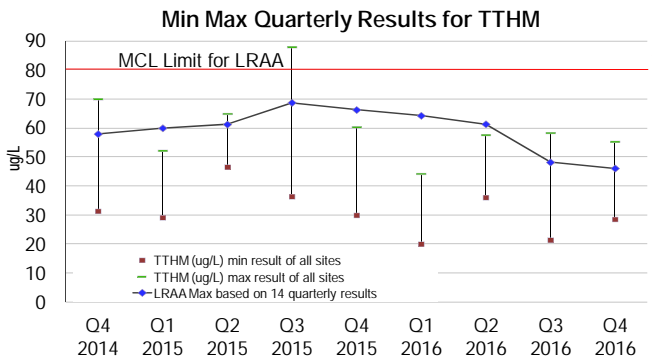
Bromate is tested monthly per DEP requirements for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA's RAA MCL standard for bromate is 10 µg/L.

The LRAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remain below current standards. The Max LRAA in the quarter for TTHMs = 9.8 µg/L; HAA5s = 9.0 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 (Combined Results)



Water Supply and Source Water Management

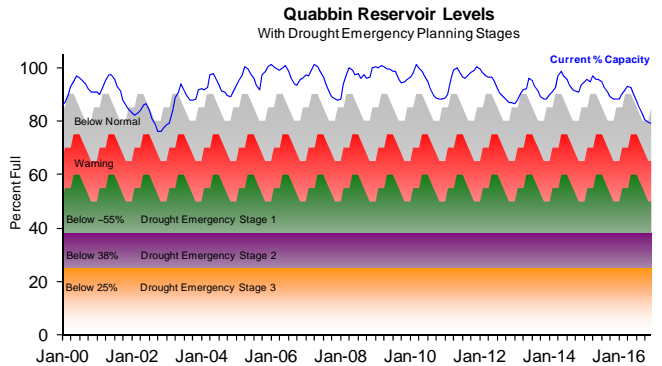
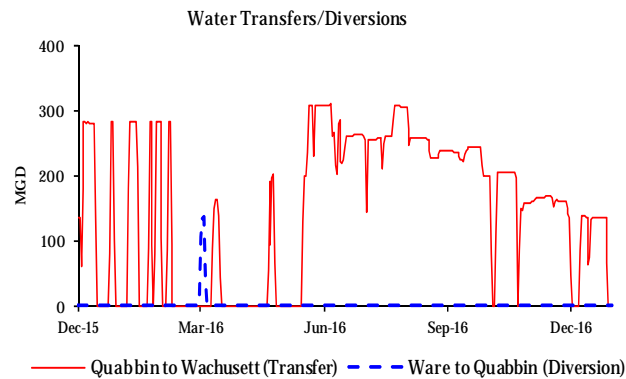
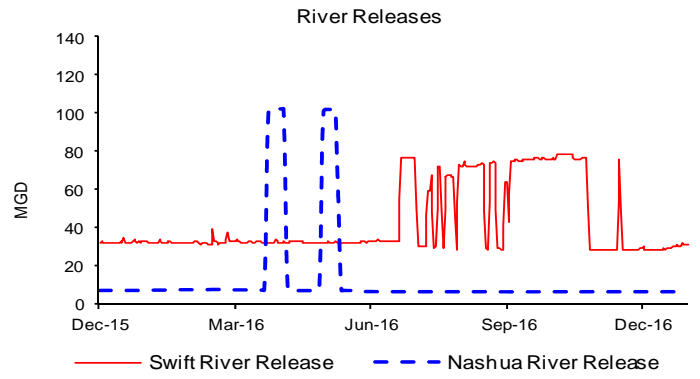
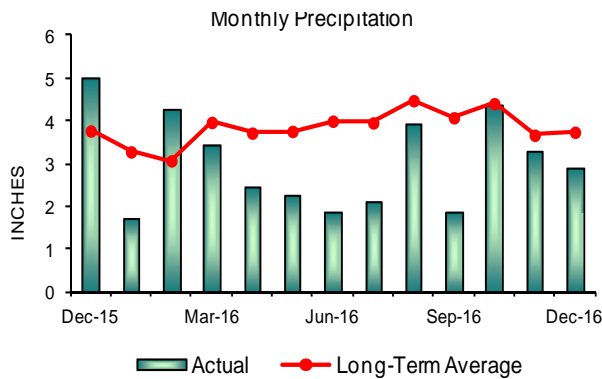
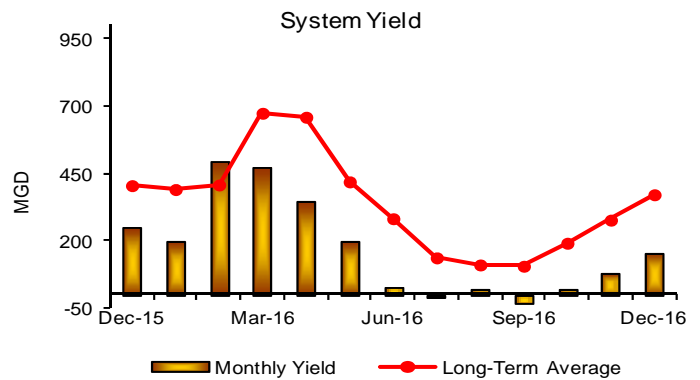
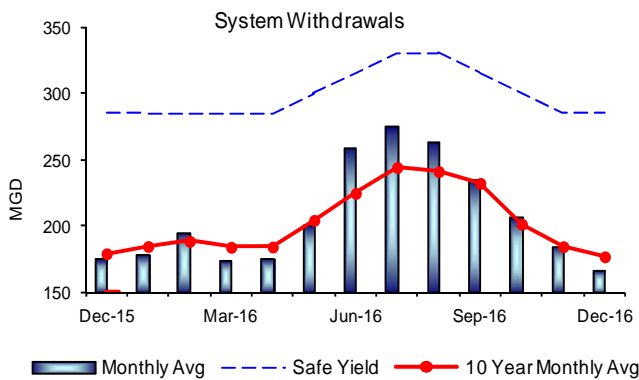
2nd Quarter – FY16

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 went into the Below Normal operating range in the month of November. The volume of the Quabbin Reservoir was at 79.1% as of December 31, 2016; a 3.4% decrease for the quarter, which represents a loss of about 14 billion gallons of storage. Yield and precipitation for the quarter were below their respective quarterly long term averages. System withdrawals for the quarter were below the 10 year monthly average.



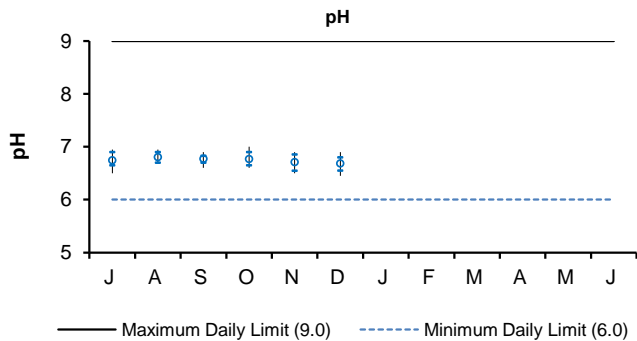
WASTEWATER QUALITY

NPDES Permit Compliance: Deer Island Treatment Plant
2nd Quarter - FY17

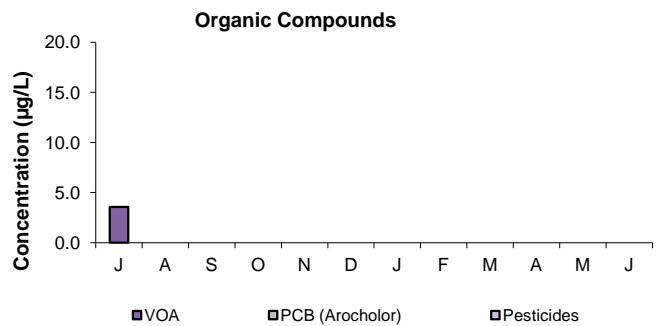
NPDES Permit Limits

Effluent Characteristics		Units	Limits	October	November	December	2nd Quarter Violations	FY17 YTD Violations
Dry Day Flow:		mgd	436	254.2	255.0	256.1	0	0
cBOD:	Monthly Average	mg/L	25	6.4	6.4	7.1	0	0
	Weekly Average	mg/L	40	8.4	6.5	8.2	0	0
TSS:	Monthly Average	mg/L	30	7.4	8.2	7.9	0	0
	Weekly Average	mg/L	45	10.5	10.0	12.8	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	7	6	7	0	0
	Weekly Geometric Mean	col/100mL	14000	17	8	16	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	6.6-7.0	6.6-6.9	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	100	100	0	0
	Inland Silverside	%	≥1.5	50	100	100	0	0

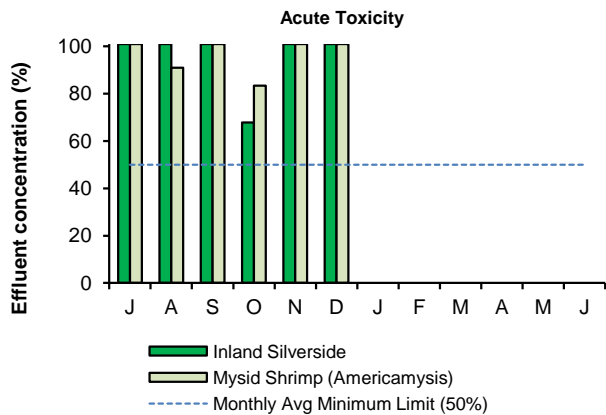
There have been no permit violations in FY17 to date at the Deer Island Treatment Plant.



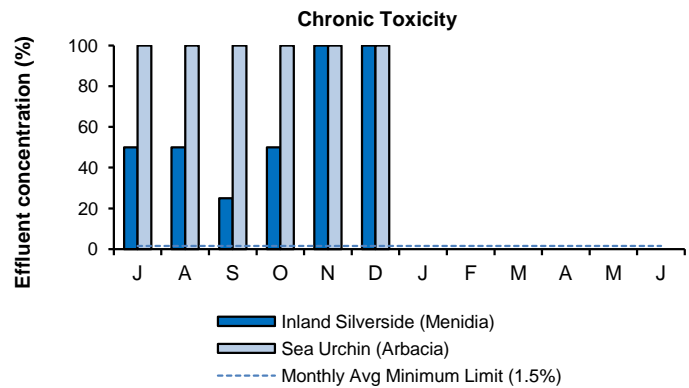
pH is a measure of alkalinity or acidity. Fluctuations in effluent pH are unlikely to impact on marine environments, which have significant buffering capacity. Because of the pure oxygen used in the activated sludge process, effluent pH tends to be at the lower end of the permit-required range. All pH measurements for the 2nd Quarter were within the daily permit limits.



An important wastewater component monitored in the effluent is organic compounds, such as volatile organic acids, pesticides, and polychlorinated biphenyls, which are all sampled monthly. The secondary treatment process significantly reduces organic compounds in the effluent stream. In the 2nd Quarter, all organic compounds were below the detection limit for the quarter.



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



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

NPDES Permit Compliance: Clinton Wastewater Treatment Plant 2nd Quarter - FY17

NPDES Permit Limits

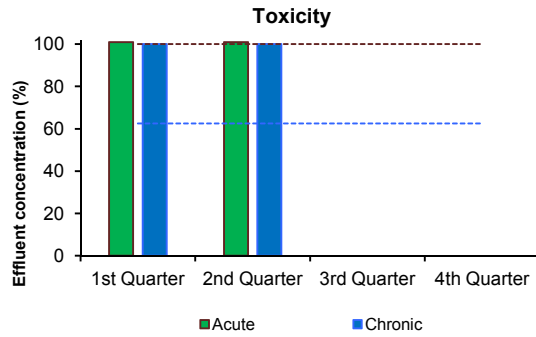
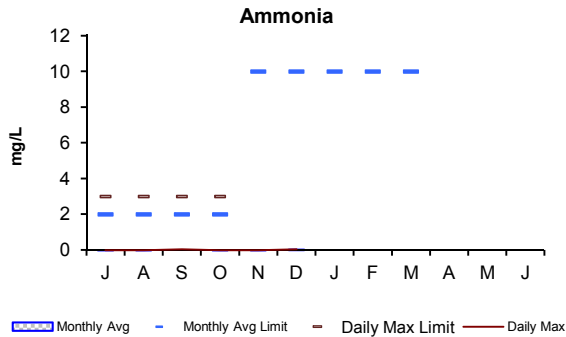
Effluent Characteristics	Units	Limits	October	November	December	2nd Quarter Violations	FY17 YTD Violations	
Flow:	mgd	3.01	2.30	2.27	2.24	0	0	
BOD:	Monthly Average:	mg/L	20	3.1	3.7	4.9	0	0
	Weekly Average:	mg/L	20	3.2	4.0	8.3	0	0
TSS:	Monthly Average:	mg/L	20	3.4	3.6	4.5	0	0
	Weekly Average:	mg/L	20	3.8	4.4	5.3	0	0
pH:	SU	6.5-8.3	7.2-7.9	7.3-7.6	7.0-7.6	0	0	
Dissolved Oxygen:	Daily Minimum:	mg/L	6	7.4	8.6	9.5	0	0
Fecal Coliform:	Daily Geometric Mean:	col/100mL	400	10	18	6	0	0
	Monthly Geometric Mean:	col/100mL	200	4	3	4	0	0
TCR:	Monthly Average:	ug/L	50	0	0.0	0.0	0	0
	Daily Maximum:	ug/L	50	0.0	0.0	0.0	0	0
Total Ammonia Nitrogen: November 1st - March 31st								
	Monthly Average:	mg/L	2.0	0.00	0.00	0.02	0	0
	Daily Maximum:	mg/L	3.0	0.00	0.00	0.04	0	0
Copper:	Monthly Average:	ug/L	20	7.6	7.7	6.9	0	0
Phosphorus: May 1 - Oct 31								
	Monthly Average:	mg/L	1.0	0.29	N/A	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

There have been no permit violations in FY17 at the Clinton Treatment Plant.

1st Quarter: There were no permit violations in the first quarter.

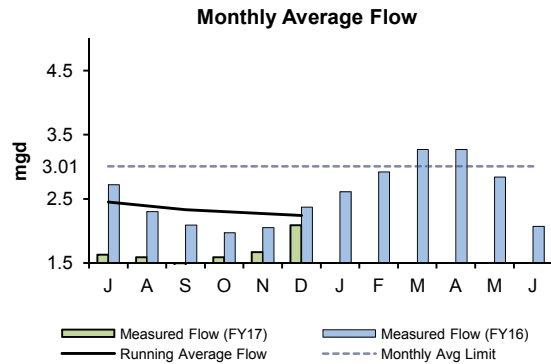
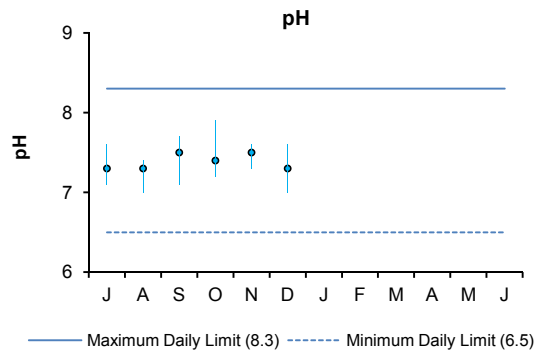
2nd Quarter: There were no permit violations in the second quarter.

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



The 2nd Quarter's monthly average and daily maximum concentrations were below the permit limits. The monthly average and daily maximum limits for the 2nd Quarter are 0.02 mg/L and 0.06 mg/L, respectively. The permit limits are most stringent from June to October when warm weather conditions are most conducive to potential eutrophication.

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



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

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

COMMUNITY FLOWS AND PROGRAMS

Total Water Use

MWRA Revenue Customers

2nd Quarter - FY17

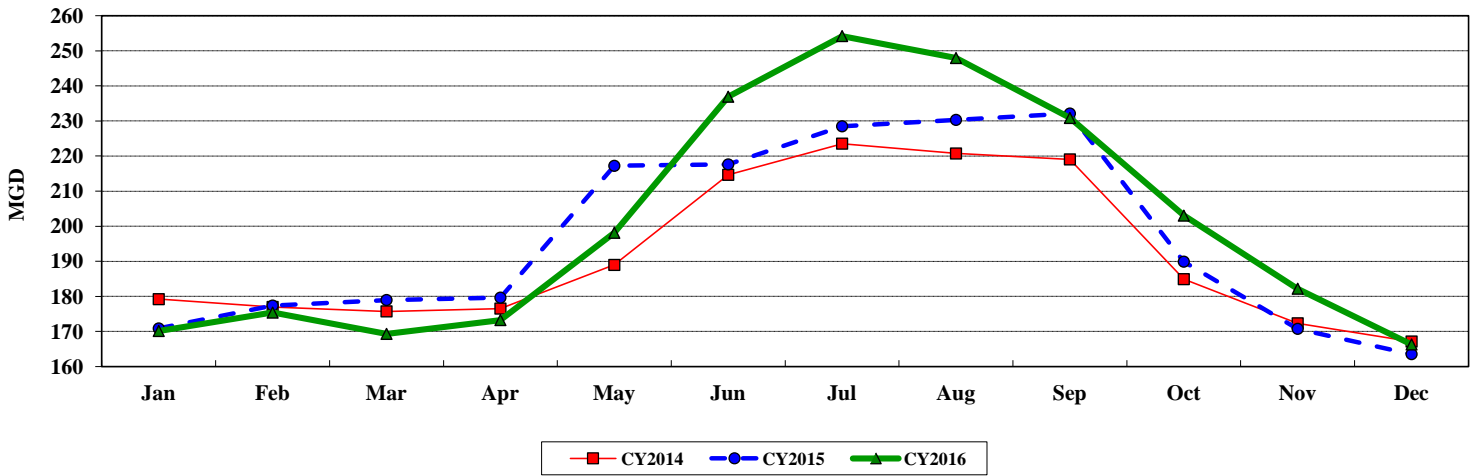
YTD CHANGES (CY16 vs. CY15)
Water Supplied
2.1%

Water Supplied: All Revenue Customers

MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Annual Average
CY2014	179.212	176.987	175.736	176.536	188.974	214.660	223.544	220.734	219.049	184.918	172.333	167.145	191.729	191.729
CY2015	170.874	177.386	178.975	179.653	217.221	217.619	228.484	230.316	232.125	189.905	170.763	163.550	196.522	196.522
CY2016	170.144	175.389	169.319	173.256	198.133	236.921	254.203	247.944	230.859	203.031	182.197	166.310	200.724	200.724

MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Total	Annual
CY2014	5,555.575	4,955.629	5,447.807	5,296.068	5,858.182	6,439.790	6,929.849	6,842.752	6,571.479	5,732.472	5,169.979	5,181.506	69,981.088	69,981.088
CY2015	5,297.089	4,966.801	5,548.216	5,389.596	6,733.842	6,528.559	7,082.997	7,139.787	6,963.760	5,887.062	5,122.884	5,070.040	71,730.633	71,730.633
CY2016	5,274.454	5,086.269	5,248.893	5,197.675	6,142.124	7,107.637	7,880.290	7,686.259	6,925.757	6,293.965	5,465.920	5,155.620	73,464.863	73,464.863

MWRA Water Supplied: All Revenue Customers



The December 2016 Community Water Use Report recently distributed to communities served by the MWRA waterworks systems. Each community's annual water use relative to the system as a whole is the primary factor in allocating the annual water rate revenue requirement to MWRA water communities. Calendar year 2016 water use will be used to allocate the FY18 water utility rate revenue requirement.

December 2016 water supplied of 166.3 mgd (for revenue generating users) is up 2.8 mgd or 1.7% compared to December 2015. December 2016 water use includes 1.2 mgd provided to the City of Cambridge and 0.6 mgd provided to the City of Worcester.

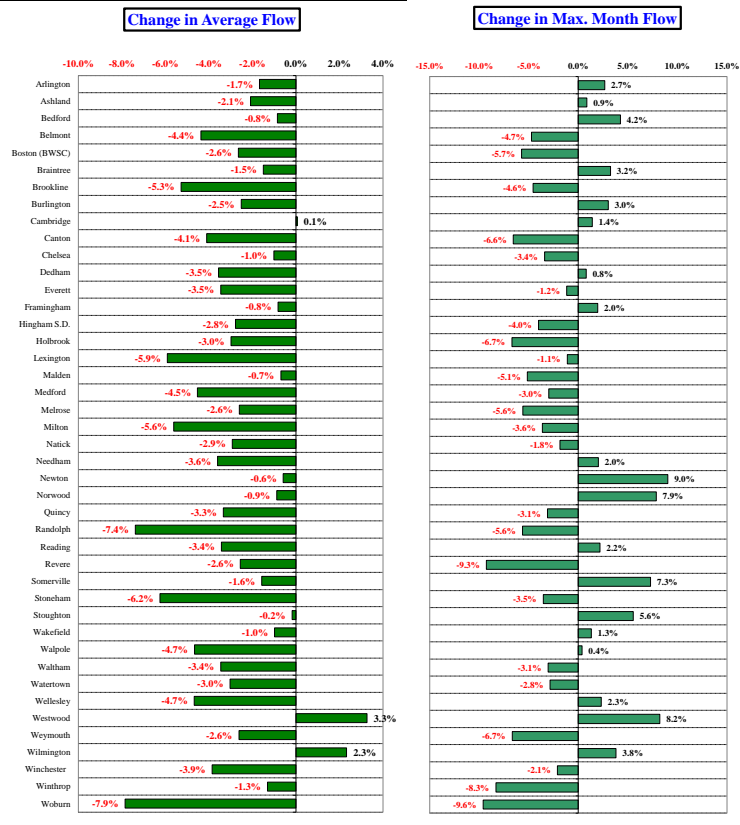
System-wide year to date consumption for CY16 was higher than CY15 with 200.7 mgd being supplied to MWRA customers **through December**. This is 4.2 mgd higher than CY15, and is an increase of 2.1%.

Community Wastewater Flows

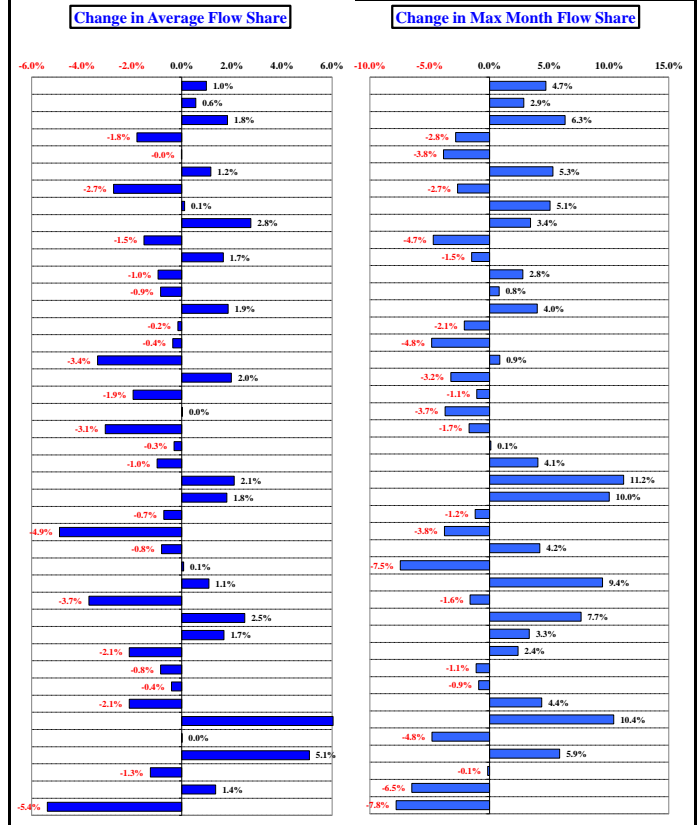
2nd Quarter - FY17

How Projected CY2016 Community Wastewater Flows Could Effect FY2018 Sewer Assessments ^{1,2,3}

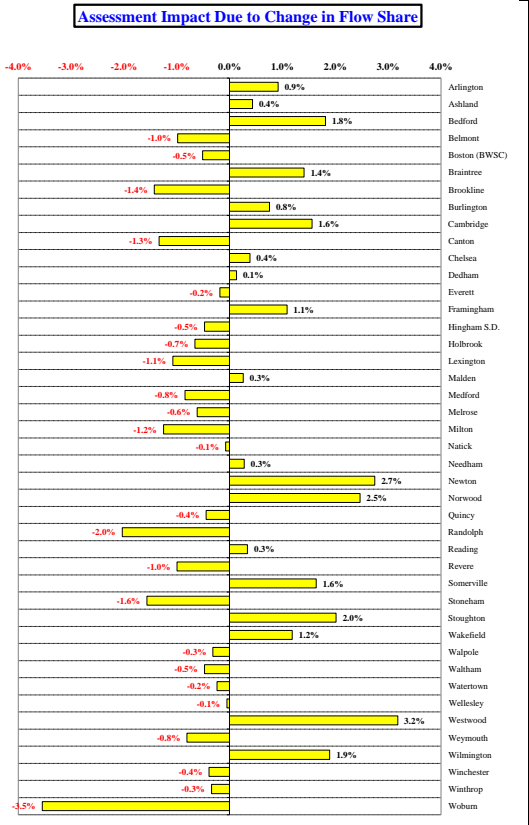
The flow components of FY2018 sewer assessments will be calculated using a 3-year average of CY2014 to CY2016 wastewater flows compared to FY2017 assessments that used a 3-year average of CY2013 to CY2015 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the **RELATIVE** change in CY2014 to CY2016 flow share compared to CY2013 to CY2015 flow share, compared to all other communities in the system.



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



Notes:
¹ MWRA uses a 3-year flow average to calculate sewer assessments. Three-year averaging smoothes the impact of year-to-year changes in community flow share, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.
² Based on CY2013 to CY2016 average wastewater flows as of 12/12/16. Flow data is preliminary and subject to change pending additional MWRA and community review.
³ CY2013 to October CY2016 wastewater flows based on actual meter data. November to December 2016 flows based on the average of the prior three years.
⁴ Represents **ONLY** the impact on the total BASE assessment resulting from the changes in average and maximum wastewater **FLOW SHARES**.

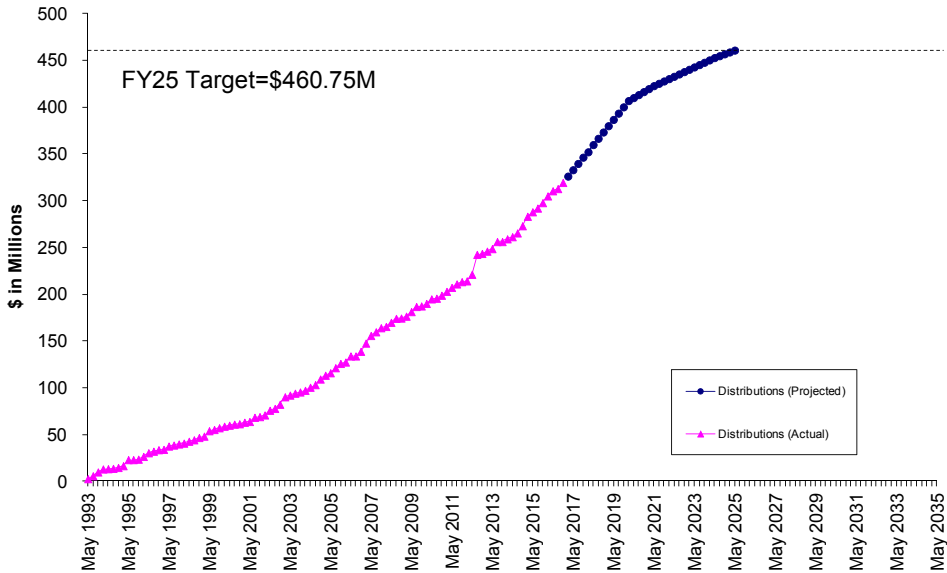
Community Support Programs

2nd Quarter – FY17

Infiltration/Inflow Local Financial Assistance Program

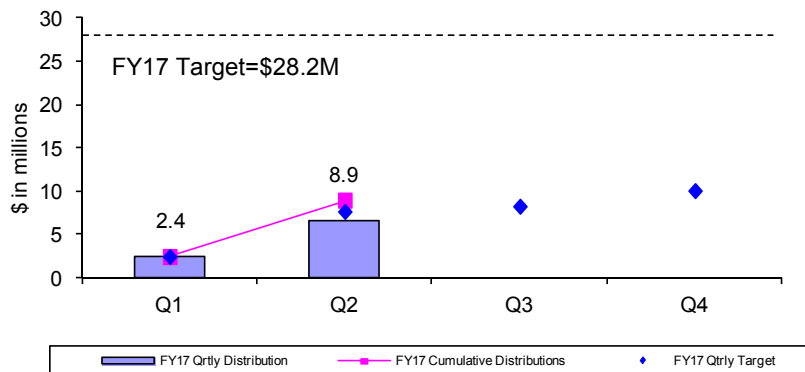
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$460.75 million in grants and interest-free loans (average of about \$14 million per year from FY93 through FY25) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Eligible project costs include: sewer rehabilitation construction, pipeline replacement, removal of public and private inflow sources, I/I reduction planning, engineering design, engineering services during construction, etc. I/I Local Financial Assistance Program funds are allocated to member sewer communities based on their percent share of MWRA's wholesale sewer charge. Phase 1-8 funds (total \$300.75 million) were distributed as 45% grants and 55% loans with interest-free loans repaid to MWRA over a five-year period. Phase 9 and 10 funds (total \$160 million) are distributed as 75% grants and 25% loans with interest-free loans repaid to MWRA over a ten-year period.

I/I Local Financial Assistance Program Distribution FY93-FY25



During the 2nd Quarter of FY17, \$6.6 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Ashland, Burlington, Framingham, Melrose, Quincy, Watertown and Wilmington. Total grant/loan distribution for FY17 is \$8.9 million. From FY93 through the 2nd Quarter of FY17, all 43 member sewer communities have participated in the program and more than \$319 million has been distributed to fund 518 local I/I reduction and sewer system rehabilitation projects. Distribution of the remaining funds has been approved through FY25 and community loan repayments will be made through FY36. All scheduled community loan repayments have been made.

FY17 Quarterly Distributions of Sewer Grant/Loans



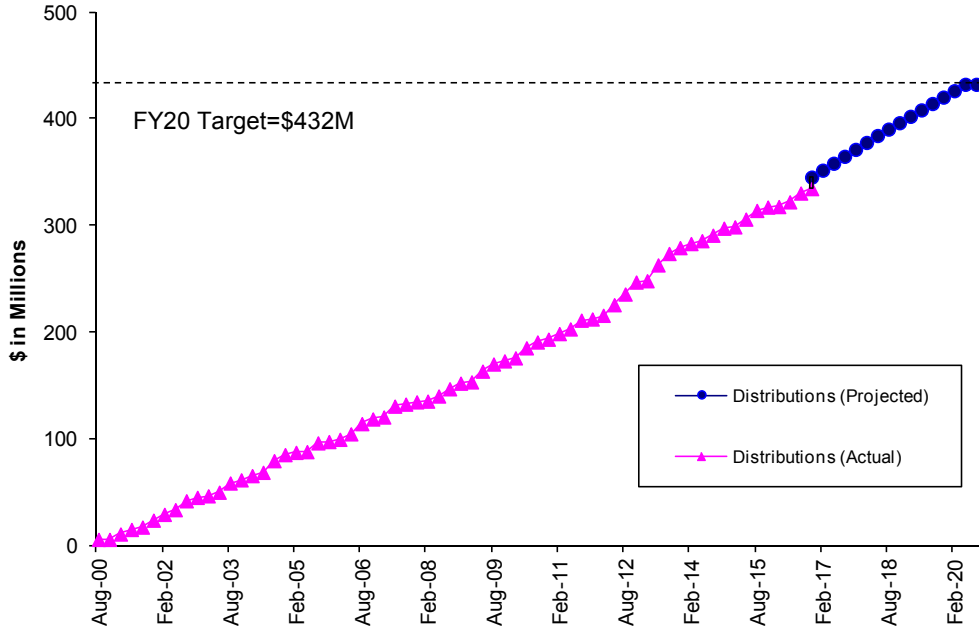
Community Support Programs

2nd Quarter – FY17

Local Water System Assistance Program

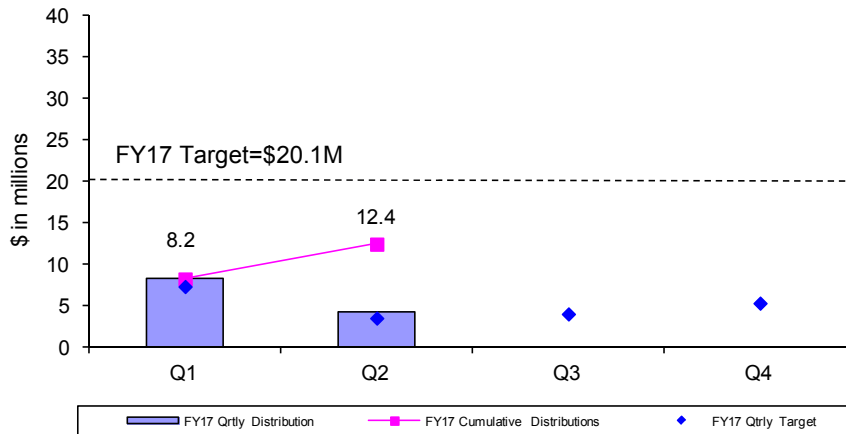
MWRA's Local Water System Assistance Programs (LWSAP) provides \$432 million in interest-free loans (an average of about \$22 million per year from FY01 through FY20) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. Eligible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

Local Water System Assistance Program Distribution FY01-FY20



During the 2nd Quarter of FY17, \$4.2 million in interest-free loans was distributed to fund local water projects in Chelsea, Framingham, Newton and Watertown. Total loan distribution for FY17 is \$12.4 million. From FY01 through the 2nd Quarter of FY17, more than \$334 million has been distributed to fund 377 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.

FY17 Quarterly Distributions of Water Loans



Community Support Programs

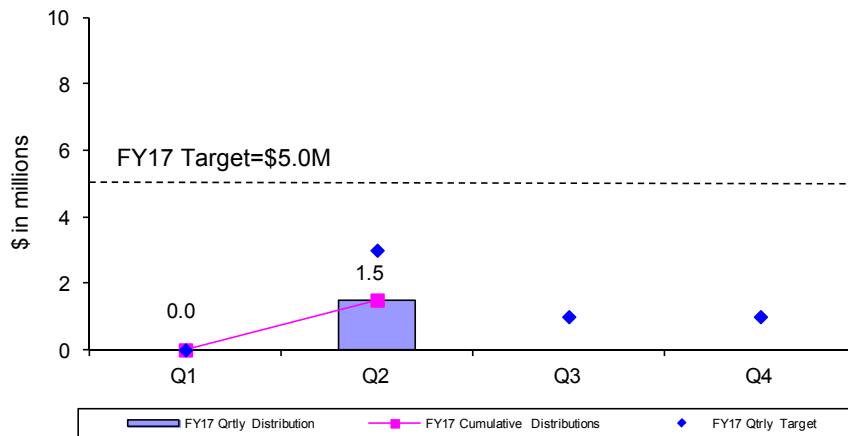
2nd Quarter – FY17

Lead Service Line Replacement Loan Program

By its vote on March 16, 2016, the Board approved an enhancement to the Local Water System Assistance Program to provide up to \$100 million in 10-year zero-interest loans to communities solely for efforts to fully replace lead service lines. The Lead Service Line Replacement Loan Program is also referenced as the Lead Loan Program or LLP. Each community can develop its own program, tailored to their local circumstances. MWRA's goal in providing financial assistance to member communities is to improve local water systems so that the high quality water MWRA delivers can make it all the way to the consumer's tap. The presence of a lead service line connecting a home to the main in the street can lead to elevated lead levels in tap water, especially if that water sits stagnant for an extended period. MWRA's stable water quality and effective corrosion control treatment reduce the risk that a lead service line will cause elevated lead levels, and measured lead levels in high risk homes have decreased by 90 percent since corrosion control was brought on-line in 1996. However, the risk of elevated levels remains as long as lead service lines are in use.

FY17 is the first year of the Lead Service Line Replacement Loan Program. During the 2nd Quarter of FY17, MWRA made the first Lead Loan Program distribution to Quincy for \$1.5 Million.

FY17 Quarterly Distributions of Lead Service Line Replacement Loans

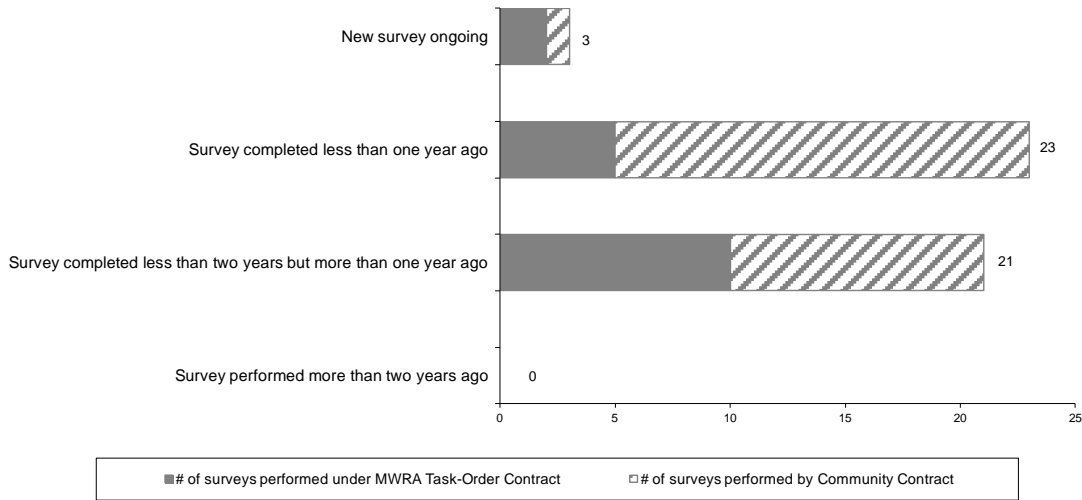


Community Support Programs

2nd Quarter – FY17

Community Water System Leak Detection

To ensure member water communities identify and repair leaks in locally-owned distribution systems, MWRA developed leak detection regulations that went into effect in July 1991. Communities purchasing water from MWRA are required to complete a leak detection survey of their entire distribution system at least once every two years. Communities can accomplish the survey using their own contractors or municipal crews; or alternatively, using MWRA's task order leak detection contract. MWRA's task order contract provides leak detection services at a reasonable cost that has been competitively procured (3-year, low-bid contract) taking advantage of the large volume of work anticipated throughout the regional system. Leak detection services performed under the task order contract are paid for by MWRA and the costs are billed to the community the following year. During the 2nd Quarter of FY17, 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 205 mgd. The local Water Conservation Program includes distribution of water conservation education brochures (indoor and outdoor bill-stuffers) and low-flow water fixtures and related materials (shower heads, faucet aerators, toilet leak detection dye tabs, and instructions), all at no cost to member communities or individual customers. The Program's annual budget is \$25,000 for printing and purchase of materials. Annual distribution targets and totals are provided in the table below. Distributions of water conservation materials are made based on requests from member communities and individual customers.

	Annual Target	Q1	Q2	Q3	Q4	Annual Total
Educational Brochures	100,000	324	20,778			21,102
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	3,162	1,944			5,106
Toilet Leak Detection Dye Tablets	-----	2,265	2,814			5,079

BUSINESS SERVICES

Procurement: Purchasing and Contracts

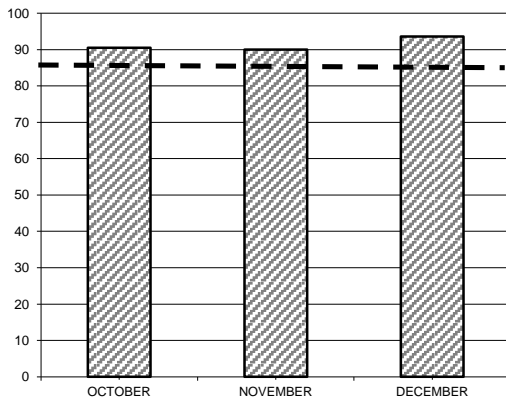
Second Quarter - FY17

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

Outcome: Processed 94% of purchase orders within target; Average Processing Time was 4.97 days vs. 4.92 days in Qtr 2 of FY16. Processed 76% (13 of 17) of contracts within target timeframes; Average Processing Time was 122 days vs. 72 days in Qtr 2 of FY16.

Purchasing

Purchase Orders - Percent in Target



	No.	TARGET	PERCENT IN TARGET
\$0 - \$500	734	3 DAYS	87.6%
\$500 - \$2K	752	7 DAYS	94.9%
\$2K - \$5K	397	10 DAYS	94.2%
\$5K - \$10K	69	25 DAYS	89.8%
\$10K - \$25K	67	30 DAYS	82.0%
\$25K - \$50K	15	60 DAYS	80.0%
Over \$50K	29	90 DAYS	86.2%

The Purchasing Unit processed 2063 purchase orders, 297 less than the 2360 processed in Qtr 2 of FY16, for a total value of \$14,165,441 versus a dollar value of \$21,846,994 in Qtr 2 of FY16.

The purchase order processing target was not met for the \$10K - \$25K category due to sole source documentation requirements and extensions of the bid date; and the \$25K - \$50K category due to end user bid evaluations.

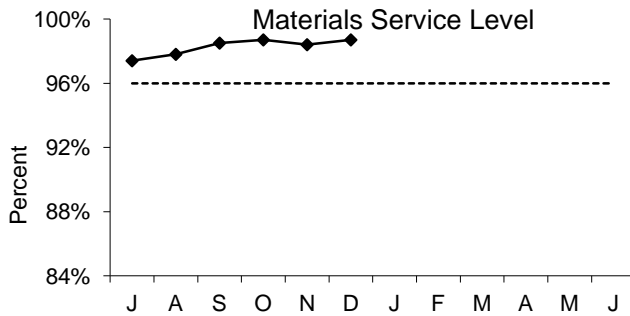
Contracts, Change Orders and Amendments

Four contracts were not processed within the target timeframes. One due to extensive revisions of the contract documents prior to bid required to address design issues and numerous bidder questions; another due to requirements to align the contract with the start of the associated construction contract as this contract provided the Resident Engineer/Inspector for the project; a third due to prolonged consultant turnover time for requested revisions to the contract specifications; and the fourth due to extended contract negotiations with the consultant (new contract in place prior to the expiration of the existing contract).

Procurement processed seventeen contracts with a value of \$84,068,927 and nine amendments with a value of \$591,144. Twenty three change orders were executed during the period. The dollar value of all non-credit change orders during the 2nd quarter FY17 was \$1,419,910 and the value of credit change orders was (\$19,686).

Staff reviewed 55 proposed change orders and 33 draft change orders.

Materials Management 2nd Quarter, FY17



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 8,468 (98.6%) of the 8,588 items requested in Q2 from the inventory locations for a total dollar value of \$1,010,937.

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 FY17 goal is to reduce consumable inventory from the July '16 base level (\$8.10 million) by 2.0% (approximately \$162,164), to \$7.94 million by June 30, 2017 (see chart below).

Items added to inventory this quarter include:

- Deer Island – couplings and leak detectors for HVAC; sealing bands, coupling elements, terminator cap and pump rotor for Residuals; sensors and input modules for I&C; plug valve and grease for Liquid Train; loop indicator for Power & Pump; transformer, wire, relays, insulation washers and tubes, fuses and diodes for Electrical.
- Chelsea – mirrors, fuel injector pipe, calipers and connectors for Fleet Services; washer, refrigerator and mechanical seals for Field Operations; PLC processor, PLC cards, control relays and power supplies for Engineering and Construction; switches, transducers, receptacles and lamps for Metro Maintenance; docking station and converters for SCADA.
- Southboro – padlocks for Equipment Maintenance; loop isolators for Quality Assurance; hand warmers for Maintenance.

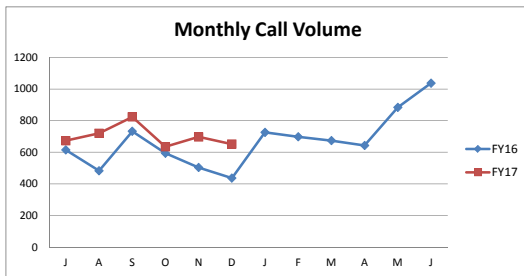
Property Pass Program:

- Nine audits were conducted during Q2.
- Scrap revenue received for Q2 amounted to \$10,247. Year to date revenue received amounted to \$14,987.
- Revenue received from online auctions held during Q2 amounted to \$112,877. Year to date revenue received amounted to \$173,807.

Items	Base Value July-16	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	8,108,240	7,929,900	-178,340
Spare Parts Inventory Value	8,841,332	8,831,754	-9,578
Total Inventory Value	16,949,572	16,761,654	-187,918

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

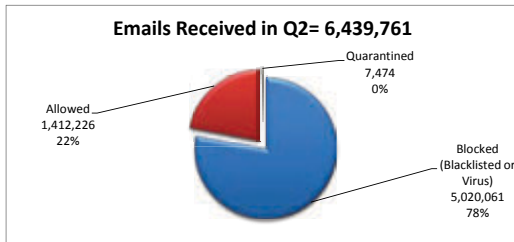
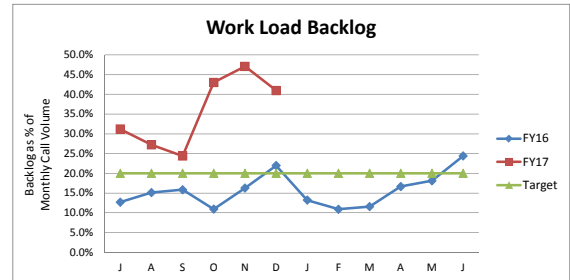
MIS Program 2nd Quarter FY17



Performance and Backlog

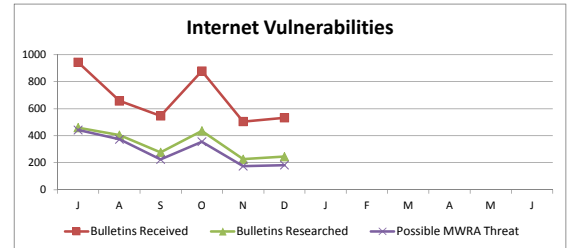
Call Volume:
Peaked in November. FY17-Q2 call volume increased by 29% from FY16-Q2.

Call Backlog:
Peaked in November. FY17-Q2 backlog average is 23.7% above the targeted benchmark of 20%. There were 193 additional helpcalls vs. Nov 2015. Backlog also attributed to Laptop Validation, iPhone Rollout and Surface Tablet projects.



Information Security

During Q2, pushed security fixes/updates to desktops/ servers to protect against 318 vulnerabilities. LANDesk Antivirus quarantined 20 distinct viruses from 13 PCs. PCs are current with anti-virus providers' signatures for all known malware.



Infrastructure:

Citrix Mobile Application Design and Development:

Upgraded XenMobile infrastructure to support iOS10. Expanding use of Sharefile to Procurement. Began build out of Virtual Desktop Infrastructure

Applications/Training/Records Center:

Library Catalog Replacement Project (InMagic): Went live with the new Library Resources Portal and ran brown bag user training sessions at various locations. Installed a development server and synchronized the development and production servers. Adjusted Library location values across newly merged record types to suit display and label requirements and made various configuration changes to fine-tune the user experience. Ordered new barcode scanner, selected label stock and designed label layouts for book spine and card printing to re-label and re-shelve books. Created a 2 page Quick Reference Card for the go-live announcement based on the 27 page user guide.

Miscellaneous Lawson Support: Installed/tested a new Disaster Recovery micro check printer for the Payroll and AP check applications on Deer Island. Upgraded the MUNEASE Bond Tracking application and SQL Server database. Scheduled and held six days of training and configuration workshops with the Portia vendor and users.

Lawson-Maximo Interface: MWRA and Vendor integration testing results have 50 of 51 interfaces and 10 of 12 bulk load import programs successfully passing; the remaining program/interface testing continues. User Interface Acceptance testing is underway.

Information Security Program: Concluded User Security Awareness Training. 76% of all employees completed all training modules. A second phishing assessment was conducted. 30% fewer employees fell victim to this phishing attempt than the prior year. As a result, MIS will pursue continuing this training along with revising and enhancing internal procedures.

Maximo Upgrade Project: Maximo 7.6 Go-live date scheduled in January 2017. Conducted IBM Control Desk (ICD) workshops for end users and completed Integration Testing of the Lawson interface.

Electronic Library Notebook (ELN): Deployed 15 ELN logs in production for Chelsea Laboratory Experiment. Began work on ELN logs Quabbin Laboratory.

LIMS: Prepared responses for LIMS Data Reliability Assessment conducted by State Auditor's office.

PIMS/CromERR: Discussed next steps to implement PIMS CromERR internally and with EPA.

Library & Records Center: The Library fulfilled 58 research requests, and provided 266 periodicals, standards, books & reports. Research topics included chlorate, bromated and estrogens in drinking water and historic navigation. The Records Center added 243 boxes, handled 350 boxes, disposed of 342 boxes and attended three Records Conservation Board Meetings.

IT Training: For the quarter, 639 staff attended 62 classes. 47% of the workforce has attended at least one class year-to-date. 492 staff completed Maximo 7.6 training. A new Maximo Self Service Quick Reference Card was developed and published and a brown bag demo was presented to Chelsea Operations field staff. A new Introduction to Maximo class is under development.

Legal Matters

2nd Quarter - FY17

PROJECT ASSISTANCE

COURT AND ADMINISTRATIVE ORDER

- **Boston Harbor Litigation and CSO:** Reviewed and Filed Semi-Annual Compliance and Progress Report.
- **Administrative Consent Order (DITP power outages):** Reviewed and submitted updated semi-annual *Consultant's Deer Island Energy Recommendations Tracking Sheet* to DEP and EPA for ACOP-NE-04-1N003-SEP.

REAL ESTATE, CONTRACT AND OTHER SUPPORT

- **Regulations:** Reviewed and provided comments on Mass DAR's revised 330 CMR 31.00 regulations relating to plant and nutrient application requirements for agricultural land for non agricultural land and non agricultural turf and lawn. Reviewed and revised comments on EPA's proposed information collection request for the national study on nutrients removal and secondary technologies. Reviewed Massachusetts Contingency Plan notification provisions relative to sampling results from a DEP monitoring well near the Wachusett Aqueduct in Northborough.
- **Real Property:** Drafted letter notifying MassDOT that MWRA was vacating the Commercial Point CSO Facility chemical building site and returning it to MassDOT. Coordinated with MBTA to access two MWRA manholes within MWRA easement on MBTA property. Confirmed that proposed taking by MassDOT along Route 9 in Wellesley did not affect property under MWRA's care custody and control. Reviewed MWRA's property rights for parcels of land located at Marginal and Chelsea Street in Chelsea and for 51 Fairmont Court in Hyde Park. Drafted easement language needed for the relocation of a portion MWRA's Northern High Service Pipeline Section 14 water main from Pleasant Street Extension to Pleasant Street in Malden. Reviewed and provided comments on draft estoppel certificate and subordination, attornment and non-disturbance agreement relative to MWRA's lease of a portion of Building 39 in CNY.
- **NPDES:** Reviewed and provided comments on letter to EPA seeking revisions to MWRA's outfall contingency plan. Reviewed and provided comments on letter transmitting scope of CSO variance monitoring in the Lower Charles River/Charles Basin and the Alewife Brook/Upper Mystic River to EPA and DEP. Reviewed and provided comments on notification letter to EPA relative to DITP's operation of its back up power during periods when the HEEC power cable, which provides primary power to DITP, is off-line. Reviewed applicability of noncontact cooling water NPDES permit to MWRA's Wachusett Aqueduct pumping station future geothermal discharge to forebay. Reviewed and provided comments on notification letter to EPA relative to DITP's operation of its back up power during periods when the HEEC power cable, which provides primary power to DITP, is off-line.
- **Watershed Preservation Restriction:** Reviewed Wachusett Reservoir Watershed Acquisition W-000494 located at Upper North Row Road and Hardscrabble Road, in Sterling, MA. Reviewed Quabbin Reservoir Watershed Acquisition W-0001175 located at Hardwick Road in Petersham, MA.
- **Order of Conditions:** recorded extension permit for order of conditions DEP 297-0353 related to MWRA Spot Pond Covered Storage contract 6457.
- **Licenses:** Finalized Mass DOT license for MWRA's use of land in Weston near shaft 5 and shaft 5A for parking and a lay down area needed for the repair of water line Section 80. Finalized MIT Sea Grant College Program for MIT's use of the Deer Island Wastewater Treatment Plant (DITP) Pier. Reviewed and revised draft license agreement related to Boston Gas's (NGRID) gas line and meters being installed at MWRA's Clinton Wastewater Treatment Plant.
- **8(m) Permits:** Reviewed and approved fifty-seven (57) 8(m) permits.
- **Public Records Requests:** Provided responses to one public records request.
- **Greater Esker Park:** Filed MWRA's Third/Final Annual Compliance/Monitoring Report.
- **FST/Stantec Cost Recovery:** Assisted staff with structuring cost recovery settlement to permit set-off against FST claims for additional work. Obtained extension to tolling agreement.
- **CNY Lease:** Provided documentation to CNY landlord concerning landlord's property refinancing.
- **Amended Public Records Law:** Provided assistance to MIS, Operations and Executive Office in implementing amended Public Records Law which became effective on January 1, 2017. Revised MWRA Admin. Policy #19.
- **West Boylston Municipal Lighting Plant:** Met with energy consultant and answered WBMLP's offer to enter into a long term agreement for the purchase of Oakdale output.

MISCELLANEOUS

LABOR, EMPLOYMENT AND ADMINISTRATIVE

New Matters -- One demand for arbitration was filed.

LABOR, EMPLOYMENT AND ADMINISTRATIVE (cont.)

Matters Concluded

- Received an arbitrator's decision in favor of MWRA finding that the MWRA did not violate a collective bargaining agreement when an employee claimed to be working out of title.
- Received an arbitrator's decision in favor of MWRA finding that the MWRA did not violate a collective bargaining agreement when an employee claimed to be working out of title.
- Received a dismissal from the MCAD for lack of probable cause of a charge of discrimination on the basis of race, color.
- Received a dismissal from the MCAD for lack of probable cause of a charge of discrimination on the basis of retaliation.

LITIGATION/TRAC

New Matters

- Joel Chiet (Motor Vehicle Accident): Mr. Chiet, an 80-year old resident of Everett, has initiated a claim arising out of an auto accident that occurred on June 29, 2015 on the Fellsway in Medford. Chiet alleges that he was stopped at a red light when his vehicle was rear ended by an MWRA truck operated by MWRA employee Mark Cataldo. Mr. Cataldo had also been stopped at the light, but reportedly his vehicle rolled approximately ten feet into the rear of Chiet's vehicle. Chiet alleges hip, shoulder and back pain and received medical treatment as well as physical therapy. No lawsuit has yet been filed, but Chiet has legal counsel with whom Law Division will pursue settlement discussions.
- Besnick Lalaj and Violeta Lalaj (Motor Vehicle Accident): Mr. and Mrs. Lalaj are represented by Attorney William Reitzell in connection with an auto accident that occurred on November 10, 2015, at approximately 6:15 a.m., on Mystic Avenue in Somerville, near MWRA's CSO facility. Mr. Lalaj contends that he was traveling on Mystic Avenue, when an MWRA vehicle pulled out of a "construction area" and hit the driver's side of Mr. Lalaj's vehicle. Mr. Lalaj saw the license plate and reported the incident by telephone to the Somerville Police. Mr. Lalaj, who is 47 years old, alleges injuries to his neck and back, and medical expenses of approximately \$5,000.00. Mrs. Lalaj, the passenger, who is 41 years old, alleges injuries to her neck, back and right knee, and medical expenses of \$4,757.00. Settlement discussions will be pursued in this matter.
- Thang Viet Vu and Oanh Vu (Motor vehicle Accident): On December 1, 2015, MWRA employee Mark Enos was travelling in an MWRA vehicle on Gallivan Boulevard, approaching Granite Avenue in Quincy, when he collided with the vehicle in front of him, operated by Mr. Vu. Mr. Vu's vehicle had stopped abruptly to avoid hitting the vehicle in front of him that had suddenly attempted an illegal left turn onto Granite Avenue. Mr. Vu is 65 years old; Ms. Vu, the passenger, is 27 years old. Both claimants are represented by Attorney Brian Gunning of Dorchester and settlement discussions will be pursued.
- Service of Process Matter: On December 13, 2016, the Law Division received a telephone call from a woman who claimed to be a process server, employed by a California attorney, who was attempting to contact an MWRA employee before possibly serving the employee with legal process at MWRA. She stated that she had tried unsuccessfully three times to serve the employee at his home. The process server would not divulge her last name or the nature of the matter about which she was calling. Law Division contacted the employee and relayed the substance of the telephone call. The employee said he had received calls at home concerning an unspecified account, with directives to pay, but he has never received any documents substantiating the allegedly past due account and otherwise is not aware of any account on which he is indebted. The employee knows not to make any payments solicited in this manner. Law Division advised the employee that he would be notified in the event of any further contact from the process server or the alleged creditor, including service on MWRA of any legal papers pertaining to him.

Significant Claim Not in Court There are no Significant Claims.

Significant Developments

- Daniel O'Connell's Sons v. MWRA v Allied-Locke Industries, Inc.: In late December 2016 following Board authorization to settle, this matter was settlement for a payment to O'Connell's of \$2.65 million. A memorandum agreement was signed on December 22, 2016.
- United States (Army Corps) v. NStar, HEEC and MWRA: MWRA prevailed on the motion, brought by HEEC and NStar, to dismiss MWRA's cross-claims. In particular, MWRA's indemnification claims in its cross-claims will be the primary basis upon which MWRA will proceed to argue that NStar and HEEC have responsibility for all expenses arising out of the mis-positioned cable. MWRA also prevailed on the motion, brought by the United States, for summary judgment on issues of liability for the alleged failure to comply with the depth requirements of the ACoE dredging permit. That denial, which was without prejudice, allows all parties to pursue discovery. Finally, MWRA substantially prevailed in the DPU tariff proceeding in that DPU rejected HEEC's theory that the expiration of the 1990 Interconnection Agreement meant that its provisions relating to construction cost caps would no longer have any application under the new tariff. DPU re-drafted many of the tariff terms and conditions proffered by HEEC to make them neutral relative to future cable expenditures. DPU also indicated that either a court or the DPU could decide any dispute about cable protection costs.
- MWRA Law Division staff completed review of Boston Harbor Project archived files and culled out approximately 4,500 pages of documents in response to the document request of HEEC/NStar. Reviewed and filed MWRA's Answer to HEEC/NStar's cross-claims against MWRA.
- HEEC Tariff Proceeding (MA DPU 15-157): DPU issued its lengthy decision on most open tariff issues ruling substantially in MWRA's favor on disputed issues including the term and conditions of service and prohibiting HEEC from charging MWRA for any extraordinary cable protection costs, and ruling that the disputes underlying such costs could be adjudicated by a court, by DPU or could be resolved by the future agreement of MWRA and HEEC.

Significant Developments (cont.)

- Bay State Regional Contractors, Inc. v. MWRA: Concluded agreement to allow MWRA to disburse payment to J.F. White from amounts withheld under contract 7260 and to treat the payment as a credit against sums claimed to be due to Bay State in Superior Court suit.

Matters Concluded

- OPK Biotech LLC: On December 9, this Chapter 7 Bankruptcy matter closed once a dividend payment on MWRA's claim from the Interim Distribution was filed. MWRA received a payment in the amount of \$1,077.90.
- Implant Services: This was a small TRAC customer that filed for Chapter 11 Bankruptcy in October 2016. It was determined that MWRA did not have a claim.

Subpoenas-

- During the Second Quarter of FY 2017, no new subpoenas were received and no subpoenas were pending at the end of the Second Quarter FY 2017.

Public Records

- During the Second Quarter of FY 2017, eight public records requests were received, two were withdrawn and four public records requests were closed.

SUMMARY OF PENDING LITIGATION MATTERS

TYPE OF CASE/MATTER	As of Dec 2016	As of Sept 2016	As of June 2016
Construction/Contract/Bid Protest (other than BHP)	3	3	5
Tort/Labor/Employment	1	1	1
Environmental/Regulatory/Other	2	2	2
Eminent Domain/Real Estate	0	0	0
total – all defensive cases	6	6	8
Other Litigation matters (restraining orders, etc.) <u>MWRA v. Thomas Mercer</u> <u>MWRA v. NSTAR and HEEC</u>	2	2	2
total – all pending lawsuits	8	8	10
Claims not in suit: <u>Joel Chiet Claim</u> <u>Besnick Lalaj and Violeta Lalaj Claim</u> <u>Thang Viet Vu and Oanh Vu Claim</u>	3	0	0
Bankruptcy	1	2	2
Wage Garnishment	14	14	14
TRAC/Adjudicatory Appeals	0	0	2
Subpoenas	0	0	0
TOTAL – ALL LITIGATION MATTERS	26	24	28

TRAC/MISC.

New Appeals No new cases were received.

Settlement by Agreement of Parties
No Settlements by Agreement of Parties.

Stipulation of Dismissal No Stipulation of Dismissals.

Notice of Dismissal Fine paid in full
No cases of Notices of Dismissal, Fine paid in full.

Tentative Decisions No Tentative Decisions were issued in the 2nd Quarter FY 2017.

Final Decisions No Final Decisions was issued in the 2nd Quarter FY 2017.

INTERNAL AUDIT AND CONTRACT AUDIT ACTIVITIES
2nd Quarter - FY17

Highlights

During the 2nd quarter, Internal Audit (IA) completed 5 construction labor burden reviews, 1 consultant preliminary review and 5 incurred cost audits. A change order pricing analysis and a vendor review were also completed. An audit of the Wright Express Retail Fuel Card Program was performed to determine if current controls over fuel purchases and invoice payments are adequate and comply with current policies and procedures. General management advisory services included sole source award analysis, labor rates on professional services contracts and assistance in contract negotiations.

Status of Recommendations

There were 25 recommendations made in FY17 and 14 of these have been closed year to date. An additional 11 recommendations were closed from prior fiscal year audits.

IA follows-up on open recommendations on a continuous basis. All open recommendations have target dates for implementation. When a recommendation has not been acted on within 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 (issue dates)	Audit Recommendations		
	Total	Closed	Open
Hardware Equipment Management Report (5/22/13)	36	32	4
Follow-Up Report on Fleet Services Activities (12/31/13)	17	13	4
8(m) Permit Fees (11/17/14)	6	4	2
Records Management (12/5/14)	8	6	2
Unmatched Receipts and Accruals (6/30/15)	10	5	5
Halon Inspections at DITP (9/30/15) & Caruso and DeLauri (12/31/15)	18	16	2
Warehouse Cycle Counts at DITP (11/5/15), Southboro (11/6/15) and Chelsea (12/4/15)	25	20	5
Security System Alarms (3/3/16)	3	1	2
AVL Tracking 2016 (5/6/16)	9	7	2
MIS Mobile Equipment Asset Tracking (9/26/16)	12	11	1
Wright Express (WEX) Fuel Card Purchases (11/16/16)	13	3	10
Total Recommendations	157	118	39

Cost Savings

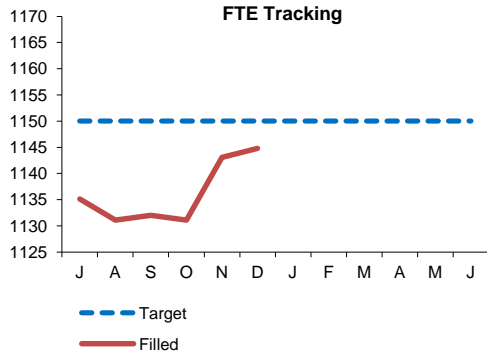
IA's target is to achieve at least \$1 million in cost savings each year. Cost savings vary each year based upon many factors. In some cases, cost savings for one year may be the result of work in prior years.

Cost Savings	FY13	FY14	FY15	FY16	FY17 (2Q)	TOTAL
Consultants	\$587,314	\$294,225	\$87,605	\$88,312	\$93,349	\$1,150,805
Contractors & Vendors	\$2,153,688	\$415,931	\$1,146,742	\$1,772,422	\$2,141,609	\$7,630,392
Internal Audits	\$391,083	\$923,370	\$543,471	\$220,929	\$109,452	\$2,188,305
Total	\$3,132,085	\$1,663,526	\$1,777,818	\$2,081,663	\$2,344,410	\$10,969,502

OTHER MANAGEMENT

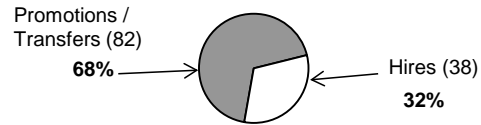
Workforce Management

2nd Quarter - FY17



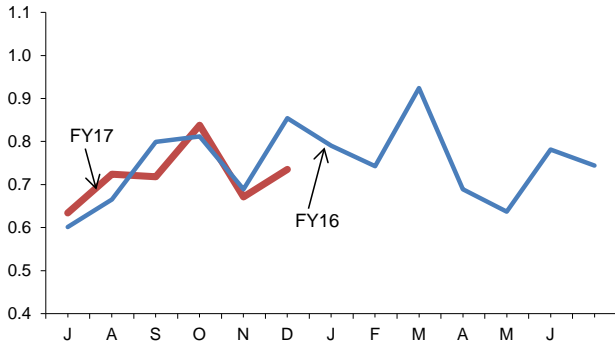
FY17 Target for FTE's = 1150
 FTE's as of Dec 2016 = 1144.8

Positions Filled by Hires/Promotions
 FY17-YTD



	Pr/Trns	Hires	Total
FY14	111 (69%)	51 (31%)	162
FY15	133 (67%)	65 (33%)	198
FY16	99 (62%)	60 (38%)	159
FY17	82 (68%)	38 (32%)	120

Average Monthly Sick Leave Usage
 Per Employee



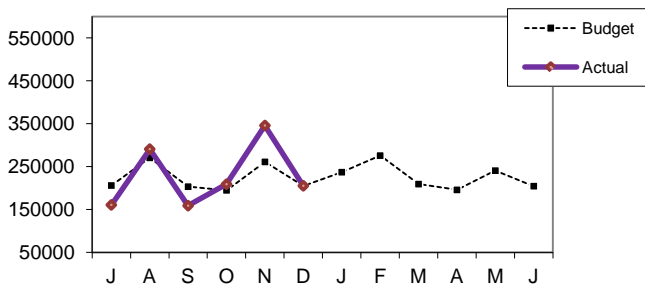
Average monthly sick leave for the 2nd Quarter of FY17 decreased as compared to the 2nd Quarter of FY16 (9.42 to 8.98 days)

In Q2 of FY17, the average quarterly sick leave usage decreased 4.7% from the same time last year.

	Number of Employees	YTD	Annualized Total	Annual FMLA %	FY16
Admin	140	3.76	7.51	13.9%	8.29
Aff. Action	5	2.91	5.83	0.0%	8.05
Executive	5	9.07	18.13	57.4%	10.97
Finance	35	4.27	8.54	32.5%	9.70
Int. Audit	7	2.84	5.69	69.1%	4.44
Law	16	4.62	9.25	5.9%	11.41
OEP	8	3.10	6.20	57.1%	6.62
Operations	930	4.42	8.83	18.6%	9.06
Pub. Affs.	14	3.54	7.08	9.7%	9.16
MWRA Avg	1160	4.32	8.64	18.9%	8.99

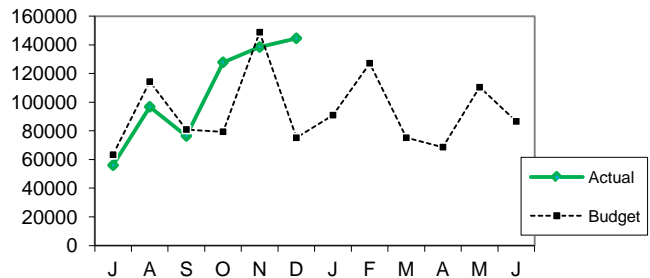
Percent of sick leave usage for FY17, attributable to Family and Medical Leave Act (FMLA) is 18.9% .

Field Operations
 Current Month Overtime \$



Total Overtime for Field Operations for The Second Quarter of 2016 was \$769,290 which is \$109k over budget. Emergency overtime was \$290k, which was (\$9k) under budget. Rain events totaled \$147, emergency maintenance was \$42k, emergency operations was \$27k, and snow removal was \$15k. Coverage overtime was \$147k, which was \$25k over budget, reflecting the shift coverage requirements for the quarter. Planned overtime was \$332k or \$83k over budget. Spending for the quarter includes maintenance off-hours work at \$117k, maintenance work completion at \$36k, Planned operations at \$30k, half-plant at Carroll at \$40k. YTD, FOD has spent \$1,371,643 on overtime which is \$30k over budget.

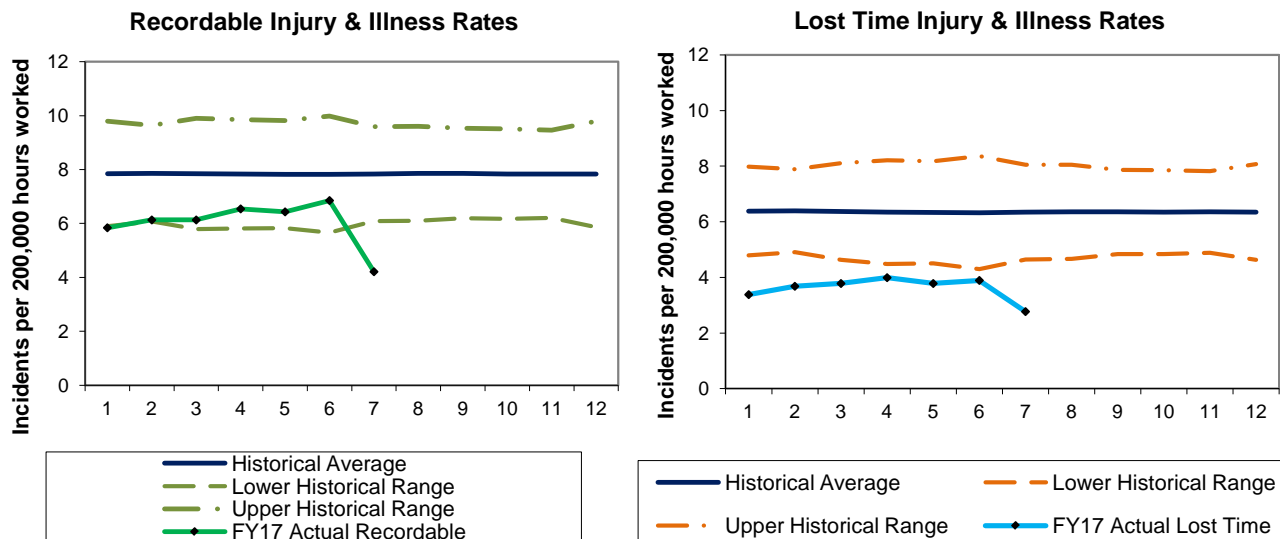
Deer Island Treatment Plant
 Current Month Overtime \$



Total overtime for Deer Island for the second quarter of FY17 \$410K, which was \$107K over budget. A combination of planned/unplanned overtime which was \$155K over budget mainly due to maintenance and operations activities involving the Eversource cable outage and HVAC work during the power plant outage, and higher shift coverage overtime, \$43K over budget, due to several vacant operator positions. This is offset in part by, less than anticipated storm coverage overtime, (\$91K) or (1,756) fewer hours. YTD, Deer Island has spent \$640,098 on overtime which is \$78K over budget.

Workplace Safety

2nd Quarter - FY17



1 "Recordable" incidents are all work-related injuries and illnesses which result in death, loss of consciousness, restriction of work or motion, transfer to another job, or require medical treatment beyond first aid.

2 "Lost-time" incidents, a subset of the recordable incidents, are only those incidents resulting in any days away from work, days of restricted work activity or both - beyond the first day of injury or onset of illness.

3 The "Historical Average" is computed using the actual MWRA monthly incident rates for FY99 through FY14. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively. FY15 actual incident rates can be expected to fall within this historical range.

Workers Compensation Claims Highlights - 2nd Quarter FY17

	New	Closed	Open Claims
Lost Time	4	9	60
Medical Only	23	16	23
Report Only	5	9	
	New		YTD Light Duty Returns
Regular Duty Returns	8		8
Light Duty Returns	2		5

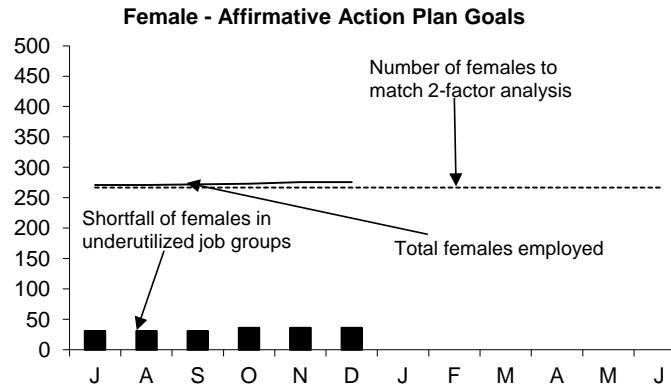
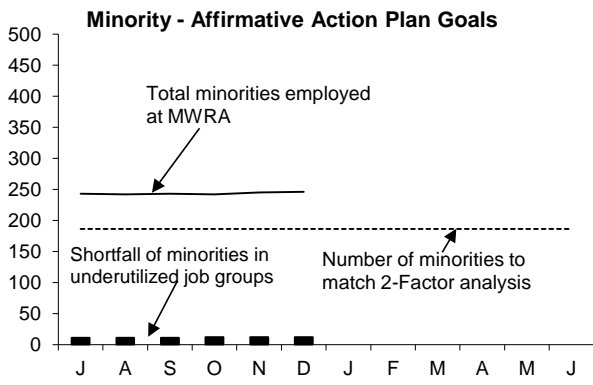
Highlights/Comments:

- **Light Duty Returns**
 - October**
 - November** Two employees Returned to Light Duty
 - December**
- **Regular Duty returns**
 - October**
 - November** One employee returned to regular duty from IA
 - December**

Note: Claims may initially be counted in one category and changed to another category at a later date. Examples include a medical treatment only claim (no lost time from work) but the employee may require surgery at a later date resulting in the claim becoming a lost time claim. At that time we would only count the claim as opened but not as a new claim.

*Report only claims are closed the month they are filed.

MWRA Job Group Representation
2nd Quarter - FY17



Highlights:

At the end of Q2 FY17, 4 job groups or a total of 12 positions are underutilized by minorities as compared to 11 job groups or a total of 44 positions at the end of Q2 FY16; for females 9 job groups or a total of 36 positions are underutilized by females as compared to 10 job groups or a total of 43 positions at the end of Q2FY16. During Q2, 6 minority and 6 female were hired. During this same period 3 minorities and 4 female terminated.

Underutilized Job Groups - Workforce Representation

Job Group	Employees as of 12/31/2016	Minorities as of 12/31/2016	Achievement Level	Minority Over or Under Underutilized	Females As of 12/31/2016	Achievement Level	Female Over or Under Underutilized
Administrator A	21	2	2	0	6	6	0
Administrator B	22	1	3	-2	2	6	-4
Clerical A	36	13	5	8	31	32	-1
Clerical B	29	7	7	0	11	15	-4
Engineer A	83	20	14	6	15	12	3
Engineer B	57	17	11	6	12	7	5
Craft A	111	17	14	3	0	7	-7
Craft B	142	29	17	12	4	4	0
Laborer	69	19	16	3	5	3	2
Management A	99	13	16	-3	36	25	11
Management B	48	10	4	6	11	12	-1
Operator A	67	4	10	-6	1	9	-8
Operator B	63	11	1	10	3	1	2
Professional A	34	5	6	-1	22	14	8
Professional B	163	46	35	11	83	67	16
Para Professional	60	18	12	6	28	32	-4
Technical A	51	13	10	3	5	10	-5
Technical B	6	1	1	0	0	2	-2
Total	1161	246	184	74/-12	275	264	47/-36

AACU Candidate Referrals for Underutilized Positions

Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions/ Transfers	AACU Ref. External	Position Status
Craft B	HVAC Technician	1	Int	0	2	Promo = WM
Clerical B	Messenger/Courier	1	Int/Ext	0	2	NH = WF
Engineer B	Staff Engineer	1	Int/Ext	1	1	Trans = WM
Laborers	Buildings & Grounds Worker	3	Int/Ext	0	0	(3)NH = WM
Laborers	OMC Laborer	3	Int/Ext	1	1	Promo = WM
Management B	Asset Control Supervisor	1	Int	1	0	Promo = WM
Operator A	Research Vessel Operator	1	Int/Ext	0	0	NH = WM
Operator B	Operator	2	Int	1	0	Promo = BM & WM
Professional A	Lab Supervisor	1	Int	1	0	Promo = WM
Professional B	Chemist I	2	Int	1	0	Trans & Promo = WF
Professional B	Senior Laboratory Technician	3	Int/Ext	0	0	(2)NH = WF & Rehire = WM
Professional B	Chemist I	2	Int	2	0	Promo = BF & WF
Professional B	Chemist II	1	Int/Ext	0	0	Promo = WF
Professional B	Sr Financial Analyst	1	Int	1	0	Promo = WM
Professional B	Network Administrator III	1	Int/Ext	0	0	NH = HM
Professional B	Security Services Administrator	1	Int/Ext	0	0	NH = AF
Professional B	Systems Analyst Programmer II	1	Int/Ext	0	1	NH = WM
Professional B	Buyer	1	Int	1	0	Promo = BF
Technical A	Senior SCADA Technician	1	Int	1	0	Promo = WM
Technical A	Communication and Control	1	Int	1	0	Promo = WM

MBE/WBE Expenditures

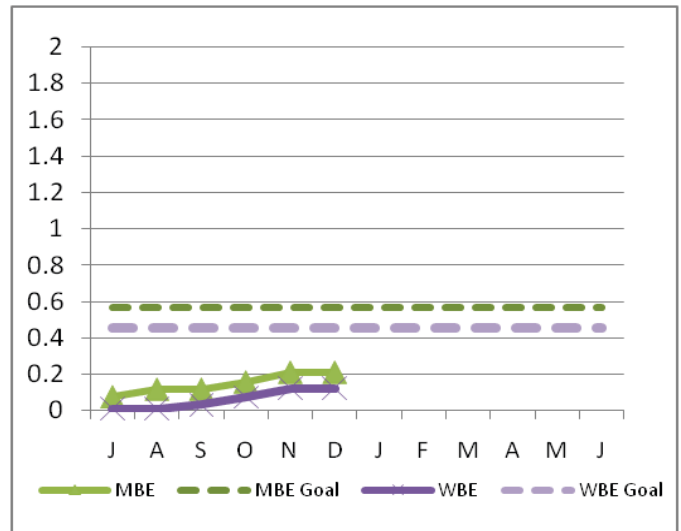
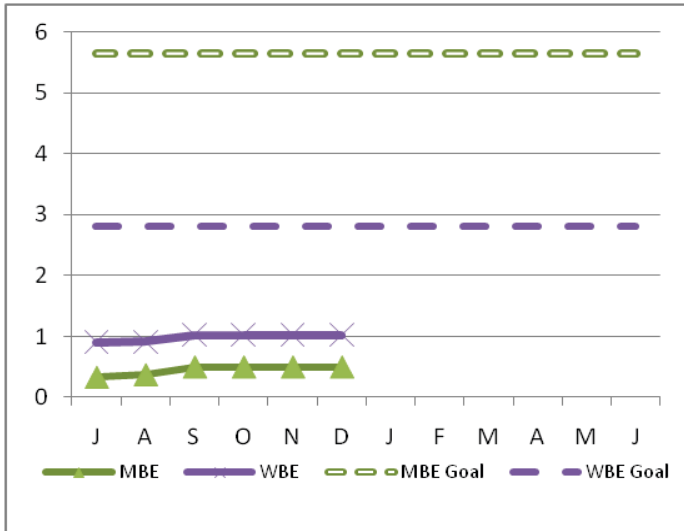
2nd Quarter - FY17

MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. The goals for FY17 are based on 85% of the total construction and 75% of the total professional projected spending for the year. Certain projects have been excluded from the goals as they have no MBE/WBE spending goals.

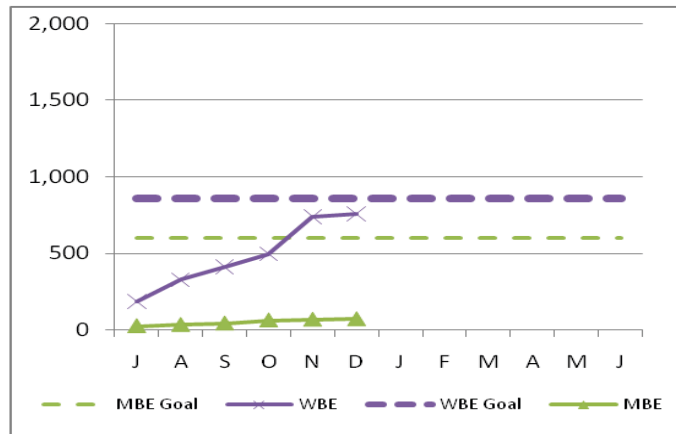
MBE/WBE percentages are the results from a 2002 Availability Analysis, and MassDEP's Availability Analysis. As a result of the Availability Analyses, the category of Non-Professional Services is included in Goods/Services. Consistent with contractor reporting requirements, MBE/WBE expenditure data is available through December.

Construction

Professional Services



Goods/Services



FY17 spending and percentage of goals achieved, as well as FY16 performance are as follows:

MBE			
FY17 YTD		FY16	
Amount	Percent	Amount	Percent
502,903	8.9%	1,805,604	37.9%
211,030	37.3%	828,841	55.3%
71,125	11.8%	255,324	40.6%
785,058	11.5%	2,889,769	41.9%

WBE			
FY17 YTD		FY16	
Amount	Percent	Amount	Percent
1,021,956	36.3%	1,114,916	47.1%
121,443	26.7%	314,752	26.1%
756,877	88.5%	1,124,374	160.7%
1,900,276	46.1%	2,554,042	59.8%

Construction
Prof Svcs
Goods/Svcs
Totals

FY16 MBE/WBE dollar totals do not include MBE and WBE payments to prime contractors and consultants.

**FY17 CEB Expenses through
2nd Quarter – FY17**

	December 2016 Year-to-Date					
	Period 6 YTD Budget	Period 6 YTD Actual	Period 6 YTD Variance	%	FY17 Approved	% Expended
EXPENSES						
WAGES AND SALARIES	\$ 47,811,157	\$ 46,048,316	\$ (1,762,841)	-3.7%	\$ 101,588,897	45.3%
OVERTIME	2,081,423	2,183,804	102,381	4.9%	4,192,676	52.1%
FRINGE BENEFITS	10,004,307	9,689,604	(314,703)	-3.1%	20,242,323	47.9%
WORKERS' COMPENSATION	1,172,095	2,772,812	(399,283)	-34.1%	2,344,190	33.0%
CHEMICALS	4,790,837	5,096,351	305,514	6.4%	9,110,407	55.9%
ENERGY AND UTILITIES	10,081,280	9,603,644	(477,636)	-4.7%	21,541,077	44.6%
MAINTENANCE	14,795,053	15,508,221	713,168	4.8%	31,080,642	49.9%
TRAINING AND MEETINGS	214,812	173,218	(41,594)	-19.4%	435,481	39.8%
PROFESSIONAL SERVICES	3,145,892	3,088,463	(57,429)	-1.8%	6,531,939	47.3%
OTHER MATERIALS	1,901,902	2,179,799	277,897	14.6%	6,219,630	35.0%
OTHER SERVICES	11,652,788	10,985,916	(666,872)	-5.7%	22,974,855	47.8%
TOTAL DIRECT EXPENSES	\$ 107,651,546	\$ 105,330,148	\$ (2,321,399)	-2.2%	\$ 226,262,117	46.6%
INDIRECT EXPENSES						
INSURANCE	\$ 998,949	\$ 933,479	\$ (65,470)	-6.6%	\$ 1,997,898	46.7%
WATERSHED/PILOT	12,145,634	12,090,314	(55,320)	-0.5%	24,291,268	49.8%
BECO PAYMENT	386,930	391,314	4,384	1.1%	773,859	50.6%
MITIGATION	779,000	771,400	(7,600)	-1.0%	1,558,000	49.5%
ADDITIONS TO RESERVES	(83,871)	(83,871)	-	0.0%	(167,742)	50.0%
RETIREMENT FUND	4,632,624	4,632,624	-	0.0%	4,632,624	100.0%
POST EMPLOYEE BENEFITS	-	-	-	---	4,876,050	0.0%
TOTAL INDIRECT EXPENSES	\$ 18,859,266	\$ 18,735,260	\$ (124,006)	-0.7%	\$ 37,961,957	49.4%
DEBT SERVICE						
STATE REVOLVING FUND	\$ 40,168,407	\$ 39,760,853	\$ (407,554)	-1.0%	\$ 86,971,915	45.7%
SENIOR DEBT	131,424,056	130,896,551	(527,505)	-0.4%	268,472,556	48.8%
CORP FUND	-	-	-	---	-	---
DEBT SERVICE ASSISTANCE	-	-	-	---	(873,804)	---
CURRENT REVENUE/CAPITAL	6,100,000	6,100,000	-	0.0%	12,200,000	50.0%
SUBORDINATE MWRA DEBT	32,313,338	32,313,338	-	0.0%	69,997,992	46.2%
LOCAL WATER PIPELINE CP	2,074,621	2,074,621	-	0.0%	4,149,242	50.0%
CAPITAL LEASE	1,608,530	1,608,530	-	0.0%	3,217,060	50.0%
DEBT PREPAYMENT	-	-	-	---	10,994,960	0.0%
VARIABLE DEBT	-	(5,501,286)	(5,501,286)	---	-	0.0%
DEFEASANCE ACCOUNT	-	-	-	---	-	---
TOTAL DEBT SERVICE	\$ 213,688,952	\$ 207,252,607	\$ (6,436,346)	-3.0%	\$ 455,129,921	45.5%
TOTAL EXPENSES	\$ 340,199,764	\$ 331,318,015	\$ (8,881,751)	-2.6%	\$ 719,353,995	46.1%
REVENUE & INCOME						
RATE REVENUE	\$ 347,439,250	\$ 347,439,250	\$ -	0.0%	\$ 694,878,500	50.0%
OTHER USER CHARGES	4,197,247	4,255,408	58,161	1.4%	8,752,834	48.6%
OTHER REVENUE	4,316,123	5,865,957	1,549,834	35.9%	6,519,171	90.0%
RATE STABILIZATION	-	-	-	---	-	---
INVESTMENT INCOME	4,508,943	4,239,123	(269,820)	-6.0%	9,473,490	44.7%
TOTAL REVENUE & INCOME	\$ 360,461,563	\$ 361,799,738	\$ 1,338,175	0.4%	\$ 719,623,995	50.3%

As of December 2016, total expenses are \$331.3 million, \$8.9 million or 2.6% lower than budget and total revenue was \$361.8 million, \$1.3 million or 0.4% over budget, for a net variance of \$10.2 million.

Expenses –

Direct Expenses are \$105.3 million, \$2.3 million or 2.2% below budget.

- **Wages & Salaries** are under budget by \$1.8 million or 3.7%. At the end of December, the average Full Time Equivalent (FTE) positions were 1,137, 13 positions fewer than the 1,150 budgeted FTE's.
- **Maintenance** is over budget by \$713k or 4.8%. Services are overspent by \$849k and Materials are underspent by \$135k. Over spending includes \$410k for Nut Island fire repairs and the remaining variance reflects timing of work budgeted in later months.
- **Other Services** are under budget by \$667k or 5.7% mainly due to lower Sludge Pelletization expense of \$264k reflecting lower year to date quantities, lower Space Lease/Rentals of \$195k due to lower escrow payments at the Chelsea Facility for taxes and insurance, and lower pass through maintenance cost at the Charlestown Navy Yard Facility, and \$128k for Grit and Screenings disposal services primarily due to lower quantities.
- **Utilities** are under budget by \$478k or 4.7% mainly due to electricity costs of \$268k, primarily for favorable pricing at DITP and lower diesel fuel cost of \$183k.
- **Workers' Compensation** is underspent by \$399k or 34.1% due to lower than budgeted Medical Payments of \$226k and Compensation Payments of \$193k, due mostly to reserve adjustments.
- **Chemicals** expenses were higher than budgeted by \$306k or 6.4% primarily for Activated Carbon of \$165,000 at DITP due to increased odor control via carbon as opposed to wet scrubbers; and Sodium Hypochlorite of \$76k.
- **Other Materials** are over budget by \$278k or 14.6% mainly due to timing of vehicle purchases of \$245k, Other Materials of \$58k, and Computer Hardware of \$59k, partially offset by lower Vehicle Expenses of \$135k reflecting lower than budgeted gasoline pricing and computer software expense \$56k.
- **Fringe Benefits** are under budget by \$315k or 3.1% mainly due to fewer than budgeted participants.

Indirect Expenses are \$18.7 million, \$124k under budget or 0.7%.

Debt Service Expenses totaled \$207.3 million, which was \$6.4 million or 3.0% under budget due mainly to lower than budgeted variable interest rates of \$5.5 million and savings from the August 2016 refunding.

Revenue and Income –

Total Revenue / Income for December is \$361.8 million, \$1.3 million higher than budget as non-rate revenue including \$1.3 million for water sales related to the summer drought, \$299k for a favorable class action settlement related to derivatives, surplus equipment sales \$186k, and TRAC penalty \$115k, were partially offset by lower investment Income of \$270k due to unexpected calls and lower reinvestment rates.

Cost of Debt 2nd Quarter – FY17

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.

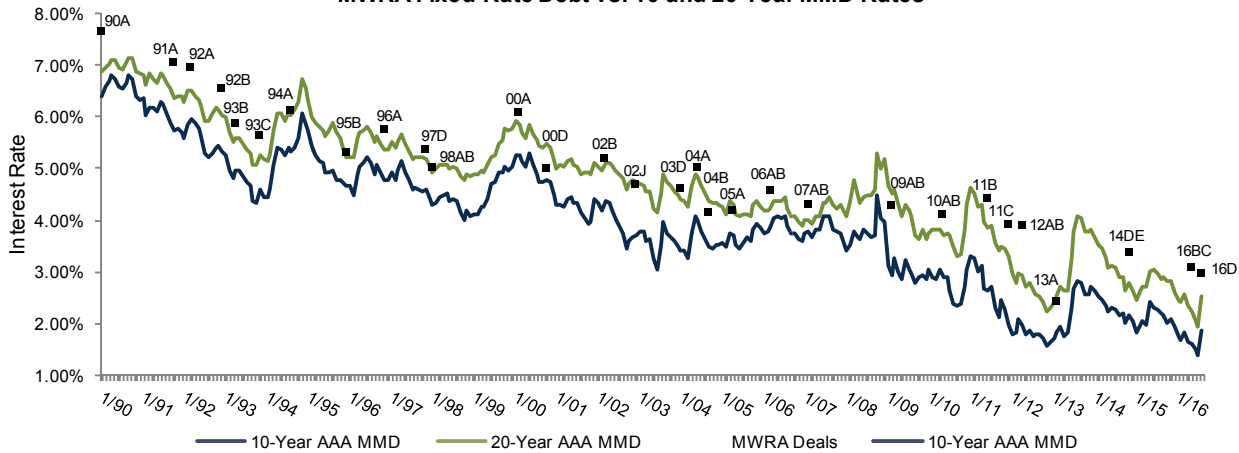
Average Cost of MWRA Debt FYTD

Fixed Debt (\$3,621)	3.95%
Variable Debt (\$481.2)	1.00%
SRF Debt (\$980.1)	1.38%
 Weighted Average Debt Cost (\$5,083)	 3.17%

Most Recent Senior Fixed Debt Issue August 2016

2016 Series D (\$104.3) 2.99%

MWRA Fixed Rate Debt vs. 10 and 20 Year MMD Rates

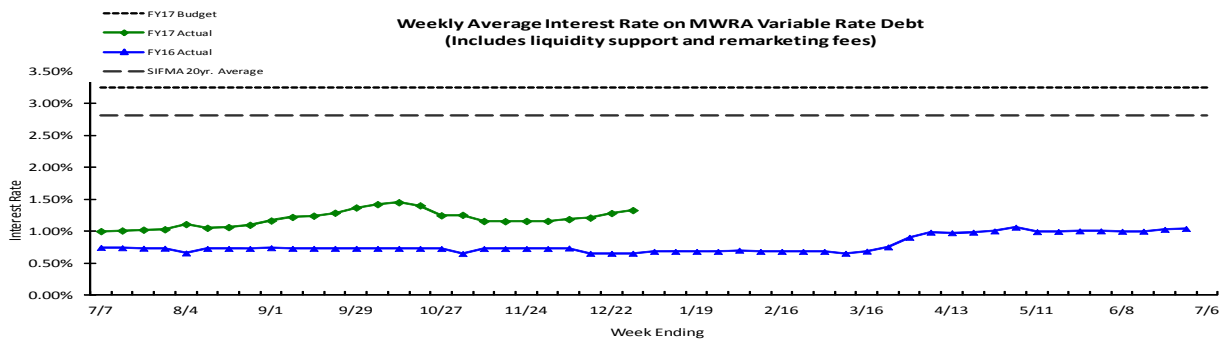


Bond Deal	1992A	1992B	1993B	1993C	1994A	1995B	1996A	1997D	1998AB	2000A	2000D	2002B	2002J	2003D
Rate	6.98%	6.58%	5.89%	5.66%	6.15%	5.34%	5.78%	5.40%	5.04%	6.11%	5.03%	5.23%	4.71%	4.64%
Avg Life	22.6 yrs	6.3 yrs	19.8 yrs	19.1 yrs	19.5 yrs	20.5 yrs	19.5 yrs	21.6 yrs	24.4 yrs	26.3 yrs	9.8 yrs	19.9 yrs	19.6 yrs	18.4 yrs

Bond Deal	2004A	2004B	2005A	2006AB	2007AB	2009AB	2010AB	2011B	2011C	2012AB	2013A	2014DEF	2016BC	2016D
Rate	5.05%	4.17%	4.22%	4.61%	4.34%	4.32%	4.14%	4.45%	3.95%	3.93%	2.45%	3.41%	3.12%	2.99%
Avg Life	19.6 yrs	13.5 yrs	18.4 yrs	25.9 yrs	24.4 yrs	15.4 yrs	16.4 yrs	18.8 yrs	16.5 yrs	17.9 yrs	9.9 yrs	15.1 yrs	17.4 yrs	18.8 yrs

Weekly Average Variable Interest Rates vs. Budget

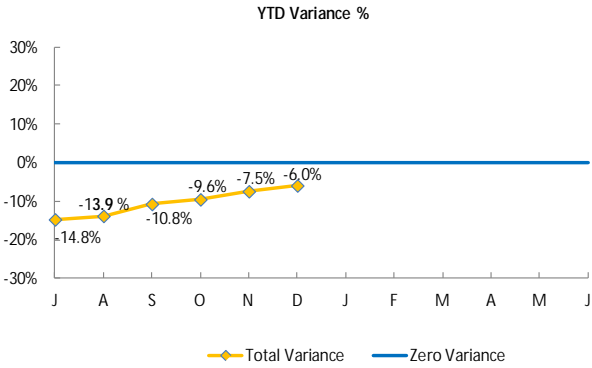
MWRA currently has eleven variable rate debt issues with \$903 million outstanding, excluding commercial paper. Of the eleven outstanding series, five have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In December, SIFMA rates ranged from a high of 0.73% to a low of 0.56% for the month. 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

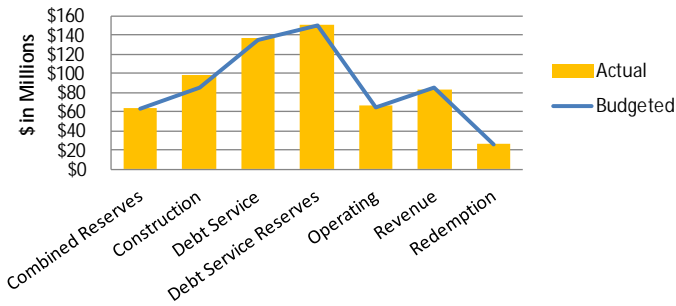
2nd Quarter – FY17

Year To Date

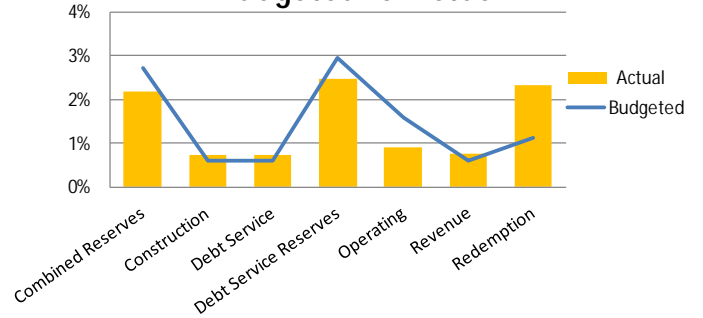


	YTD BUDGET VARIANCE			
	(\$'000)			
	BALANCES IMPACT	RATES IMPACT	TOTAL	%
Combined Reserves	(\$0)	(\$165)	(166)	-19.8%
Construction	\$38	\$63	101	40.6%
Debt Service	\$7	\$94	102	26.0%
Debt Service Reserves	\$14	(\$339)	(325)	-15.2%
Operating	\$20	(\$220)	(200)	-40.2%
Revenue	(\$5)	\$71	65	26.2%
Redemption	(\$0)	\$154	154	106.3%
Total Variance	\$73	(\$343)	(\$270)	-6.0%

YTD Average Balances Budgeted vs. Actual

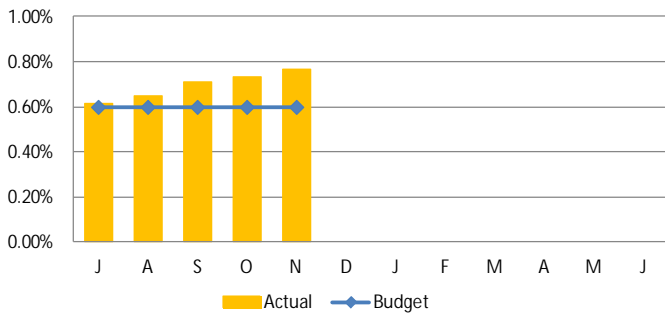


YTD Average Interest Rate Budgeted vs. Actual

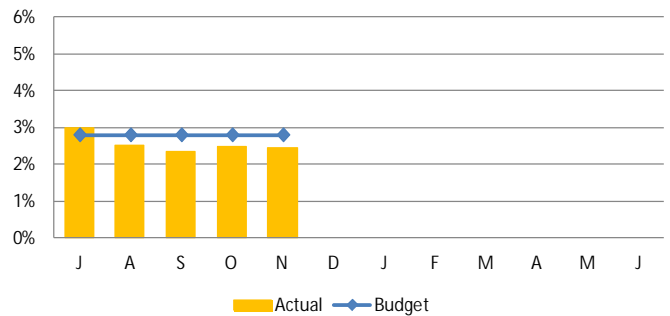


Monthly

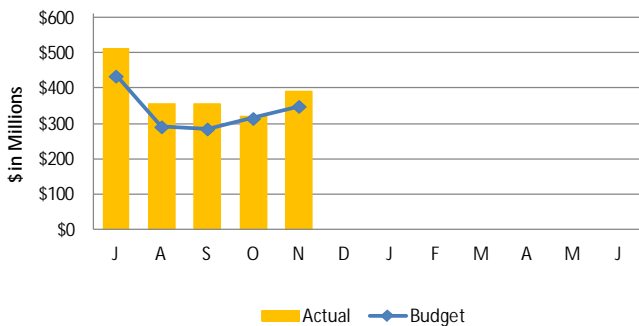
Short - Term Interest Rates



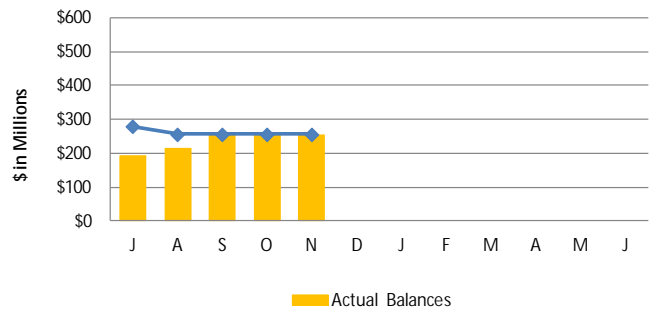
Long - Term Interest Rates



Short-Term Average Balances

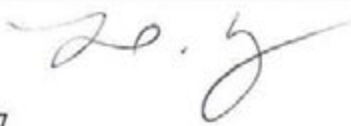


Long-Term Average Balances



STAFF SUMMARY



TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: February 15, 2017
SUBJECT: Delegated Authority Report – January 2017



COMMITTEE: Administration, Finance & Audit

INFORMATION
 VOTE

Barbara Aylward, Administrator A & F
Preparer/Title


Michele S. Gillen
Director, Administration

Carolyn Francisco Murphy
Director of Procurement

RECOMMENDATION:

For information only. Attached is a listing of actions taken by the Executive Director under delegated authority for the period January 1 – 31, 2017.

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.

PURCHASING DELEGATED AUTHORITY ITEMS JANUARY 1 - 31, 2017

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-1.	01/03/17	BOLTED MANHOLE FRAME AND COVER ASSEMBLIES AWARD OF SOLE SOURCE PURCHASE ORDER FOR THE PURCHASE OF 150 BOLTED MANHOLE FRAME AND COVER ASSEMBLIES.			E.J. USA, INC.	\$80,345.00
P-2.	01/03/17	UPGRADE THE MWRA WIRELESS INFRASTRUCTURE AWARD OF A PURCHASE ORDER UNDER STATE BLANKET CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE UPGRADE OF THE MWRA WIRELESS INFRASTRUCTURE.	WRA-4284Q		INTEGRATION PARTNERS, INC.	\$89,984.16
P-3.	01/09/17	ONE NEW TRAILER MOUNTED 1,000 KW GENERATOR AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE PURCHASE OF ONE NEW TRAILER MOUNTED 1,000 KW GENERATOR.	WRA-4296		SOUTHWORTH-MILTON, INC.	\$409,000.00
P-4.	01/11/17	SUPPLY AND DELIVERY OF CATION AND ANION EXCHANGE RESIN TO THE DEER ISLAND TREATMENT PLANT AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF CATION AND ANION EXCHANGE RESIN FOR THE THERMAL POWER PLANT AT THE DEER ISLAND TREATMENT PLANT.	WRA-4304Q		ML BALL CO., INC.	\$36,393.00
P-5.	01/20/17	THREE LASER ALIGNMENT TOOLS AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THREE LASER ALIGNMENT MACHINES FOR DEER ISLAND MAINTENANCE OF ROTATING MACHINERY.	WRA-4319Q		VIBRALIGN, INC.	\$45,000.00
P-6.	01/20/17	DIVER ASSISTED SUCTION HARVESTING SERVICES FOR CONTROL OF INVASIVE AQUATIC PLANTS AT WACHUSETT RESERVOIR STILLWATER BASIN AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR DIVER ASSISTED SUCTION HARVESTING OF INVASIVE AQUATIC PLANTS AT STILLWATER BASIN WACHUSETT RESERVOIR FOR THE 2017 SEASON.	WRA-4317		AE COMMERCIAL DIVING SERVICES	\$192,096.00
P-7.	01/20/17	SUPPLY AND DELIVERY OF RIP RAP DEER ISLAND TREATMENT PLANT AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE PURCHASE OF 6,400 TONS OF RIP RAP FOR THE DEER ISLAND TREATMENT PLANT.	WRA-4297		LORUSSO CORPORATION	\$227,200.00
P-8.	01/27/17	SUPPLY AND DELIVERY OF CARBON DIOXIDE TO THE JOHN J. CARROLL WATER TREATMENT PLANT APPROVE AMENDMENT NO. 1 TO INCREASE CARBON DIOXIDE BY 200 TONS TO ENSURE AN UNINTERRUPTED SUPPLY THROUGH THE END OF THE CONTRACT TERM.	WRA-4173	1	PRAXAIR, INC.	\$33,994.00
P-9.	01/27/17	DIVER ASSISTED SUCTION HARVESTING OF INVASIVE AQUATIC PLANTS AT WACHUSETT RESERVOIR LOWER BASINS AND COVES AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR DIVER ASSISTED SUCTION HARVESTING OF INVASIVE AQUATIC PLANTS AT WACHUSETT RESERVOIR LOWER BASINS AND COVES FOR THE 2017 SEASON.	WRA-4316		AE COMMERCIAL DIVING SERVICES	\$87,000.00
P-10.	01/30/17	APC SMART UPSs AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE PURCHASE OF 61 APC SMART UNINTERRUPTIBLE POWER SUPPLIES (UPSs) AT VARIOUS LOCATIONS.	WRA-4322Q		COMPUTER HUT OF NEW ENGLAND, INC.	\$36,914.15
P-11	12/23/16	SUPPLY AND DELIVERY OF ULTRA-LOW-SULFUR #2 DIESEL FUEL FOR DEER ISLAND TREATMENT PLANT AWARD OF CRITICAL NEED PURCHASE ORDER FOR THE SUPPLY AND DELIVERY OF UP TO 405,000 GALLONS OF FUEL FOR CONTINUOUS AND RELIABLE OPERATION OF CTGS DURING EVERSOURCE CROSS HARBOR CABLE OPERATIONS.			GLOBAL MONTELLO GROUP CORP.	\$705,996.00

CONSTRUCTION/PROFESSIONAL SERVICES DELEGATED AUTHORITY ITEMS JANUARY 1 - 31, 2017

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMEND/CO	COMPANY	FINANCIAL IMPACT
C-1.	01/04/17	COMBUSTION TURBINE GENERATOR MAINTENANCE DEER ISLAND TREATMENT PLANT INCREASE ESTIMATED NON-EMERGENCY MAINTENANCE AND REPAIR SERVICES HOURS; EXTEND CONTRACT TERM BY 100 CALENDAR DAYS FROM DECEMBER 20, 2016 TO MARCH 30, 2017.	5524	1	O'CONNOR CONSTRUCTORS, INC.	\$55,056.00
C-2.	01/06/17	WORKERS' COMPENSATION LEGAL SERVICES AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR LEGAL REPRESENTATION SERVICES BEFORE THE MASSACHUSETTS DEPARTMENT OF INDUSTRIAL ACCIDENTS FOR WORKERS' COMPENSATION CLAIMS FOR THE PERIOD OF JANUARY 5, 2017 TO DECEMBER 31, 2017.	A611	AWARD	TENTINDO KENDALL CANNIFF & KEEFE, LLP	\$95,000.00
C-3.	01/11/17	HATCHERY PIPELINE AND HYDROELECTRIC PROJECT REDESIGN, FURNISH AND INSTALL ADDITIONAL STAGING AND WELDING RELATED TO THE SWIFT RIVER BRIDGE CROSSING; FURNISH AND INSTALL EPOXY COATED REINFORCING STEEL.	7235	1	WATERLINE INDUSTRIES CORP.	\$29,557.45
C-4.	01/27/17	ADAMS STREET CROSSING/CATTLE PASS BRIDGE REMOVAL DELETE THE REQUIREMENT TO MANAGE, TRANSPORT AND DISPOSE OF CONTAMINATED SOIL AT AN ASPHALT BATCH PLANT; DECREASE ESTIMATED QUANTITIES FOR ADDITIONAL TRAFFIC CONTROL, BRAINTREE ELECTRICAL LIGHT DEPARTMENT ON-SITE SAFETY PERSONNEL; BRAINTREE FIRE DEPARTMENT FIRE WATCH.	FRR29	3	LM HEAVY CIVIL CONSTRUCTION, LLC	(\$104,610.66)
C-5.	01/27/17	DEER ISLAND TREATMENT PLANT CLARIFIER REHABILITATION PHASE II DESIGN/ESDC INCREASE LEVEL OF EFFORT FOR THE INSTALLATION OF DENSITY CURRENT BAFFLES AT THE EFFLUENT LAUNDERS IN SECONDARY BATTERY A AND B AND REPLACEMENT OF CORRODED CONDUIT AND CONDUCTORS THAT PROVIDE POWER AND CONTROLS TO THE FLIGHT DRIVE SYSTEM IN PRIMARY BATTERY A, B C AND D.	7394	1	CDM SMITH, INC.	\$43,116.00
C-6.	01/30/17	OAKDALE POWER LINES EASEMENT TREE REMOVAL AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE OAKDALE POWER LINES EASEMENT TREE REMOVAL FOR A TERM OF 90 CALENDAR DAYS.	OP-343	AWARD	ANDERSON TIMBER HARVESTING, INC.	\$58,750.00

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: February 15, 2017
SUBJECT: FY17 Financial Update and Summary



COMMITTEE: Administration, Finance & Audit


Kathy Song, Budget Director


Louise L. Miller, Budget Manager

Preparer/Title

INFORMATION

VOTE


Thomas J. Durkin

Director, Finance

RECOMMENDATION:

For information only. This staff summary provides the financial update and variance highlights through January 2017, comparing actual spending and revenue to the FY17 budget.

DISCUSSION:

Starting this month the Authority is continuing the practice of setting aside favorable Capital Finance variances into the Defeasance Account with the intention of using these funds to defease debt and provide rate relief in future years. Targeted defeasances are a critical component of the Authority's multi-year rate management strategy. As such, in January the year-to-date debt related savings of \$7.5 million was transferred to the Defeasance Account. This favorable variance is the result of the continued low variable rate environment, the lower than planned SRF funding, the August 2016 refunding, and the timing of new money borrowing.

Staff already identified candidates for year-end defeasance and plans to include the impact of the FY17 defeasance in the FY18 planning estimates.

Without the transfer of the \$7.5 million in debt service savings to the Defeasance Account, the total year-to-date budget variance through January would have been \$16.0 million. After the transfer, the net variance is \$8.5 million, with total expenses lower than budgeted by \$3.3 million or 2.5% and total revenues higher than budgeted by \$5.2 million or 1.3%.

Should these favorable trends continue, the year-end favorable variance is projected at \$33.7 million, of which \$22.3 million is related to debt service. Beyond debt service savings, staff project a surplus of approximately \$11.4 million at year-end of which \$3.9 million would be from lower direct expenses, \$472,000 from lower indirect expenses, and \$7.0 million from greater than budgeted revenues, mostly related to additional unbudgeted water revenue due to the drought.

As the year progresses and more actual spending information becomes available, staff will continue to refine the year-end projections and update the Board accordingly.

FY17 Current Expense Budget

The expense variances through January 2017 by major budget category were:

- Net Lower Direct Expenses of \$3.2 million or 2.5%. Spending is lower for Wages and Salaries, Other Services, Worker's Compensation, Utilities, Fringe Benefits, Professional Services, and Training & Meetings. This is offset by higher spending for Maintenance, Other Materials, Chemicals, and Overtime.
- Lower Indirect Expenses of \$123,000 or 0.6% for lower Insurance costs and Watershed reimbursements.

FY17 Budget and FY17 Actual Year to Date Variance by Expenditure Category

	FY17 Budget YTD	FY17 Actual YTD	\$ Variance	% Variance
Direct Expenses	\$125.1	\$122.0	-\$3.2	-2.5%
Indirect Expenses	\$21.0	\$20.9	-\$0.1	-0.6%
Debt Service	\$248.4	\$248.4	\$0.0	0.0%
Total	\$394.6	\$391.3	-\$3.3	-0.8%

Totals may not add due to rounding

Total Revenues of \$421.8 million were \$5.2 million over budget reflecting primarily \$4.8 million receipt for water usage related to the ongoing drought and \$299,000 for a class action lawsuit settlement for derivative agreements, offset by lower Investment Income of \$250,000 for unanticipated calls re-invested at lower rates.

Please refer to Attachment 1 for a more detailed comparison by line item of the budget variances for the year to date.

Eversource Cross-Harbor Cable Location Project

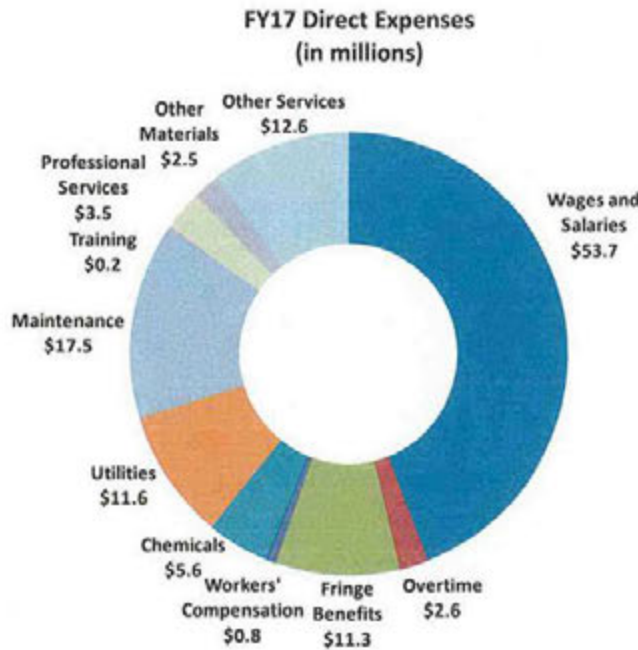
As reported in December, staff are tracking MWRA's costs for the Eversource Cross-Harbor Cable (HEEC cable) location work which started on November 2, 2016. The investigatory work of the project was defined as two phases (Phase 1A and Phase 1B), followed by remediation work Phase 2 to take place in the summer of 2017 (FY18). Phase 1A and 1B, which consisted of locating the cable in the Reserved Channel and of excavating four test pits over the path of the cable to verify the precise location and depth was completed on January 23, 2017.

During this work the HEEC cable was de-energized and MWRA was required to utilize its Combustion Turbine Generators (CTGs) to power the Deer Island wastewater treatment plant. By doing so, MWRA incurred significant costs related to diesel fuel use, third party labor, and significant overtime. These costs are partially offset by the avoided cost of energy and

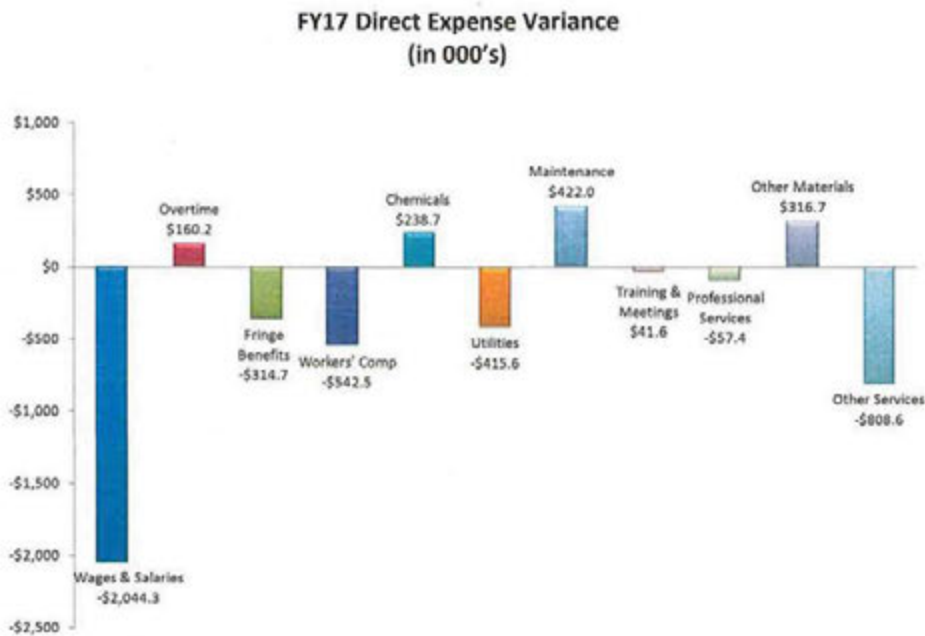
distribution charges. The total MWRA estimated net unbudgeted costs for the investigatory Phases are in the range of \$1.0-\$1.2 million.

Direct Expenses

Year-to-date direct expenses totaled \$122.0 million, \$3.2 million or 2.5% less than budgeted.



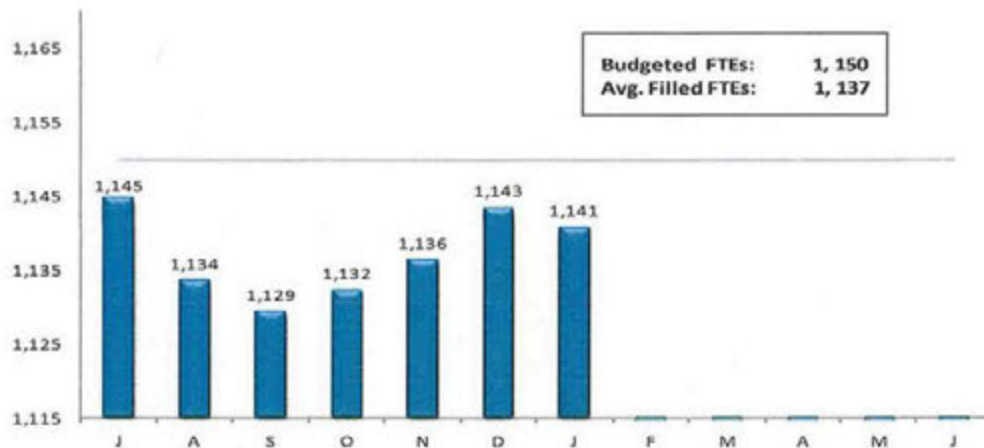
Less than budgeted spending in Wages and Salaries, Other Services, Worker's Compensation, Utilities, Fringe Benefits, Professional Services, and Training & Meetings was offset by higher spending for Maintenance, Other Materials, Chemicals, and Overtime.



Wages and Salaries

Wages and Salaries were underspent by \$2.0 million or 3.7% mainly as a result of lower average Full Time Equivalent positions (FTEs) than budgeted, the timing of backfilling vacant positions, and the salary mix differential between staff retiring and new hires. The average FTEs through December were 1,137, which was 13 positions lower than the 1,150 FTEs budgeted.

FY17 MWRA Full Time Equivalent (FTE) Position Trend



Other Services

Other Services spending was lower than budget by \$809,000 or 6.0% due to lower spending of \$338,000 for sludge pelletization services because of lower year to date quantities; \$215,000 for Space/Lease Rentals due to lower escrow payments at the Chelsea Facility for taxes and insurance, and lower pass-through maintenance cost at the Charlestown Navy Yard Facility; \$149,000 for Grit and Screenings disposal services primarily due to lower quantities; and \$122,000 for Other Services primarily for timing of community lead testing assistance.

Workers' Compensation

Workers' Compensation expenses were lower than budget by \$543,000 or 39.7% based on lower medical expenses of \$292,000 and compensation payments of \$267,000. In January, actual spending was \$143,000 under budget. The majority of lower expenses are due to reserve decreases earlier in the fiscal year associated with a few cases.

Utilities

Utilities were underspent by \$416,000 or 3.4%, due to lower electricity costs of \$909,000, primarily for lower than budgeted pricing at the Deer Island Treatment Plant and being offline during the HEEC cable location work. This is offset by higher net spending of \$473,000 for Diesel Fuel. Deer Island had two deliveries of diesel fuel during FY17 versus one budgeted, resulting in \$673,000 overspending. However, Field Operations was underspent by \$200,000

related to lower pricing. The average price of fuel at Deer Island was \$1.66/gal versus the budgeted \$2.10/gal. The second delivery at Deer Island is related to running the CTGs during the HEEC cable location work.

Fringe Benefits

Fringe Benefits spending was lower than budgeted by \$356,000 or 3.0% primarily for lower Health Insurance costs of \$310,000 due to fewer employees and retirees than budgeted participating, and the change between family vs. individual plans.

Professional Services

Professional Services were underspent by \$98,000 or 2.7% for Lab and Testing Analysis in EnQual – Wastewater for harbor monitoring; Other Services primarily in Finance for finance/investment services; Engineering Services primarily in Office of Emergency Preparedness for Dam Emergency Action Plan updates; Resident Inspection for DASH (invasives) quality assurance diver services. This is offset by higher spending for Legal Services in Law.

Maintenance

Maintenance expenses were higher than budgeted by \$422,000 or 2.5%. The Nut Island fire incident accounts for \$410,000 of the variance.

Other Materials

Other Materials were higher than budget by \$317,000 or 14.8% mainly due to timing of Vehicle Purchases of \$266,000; Lab & Testing Supplies of \$68,000; Other Materials of \$61,000 primarily for gravel at the Clinton Landfill; and Health & Safety of \$56,000. This is offset by lower Vehicle Expenses of \$157,000 due to lower than budgeted fuel prices and Computer Software of \$58,000.

Chemicals

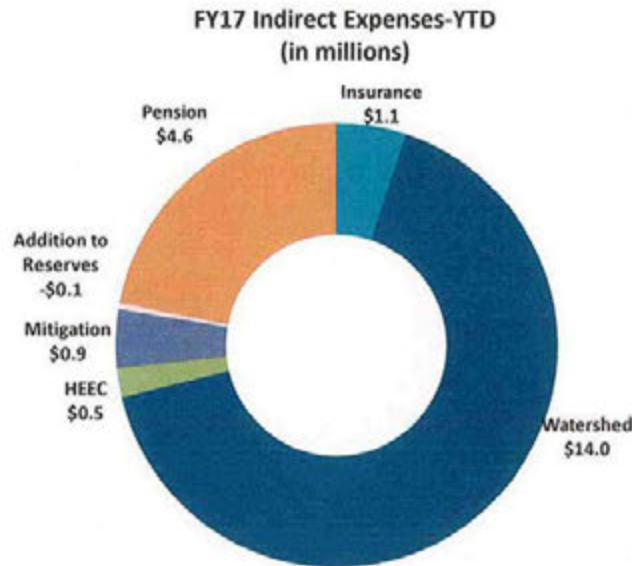
Chemicals expenses were higher than budgeted by \$239,000 or 4.4% primarily for Activated Carbon of \$165,000 at Deer Island Treatment Plant and Sodium Hypochlorite of \$108,000 due to higher than budgeted price for new contracts.

Overtime

Overtime was higher than budget by \$160,000 or 6.6% mainly at the Deer Island Treatment Plant for the HEEC cable location project by Eversource. This is offset by lower than expected spending in Wastewater Operations related to the North Main Pump Station project at Deer Island.

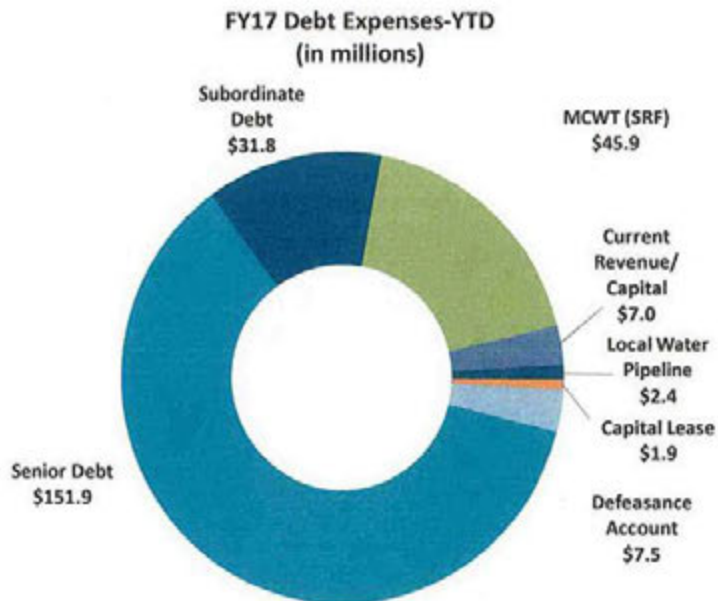
Indirect Expenses

For the fiscal year to date, Indirect Expenses totaled \$20.9 million, \$123,000 or 0.6% lower than budget, related to lower than budgeted insurance claims and an over-accrual in FY16 for Watershed management operating expenses.



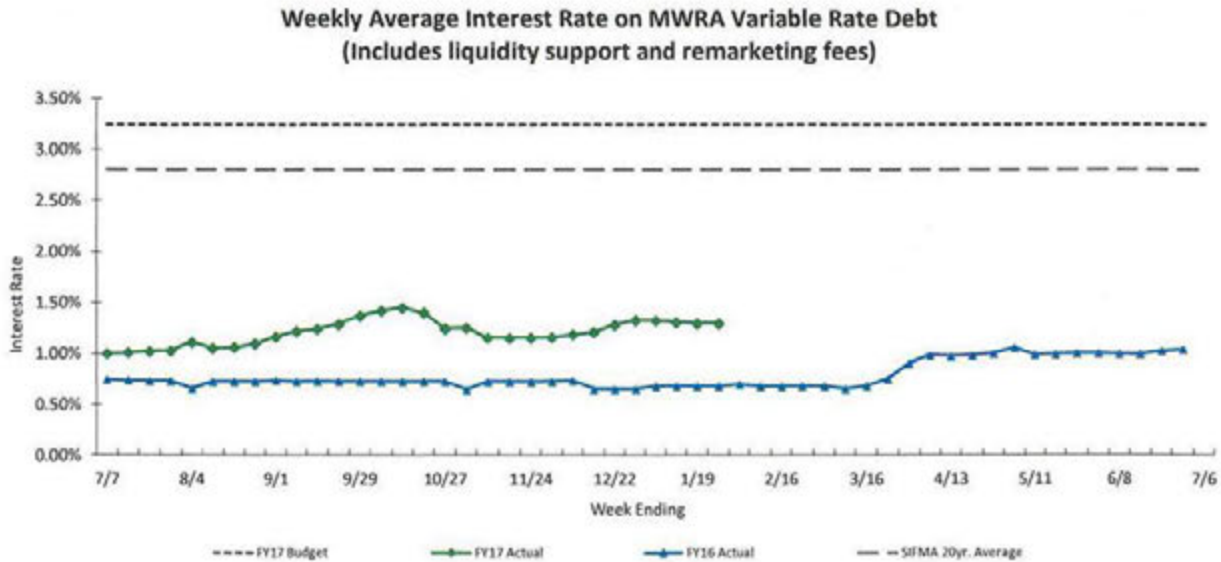
Debt Service

Debt Service expenses include the principal and interest payment for fixed debt, the variable subordinate debt, the Massachusetts Clean Water Trust (SRF) obligation, the commercial paper program for the local water pipeline projects, current revenue for capital, and the Chelsea facility lease payment.



Debt Service expenses for the fiscal year totaled \$248.4 million, which is at the budgeted level after the transfer of \$7.5 million of a favorable year-to-date variance to the Defeasance Account. The short-term rates related variance is \$6.3 million year-to-date. Additionally, the Authority recognized \$1.2 million in year-to-date underspending that is the result of the favorable impact of the August 2016 defeasance, lower SRF funding than planned, and not borrowing senior debt scheduled for November.

The graph below reflects the FY17 actual variable rate trend by week over the past year and the FY17 Budget.



Revenue & Income

Total Revenue for the fiscal year totaled \$421.8 million, \$5.2 million or 1.3% higher than budget.

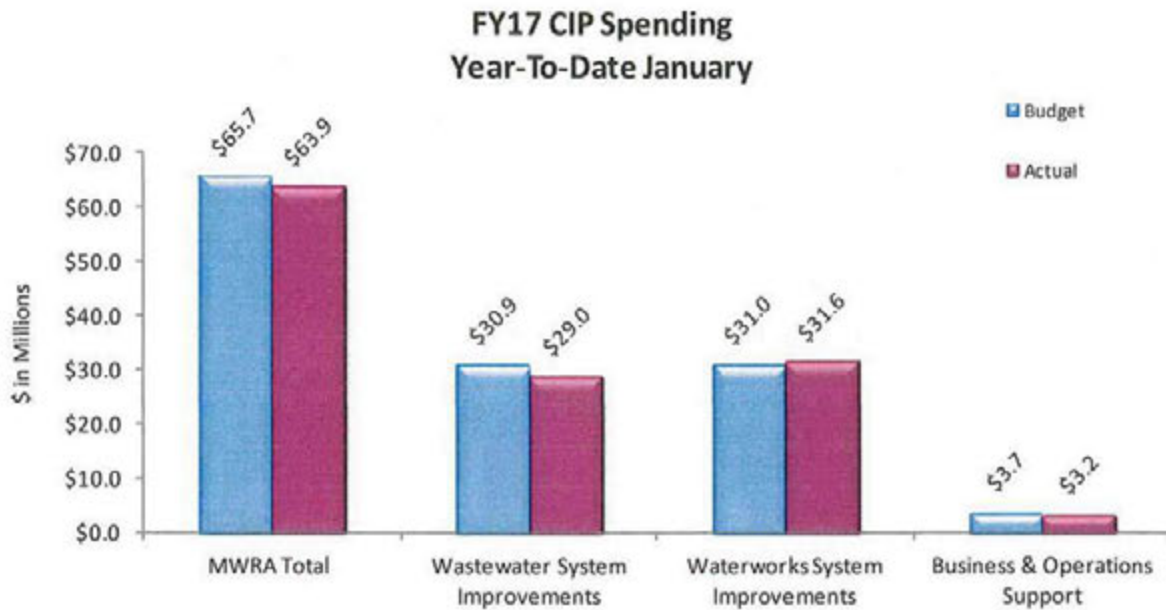
The higher than budgeted non-rate Revenue was driven by the receipt of \$4.8 million for water usage related to the summer drought and \$299,000 for a class action lawsuit settlement for derivative agreements. This is offset by lower Investment Income of \$250,000 for unanticipated calls re-invested at lower rates.

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

FY17 Capital Improvement Program

Capital expenditures in FY17 total \$63.9 million through the end of January, \$1.8 million or 2.7% less 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, capital spending totaled \$55.2 million, \$2.3 million or 4.4% over budget.



Totals may not add due to rounding

Overall underspending reflects the underspending of Wastewater Improvements and Business and Operations Support of \$1.9 million and \$0.5 million, respectively, partially offset by Waterworks Improvements overspending of \$0.6 million.

Also being presented to the Board of Directors at this meeting is the FY17 mid-year Capital Improvement Program Spending Report, which includes details for the first six months of the fiscal year.

FY17 Year-to-date Spending By Program:

\$ in Millions	Budget	Actuals	\$ Var.	% Var.
Wastewater System Improvements				
Interception & Pumping	11.7	8.6	(3.1)	-26.5%
Treatment	8.5	13.9	5.4	63.7%
Residuals	0.0	0.0	0.0	N/A
CSO	5.9	3.1	(2.9)	-48.1%
Other	4.8	3.5	(1.3)	-27.5%
Total Wastewater System Improvements	\$30.9	\$29.0	-\$1.9	-6.1%
Waterworks System Improvements				
Drinking Water Quality Improvements	1.3	0.6	(0.7)	-54.3%
Transmission	15.4	14.1	(1.3)	-8.2%
Distribution & Pumping	8.4	11.3	2.9	34.4%
Other	5.9	5.6	(0.3)	N/A
Total Waterworks System Improvements	\$31.0	\$31.6	\$0.6	1.9%
Business & Operations Support	\$3.7	\$3.2	(\$0.5)	-13.2%
Total MWRA	\$65.7	\$63.9	-\$1.8	-2.7%

Totals may not add due to rounding

The main reasons for the project spending variances in order of magnitude are:

Wastewater Treatment: Net overspending of \$5.4 million

- \$1.8 million for Deer Island Primary/Secondary Clarifier Rehabilitation legal settlement.
- \$1.5 million for Deer Island Power System Improvements, \$0.9 million for Winthrop Terminal Facility Variable Frequency Drives Replacement Construction, \$0.7 million for Clinton Phosphorus Reduction Construction, and \$0.5 million for Digester Sludge Pump Phase 2 due to contractor progress.
- \$0.6 million for Electrical Upgrades Construction 4 due to timing of final work.
- The overspending was partially offset by underspending on Personnel Dock Rehabilitation due to later than anticipated award and less than anticipated design expenditures for Clarifier Rehabilitation Phase 2.

Interception & Pumping: Net underspending of \$3.1 million

- \$2.8 million for Chelsea Creek Headworks Upgrades Construction and Engineering Services for a later Notice-to-Proceed date than budgeted.
- \$1.6 million on Caruso Pump Station Improvements Construction due to construction delays.
- The underspending was partially offset by \$1.3 million for Alewife Brook Pump Station Rehabilitation Construction due to contractor progress and \$0.5 million for Chelsea Screenhouse Upgrades due to timing of final work.

Water Distribution and Pumping: Net overspending of \$2.9 million

- \$1.5 million for Section 89/29 Redundancy Phase 1B Construction, and \$0.7 million for Southern Extra High Section 111 Construction 1 due to contractor progress.

- \$1.3 million for Spot Pond Supply Mains due to additional work for Webster Avenue Bridge Pipe Rehabilitation.
- The overspending was partially offset by underspending on Weston Aqueduct Supply Mains Section 36/C/S9-A11 Valve of \$0.4 million due to anticipated balancing credit change order for underspent items.

Combined Sewer Overflow: Net underspending of \$2.9 million

- \$2.8 million for Cambridge Sewer Separation Project due to less than anticipated progress on final restoration work.

Other Wastewater: Net underspending of \$1.3 million

- \$1.3 million for Community Infiltration/Inflow (I/I) due to less than anticipated requests for loans and grants.

Waterworks Transmission: Net underspending of \$1.3 million

- \$0.8 million for Cosgrove Tunnel Redundancy primarily due to less than anticipated progress with the guard shack for the Wachusett Aqueduct Pump Station Construction.
- \$0.6 million caused by less than anticipated progress for the Rosemary Brook Siphon Building Repairs due to delays in obtaining specialty items for work.
- The underspending was partially offset by overspending of \$0.6 million for the Hatchery Pipeline Construction due to contractor progress.

Drinking Water Quality Improvements: Net underspending of \$0.7 million

- Spot Pond Covered Storage Facility Design/Build of \$0.4 million due to construction delays, and \$0.2 million for Southborough Water Quality Upgrades pending a final balancing change order.

Waterworks Other: Net underspending of \$0.3 million

- \$0.4 million for Beacon Street Line Repair due to construction issues with vaults at access pits.

Construction Fund Balance

The construction fund balance was at \$54.4 million as of the end of January. Commercial Paper availability was at \$222.0 million to fund construction projects.

Attachment 1–Variance Summary January 2017

Attachment 2 – Current Expense Variance Explanations

Attachment 3 – Capital Improvement Program Variance Explanations

Attachment 4 – FY17 Budget vs. FY17 Projections

ATTACHMENT 1

	January 2017					
	Year-to-Date					
	Period 7 YTD Budget	Period 7 YTD Actual	Period 7 YTD Variance	%	FY17 Approved	% Expended
EXPENSES						
WAGES AND SALARIES	\$ 55,752,807	\$ 53,708,550	\$ (2,044,257)	-3.7%	\$ 101,588,897	52.9%
OVERTIME	2,438,135	2,598,381	160,246	6.6%	4,192,676	62.0%
FRINGE BENEFITS	11,680,411	11,324,825	(355,586)	-3.0%	20,242,323	55.9%
WORKERS' COMPENSATION	1,367,444	824,935	(542,509)	-39.7%	2,344,190	35.2%
CHEMICALS	5,409,177	5,647,910	238,733	4.4%	9,110,407	62.0%
ENERGY AND UTILITIES	12,058,689	11,643,093	(415,596)	-3.4%	21,541,077	54.1%
MAINTENANCE	17,083,083	17,505,044	421,961	2.5%	31,080,642	56.3%
TRAINING AND MEETINGS	238,205	207,881	(30,324)	-12.7%	435,481	47.7%
PROFESSIONAL SERVICES	3,557,829	3,460,041	(97,788)	-2.7%	6,531,939	53.0%
OTHER MATERIALS	2,146,133	2,462,843	316,710	14.8%	6,219,630	39.6%
OTHER SERVICES	13,417,563	12,608,966	(808,597)	-6.0%	22,974,855	54.9%
TOTAL DIRECT EXPENSES	\$ 125,149,476	\$ 121,992,469	\$ (3,157,006)	-2.5%	\$ 226,262,117	53.9%
INDIRECT EXPENSES						
INSURANCE	\$ 1,152,633	\$ 1,082,748	\$ (69,885)	-6.1%	\$ 1,997,898	54.2%
WATERSHED/PILOT	14,014,193	13,958,873	(55,320)	-0.4%	24,291,268	57.5%
BECO PAYMENT	446,457	457,638	11,181	2.5%	773,859	59.1%
MITIGATION	898,846	890,077	(8,769)	-1.0%	1,558,000	57.1%
ADDITIONS TO RESERVES	(96,774)	(96,774)	-	0.0%	(167,742)	57.7%
RETIREMENT FUND	4,632,624	4,632,624	-	0.0%	4,632,624	100.0%
POST EMPLOYEE BENEFITS	-	-	-	---	4,876,050	0.0%
TOTAL INDIRECT EXPENSES	\$ 21,047,979	\$ 20,925,186	\$ (122,793)	-0.6%	\$ 37,961,957	55.1%
DEBT SERVICE						
STATE REVOLVING FUND	\$ 46,466,596	\$ 45,877,907	\$ (588,689)	-1.3%	\$ 86,971,915	52.8%
SENIOR DEBT	152,508,441	151,879,892	(628,549)	-0.4%	268,472,556	56.6%
CORD FUND	-	-	-	---	-	---
DEBT SERVICE ASSISTANCE	-	-	-	---	(873,804)	---
CURRENT REVENUE/CAPITAL	7,038,462	7,038,462	-	0.0%	12,200,000	57.7%
SUBORDINATE MWRA DEBT	38,115,855	38,115,855	-	0.0%	69,997,992	54.5%
LOCAL WATER PIPELINE CP	2,393,793	2,393,793	-	0.0%	4,149,242	57.7%
CAPITAL LEASE	1,855,997	1,855,997	-	0.0%	3,217,060	57.7%
DEBT PREPAYMENT	-	-	-	---	10,994,960	0.0%
VARIABLE DEBT	-	(6,274,402)	(6,274,402)	---	-	0.0%
DEFEASANCE ACCOUNT	-	7,491,641	7,491,641	---	-	0.0%
TOTAL DEBT SERVICE	\$ 248,379,143	\$ 248,379,143	\$ -	0.0%	\$ 455,129,921	54.6%
TOTAL EXPENSES	\$ 394,576,598	\$ 391,296,798	\$ (3,279,799)	-0.8%	\$ 719,353,995	54.4%
REVENUE & INCOME						
RATE REVENUE	\$ 400,891,443	\$ 400,891,443	\$ -	0.0%	\$ 694,878,500	57.7%
OTHER USER CHARGES	5,858,328	5,915,636	57,308	1.0%	8,752,834	67.6%
OTHER REVENUE	4,583,335	10,000,942	5,417,607	118.2%	6,519,171	153.4%
RATE STABILIZATION	-	-	-	---	-	---
INVESTMENT INCOME	5,221,619	4,971,523	(250,096)	-4.8%	9,473,490	52.5%
TOTAL REVENUE & INCOME	\$ 416,554,725	\$ 421,779,543	\$ 5,224,819	1.3%	\$ 719,623,995	58.6%

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY17 Budget YTD January	FY17 Actuals YTD January	FY17 YTD Actual vs. FY17 Budget		Explanations
			\$	%	
Direct Expenses					
Wages & Salaries	55,752,807	53,708,550	(2,044,257)	-3.7%	Underspending is mainly the result of lower average Full Time Equivalent positions (FTEs) than budgeted, the timing of backfilling vacant positions and the salary mix differential between staff retiring and new hires. The average FTEs for the fiscal year was 1,137, which was 13 positions lower than the 1,150 FTEs budgeted.
Overtime	2,438,135	2,598,381	160,246	6.6%	Higher spending at DITP related to the HEEC cable relocation project and Metro Maintenance due to off-hour maintenance work. This is offset by lower spending in Wastewater Operations due to lower than anticipated OT associated with the NMPS work at DITP.
Fringe Benefits	11,680,411	11,324,825	(355,586)	-3.0%	Lower than budget mainly due to Health Insurance of \$310,000, due to fewer than budgeted participation and the change between family and individual plans.
Worker's Compensation	1,367,444	824,935	(542,509)	-39.7%	Underspending due to lower medical payments of \$292,000 and compensation payments of \$267,000. In January actual spending was \$143,000 under budget. It is important to note that spending on this line item can change significantly depending on future claims and severity of cases.
Chemicals	5,409,177	5,647,910	238,733	4.4%	Overspending on Activated Carbon of \$165,000 at DITP for odor control; Sodium Hypochlorite of \$108,000 (higher than budgeted cost for new contracts); Polymer of \$38,000; Other Oxidizers of \$25,000; Carbon Dioxide of \$24,000; Hydrogen Peroxide of \$21,000; and Ferric Chloride of \$20,000. This is offset by lower spending on Liquid Oxygen of \$43,000; Soda Ash of \$36,000; Hydrofluosilic Acid of \$26,000; Other of \$22,000; and Aqua Ammonia of \$19,000.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY17 Budget YTD January	FY17 Actuals YTD January	FY17 YTD Actual vs. FY17 Budget		Explanations
			\$	%	
Utilities	12,058,689	11,643,093	(415,596)	-3.4%	Underspending in Electricity of \$909,000 primarily at DITP due to lower prices and being off grid during the HEEC cable location work; and Wastewater facilities partially for not using wet scrubbers at NI and lower flows throughout the system. This is offset by higher spending at waterworks facilities attributed to pumping more water to Bedford and higher than anticipated demand charges at the new Spot Pond Pump Station. Diesel Fuel is overspent by \$473,000 primarily related to running the CTGs at DITP during the HEEC cable location work. This is offset by lower spending in Wastewater Operations. Water is overspent by \$81,000 at DITP and the Carroll Plant. Natural Gas is underspent \$49,000 primarily at the Carroll Plant and the Chelsea Facility.
Maintenance	17,083,083	17,505,044	421,961	2.5%	Services were overspent by \$868,000 and Materials were underspent by \$446,000. Nut Island fire remediation efforts have costs \$410,000 in FY17 for both materials and services.
Training & Meetings	238,205	207,881	(30,324)	-12.7%	Underspending primarily in Fleet Services due to timing.
Professional Services	3,557,829	3,460,041	(97,788)	-2.7%	Lower spending on Lab & Testing Analysis of \$96,000 primarily in EnQual - Wastewater; Other Services of \$95,000 primarily in Treasury and HR; and Engineering of \$48,000 in SCADA. This is offset by higher spending for Legal Services of \$167,000 in the Law Department.
Other Materials	2,146,133	2,462,843	316,710	14.8%	Higher than budget spending for Vehicle Purchases/ Replacements of \$266,000 due to timing; Lab & Testing of \$68,000 in Operations; Other Materials of \$61,000 primarily for gravel for Clinton landfill; Health/Safety of \$34,000; and Computer Hardware of \$34,000 in MIS. This is offset by underspending of \$157,000 in Vehicle Expenses primarily due to lower fuel prices and \$58,000 for Computer Software in Operations - SCADA.
Other Services	13,417,563	12,608,966	(808,597)	-6.0%	Lower than budgeted Sludge Pelletization of \$2338,000 due to lower year to date quantities; Space Lease/Rentals of \$214,000 due to lower escrow for Chelsea taxes and insurance, and pass through maintenance cost at CNY; Grit and Screenings of \$149,000 due to lower quantities; and Other Services of \$122,000 primarily for timing of community lead testing assistance.
Total Direct Expenses	125,149,476	121,992,469	(3,157,007)	-2.5%	

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY17 Budget YTD January	FY17 Actuals YTD January	FY17 YTD Actual vs. FY17 Budget		Explanations
			\$	%	
Indirect Expenses					
Insurance	1,152,633	1,082,748	(69,885)	-6.1%	Lower Claims than budgeted of \$78,000 offset by higher premiums of \$8,000.
Watershed/PILOT	14,014,193	13,958,873	(55,320)	-0.4%	Lower Watershed Reimbursement due to over accrual at the end of FY16 as compared to actual invoiced paid.
HEEC Payment	446,457	457,638	11,181	2.5%	
Mitigation	898,846	890,077	(8,769)	-1.0%	Actual inflation rate was 1.5% vs. 2.5% used for the budget.
Addition to Reserves	(96,774)	(96,774)	-	0.0%	
Pension Expense	4,632,624	4,632,624	-	0.0%	
Post Employee Benefits	-	-	-		
Total Indirect Expenses	21,047,979	20,925,186	(122,793)	-0.6%	
Debt Service					
Debt Service	248,379,143	248,379,143	-	0.0%	Through January staff have transferred \$7.5 million of a favorable YTD variance to the Defeasance Account. The short-term rates related variance is \$6.3 million lower YTD.
Debt Service Assistance	-	-	-		
Total Debt Service Expenses	248,379,143	248,379,143	-	0.0%	
Total Expenses	394,576,598	391,296,798	(3,279,800)	-0.8%	
Revenue & Income					
Rate Revenue	400,891,443	400,891,442	(1)	0.0%	
Other User Charges	5,858,328	5,915,636	57,308	1.0%	
Other Revenue	4,583,335	10,000,942	5,417,607	118.2%	\$4.8 M for sale of water due to the drought; \$299k for settlement of class action lawsuit for derivative agreements; \$195k from sale of surplus equipment; and \$116k TRAC penalty.
Rate Stabilization	-	-	-		
Investment Income	5,221,619	4,971,523	(250,096)	-4.8%	Investment Income is under budget for unanticipated calls re-invested at lower rates.
Total Revenue	416,554,725	421,779,543	5,224,818	1.3%	
Net Revenue in Excess of Expenses	21,978,127	30,482,745	8,504,618		

ATTACHMENT 3
Capital Improvement Program Variance Explanations
(000's)

	FY17 Budget YTD January	FY17 Actuals YTD January	YTD Actuals vs. Budget		Explanations
			\$	%	
Wastewater					
Interception & Pumping (I&P)	\$11,697	\$8,592	(\$3,105)	-26.5%	<u>Underspending</u> Chelsea Creek Headworks Upgrades Construction: \$2.8M (NTP shifted 3 months; contract is currently in submittals and Request For Information status) Caruso Pump Station Improvements Construction: \$1.6M (delayed installation of HVAC equipment due to unforeseen roof replacement) <u>Offset Overspending</u> Alewife Brook Pump Station Rehab Construction: \$1.3M (project progress) Chelsea Screenhouse Upgrades: \$0.5M (work scheduled for FY16 performed in FY17)
Treatment	\$8,462	\$13,855	\$5,393	63.7%	<u>Overspending</u> Primary & Secondary Clarifier Rehab - Construction: \$1.8M (Portion of \$2.65M settlement with contractor. Remainder was retainage payment.) Power System Improvements - Construction: \$1.5M (project progress) WTF VFD Replacement - Construction: \$0.9M (spending for bonds and insurances) Clinton Wastewater Treatment Plant Phosphorus Reduction - Construction: \$0.7M (project progress) Electrical Equipment Upgrades Construction 4: \$0.6M (work scheduled and budgeted for FY16 performed in FY17) Digested Sludge Pump Replacement - Phase 2: \$0.5M (project progress) <u>Offset Underspending</u> Other smaller projects totaling \$0.6M.
Residuals	\$0	\$0	\$0	-	
CSO	\$5,924	\$3,074	(\$2,850)	-48.1%	<u>Underspending</u> Cambridge Sewer Separation: \$2.8M (delay in work due to Huron Avenue water main replacement by the City of Cambridge that required a six month time extension) Reserved Channel Sewer Separation Design and Construction: \$0.4M (pending reconciliation of final costs; expected in June 2017)
Other Wastewater	\$4,846	\$3,513	(\$1,333)	-27.5%	I/I Local Financial Assistance: \$1.3M (less than anticipated requests for grants and loans)
Total Wastewater	\$30,929	\$29,034	(\$1,895)	-6.1%	

ATTACHMENT 3
Capital Improvement Program Variance Explanations
(000's)

	FY17 Budget YTD January	FY17 Actuals YTD January	YTD Actuals vs. Budget		Explanations
			\$	%	
Waterworks					
Drinking Water Quality Improvements	\$1,348	\$616	(\$732)	-54.3%	<u>Underspending</u> Spot Pond Storage Facility: \$0.4M (Microwave tower installed. Awaiting delivery and installation of communication shelter.) CP7 Existing Facilities: \$0.2M (pending balancing change order)
Transmission	\$15,354	\$14,098	(\$1,255)	-8.2%	<u>Underspending</u> Wachusett Aqueduct Pump Station: \$0.8M (pending redesign of work adjacent to City of Marlborough water pipe and progress less than anticipated at the pump station) Rosemary Brook Building Repair: \$0.7M (anticipated time extension due to additional restoration work) <u>Offset Overspending</u> Hatchery Pipeline construction: \$0.7M (project progress)
Distribution & Pumping	\$8,411	\$11,304	\$2,893	34.4%	<u>Overspending</u> Section 4 Webster Ave Bridge Pipe Rehab - Construction: \$1.4M (additional change order work based on redesign) NIH Section 89/29 Redundancy Phase 1B Construction: \$1.5M (project progress) SEH Redundancy Pipeline Section 111 Phase 1 Construction: \$0.7M (project progress) <u>Offset Underspending</u> Weston Aqueduct Supply Mains Section 36/C/S9 - A11 Valve: \$0.4M (anticipated credit change order for less than estimated quantities of rock and contaminated soil, and timing of valve installation work)
Other Waterworks	\$5,919	\$5,611	(\$308)	-5.2%	Beacon Street Line Repair - Construction: \$0.4M (delay due to redesign of vaults to accommodate existing trees.)
Total Waterworks	\$31,031	\$31,629	\$598	1.9%	

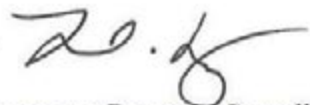
ATTACHMENT 3
Capital Improvement Program Variance Explanations
(000's)

	FY17 Budget YTD January	FY17 Actuals YTD January	YTD Actuals vs. Budget		Explanations
			\$	%	
Business & Operations Support					
Total Business & Operations Support	\$3,728	\$3,235	(\$493)	-13.2%	<u>Underspending</u> As-Needed Design: (\$0.9M) (less than budgeted use of these contracts) <u>Offset Overspending</u> Equipment Purchase: \$0.5M (timing of vehicle purchases)
Total MWRA	\$65,688	\$63,897	(\$1,791)	-2.7%	

ATTACHMENT 4

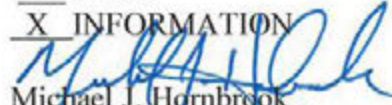
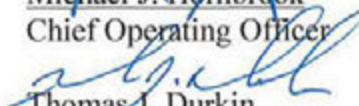
TOTAL MWRA	FY17 Budget	FY17 Projection	Change	
			FY17 Budget vs FY17 Projection	
			\$	%
EXPENSES				
WAGES AND SALARIES	\$ 101,858,897	\$ 98,693,997	\$ (3,164,900)	-3.1%
OVERTIME	4,192,676	4,353,199	160,523	3.8%
FRINGE BENEFITS	20,242,324	19,688,233	(554,091)	-2.7%
WORKERS' COMPENSATION	2,344,190	2,144,190	(200,000)	-8.5%
CHEMICALS	9,110,407	9,479,801	369,394	4.1%
ENERGY AND UTILITIES	21,541,078	20,825,402	(715,676)	-3.3%
MAINTENANCE	31,080,642	32,004,057	923,415	3.0%
TRAINING AND MEETINGS	435,481	414,086	(21,395)	-4.9%
PROFESSIONAL SERVICES	6,531,939	6,818,941	287,002	4.4%
OTHER MATERIALS	6,219,630	6,156,271	(63,359)	-1.0%
OTHER SERVICES	22,974,855	22,065,308	(909,547)	-4.0%
TOTAL DIRECT EXPENSES	\$ 226,532,117	\$ 222,643,485	\$ (3,888,632)	-1.7%
INSURANCE	\$ 1,997,898	\$ 1,932,428	(65,470)	-3.3%
WATERSHED/PILOT	24,291,268	23,900,159	(391,109)	-1.6%
HEEC PAYMENT	773,859	773,859	-	0.0%
MITIGATION	1,558,000	1,542,800	(15,200)	-1.0%
ADDITIONS TO RESERVES	(167,742)	(167,742)	-	0.0%
RETIREMENT FUND	3,132,624	3,132,624	-	0.0%
ADDITIONAL PENSION DEPOSIT	1,500,000	1,500,000	-	0.0%
POSTEMPLOYMENT BENEFITS	4,876,050	4,876,050	-	0.0%
TOTAL INDIRECT EXPENSES	\$ 37,961,957	\$ 37,490,178	\$ (471,779)	-1.2%
STATE REVOLVING FUND	\$ 86,971,915	\$ 82,906,636	(4,065,279)	-4.7%
SENIOR DEBT	268,472,557	263,027,504	(5,445,053)	-2.0%
SUBORDINATE DEBT	69,997,992	69,997,992	-	0.0%
LOCAL WATER PIPELINE CP	4,149,242	1,011,093	(3,138,149)	-75.6%
CURRENT REVENUE/CAPITAL	12,200,000	12,200,000	-	0.0%
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%
DEBT PREPAYMENT	10,994,960	10,994,960	-	
VARIABLE RATE SAVINGS	-	(9,643,716)	(9,643,716)	
DEFEASANCE ACCOUNT	-	22,292,195	22,292,195	
DEBT SERVICE ASSISTANCE	(873,804)	(873,804)	-	0.0%
TOTAL DEBT SERVICE	\$ 455,129,920	\$ 455,129,920	\$ -	0.0%
TOTAL EXPENSES	\$ 719,623,994	\$ 715,263,583	\$ (4,360,411)	-0.6%
REVENUE & INCOME				
RATE REVENUE	\$ 694,878,500	\$ 694,878,500	-	0.0%
OTHER USER CHARGES	8,752,834	8,752,834	-	0.0%
OTHER REVENUE	6,519,171	13,719,271	7,200,100	110.4%
RATE STABILIZATION	-	-	-	
INVESTMENT INCOME	9,473,490	9,309,490	(164,000)	-1.7%
TOTAL REVENUE & INCOME	\$ 719,623,996	\$ 726,660,095	\$ 7,036,100	1.0%
VARIANCE:		\$ (11,396,512)	\$ (11,396,512)	

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: February 15, 2017
SUBJECT: Fiscal Year 2017 Mid-Year Capital Improvement Program Spending Report

COMMITTEE: Administration, Finance & Audit


Kathy Soni, Budget Director
Louise Miller, Budget Manager
Preparer/Title

 VOTE
 X INFORMATION

Michael J. Hombrook
Chief Operating Officer

Thomas J. Durkin
Director, Finance

At the mid-point of each fiscal year, staff present the Board with a spending recap of the year-to-date Capital Improvement Program (CIP).

FY17 actual spending for the first half of the year is \$56.7 million compared to a budgeted amount of \$59.1 million which is \$2.4 million or 4.1% below budget. The projected spending for FY17 is estimated at \$133.4 million versus the budget of \$155.3 million for an underspending of \$21.9 million or 14.1% which is better than the historical 23-24% below budget spending pattern.

MWRA continues to make progress on several major projects including North Main Pump Station and Winthrop Terminal Facility Butterfly Valve Replacement and Winthrop Terminal Facility Variable Frequency Drives Construction, both at Deer Island, Wachusett Aqueduct Pump Station, Alewife Brook Pump Station Rehabilitation, Hatchery Pipeline and Hydroelectric project, Clinton Phosphorus Reduction, and redundancy projects in both the Northern Intermediate High and Southern Extra High Service areas.

Several projects were completed in the first half of the fiscal year, including Upgrades to Chelsea Screenhouse, Section 4 Webster Avenue Pipe and Utility Bridge Replacement, Southborough Water Quality Laboratory Upgrades, Section 36 Water Mains in Arlington and Medford, Deer Island Secondary Reactor Variable Frequency Drives, Deer Island Cryogenics Chillers Replacement, and Deer Island Thermal Power Plant Boiler Controls Replacement.

New contracts valued at \$113.2 million were awarded in the first half of the fiscal year including the Chelsea Creek Headworks Upgrades Construction and the third construction contract for Northern Intermediate High Service area Section 89 and 29 Redundancy.

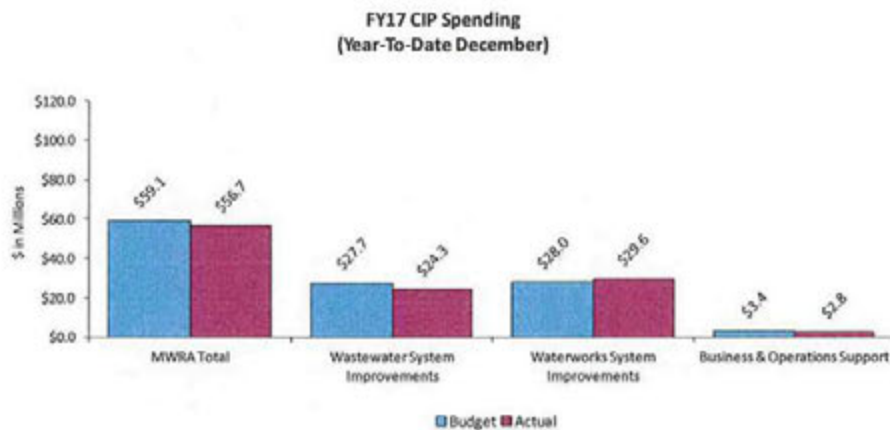
RECOMMENDATION:

For information only. The Fiscal Year 2017 Mid-Year Capital Improvement Program Spending Report highlights major capital program accomplishments and provides explanations for spending variances and schedule changes versus the budget.

DISCUSSION:

Overall MWRA Capital Spending

Spending through FY17 second quarter totals \$56.7 million, \$2.4 million or 4.1% 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, capital spending totaled \$48.0 million, \$1.7 million or 3.7% over budget.



Projects that were completed or reached substantial completion in the first half of FY17 included:

- Deer Island Treatment Plant Scum Skimmer Replacement
 - o Total Project Cost: \$20.4 million
 - o Completion Date: October 2016
 - o Total Project Duration: 3 years
- Weston Aqueduct Supply Mains Section 36 Water Mains Arlington & Medford
 - o Total Project Cost: \$11.6 million
 - o Completion Date: December 2016
 - o Total Project Duration: 2 years
- Chelsea Screenhouse Upgrades
 - o Total Project Cost: \$5.0 million
 - o Completion Date: September 2016
 - o Total Project Duration: 1 year
- Webster Avenue Bridge Pipe Replacement
 - o Total Project Cost: \$3.9 million
 - o Completion Date: December 2016
 - o Total Project Duration: 1.5 years
- Southborough Water Quality Laboratory Upgrades
 - o Total Project Cost: \$3.5 million
 - o Completion Date: November 2016
 - o Total Project Duration: 1.3 years
- Deer Island Secondary Reactor Variable Frequency Drives Construction
 - o Total Project Cost: \$2.3 million
 - o Completion Date: August 2016
 - o Total Project Duration: 1.5 years
- Deer Island Cryogenics Chillers Replacement
 - o Total Project Cost: \$3.2 million
 - o Completion Date: October 2016
 - o Total Project Duration: 2 years
- Deer Island Thermal Power Plant Boiler Controls Replacement
 - o Total Project Cost: \$1.6 million
 - o Completion Date: November 2016
 - o Total Project Duration: 2 years

MWRA also has a number of water and wastewater projects currently in design or under construction. Life-to-date expenditures for some of the larger active contracts are:

- Deer Island North Main Pump Station and Winthrop Terminal Facility Butterfly Valve Replacement - 61% complete
 - o Total budget: \$17.2 million, \$10.5 million spent

- Deer Island Winthrop Terminal Facility Variable Frequency Drives Construction – 7% complete
 - o Total budget: \$15.2 million, \$0.8 million spent
- Alewife Brook Pump Station Rehabilitation – 24% complete
 - o Total budget: \$12.6 million, \$3.0 million spent
- Wachusett Aqueduct Pump Station – 29% complete
 - o Total budget: \$45.5 million, \$13.2 million spent
- Clinton Phosphorus Reduction Construction – 36% complete
 - o Total budget: \$7.3 million, \$2.6 million spent
- Hatchery Pipeline and Hydroelectric Construction – 72% complete
 - o Total budget \$3.7 million, \$2.6 million spent
- Northern Intermediate High Section 89 & 29 Redundancy Phase 1B Construction – 81% complete
 - o Total budget: \$9.9 million, \$8.0 million spent
- Southern Extra High Section 111 Phase 1 Construction – 10% complete
 - o Total budget: \$13.5 million, \$1.3 million spent
- Quabbin Power Communications and Security Improvements – 99% complete
 - o Total budget: \$3.2 million, \$3.2 million spent
- Beacon Street Water Line Repair – 73% complete
 - o Total budget: \$1.6 million, \$1.1 million spent
- DI Fuel Oil System Upgrades – 84% complete
 - o Total budget: \$4.6 million, \$3.8 million total spent
- Rosemary Brook Building Repair – 87% complete
 - o Total budget: \$1.7 million, \$1.5 million spent
- Caruso Pump Station Improvements – 53% complete
 - o Total budget: \$4.1 million, \$2.2 million spent
- Southern Extra High Redundancy Pipeline Phase 1 Design/Construction Administration/Resident Inspection – 36% complete
 - o Total budget: \$7.7 million, \$2.8 million spent
- Northern Intermediate High Section 89/29 Redundancy Design/Construction Administration/Resident Inspection – 59% complete
 - o Total budget: \$6.2 million, \$3.7 million spent
- Deer Island HVAC Equipment Replacement Design/Engineering Services During Construction – 65% complete
 - o Total budget \$2.0 million, \$1.3 million spent

Community Financial Assistance

In the first half of FY17, MWRA continued support for the community financial assistance programs by providing funding distributions of \$22.8 million for wastewater infiltration and

inflow (I/I) removal (\$8.9 million) and water pipeline improvements (\$13.9 million, including a \$1.5 million for lead service replacement).

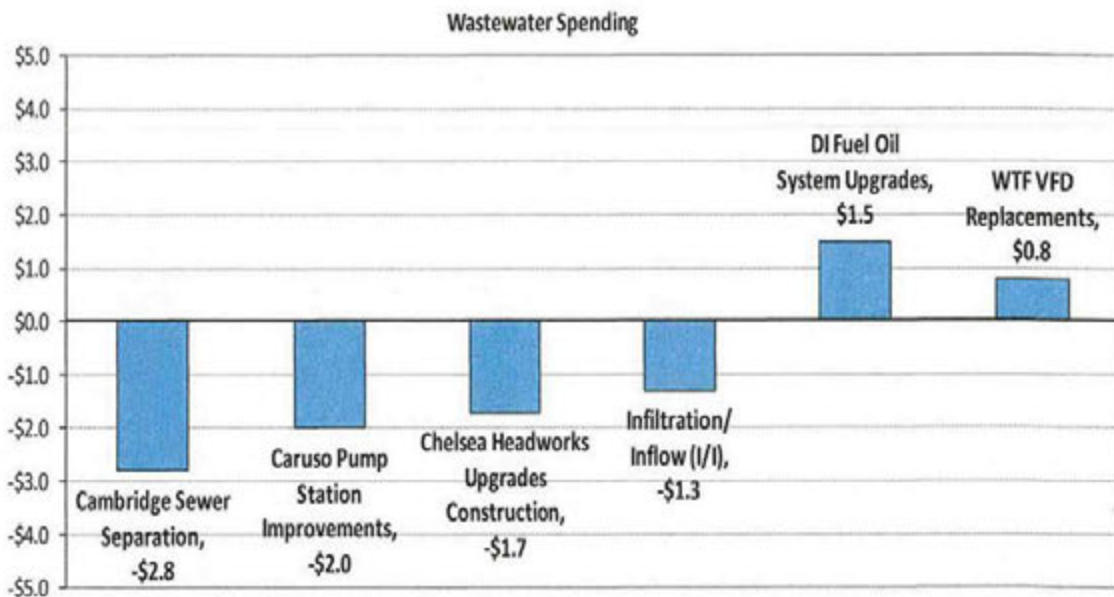
Major Variances to FY17 Budget

Spending by program is represented below:

FY17 Capital Improvement Program Spending Through December 2016 (\$000s)					
Program	Budgeted Spending	Actual Spending	Variance to Budget		% of Total YTD Actual Spending
			\$	%	
Total Wastewater System	\$27,702	\$24,281	(\$3,422)	-12%	43%
Interception & Pumping	\$9,723	\$7,439	(\$2,284)	-23%	13%
Treatment	\$7,210	\$10,313	\$3,103	43%	18%
Residuals	\$0	\$0	\$0	0%	0%
Combined Sewer Overflow	\$5,924	\$3,016	(\$2,908)	-49%	5%
Other Wastewater Programs	\$4,846	\$3,513	(\$1,333)	-28%	6%
Total Waterworks System	\$28,023	\$29,554	\$1,531	5%	52%
Drinking Water Quality Improvements	\$1,272	\$560	(\$712)	-56%	1%
Transmission	\$13,549	\$12,626	(\$923)	-7%	22%
Distribution and Pumping	\$7,523	\$11,039	\$3,516	47%	19%
Other Waterworks Programs	\$5,678	\$5,328	(\$350)	-6%	9%
Business & Operations Support	\$3,374	\$2,848	(\$526)	-16%	5%
Total MWRA (without Contingency)	\$59,099	\$56,682	(\$2,417)	-4%	100%

Wastewater System Improvements

Wastewater actual spending was \$24.3 million, \$3.4 million or 12.4% less than budget. The graph on next page reflects the project variances:



Spending is under budget for the following projects:

- Cambridge Sewer Separation: \$2.8 million – due to delays in surface restoration work.
- Caruso Pump Station Improvements: \$2.0 million – due to delays with HVAC installation as a result of an unforeseen roof replacement.
- Chelsea Creek Headworks Upgrades Construction: \$1.7 million – due to later than budgeted award of contract.
- Infiltration/Inflow (I/I): \$1.3 million – due to community requests for grants and loans being less than anticipated.

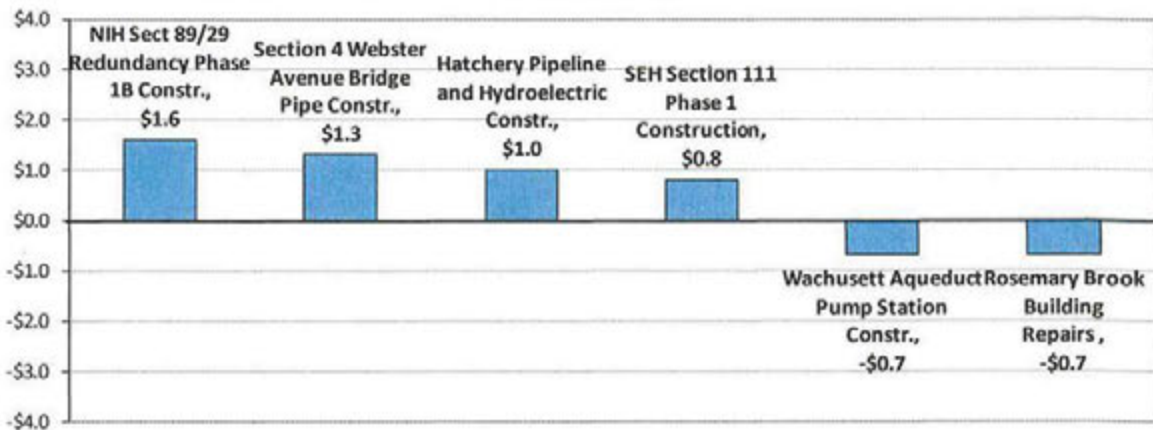
Spending is over budget for the following projects:

- Deer Island Treatment Plant Fuel Oil System Upgrades: \$1.5 million – due to contractor progress
- Deer Island Winthrop Terminal Facility Variable Frequency Drives Replacement: \$0.8 million – primarily due to contractor progress.

Waterworks System Improvements

Waterworks actual spending was \$29.6 million, \$1.5 million or 5.5% greater than budget. The major spending variances are shown in the graph on next page:

Waterworks Spending



Spending is over budget for the following projects:

- Northern Intermediate High Section 89/29 Redundancy Construction Phase 1B: \$1.6 million – due to contractor progress.
- Section 4 Webster Avenue Bridge Pipe Construction: \$1.3 million – due to additional change order work.
- Hatchery Pipeline: \$1.0 million – due to contractor progress for Phase 1 completed ahead of schedule.
- Southern Extra High Section 111 Phase 1 Construction: \$0.9 million – due to contractor progress.

Spending is under budget for the following projects:

- Wachusett Aqueduct Pump Station: \$0.7 million – due to construction issues encountered
- Rosemary Brook Building Repairs of \$0.7 million – due to construction delays and time extension.

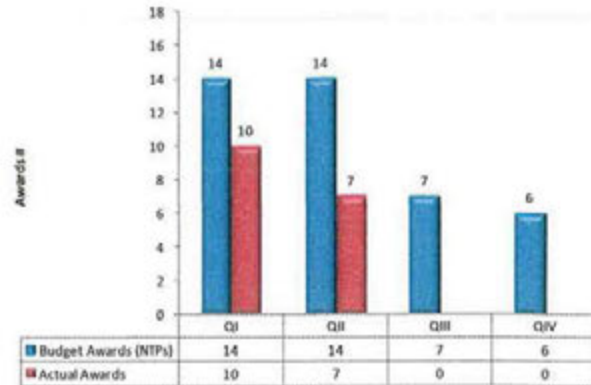
Business and Operations Support

Business and Operations Support spending is \$2.8 million, \$0.5 million or 15.6% less than budget. The actual project underspending is due to timing of MIS-related projects which were budgeted for implementation in the first half of FY17 but will implement in the second half.

Please refer to Attachment A of the report for detailed FY17 CIP variance explanations.

Status of Contract Awards Planned for FY17

MWRA's FY17 Final CIP forecast 41 contract awards valued at \$241.6 million. Through mid-year, MWRA has awarded 17 contracts with a value of \$113.2 million or nearly 65% of the \$174.1 million planned.



As part of the FY18 Proposed CIP development, staff revisited planned work identified in the FY17 Final CIP and updated assumptions based on new information. By the end of FY17, staff expect to award 18 additional contracts valued at \$107.9 million for a total of 35 contracts valued at \$221.2 million.

The primary reasons for not expecting to award all contracts in FY17 are:

- Five projects have been delayed due to changes in scope that has required additional work;
- Four projects whose schedules have been reprioritized; and
- One project where the project/phase has been eliminated or being performed in-house or in the Current Expense Budget.

The table below summarizes the total number of capital contract awards planned for FY17 and highlights the number planned for award during the second half of FY17.

Recap of Planned FY17 Contract Awards

	# of projects	Budget/ Award
Total Planned Awards per FY17 CIP	41	\$241.6
Actual Awards in First Half FY17	12	\$91.0
Actual Unplanned Awards in First Half FY17	5	\$22.3
Planned Awards in Second Half of FY17	18	\$107.9
Shifted Beyond FY17 - Scope or Priority Change	10	\$37.5
Deleted/Transferred from CIP/Project on hold	1	\$0.4
Total Projects Planned to be awarded in FY17	35	\$221.2

Please refer to Attachment B for project level detail.

The MWRA awarded the following contracts in the first half of FY17:

- Chelsea Creek Headworks Upgrades Construction - \$72.9 million
- Northern Intermediate High Section 89 & 29 Redundancy Construction Phase 1C - \$17.8 million
- Chelsea Headworks Upgrades Resident Engineering/Inspection - \$3.6 million
- New Connecting Mains Shaft 7 to WASM 3 CP3 (Section 23,24,47 Final Design/Construction Administration/Resident Inspection - \$3.5 million
- Prison Point Rehabilitation Design/Construction Administration/Resident Inspection - \$2.8 million
- Commonwealth Avenue Pump Station Redundancy Design/Construction Administration/Resident Inspection - \$2.8 million
- North Main Pump Station Motor Control Center Phase 2 Design/Engineering Services During Construction/Resident Inspection - \$2.5 million
- Section 80 Replacement - \$1.8 million
- DI Personnel Dock Rehabilitation - \$1.3 million
- Sewer Sections 4,5,6,186 Study - \$1.2 million
- Chicopee Valley Aqueduct Motorized Screens Replacement - \$1.0 million
- Cambridge Branch 23, 24, 26, 27 Study - \$0.7 million
- Prison Point Piping Rehabilitation - \$0.5 million
- Evaluation of Farm Pond Buildings – Waban Arches - \$0.3 million
- Quabbin Utility - \$0.2 million
- Shaft 5A/5 Surface Piping Cathodic Protection - \$0.1 million

Major Initiatives for the 2nd Half of FY17

Looking ahead to the second half of FY17, the MWRA anticipates awarding several major construction contracts. The largest of these projects are listed below:

Major Planned Construction Contract Awards for Second Half of FY17

Project	Contract	FY17 Budget in Millions
DI Treatment Plant Asset Protection	HVAC Equipment Replacement Construction	\$ 29.5
NIH Redundancy and Storage	Section 89/29 Redundancy Construction Phase 2	18.2
SEH Redundancy and Storage	Redundancy Pipeline Section 111 Construction 2	10.8
Residuals Asset Protection	Residuals Facility Upgrade Construction	10.0
SEH Redundancy and Storage	Redundancy Pipeline Section 111 Construction 3	7.4
DI Treatment Plant Asset Protection	Future Miscellaneous Variable Frequency Drives Replacements Construction	5.3
DI Treatment Plant Asset Protection	Sodium Hypochlorite and Bisulfite Tanks Rehabilitation	5.0
Facility Asset protection	Interceptor Renewal 1, Reading Extension Sewer Construction	4.3
Total		\$ 90.5

MWRA also anticipates awarding several significant professional services contracts. The largest contracts are listed below:

Major Planned Professional Services Awards for Second Half of FY17

Project	Contract	FY17 Budget in Millions
Corrosion & Odor Control	Nut Island Headworks Odor Control and HVAC Improvements Design/Construction Administration/Resident Inspection	\$ 2.8
Winsor Station Pipeline Improvements	Shaft 12 Isolation Gate Design/Construction Administration/Resident Inspection	2.2
DI Treatment Plant Asset Protection	HVAC Equipment Replacement Resident Engineering Inspection	2.0
Facility Asset Protection	Interceptor Renewal 3 Dorchester Interceptor Sewer Design/Construction Administration/Resident Inspection	1.0
DI Treatment Plant Asset Protection	Cathodic Protection Design/Engineering Services During Construction	1.0
Total		\$ 9.0

In the second half of the FY17, MWRA also anticipates substantial completion on major contracts including Caruso Pump Station Improvements, Quabbin Power, Communications and Security, Rosemary Brook Building Repair, and Beacon Street Water Line.

Attachments:

- A. FY17 CIP Variance Explanations through December 2016
- B. FY17 Planned Capital Contract Awards

ATTACHMENT A
FY17 CIP VARIANCE EXPLANATIONS THROUGH DECEMBER (Q2) - PROGRAM SUMMARY (\$000s)

	BUDGET	ACTUALS	VARIANCE		MAJOR PROJECT
			(\$)	%	
Total MWRA	\$ 59,100	\$ 56,682	\$ (2,417)	-4%	
Variance by Program					
Total Wastewater	\$ 27,702	\$ 24,281	\$ (3,422)	-12%	
Interception and Pumping	\$ 9,723	\$ 7,439	\$ (2,284)	-23%	Interception & Pumping Facility Asset Protection (\$2.2M).
Treatment	\$ 7,210	\$ 10,313	\$ 3,103	43%	Deer Island Treatment Plant Asset Protection (\$2.7M) and Clinton Wastewater Treatment Plant (\$0.4M).
Residuals	\$ -	\$ -	\$ -	-	
CSO	\$ 5,924	\$ 3,016	\$ (2,908)	-49%	
MWRA Managed	\$ 6	\$ 84	\$ 78	1307%	
Community-Managed	\$ 5,918	\$ 2,932	\$ (2,987)	-50%	Cambridge Sewer Separation (\$2.8M) and Reserved Channel Sewer Separation (\$0.4M).
Planning & Support	\$ 2	\$ -	\$ (2)	0%	
Other	\$ 4,846	\$ 3,513	\$ (1,333)	-28%	I/I Local Financial Assistance (\$1.3M).
Total Waterworks System Improvements	\$ 28,024	\$ 29,554	\$ 1,531	5%	
Drinking Water Quality Improvements	\$ 1,272	\$ 560	\$ (712)	-56%	Spot Pond Storage Facility (\$0.4M) and Carroll Water Treatment Plant (0.3M).
Transmission	\$ 13,549	\$ 12,626	\$ (923)	-7%	Sudbury/Weston Aqueduct Repairs (\$0.6M), Cosgrove Tunnel Redundancy (\$0.5M) and Watershed Land (\$0.3M). Offset by Winsor Station/Pipeline Improvements +\$0.6M.
Distribution and Pumping	\$ 7,523	\$ 11,039	\$ 3,515	47%	NIH Redundancy & Storage +\$1.6M, Spot Pond Supply Mains Rehab +\$1.4M, SEH Redundancy & Storage +\$0.9M and New Connecting Mains - Shaft 7 to WASM +\$0.2M. Offset by Weston Aqueduct Supply Mains (\$0.3M).
Other	\$ 5,678	\$ 5,328	\$ (350)	-6%	Waterworks Facility Asset Protection (\$0.4M) and Central Monitoring System (\$0.1M). Offset by Local Water Pipeline Improvement Loan Program +\$0.2M.
Business and Operations Support	\$ 3,374	\$ 2,848	\$ (526)	-16%	Capital Maintenance Planning & Development (\$0.8M), Application Improvement Program (\$0.5M) and IT Infrastructure Program (\$0.4). Offset by Alternative Energy Initiatives +\$0.4M, Information Security Program +\$0.4M and Equipment Purchase +\$0.3M.
Total Variance by Program	\$ 59,100	\$ 56,682	\$ (2,416)	-4%	

ATTACHMENT A
FY17 CIP VARIANCE EXPLANATIONS THROUGH DECEMBER (Q2) - BY PROJECT (\$000s)

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
Total MWRA	\$ 59,099	\$ 56,682	\$ (2,417)	-4%	
Wastewater System Improvements	\$ 27,702	\$ 24,281	\$ (3,422)	-12%	
Interception & Pumping	\$ 9,723	\$ 7,439	\$ (2,284)	-23%	
Corrosion & Odor Control	\$ 133	\$ 71	\$ (63)	-47%	
Interception & Pumping (I&P) Facility Asset Protection	\$ 9,589	\$ 7,369	\$ (2,221)	-23%	
Caruso Pump Station Improvements - Construction	\$ 3,575	\$ 1,597	\$ (1,978)	-55%	Delayed installation of HVAC equipment due to unforeseen roof replacement.
Chelsea Creek Headworks Upgrades Construction	\$ 1,663	\$ -	\$ (1,663)	-	Notice to proceed schedule shift of three months. Contract is currently in submittals and Requests For Information.
Alewife Brook Pump Station Rehab Construction	\$ 1,850	\$ 3,023	\$ 1,173	63%	Project progress.
Chelsea Screenhouse Upgrades	\$ 1,045	\$ 1,562	\$ 516	49%	Work scheduled and budgeted for FY16 performed in FY17.
Treatment	\$ 7,210	\$ 10,313	\$ 3,103	43%	
DITP Asset Protection	\$ 5,730	\$ 8,396	\$ 2,667	47%	
Power System Improvements - Construction	\$ 718	\$ 2,264	\$ 1,546	215%	Project progress.
WTF VFD Replacement - Construction	\$ -	\$ 824	\$ 824	-	Current spending for bonds and insurance.
Electrical Equipment Upgrades - Construction 4	\$ -	\$ 500	\$ 500	-	Work scheduled and budgeted for FY16 performed in FY17.
Digested Sludge Pump Replacement - Phase 2	\$ 638	\$ 964	\$ 326	51%	Project progress.
NMPS & WTF Butterfly Valve Replacement	\$ 2,279	\$ 1,730	\$ (549)	-24%	Longer than anticipated lead time for valves as a result of coating issues.
Clinton Wastewater Treatment Plant	\$ 1,480	\$ 1,916	\$ 436	29%	
Phosphorous Reduction - Construction	\$ 1,333	\$ 1,727	\$ 394	30%	Project progress.
Residuals	\$ -	\$ -	\$ -	-	
CSO	\$ 5,924	\$ 3,016	\$ (2,908)	-49%	
MWRA-Managed	\$ 6	\$ 84	\$ 78	-	
MWR003 Gate & Siphon	\$ 6	\$ 84	\$ 78	-	
Community-Managed	\$ 5,918	\$ 2,932	\$ (2,987)	-50%	
Dorchester Bay Sewer Separation (Commercial Point)	\$ (127)	\$ -	\$ 127	-	
Cambridge Sewer Separation	\$ 5,691	\$ 2,932	\$ (2,759)	-48%	
Design/CS/RI	\$ 1,311	\$ 739	\$ (572)	-44%	Delay in work due to Huron Avenue water main replacement by the City of Cambridge that required a six month time extension.
Construction	\$ 4,380	\$ 2,192	\$ (2,188)	-50%	
Morrissey Boulevard Drain	\$ (2)	\$ -	\$ 2	-	
Reserved Channel Sewer Separation	\$ 354	\$ -	\$ (354)	-	Pending reconciliation of final costs. Expected in June 2017.
Planning and Support	\$ 2	\$ -	\$ (2)	-	

ATTACHMENT A
FY17 CIP VARIANCE EXPLANATIONS THROUGH DECEMBER (Q2) - BY PROJECT (\$000s)

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
Other	\$ 4,846	\$ 3,513	\$ (1,333)	-28%	
I/I Local Financial Assistance	\$ 4,846	\$ 3,513	\$ (1,333)	-28%	Less than anticipated requests for grants and loans.
Grants	\$ 6,939	\$ 6,034	\$ (904)	-13%	
Loans	\$ 3,213	2,871	\$ (342)	-11%	
Repayments	(5,306)	(5,393)	\$ (87)	2%	
Waterworks System Improvements	\$ 28,023	\$ 29,554	\$ 1,531	5%	
Drinking Water Quality Improvements	\$ 1,272	\$ 560	\$ (712)	-56%	
Carroll Water Treatment Plant	\$ 652	\$ 306	\$ (346)	-53%	
Existing Facilities Modifications - CP7	\$ 517	\$ 275	\$ (242)	-47%	Pending balancing change order for asbestos removal.
Spot Pond Storage Facility	\$ 620	\$ 255	\$ (365)	-59%	
Design / Build	\$ 620	\$ 242	\$ (378)	-61%	Microwave tower installed. Awaiting delivery and installation of communication shelter.
Transmission	\$ 13,549	\$ 12,626	\$ (923)	-7%	
Cosgrove Tunnel Redundancy	\$ 9,311	\$ 8,794	\$ (517)	-6%	
Wachusett Aqueduct Pump Station - Construction	\$ 9,000	\$ 8,258	\$ (742)	-8%	Pending redesign of work adjacent to City of Marlborough water pipe and progress less than anticipated at the pump station.
Watershed Land	\$ 1,000	\$ 731	\$ (269)	-27%	
Long Term Redundancy	\$ 354	\$ 292	\$ (62)	-18%	
Sudbury/Weston Aqueduct Repairs	\$ 1,474	\$ 828	\$ (646)	-44%	
Rosemary Brook Building Repair	\$ 1,450	\$ 767	\$ (683)	-47%	Anticipated time extension.
Winsor Station/Pipeline Improvements	\$ 1,292	\$ 1,913	\$ 621	48%	
Hatchery Pipeline - Construction	\$ 1,258	\$ 1,840	\$ 582	46%	Project progress.
MetroWest Tunnel	\$ 68	\$ (6)	\$ (74)	-	
Metropolitan Redundancy Interim Improvement	\$ 50	\$ 74	\$ 24	49%	
Distribution And Pumping	\$ 7,523	\$ 11,039	\$ 3,516	47%	
NIH Redundancy & Storage	\$ 4,205	\$ 5,757	\$ 1,552	37%	
Section 89/29 Redundancy Phase 1B Construction	\$ 3,600	\$ 5,217	\$ 1,617	45%	Project progress.
Spot Pond Supply Mains Rehab	\$ 605	\$ 2,005	\$ 1,400	231%	
Section 4 Webster Avenue Bridge Pipe Rehab - Construct.	\$ 569	\$ 1,888	\$ 1,318	232%	Additional change order work based on redesign.
SEH Redundancy & Storage	\$ 1,086	\$ 1,939	\$ 852	78%	
Redundancy Pipeline Section 111 Phase 1 - Construction	\$ 400	\$ 1,313	\$ 913	228%	Project progress.
New Connecting Mains - Shaft 7 to WASM 3	\$ 287	\$ 511	\$ 225	78%	
CP3, Sections 23,24 & 47 - Final Design/CA/RI	\$ 282	\$ 511	\$ 230	81%	Project progress.
Weston Aqueduct Supply Mains	\$ 1,060	\$ 754	\$ (306)	-29%	
Section 36/C/S9 - A11 Valve	\$ 930	\$ 557	\$ (373)	-40%	Anticipated credit change order for less than estimated quantities of rock and contaminated soil, and timing of valve installation work.
Valve Replacement	\$ 120	\$ -	\$ (120)	-	
NHS - Revere & Malden Pipeline Improvements	\$ 99	\$ 49	\$ (50)	-51%	

ATTACHMENT A
FY17 CIP VARIANCE EXPLANATIONS THROUGH DECEMBER (Q2) - BY PROJECT (\$000s)

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
Northern Extra High Service - New Pipelines	\$ 11	\$ -	\$ (11)	-	
Cathodic Protection of Distribution Mains	\$ 34	\$ 25	\$ (9)	-27%	
Northern Low Service Rehabilitation - Section 8 & 57	\$ 8	\$ -	\$ (8)	-	
Northern High Service - Section 27 Improvements	\$ 7	\$ -	\$ (7)	-	
Southern Spine Distribution Mains	\$ 1	\$ -	\$ (1)	-	
Section 80 Rehabilitation	\$ 1	\$ 1	\$ (1)	-50%	
Other	\$ 5,678	\$ 5,328	\$ (350)	-6%	
Local Water Pipeline Improvement Loan Program	\$ 2,037	\$ 2,221	\$ 184	9%	
Community Loans	\$ 10,725	\$ 12,410	\$ 1,685	16%	Greater community requests for Local Water System Loans.
Lead Service Line Replacement Loans	\$ 3,000	\$ 1,500	\$ (1,500)	-50%	Less community requests for the Lead Loan Program.
Repayments	\$ (11,688)	\$ (11,689)	\$ (1)	0%	
Central Monitoring System	\$ 1,993	\$ 1,856	\$ (137)	-7%	
Quabbin Power Utility Fees and Permits	\$ 170	\$ -	\$ (170)	-	
Waterworks Facility Asset Protection	\$ 1,648	\$ 1,251	\$ (397)	-24%	
Beacon Street Line Repair - Construction	\$ 1,536	\$ 1,146	\$ (390)	-25%	Delay due to trees relocation and MBTA permits.
Business & Operations Support	\$ 3,374	\$ 2,848	\$ (526)	-16%	
Business Systems Plan	\$ -	\$ 35	\$ 35	-	
Alternative Energy Initiatives	\$ 50	\$ 431	\$ 381	762%	
Application Improvement Program	\$ 1,098	\$ 645	\$ (453)	-41%	
IT Infrastructure Program	\$ 445	\$ 6	\$ (439)	-99%	Timing of IT Strategic Plan implementation.
Information Security Program	\$ 44	\$ 477	\$ 433	985%	
Equipment Purchase	\$ 657	\$ 1,000	\$ 343	52%	
FY14-18 Vehicle Purchases	\$ 325	\$ 841	\$ 516	159%	Timing of vehicle purchases.
MWRA Facility - Chelsea	\$ -	\$ (1)	\$ (1)	-	
Capital Maintenance Planning & Development	\$ 1,081	\$ 255	\$ (826)	-76%	

**ATTACHMENT B
FY17 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Subphase	NTP	FY18 Revised	FY17 Budget	Award Amount	Vendor	Schedule Change Reason Code*
Facility Asset Protection	Prison Point Rehabilitation - Design/Construction Administration/Resident Inspection	Jul-16	Jul-16	\$ 2.5	\$ 2.8	Arcadis U.S., Inc.	1
Facility Asset Protection	Chelsea Creek Upgrades - Construction	Jul-16	Nov-16	62.0	72.9	Barletta Heavy Division/Barletta Engineering Corporation, A Joint Venture	1
New Connect Mains-Shaft 7 to WASM 3	CP3 (Sect 23,24,47) - Final Design/Construction Administration/Resident Inspection	Jul-16	Jul-16	3.0	3.5	Green International Affiliates, Inc.	1
Chestnut Hill Connecting Mains	Chestnut Hill Gatehouse # 1 Repairs Construction	Jul-16	Sep-17	1.0			6
NIH Redundancy & Storage	Section 89 & 29 Redundancy Construction Phase 2	Jul-16	May-17	18.2			3 & 4
Winsor Station Pipeline Improvements	Quabbin Aqueduct Final Design CA/RI (Shaft 12 Isolation Gate Design CA/RI now)	Jul-16	Apr-17	2.2			3
Sudbury/Weston Aqueduct Repairs	Weston Aqueduct Flow Control Valve	Jul-16	Project being done in the CEB.	0.4			2
Sudbury/Weston Aqueduct Repairs	Evaluation of Farm Pond Buildings-Waban Arches	Jul-16	Jul-16	0.1	0.3	Green International Affiliates, Inc.	1
Application Improvements Program	Pre-Treatment Information Management Systems (PIMS) Enhancements	Sep-16	Feb-17	0.4			3
Facility Asset Protection	Cambridge Branch 23, 24, 26, 27 - Study	Sep-16	Oct-16	1.0	0.7	Hazen and Sawyer, P.C.	1
NHS - Revere & Malden Pipeline Improvements	Section 53 and 99 Improvements Study (now Design CA/RI)	Sep-16	Jun-17	0.4			3
Rehabilitation of Other Pump Stations	Commonwealth Ave Pump Station Redundancy-Design/Construction Administration/Resident Inspection	Sep-16	Dec-16	0.8	2.8	Black & Veatch Corporation	1
SEH Redundancy & Storage	Redundancy Pipeline Sect III - Construction 2	Sep-16	Jun-17	10.8			3 & 4
Quabbin Transmission System	Chicopee Valley Aqueduct Motorized Screens Replacement-Construction	Sep-16	Nov-16	1.0	1.0	W.M. Schultz Construction, Inc.	1

ATTACHMENT B
FY17 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)

Project	Subphase	NTP	FY18 Revised	FY17 Budget	Award Amount	Vendor	Schedule Change Reason Code*
Wastewater Meter System-Equipment Replacement	Planning / Study / Design	Oct-16	Jul-17	2.7			5
Residuals Asset Protection	Residuals Facility Upgrades - Construction	Oct-16	Jun-17	10.0			3
Central Monitoring System	Waterworks Supervisory Control and Data Acquisition System (SCADA)/Program Logic Controller (PLC) Upgrades (Comm. Ave PS Programming and Configuration initial phase awarded)	Oct-16	Oct-16	18.5	0.1	McInnis Consulting Services, Inc.	1
Section 80 Rehabilitation	Section 80 Replacement	Oct-16	Nov-16	0.7	1.8	P. Caliacco Corporation	1
Corrosion & Odor Control	Nut Island Headworks Odor Control and HVAC Improvements Design/Construction Administration/Resident Engineer Inspection	Nov-16	Apr-17	2.8			3
Facility Asset Protection	Sections 4, 5, 6, 186 - Study	Nov-16	Jan-17	1.5	1.2	Hazen and Sawyer, P.C.	1
Facility Asset Protection	Hingham/Quincy PS Fuel Storage Upgrades Const	Nov-16	Mar-17	0.5			3
DI Treatment Plant Asset Protection	Cathodic Protection - Design/ESDC	Nov-16	May-17	1.0			3
DI Treatment Plant Asset Protection	Barge Berth and Facility Replacement	Nov-16	Dec-16	2.3	1.3	Coastal Marine Construction LLC	1
DI Treatment Plant Asset Protection	North Main Pump Station Motor Control Center Phase 2 Design/Engineering Services During Construction/Resident Inspection	Nov-16	Feb-17	2.5	2.5	AECOM	1
DI Treatment Plant Asset Protection	Gravity Thickener Rehabilitation	Nov-16	Apr-18	14.1			5
DI Treatment Plant Asset Protection	Combined Heat & Power Alternatives Design (Study now)	Dec-16	Apr-17	6.0			3
Clinton Wastewater Treatment Plant	Clinton Roofing Rehabilitation	Dec-16	Mar-17	1.2			3
SEH Redundancy & Storage	Redundancy Pipeline Section III - Construction 3	Dec-16	Jun-17	7.4			3
July 2016 - December 2016	28 Contracts Planned			\$ 174.9	\$ 91.0		
Facility Asset Protection	Interceptor Renewal 3 Dorchester Interceptor Sewer Design Construction Administration/Resident Inspection	Jan-17	Apr-17	1.0			3
DI Treatment Plant Asset Protection	Eastern Seawall Design - 1	Jan-17	Jul-17	0.6			6
DI Treatment Plant Asset Protection	HVAC Equipment Replacement - Construction	Jan-17	Jun-17	29.5			3
NIH Redundancy & Storage	Section 89 & 29 Rehabilitation - Design	Jan-17	Jul-17	1.5			6
Winsor Station Pipeline Improvements	Winsor Power Station Final Design/Construction Administration/Resident Inspection	Jan-17	Aug-17	1.9			5
Facility Asset Protection	Interceptor Renewal 1, Reading Extension Sewer - Construction	Mar-17	Apr-17	4.3			3
DI Treatment Plant Asset Protection	HVAC Equipment Replacement Resident Engineer Inspection	Mar-17	Jun-17	2.0			3
DI Treatment Plant Asset Protection	Switchgear Replacement - Construction	Apr-17	Oct-17	8.0			5
Distribution Systems Facilities Mapping	Update of Record Drawings	Apr-17	Apr-18	0.5			5

**ATTACHMENT B
FY17 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Subphase	NTP	FY18 Revised	FY17 Budget	Award Amount	Vendor	Schedule Change Reason Code*
DI Treatment Plant Asset Protection	Expansion Joint Repair - Construction 3	May-17	Oct-17	1.9			6
DI Treatment Plant Asset Protection	Future Miscellaneous Variable Frequency Drives Replacements - Construction	May-17	May-17	5.3			3
DI Treatment Plant Asset Protection	Odor Control Rehabilitation - Design/Engineering Services During Construction	Jun-17	May-19	5.2			5
DI Treatment Plant Asset Protection	Sodium Hypochlorite and Bisulfite Tanks Rehabilitation	Jun-17	Jun-17	5.0			3
January 2017 - June 2017	13 Contracts Planned			\$	66.8		
41 FY17 Contract Awards Planned				\$	241.6		

Unplanned Awards

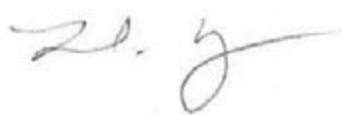
Facility Asset Protection	Prison Point Piping Rehabilitation	Jun-16	Oct-16	\$	0.4	\$	0.5	John Danforth, Inc.	1
Facility Asset Protection	Chelsea Headworks Resident Engineering/ Inspection	Jun-16	Oct-16		3.7		3.6	CDM Smith, Inc.	1
Central Monitoring	Utility Fees and Permits	Jul-16	Jul-16		0.7		0.2	Verizon Business Network Services	1
MetroWest Tunnel	Shaft 5A/5 Surface Piping Cathodic Protection	May-16	Nov-16		0.2		0.1	CorrTech Inc.	1
NIH Redundancy & Storage	Section 89 & 29 Redundancy Construction Phase 1C	Jun-16	Jan-17		17.2		17.8	Albanese D&S, Inc.	1
Total Unplanned				\$	22.3	\$	22.3		

*** Reason Codes:**

1. NTP issued in first half of FY17.
2. Project/Phase eliminated or being performed in-house; or phase completed but on hold.
3. NTP expected January 2017 - June 2017.
4. Schedule change due to permitting.
5. Scope changes.
6. Changes in priorities.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: February 15, 2017
SUBJECT: FY2017 Sewer Assessment Adjustments

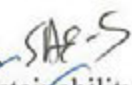
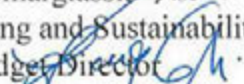


COMMITTEE: Administration, Finance & Audit

X INFORMATION

VOTE


Michael J. Hornbrook
Chief Operating Officer

Stephen Estes-Smargiassi, 
Director, Planning and Sustainability
Kathy Soni, Budget Director

Leo Norton, Asst. Mgr. Rates/Revenue & Finance
Preparer/Title


Thomas J. Durkin
Director, Finance

RECOMMENDATION:

For information only. This staff summary provides information on changes to CY2015 sewer meter data used to calculate FY2017 community sewer assessments. The assessment adjustments resulting from this change are included in the preliminary FY2018 assessments being presented at today's Board of Directors' meeting.

DISCUSSION:

MWRA annually determines preliminary water and sewer assessments in February and final assessments in June. As part of MWRA's Rate Basis Review and Comment Process, approved by the Board of Directors in 1996, water and sewer customers can challenge rate basis data through the current fiscal year. MWRA staff also conduct supplementary quality assurance reviews of meter data during this time period which could result in changes to the rate basis data.

Following a review of calendar year 2015 sewer flows, MWRA staff has made the adjustments listed in the following table. Also included are the corresponding adjustments to the FY2017 sewer assessment for each community. Assessment adjustments take into account the revised sewer flows and flow shares for all MWRA communities.

MWRA staff regularly perform a variety of quality assurance checks on the flow data used to develop community assessments. In addition to reviewing MWRA Meter Maintenance quarterly confirmations staff continuously review data for data gaps or irregularities which require meter maintenance, such as cleaning the sensors of debris, parts replacement or meter replacement. The percentage of meter uptime is tracked for each meter, and percent estimation is reported in the monthly and quarterly reports. Data gaps are filled using data from working meters or by other means of interpolation. The types of issues typically addressed include velocity or depth measurements which do not correlate well with similar meters or with historical flow patterns,

the presence of sediment or other factors influencing flow depth, changes in flow patterns due to piping or connection alternations. On a regular basis, MWRA uses the services of a specialty subcontractor (currently EST) to perform temporary metering to check the accuracy of the permanent metering. In some cases, review of a particular calendar year will suggest a re-assessment of the previous year's data. In all cases where a flow data correction is appropriate, MWRA metering data staff provide that information to Finance staff for inclusion in the assessment process.

In addition to the summary level flow data routinely provided to each community by Finance staff, detailed meter specific data is frequently provided upon request to community staff. Communities will also use temporary metering for a variety of purposes, including master planning and I/I assessments, and MWRA staff will use that data for comparison purposes if appropriate.

In addition to the communities listed, the FY2017 sewer assessment has also been adjusted for the other communities served by the MWRA sewer system, with most adjustments being less than \$3,000. The assessment adjustments will be applied to each community's FY2018 sewer assessment.

Community	Sewer Flow Adjustment	FY2017 Sewer Assessment Adjustment
Boston	Decrease CY15 flow by 0.02 million gallons per day (mgd) Increase Maximum flow by 0.02 mgd	+\$46,050
Braintree	Increase CY15 flow by 0.13 mgd	+\$34,632
Brookline	Decrease CY15 flow by 0.08 mgd	-\$10,048
Chelsea	Decrease CY15 flow by 0.16 mgd	-\$26,593
Framingham	Decrease CY15 flow by 0.49 mgd	-\$137,424
Waltham	Increase CY15 flow by 0.11 mgd	+25,004
Watertown	Decrease CY15 flow by 0.11 mgd	-\$18,851

Reason for Flow Adjustments

BOSTON: MWRA was unable to record accurate meter depth and velocity for one meter for the period of August 1-18, 2015. The original flow estimate was based on another Boston meter, but was later revised based on a different meter from a more appropriate area of Boston.

BRAINTREE: One of Braintree's direct meters was consistently recording depth of flow lower than that measured by MWRA on site. MWRA wastewater meter Quality Assurance/Quality Control testing contractor EST confirmed the higher depth, resulting in adjusted flows from January 1, 2015 to present.

BROOKLINE: Staff determined that a flow meter formula for meter BK-2C should be revised to account for depth of flow differential, resulting in a flow reduction.

CHELSEA: One of Chelsea's direct meters was consistently recording depth of flows that were higher than that measured by MWRA on site. MWRA wastewater meter testing contractor EST

confirmed the lowered depth during twice (in March and November 2016) in separate temporary metering checks resulting in adjusted flows from May 7, 2015 to present.

FRAMINGHAM: Following a review of CY2015 flow through Framingham's main direct meter, MWRA staff determined that the meter's performance over this time period was unreliable due to meter mounting issues. Separate temporary metering reviews conducted by Framingham (for their master plan) and MWRA's meter testing contractor confirmed the problem. CY2015 flows are reduced by 490,000 gallons per day, and the meter was relocated to an improved location.

WALTHAM & WATERTOWN: An improved estimate of flow from a section of Watertown that flows into Waltham resulted in two changes. Staff has increased Waltham's flow, and decreased Watertown's flow 11,000 gallons per day.

Attachment 1 summarizes the FY2017 sewer assessment adjustment and the impact for each community.

BUDGET/FISCAL IMPACT:


Based on MWRA's zero based assessment methodology, FY2017 sewer assessments for all other sewer communities will change proportionally and will be applied to each community's FY2018 sewer assessment.

ATTACHMENTS:

1. Attachment 1: Sewer Utility: Fiscal Year 2017 Assessment Adjustments

MWRA Sewer Customer	FINAL 2017 Assessments			REVISED 2017 Assessments			2017 Assessment Adjustments			Comments
	Base Sewer Charges (O&M)	Base Sewer Charges (Capital)	Base Sewer Charges (Total)	Base Sewer Charges (O&M)	Base Sewer Charges (Capital)	Base Sewer Charges (Total)	Base Sewer Charges (O&M)	Base Sewer Charges (Capital)	Base Sewer Charges (Total)	
Arlington	\$2,220,282	\$5,772,831	\$7,993,113	\$2,221,988	\$5,773,624	\$7,995,611	\$1,706	\$792	\$2,498	
Ashland	606,560	1,878,612	2,485,172	607,024	1,878,805	2,485,829	465	193	657	
Bedford	1,266,853	2,101,475	3,368,327	1,267,826	2,101,907	3,369,733	973	433	1,406	
Belmont	1,393,339	3,432,135	4,825,474	1,394,409	3,432,675	4,827,084	1,070	539	1,610	
Boston (BWSC)	44,824,388	87,447,321	132,271,709	44,856,142	87,461,617	132,317,759	31,754	14,296	46,050	Revised CY15 annual ADF & Max Month Flow.
Braintree	3,452,051	5,648,209	9,100,260	3,476,360	5,658,532	9,134,893	24,309	10,323	34,632	Revised CY15 annual ADF & Max Month Flow.
Brookline	4,424,695	8,469,711	12,894,405	4,414,086	8,470,271	12,884,357	-10,609	561	-10,048	Revised CY15 annual ADF
Burlington	1,645,225	3,433,231	5,078,456	1,646,489	3,433,776	5,080,265	1,264	544	1,809	
Cambridge	8,775,160	14,970,508	23,745,668	8,781,903	14,973,041	23,754,944	6,742	2,533	9,275	
Canton	1,453,450	2,683,707	4,137,157	1,454,567	2,684,205	4,138,772	1,117	498	1,615	
Chelsea	2,567,364	5,095,944	7,663,307	2,541,912	5,094,802	7,636,715	-25,451	-1,141	-26,593	Revised CY15 annual ADF
Dedham	1,789,190	3,522,377	5,311,566	1,790,564	3,523,041	5,313,605	1,375	664	2,039	
Everett	2,516,629	5,607,465	8,124,094	2,518,563	5,608,226	8,126,788	1,934	761	2,695	
Framingham	3,841,728	8,983,223	12,824,952	3,759,556	8,927,972	12,687,528	-82,172	-55,252	-137,424	Revised CY15 annual ADF & Max Month Flow.
Hingham S.D.	677,517	1,120,510	1,798,026	678,037	1,120,768	1,798,806	521	259	779	
Holbrook	456,275	1,303,718	1,759,994	456,627	1,303,871	1,760,498	351	153	503	
Lexington	2,467,869	4,797,993	7,265,862	2,469,765	4,798,928	7,268,694	1,896	935	2,831	
Malden	4,474,755	8,466,304	12,941,059	4,468,371	8,467,064	12,935,435	-6,383	759	-5,624	Revised CY15 annual ADF
Medford	3,946,830	7,931,947	11,878,777	3,949,863	7,933,264	11,883,126	3,033	1,317	4,350	
Melrose	2,175,696	4,076,249	6,251,946	2,176,491	4,076,975	6,253,466	795	726	1,520	Revised CY15 annual ADF
Milton	1,585,777	3,776,274	5,362,051	1,586,995	3,776,918	5,363,913	1,218	644	1,863	
Natick	1,529,657	4,227,043	5,756,700	1,530,832	4,227,555	5,758,388	1,175	512	1,687	
Needham	1,721,037	3,962,873	5,683,910	1,722,349	3,963,507	5,685,856	1,312	635	1,946	
Newton	7,443,599	13,074,620	20,518,219	7,449,318	13,077,264	20,526,582	5,719	2,644	8,363	
Norwood	2,628,212	4,394,946	7,023,158	2,630,220	4,395,864	7,026,084	2,008	918	2,926	
Quincy	6,905,593	13,066,364	19,971,957	6,910,804	13,068,598	19,979,401	5,211	2,234	7,444	
Randolph	1,784,180	4,488,000	6,272,181	1,785,551	4,488,675	6,274,226	1,371	675	2,045	
Reading	1,405,015	3,364,909	4,769,924	1,406,093	3,365,411	4,771,504	1,078	502	1,580	
Revere	3,362,126	7,249,412	10,611,538	3,364,710	7,250,513	10,615,223	2,583	1,101	3,685	
Somerville	5,299,093	10,618,926	15,918,019	5,303,165	10,620,554	15,923,719	4,072	1,628	5,700	
Stoneham	1,500,225	3,041,819	4,542,044	1,501,378	3,042,347	4,543,725	1,153	528	1,681	
Stoughton	1,473,112	3,274,225	4,747,336	1,474,240	3,274,768	4,749,008	1,129	543	1,672	
Wakefield	1,985,209	3,828,482	5,813,691	1,988,050	3,829,311	5,817,361	2,841	829	3,670	Revised CY15 annual ADF
Walpole	1,001,179	2,712,696	3,713,875	1,001,918	2,713,025	3,714,942	739	329	1,068	
Waltham	4,474,990	8,647,118	13,122,109	4,497,205	8,649,908	13,147,113	22,214	2,790	25,004	Revised CY15 annual ADF
Watertown	1,692,333	4,279,039	5,971,372	1,674,273	4,278,248	5,952,521	-18,060	-791	-18,851	Revised CY15 annual ADF
Wellesley	1,607,959	3,851,787	5,459,745	1,609,194	3,852,362	5,461,556	1,235	575	1,811	
Westwood	725,943	1,872,320	2,598,263	726,501	1,872,576	2,599,077	558	256	814	
Weymouth	3,886,156	7,880,106	11,766,262	3,889,140	7,881,569	11,770,708	2,984	1,462	4,446	
Wilmington	845,894	1,749,705	2,595,599	846,359	1,749,892	2,596,251	465	187	652	
Winchester	1,104,793	2,928,974	4,033,767	1,105,642	2,929,393	4,035,035	849	419	1,268	
Winthrop	978,118	2,341,947	3,320,066	978,870	2,342,250	3,321,120	752	302	1,054	
Woburn	3,515,997	5,808,654	9,324,652	3,518,704	5,809,839	9,328,544	2,707	1,185	3,892	
TOTAL FY15	\$153,432,053	\$307,183,710	\$460,615,763	\$153,432,053	\$307,183,710	\$460,615,763	\$0	\$0	\$0	


STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: February 15, 2017
SUBJECT: Preliminary FY18 Water and Sewer Assessments

COMMITTEE: Administration, Finance & Audit

INFORMATION
 VOTE


 Kathy Sonil, Budget Director
Leo Norton, Asst. Mgr. Rates, Revenue and Finance
 Preparer/Title


Thomas J. Durkin
 Director, Finance

Consistent with the Proposed FY18 Current Expense Budget (CEB), preliminary FY18 water and sewer assessments are based on a Rate Revenue Requirement of \$721,238,000, a 3.8% increase over the FY17 Rate Revenue Requirement.

The FY18 Rate Revenue Requirement will be allocated to MWRA communities based on their respective shares of CY16 MWRA water use, the average of CY14-CY16 wastewater flows, corresponding strength of flows, and population.

RECOMMENDATION:

For information only. This staff summary provides information on preliminary FY18 wholesale water and sewer assessments. Staff plan to transmit preliminary FY18 assessments to MWRA communities on or before Thursday, February 16, 2017.

DISCUSSION:

The Proposed FY18 CEB recommends a Rate Revenue Requirement of \$721,238,000, an increase of 3.8% over the final FY17 requirement.

	FY18 Preliminary	FY17 Approved	\$ Change from FY16	% Change from FY17
Water	\$243,393,874	\$234,262,737	\$ 9,131,137	3.9%
Sewer	\$477,844,126	\$460,615,763	\$17,228,363	3.7%
Total	\$721,238,000	\$694,878,500	\$26,359,500	3.8%

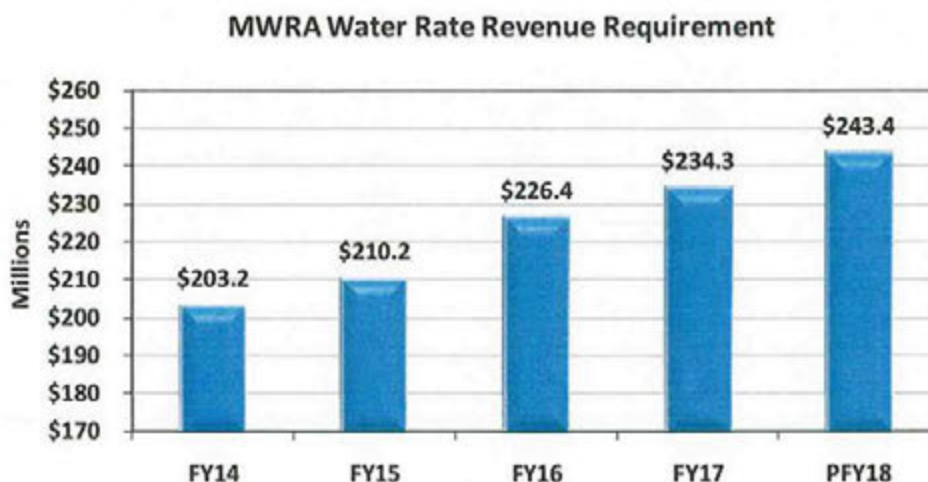
Attachment 1 summarizes preliminary FY18 wholesale water and sewer charges for each MWRA community.

The estimated impact of the FY18 assessment increase on the MWRA portion of the average household bill for water and sewer service in a fully served MWRA community that uses close to the system average of 61,000 gallons of water per year is approximately \$20.

Water Assessments

MWRA calculates water assessments for customer communities by apportioning the water rate revenue requirement according to each community's share of total water use for the most recent calendar year. Preliminary FY18 assessments are based on each community's share of CY16 water use of 67.680 billion gallons, a 0.3% increase compared to CY15 water use of 67.479 billion gallons. Changes in FY18 water assessments for customer communities compared to FY17 assessments will vary considerably, depending on each community's use of water and how that use factors into their share of the water system in CY16 compared to CY15. This is particularly true for communities that receive only part of their water from MWRA.

The graph below illustrates the water Rate Revenue Requirement for the past 5 years. The changes from FY17 to PFY18 are primarily the result of increased debt service related to water utility rehabilitation and improvements.

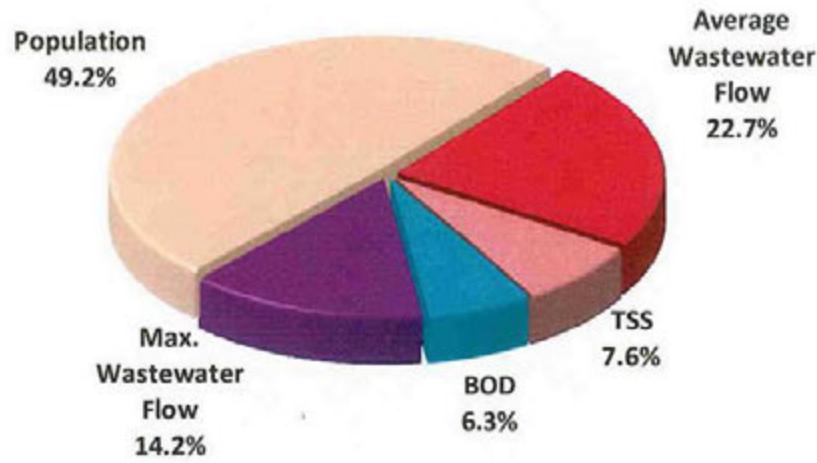


Sewer Assessments

MWRA allocates sewer assessments based on each community's share of the following allocation parameters: annual wastewater flow, maximum month flow, strength of flow, census population, and sewer population.

On average, approximately 51% of a community's preliminary FY18 sewer assessment is based on each community's share of wastewater flow and strength of flow (total suspended solids-TSS and biochemical oxygen demand-BOD), and approximately 49% is based on population as illustrated in the next graph.

Allocation of Total MWRA Sewer Utility Assessment



Both the preliminary and final FY18 assessment for population will be calculated using the most recent (July 2015) community population estimates from the U.S. Census Bureau, as well as the percentage of total population receiving municipal sewer service reported by each MWRA community.

Preliminary FY18 assessments have been calculated using the average of CY14, CY15 and CY16 wastewater flows. Ongoing review of meter data may result in revised flows prior to issuing final assessments in June.

The graph below illustrates the sewer Rate Revenue Requirement for the past 5 years. As with the water utility, the annual changes continue to be primarily the result of increased debt service related to sewer utility rehabilitation and improvements.

MWRA Sewer Rate Revenue Requirement



Clinton and Lancaster Sewer Assessments

Proposed FY18 operating and maintenance (O&M) and capital expenses attributable to the Clinton Wastewater Treatment Plant are \$3,776,682, an increase of 14.6% over FY17 expenses. This includes an 8.1% increase in operating costs, and a 31.5% increase in capital expenses related primarily to the phosphorous removal, roofing rehabilitation projects.

In accordance with the agreement that allows the City of Worcester to take water from the Wachusett watershed, Worcester is charged approximately 7.9% of the direct operating expenses for the Clinton Wastewater Treatment Plant. Proposed FY18 direct operating expenses for the plant total \$2,078,355, resulting in a preliminary FY18 charge of \$164,418 for the City of Worcester. Worcester has been paying this annual charge to MWRA or its predecessors since 1914.

The Town of Clinton and the Lancaster Sewer District are allocated proportional shares of the remaining expenses based on annual metered wastewater flow to the Clinton Plant. Based on proposed FY18 expenses and CY16 wastewater flows, preliminary FY18 charges are \$407,167 for the Lancaster Sewer District and \$3,143,917 for the Town of Clinton. However, pursuant to Chapter 307, Section 8 of the Acts of 1987, Clinton is only liable for the first \$500,000 of its share of O&M and capital costs.

Attachment 2 details the expenses and corresponding charges for the Clinton Sewer Service Area.

CVA Water Assessments

Based on the Proposed FY18 CIP and CEB for the Chicopee Valley Aqueduct (CVA) water system, the preliminary FY18 system assessment is \$4,914,231, an increase of 0.01% from FY17 assessments.

MWRA's CVA water assessment methodology allocates CVA assessments to the three communities served by the CVA system based on their share of prior calendar year water use. Based on CY16 water use, preliminary FY18 assessments are as follows:

- City of Chicopee: \$3,400,877 (-0.7%)
- South Hadley Fire District #1: \$ 721,344 (+1.9%)
- Town of Wilbraham: \$ 792,011 (+1.4%)

As with the metropolitan water system, changes in preliminary FY18 water assessments for each CVA community compared to FY17 assessments vary depending on their water use and how that use factors into their share of the CVA water system in CY16 compared to CY15.

Attachment 3 details the expenses and corresponding assessments for the CVA Water Service Area.

Wholesale Water Rate

MWRA's wholesale water rate per million gallons is applied to customers purchasing MWRA water on a pay-as-you-go basis (including customers with emergency agreements). Examples include the Department of Conservation and Recreation and the Department of Youth Services. The preliminary wholesale water rate for FY18 is \$3,596.26 per million gallons. The proposed FY18 CEB includes revenue of \$107,832 from these customers.

Retail Sewer Rate

MWRA provides direct retail sewer service to Regis College in Weston and the New England Center for Children in Southborough. In accordance with MWRA Policy #OP.11, "Admission of New Community to MWRA Sewer System and Other Requests for Sewer Service to Locations Outside MWRA Sewer Service Area", both entities are charged a modified per million gallon "retail" rate that captures both sanitary and non-sanitary flows. Based on preliminary FY18 sewer assessments, the FY18 retail sewer rate will be \$7,671.59 per million gallons. The Proposed FY18 CEB includes revenue of \$92,823 from these customers.

ATTACHMENTS:

1. Preliminary FY18 Water and Sewer Assessments
2. Clinton Wastewater Treatment Plant Sewer User Charge Determination
3. Chicopee Valley Aqueduct System Assessment

MWRA Fully Served Water and Sewer Customers	Final FY17 Water Assessment	Preliminary FY18 Water Assessment	Percent Change from FY17	Final FY17 Sewer Assessment	Preliminary FY18 Sewer Assessment	Percent Change from FY17	Final FY17 Combined Assessment	Preliminary FY18 Combined Assessment	Dollar Change from FY17	Percent Change from FY17
ARLINGTON	\$4,976,564	\$5,239,376	5.3%	\$7,993,120	\$8,308,475	4.7%	\$12,969,684	\$13,507,851	\$538,167	4.9%
BELMONT	2,828,456	2,918,249	3.2%	4,825,479	4,942,787	2.4%	7,653,935	7,861,036	207,101	2.7%
BOSTON (BWSC)	82,771,709	86,245,262	4.2%	132,271,845	138,988,619	3.8%	215,043,554	223,233,881	8,190,327	3.8%
BROOKLINE	7,046,691	6,833,777	-3.0%	12,894,419	13,070,164	1.4%	19,941,110	19,903,941	(37,169)	-0.2%
CHELSEA	4,215,080	4,310,789	2.3%	7,683,315	7,774,066	1.4%	11,878,395	12,084,865	206,470	1.7%
EVERETT	4,948,191	5,202,970	5.1%	8,124,101	8,425,809	3.7%	13,072,292	13,628,779	556,487	4.3%
FRAMINGHAM	8,159,808	8,034,710	-1.5%	12,824,962	13,125,770	2.3%	20,984,770	21,160,480	175,710	0.8%
LEXINGTON	7,349,661	7,275,204	-1.0%	7,265,870	7,453,880	2.6%	14,615,531	14,729,080	113,549	0.8%
MALDEN	6,950,768	6,789,727	-2.3%	12,941,073	13,414,561	3.7%	19,891,841	20,204,288	312,447	1.6%
MEDFORD	6,432,219	6,408,548	-0.4%	11,878,789	12,202,584	2.7%	18,311,008	18,611,132	300,124	1.6%
MELROSE	2,915,635	2,865,865	-1.7%	6,251,952	6,438,677	3.0%	9,167,587	9,304,542	136,955	1.5%
MILTON	3,360,396	3,509,472	4.4%	5,362,055	5,473,036	2.1%	8,722,451	8,982,508	260,057	3.0%
NEWTON	12,950,552	12,942,568	-0.1%	20,518,241	21,949,886	7.0%	33,468,793	34,892,254	1,423,461	4.3%
NORWOOD	3,652,867	3,718,045	1.8%	7,023,166	7,507,430	6.9%	10,676,033	11,225,478	549,442	5.1%
QUINCY	11,776,311	12,247,825	4.0%	19,971,978	20,724,145	3.8%	31,748,289	32,971,970	1,223,681	3.9%
READING	2,109,549	2,219,983	5.2%	4,769,928	4,962,610	4.0%	6,879,477	7,182,593	303,116	4.4%
REVERE	4,943,964	4,916,091	-0.6%	10,611,849	10,845,129	2.2%	15,555,813	15,761,220	205,707	1.3%
SOMERVILLE	7,658,290	7,960,067	3.9%	15,918,035	16,624,447	4.4%	23,576,325	24,584,514	1,008,189	4.3%
STONEHAM	3,174,690	3,039,459	-4.3%	4,542,049	4,628,916	1.9%	7,716,739	7,668,375	(48,364)	-0.6%
WALTHAM	9,384,159	9,074,300	-3.3%	13,122,122	13,822,389	3.8%	22,506,281	22,896,689	390,418	0.8%
WATERTOWN	3,290,986	3,401,796	3.4%	5,971,377	6,126,647	2.6%	9,262,363	9,528,443	266,080	2.9%
WINTHROP	1,643,615	1,622,216	-1.3%	3,320,089	3,412,713	2.8%	4,963,684	5,034,929	71,245	1.4%
TOTAL	\$202,540,161	\$206,776,309	2.1%	\$336,065,494	\$348,082,556	3.6%	\$538,605,655	\$554,858,865	\$16,253,210	3.0%

MWRA Sewer and Partial Water Customers	Final FY17 Water Assessment	Preliminary FY18 Water Assessment	Percent Change from FY17	Final FY17 Sewer Assessment	Preliminary FY18 Sewer Assessment	Percent Change from FY17	Final FY17 Combined Assessment	Preliminary FY18 Combined Assessment	Dollar Change from FY17	Percent Change from FY17
CANTON	\$1,673,754	\$2,548,346	52.3%	\$4,137,162	\$4,244,707	2.6%	\$5,810,916	\$6,793,053	\$982,137	16.9%
NEEDHAM	1,039,372	1,114,185	7.2%	5,683,915	5,918,642	4.1%	6,723,287	7,032,827	309,540	4.6%
STOUGHTON	1,144,249	294,814	-77.7%	4,747,341	8,009,137	6.8%	5,891,590	5,313,951	(577,639)	-9.8%
WAKEFIELD	1,852,218	2,181,150	17.8%	5,813,697	6,122,307	5.3%	7,665,915	8,303,457	637,542	8.3%
WELLESLEY	1,086,294	1,749,172	60.6%	5,459,750	5,625,596	3.0%	6,516,044	7,374,768	858,724	13.2%
WILMINGTON	703,075	779,298	10.8%	2,595,801	2,830,863	9.1%	3,298,876	3,610,161	311,485	9.4%
WINCHESTER	1,544,349	2,130,222	37.9%	4,033,770	4,157,512	3.1%	5,578,119	6,287,734	709,615	12.7%
WOBURN	3,355,306	3,650,561	8.8%	9,324,662	9,427,691	1.1%	12,679,968	13,078,252	398,284	3.1%
TOTAL	\$12,368,613	\$14,407,748	16.5%	\$41,795,898	\$43,386,455	3.8%	\$54,164,511	\$57,794,203	\$3,629,692	6.7%

MWRA Sewer-only Customers	Final FY17 Water Assessment	Preliminary FY18 Water Assessment	Percent Change from FY17	Final FY17 Sewer Assessment	Preliminary FY18 Sewer Assessment	Percent Change from FY17	Final FY17 Combined Assessment	Preliminary FY18 Combined Assessment	Dollar Change from FY17	Percent Change from FY17
ASHLAND				\$2,485,174	\$2,594,722	4.4%	\$2,485,174	\$2,594,722	\$109,548	4.4%
BEDFORD				3,368,331	3,580,904	6.3%	3,368,331	3,580,904	212,573	6.3%
BRAINTREE				9,100,270	9,892,938	6.5%	9,100,270	9,892,938	792,668	6.5%
BURLINGTON				5,078,461	5,319,835	4.8%	5,078,461	5,319,835	241,374	4.8%
CAMBRIDGE				23,748,895	24,952,636	5.1%	23,748,895	24,952,636	1,203,741	5.1%
DEDHAM				5,311,572	5,518,993	3.9%	5,311,572	5,518,993	207,421	3.9%
HINGHAM SEWER DISTRICT				1,798,028	1,863,727	3.7%	1,798,028	1,863,727	65,699	3.7%
HOLBROOK				1,759,996	1,809,042	2.8%	1,759,996	1,809,042	49,046	2.8%
NATICK				5,756,705	5,940,655	3.2%	5,756,705	5,940,655	183,950	3.2%
RANDOLPH				6,272,186	6,361,335	1.4%	6,272,186	6,361,335	89,149	1.4%
WALPOLE				3,713,877	3,821,925	3.2%	3,713,877	3,821,925	118,048	3.2%
WESTWOOD				2,598,265	2,789,172	7.3%	2,598,265	2,789,172	190,907	7.3%
WEYMOUTH				11,765,811	12,119,331	3.0%	11,765,811	12,119,331	353,520	3.0%
TOTAL				\$82,754,371	\$86,375,115	4.4%	\$82,754,371	\$86,375,115	\$3,620,744	4.4%

MWRA Water-only Customers	Final FY17 Water Assessment	Preliminary FY18 Water Assessment	Percent Change from FY17	Final FY17 Sewer Assessment	Preliminary FY18 Sewer Assessment	Percent Change from FY17	Final FY17 Combined Assessment	Preliminary FY18 Combined Assessment	Dollar Change from FY17	Percent Change from FY17
LYNNFIELD WATER DISTRICT	\$643,348	\$752,424	17.0%				\$643,348	\$752,424	\$109,076	17.0%
MARBLEHEAD	2,341,415	2,479,532	5.9%				2,341,415	2,479,532	138,117	5.9%
NAHANT	476,532	539,824	13.3%				476,532	539,824	63,292	13.3%
SAUGUS	3,692,889	3,969,580	7.5%				3,692,889	3,969,580	276,691	7.5%
SOUTHBOROUGH	948,422	1,001,153	5.6%				948,422	1,001,153	52,731	5.6%
SWAMPSCOTT	1,834,151	1,900,046	3.6%				1,834,151	1,900,046	65,895	3.6%
WESTON	2,445,970	2,830,058	15.7%				2,445,970	2,830,058	384,088	15.7%
TOTAL	\$12,382,727	\$13,472,617	8.8%				\$12,382,727	\$13,472,617	\$1,089,890	8.8%

MWRA Partial Water-only Customers	Final FY17 Water Assessment	Preliminary FY18 Water Assessment	Percent Change from FY17	Final FY17 Sewer Assessment	Preliminary FY18 Sewer Assessment	Percent Change from FY17	Final FY17 Combined Assessment	Preliminary FY18 Combined Assessment	Dollar Change from FY17	Percent Change from FY17
DEDHAM-WESTWOOD WATER DISTRICT	\$196,381	\$296,964	51.2%				\$196,381	\$296,964	\$100,583	51.2%
LYNN (LWSC)	243,938	327,659	34.3%				243,938	327,659	83,721	34.3%
MARLBOROUGH	3,887,876	4,921,458	26.6%				3,887,876	4,921,458	1,033,582	26.6%
NORTHBOROUGH	1,135,772	1,245,202	9.6%				1,135,772	1,245,202	109,430	9.6%
PEABODY	1,507,269	1,945,917	29.1%				1,507,269	1,945,917	438,648	29.1%
TOTAL	\$6,971,236	\$8,737,200	25.3%				\$6,971,236	\$8,737,200	\$1,765,964	25.3%
SYSTEMS TOTAL	\$234,262,737	\$243,393,874	3.9%	\$460,615,763	\$477,844,126	3.7%	\$694,878,500	\$721,238,000	\$26,359,500	3.8%

Massachusetts Water Resources Authority
Clinton Wastewater Treatment Plant
Sewer User Charge Determination

BUDGETED EXPENSES: Proposed FY2018	
Clinton Direct Operating Expenses:	\$2,078,355
MWRA Support Allocation:	503,275
Subtotal O&M Expenses:	\$2,581,630
Total Debt Service Expenses:	\$1,195,052
Total Clinton Service Area Expenses	\$3,776,682
Less Revenue (City of Worcester Payment)	-164,418
Clinton WWTP Rate Revenue Requirement:	\$3,612,264

WASTEWATER FLOW and FLOW SHARES:	CY2016		
	Town of Clinton Flow	Lancaster Sewer District Flow	Total Wastewater Flow
Average Daily Flow (MGD)	2.048	0.305	2.353
Average Flow (MG/YR)	747.369	111.335	858.704
Proportional Share of Flow	87.03%	12.97%	100.0%

Sewer User Charge Determination

TOWN OF CLINTON	
O&M Expenses	\$2,581,630
Less Revenue (City of Worcester Payment)	-164,418
O&M Expenses to be Recovered	\$2,417,212
Clinton's Share of Flow	87.03%
Clinton's Share of O&M Costs	\$2,103,809
Total Clinton O&M Charge	\$2,103,809

LANCASTER SEWER DISTRICT	
O&M Expenses	\$2,581,630
Less Revenue (City of Worcester Payment)	-164,418
O&M Expenses to be Recovered	\$2,417,212
Lancaster's Share of Flow	12.97%
Lancaster's Share of O&M Costs	\$313,403
Total Lancaster Sewer District O&M Charge	\$313,403

Debt Service Costs to be Recovered	\$1,195,052
Clinton's Share of Wastewater Flow	87.03%
Total Clinton Debt Service Charge	\$1,040,108
Total Clinton O&M and Debt Service Charge	\$3,143,917
Less MWRA Water Ratepayer Subsidy	-2,643,917
Billable Charge to the Town of Clinton as per CH. 307, Section 8 The Acts of 1987	\$500,000

Debt Service Costs to be Recovered	\$1,195,052
Lancaster's Share of Wastewater Flow	12.97%
Total Lancaster Sewer District Debt Service Charge	\$154,944
Total Lancaster O&M and Debt Service Charge	\$468,347
Billable Charge to Lancaster Sewer District	\$468,347

Billable Sewer User Charges and Payment Schedule

Sewer Customer	Billable Charges
Town of Clinton (billable)	\$500,000
Lancaster Sewer District (before adj.)	\$468,347
Lancaster Sewer District (prior period adj.)	-\$61,180
Lancaster Sewer District (billable)	\$407,167
Total Billable Sewer Charges	\$907,167

Payment 1 on or before Sept 15, 2017	Payment 2 on or before Nov 15, 2017	Payment 3 on or before Feb 15, 2018	Payment 4 on or before May 15, 2018
\$125,000	\$125,000	\$125,000	\$125,000
\$117,087	\$117,087	\$117,087	\$117,087
\$242,087	\$242,087	\$242,087	\$242,087

Massachusetts Water Resources Authority
Chicopee Valley Aqueduct Water System Assessment
PFY2018

CVA Operating Budget	FY17	PFY18	Change from Prior Year	
			Dollars	Percent
CVA Cost Center Expenses	\$882,479	\$871,112	-\$11,367	-1.3%
Allocated Waterworks Expenses	141,678	136,460	-5,218	-3.7%
Allocated Watershed/PILOT	1,070,505	454,446	-616,059	-57.5%
Allocated Watershed Land Acquisition	24,348	24,041	-307	-1.3%
Allocated MWRA Indirect Expenses	564,148	554,795	-9,353	-1.7%
SUBTOTAL OPERATING BUDGET	\$2,683,158	\$2,040,854	-\$642,305	-23.9%

CVA Capital Budget	FY17	PFY18	Change from Prior Year	
			Dollars	Percent
Capital Expenses	\$2,879,705	\$2,941,129	\$61,424	2.1%
TOTAL CVA BUDGET	\$5,562,863	\$4,981,983	-\$580,881	-10.4%

BASE COMMUNITY ASSESSMENT	FY17 ¹	FY18 ²	Change from Prior Year	
			Dollars	Percent
Chicopee	\$3,880,051	\$3,450,377	-\$429,675	-11.1%
South Hadley Fire District #1	802,229	731,616	-70,612	-8.8%
Wilbraham	880,583	799,990	-80,594	-9.2%
CVA BASE SYSTEM ASSESSMENT	\$5,562,863	\$4,981,983	-\$580,881	-10.4%

PRIOR PERIOD ADJUSTMENTS	FY17 ³	FY18 ³	Change from Prior Year	
			Dollars	Percent
Chicopee	-\$455,231	-\$49,500	\$405,731	-89.1%
South Hadley Fire District #1	-94,393	-10,273	84,120	-89.1%
Wilbraham	-99,295	-7,979	91,317	-92.0%
TOTAL ADJUSTMENTS	-\$648,920	-\$67,751	\$581,168	-89.6%

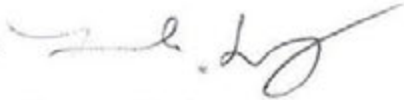
ADJUSTED ASSESSMENT	FY17	PFY18	Change from Prior Year	
			Dollars	Percent
Chicopee	\$3,424,820	\$3,400,877	-\$23,944	-0.7%
South Hadley Fire District #1	707,836	721,344	13,508	1.9%
Wilbraham	781,288	792,011	10,723	1.4%
ADJUSTED ASSESSMENT	\$4,913,944	\$4,914,231	\$288	0.01%

¹ Based on CY2015 water use and before prior period adjustments.

² Based on CY2016 water use and before prior period adjustments.

³ Prior period adjustment to account for budget to actual expenses.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: February 15, 2017
SUBJECT: Transmittal of the FY18 Proposed Current Expense Budget

COMMITTEE Administration, Finance & Audit


Kathy Som, Budget Director


Louise L. Miller, Budget Manager

Preparer/Title

INFORMATION

VOTE


Thomas J. Durkin

Director, Finance

MWRA's long-term goal has been to provide sustainable and predictable assessment increases to its member communities. In the past years, MWRA has been very successful in attaining this goal by utilizing a multi-year rates management strategy, which included controlled spending and the use of historical variable rate assumptions. In agreement with the Advisory Board, this strategy allowed the practice of targeted debt defeasance in the most challenging years, given that the debt service represents the largest component of the budget.

However, the recent increase in the variable short-term rates, higher health insurance, higher utility chemicals and construction costs, coupled with potential tax code changes may represent a higher uncertainty than in recent years.

To ensure that the MWRA's long-term goals will continue to be met in future years, it is imperative to continue the conservative fiscally responsible budgeting practices while addressing all outstanding long-term liabilities.

The FY18 Proposed Budget puts forth a 3.79% combined assessment increase, matching the increase projected for FY18 last year. At the same time, the next four-year planning estimates, through FY22 (the most challenging year facing the Authority) also project assessment increases at 3.8%.

The FY18 Proposed Budget reflects the benefits of a planned \$20.0 million defeasance in FY17 with targeted savings primarily in FY22. Besides the planned defeasances, the Authority is continuing to address the significant Other Post Employment Benefits (OPEB) and Pension obligations by including \$1.8 million optional pension payment in the Proposed Budget.

RECOMMENDATION:

To approve transmittal of the FY18 Proposed Current Expense Budget to the MWRA Advisory Board for its 60 day review and comment period.

DISCUSSION:

This staff summary presents an overview of the FY18 Proposed Current Expense Budget (CEB) and projects the Rate Revenue Requirement for the next ten years.

Summary

The FY18 Proposed Budget recommends a combined increase in rates and charges of 3.79%. Capital financing costs remain the largest component of the CEB and account for 62.6% of total expenses. Total expenses are \$749.1 million, an increase of \$29.5 million or 4.1% over the FY17 Budget. There are no offsets from Debt Service Assistance (DSA) assumed for FY18 or in any future years.

Total expenses include \$469.1 million for Capital Financing costs and \$280.0 million for operating expenses, of which \$238.4 million is for Direct Expenses and \$41.6 million is for Indirect Expenses. Total expenses increased \$29.5 million or 4.1% from the FY17 Budget mainly due to a higher debt service requirement of \$14.0 million, higher Direct Expenses of \$11.9 million due to inclusion of costs associated with the cross harbor electrical cable project (Table 1), Cost of Living Adjustments (COLA) for staff, higher chemical costs – including six months of cost associated with enterococcus removal, higher healthcare costs, and higher projected maintenance expenses.

The FY18 Proposed Budget revenues, excluding rate revenue, total \$27.9 million, an increase of \$3.1 million or 12.7% from the FY17 Budget. The FY18 Proposed Budget non-rate revenue budget includes \$16.6 million in Other User Charges and Other Revenue and \$11.3 million for Investment Income.

The FY18 Proposed Rate Revenue Requirement is \$721.2 million, an increase of \$26.3 million or 3.79% over the FY17 Budget.

Table 1 on the following page provides a comparison of the FY18 Proposed CEB and FY17 Budget by major categories. Additional detail by line item and by Division is provided in Attachments A and B.

**Table 1 MWRA Current Expense Budget
Proposed FY18 Budget versus FY17 Approved Budget**

(\$ in Millions)	FY17 Approved Budget	Proposed FY18 Budget	\$ Change	% Change
Directs	\$ 226.5	\$ 238.4	\$ 11.9	5.2%
Indirects	38.0	41.6	3.6	9.5%
Sub-Total Operating Expenses	\$ 264.5	\$ 280.0	\$ 15.5	5.9%
Capital Financing (before Offsets)	455.1	469.1	14.0	3.1%
Offsets: Bond Redemption ¹	-	-	-	
Variable Debt Savings	-	-	-	
Debt Service Assistance	-	-	-	0.0%
Sub-Total Capital Financing	\$ 455.1	\$ 469.1	\$ 14.0	3.1%
Total Expenses	\$ 719.6	\$ 749.1	\$ 29.5	4.1%
Investment Income	\$ 9.5	\$ 11.3	\$ 1.8	18.8%
Non-Rate Revenue	15.3	16.6	1.4	8.8%
Rate Stabilization ¹	-	-	-	
Sub-Total Non-Rate Revenue	\$ 24.7	\$ 27.9	\$ 3.1	12.7%
Rate Revenue	694.9	721.2	26.4	3.8%
Total Revenue & Income	\$ 719.6	\$ 749.1	\$ 29.5	4.1%
FY18 Rate Revenue Increase				3.79%
Combined Use of Reserves	\$ -	\$ -		

¹ MWRA has two reserve funds (Bond Redemption and Rate Stabilization) which can be used at the discretion of the Authority to manage the rate revenue requirement. Use of the Bond Redemption Fund reduces total expenses and Rate Stabilization Fund increases total revenue. Under the terms of the General Bond Resolution the annual use of Rate Stabilization funds cannot exceed 10% of the year's senior debt service. Bond Redemption funds can be used only to retire or prepay outstanding debt. There is no annual limit on the amount of Bond Redemption funds used in a year, however the use is tied to the bonds' maturity dates and it is utility specific.

EXPENSES:

Direct Expenses

In FY17, Eversource began work to determine the work required to be done to protect the Cross-Harbor Cable (HEEC cable) that provides electricity to the Deer Island wastewater treatment plant during the dredging of the Boston Harbor. The investigatory phase of the project to verify the precise location and depth of the cable was completed in FY17. The remediation work, Phase 2, will take place in the summer of 2017 (FY18). During this work the HEEC cable must be de-energized and MWRA is required to utilize its Combustion Turbine Generators (CTGs) to power the plant. By doing so, MWRA will incur significant costs related to diesel fuel use, in-house and third party labor, and significant overtime. These additional costs are partially offset by the avoided cost of energy and distribution charges.

Table 2 below shows the costs to MWRA associated with the project. The costs have been incorporated in the operating budget line items as indicated.

Table 2
Deer Island Cross Harbor Cable Project Costs

Item	Proposed FY18	Description
Overtime - Planned	\$ 407,864	Estimated overtime of a 2nd class engineer 24x7 and 2 Medium Voltage Electrician weekdays 3 PM to 7 AM and 24x7 on the weekends, July through October 2017.
Electricity	\$ (2,523,830)	Estimated savings in electricity cost while offline.
Diesel Fuel	\$ 6,232,506	Estimated fuel cost to run the CTGs when DITP is off the electrical grid.
Utilities Sub-total	\$ 3,708,676	
Maintenance	\$ 302,600	Estimated contractor costs for CTG third-party contractor, 8 hours per weekday.
Total	\$ 4,419,140	

FY18 Direct Expenses total \$238.4 million, an increase of \$11.9 million, or 5.2%, from the FY17 Budget.

- *Wages and Salaries* – The budget includes \$104.8 million for Wages and Salaries as compared to \$101.9 million in the FY17 Budget, an increase of \$2.9 million or 2.9%. Regular Pay which is 98.3% of total Wages and Salaries, increased \$3.0 million primarily for COLA increases. The FY18 Proposed Budget funds 1,150 positions, the same as FY17 and the goal recommended in the May 2012 staffing study by the Amawalk Consulting Group, LLC, to be reached in a five year timeframe. As always, new hires and backfilling of vacant positions will be managed at the agency level and addressed on a case-by-case basis by senior management.

- *Overtime* – The budget includes \$4.5 million for Overtime, an increase of \$315,000 or 7.5% for overtime, including the overtime associated with the HEEC cable project. Without the anticipated cable project, overtime is \$93,000 or 2.2% below FY17.
- *Fringe Benefits* – The budget includes \$21.5 million for Fringe Benefits, an increase of \$1.3 million or 6.3% from the FY17 Budget. Health Insurance premiums total \$18.6 million, an increase of \$1.1 million or 6.3% from the FY17 Budget largely due to an anticipated 8% increase in rate structure.
- *Workers' Compensation* – The budget includes \$2.3 million for Workers' Compensation, a decrease of \$21,000 or 0.9% from the FY17 Budget and is based on a three-year average of actual spending.
- *Chemicals* – The budget includes \$10.4 million for Chemicals, an increase of \$1.3 million or 14.3% from the FY17 Budget mainly due to a half year funding for the Deer Island National Pollutant Discharge Elimination System (NPDES) permit which is projected to have more stringent requirements for enterococcus treatment compliance and increased pricing primarily for Sodium Hypochlorite and Soda Ash.
- *Utilities* – The budget includes \$25.8 million for Utilities, which is an increase of \$4.2 million or 19.6% from the FY17 Budget. The increase is for diesel fuel of \$6.2 million to run the CTG's during work associated with the cross harbor electrical cable project. This is offset by a reduction of electricity of \$2.5 million. The budget funds \$14.2 million for Electricity, \$8.7 million for Diesel Fuel, \$2.2 million for Water, and \$590,000 for Natural Gas. Without the anticipated cable project, utilities in total are \$500,000 or 2.3% higher than FY17.
- *Maintenance* – The budget includes \$32.5 million for Maintenance projects, an increase of \$1.4 million or 4.6% from the FY17 budget. The increase is for one time projects and for the contractor services necessary to support DITP operations while CTGs are operating during the HEEC cable project. The FY18 Maintenance request is \$1.5 million above FY16 actuals. Without the anticipated cable project, maintenance is \$1.1 million or 3.6% higher than FY17.
- *Training and Meetings* – The budget includes \$406,000 for Training and Meetings, a decrease of \$29,000 or 6.7% from the FY17 Budget.
- *Professional Services* – The budget includes \$6.7 million for Professional Services, an increase of \$154,000 or 2.4% from the FY17 Budget. The budget reflects funding of \$1.8 million for Security, \$1.7 million for Regulatory Monitoring, and \$1.7 million for Other Professional Services to support items such as professional staff development, 24/7 monitoring of the MWRA MIS network, and as-needed engineering services.
- *Other Materials* – The budget includes \$6.7 million for Other Materials, an increase of \$478,000 or 7.7% from the FY17 Budget. \$300,000 of the increase is for hardware

replacement, mostly laptops; and \$140,000 is for water quality testing equipment. The budget includes funding of \$1.9 million for Vehicle Purchases, \$908,000 for Lab and Testing Supplies, \$833,000 for Computer Hardware needs, \$771,000 for Vehicle Expenses mostly for fuel purchases for the MWRA fleet, \$599,000 for Equipment/Furniture, \$451,000 for Health and Safety, and \$448,000 for Work Clothes.

- *Other Services* – The budget includes \$22.8 million for Other Services, a decrease of \$142,000 or 0.6% from the FY17 Budget. The budget includes funding of \$12.8 million for Sludge Pelletization, \$3.7 million for Space/Lease Rentals and related expenses for the Charlestown Navy Yard, and Chelsea facilities, \$2.0 million for Voice and Data costs, \$1.4 million for Other Services, and \$1.2 million for Grit & Screenings removal. The largest decrease is for Sludge Pelletization of \$298,000 due to deflation. This is offset by increases in Membership/Dues/Subscriptions, Printing & Duplicating, Space/Lease Rentals, and Other Services.

Indirect Expenses

Indirect Expenses for FY18 total \$41.6 million, an increase of \$3.6 million or 9.5% from the FY17 Budget. Below are the highlights of major changes:

- The budget includes \$25.0 million for the Watershed Management budget, an increase of \$733,000 or 3.0% over the FY17 Budget. The budget includes \$16.4 million for reimbursement of operating expenses net of revenues, and \$8.6 million for Payment in Lieu of Taxes (PILOT). The largest increases are for operating expenses net of revenues of \$505,000 mainly for healthcare costs and contractual increases. In addition there is an increase of \$228,000 for PILOT payments.
- The budget includes \$5.1 million for the Retirement Fund, an increase of \$445,000 million or 9.6% over the FY17 budget. The minimum required contribution for FY18 is \$3.3 million based on the January 1, 2015 actuarial report. An additional pension deposit of \$1.8 million was also included in the Proposed FY18 Budget in recognition of lower than assumed returns on pension investments in CY 16.
- The budget includes \$671,000 for the Harbor Energy Electric Company (HEEC), a decrease of \$103,000 or 13.3% from the FY17 Budget to reflect updated calculations for the Operations and Maintenance component of the HEEC payment obligations.
- The budget includes \$2.1 million for Insurance, an increase of \$116,000 or 5.8% from the FY17 Budget. The FY18 Budget was based on actual average spending for the past five years, FY12-16.
- The Authority has complied with the GASB 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other than Pensions (OPEB)*, by disclosing this liability in the year-end Financial Statements. As part of the multi-year strategy to address its unfunded liabilities for OPEB and pension holistically, the

Board approved a plan to pay down our pension liability and upon reaching full funding, move to address the OPEB obligation. Based on the latest actuarial evaluation, MWRA's pension fund is at 98.3% funding level. In the FY18 Budget the Authority is proposing to fund its OPEB liability at \$5.0 million. To maximize the benefits in terms of returns and accounting treatment, an irrevocable OPEB Trust was established after Board approval and funding started on April 23rd, 2015. The current Trust balance is \$16.5 million. The \$5.0 million contribution is 50% of the Annual Required Contribution (ARC) after the reduction of the pay-as-you-go portion budgeted under the Fringe line item, based on the January 1, 2014 actuarial report.

- Funding for the Operating Reserve for FY18 is \$2.1 million. The Operating Reserve balance is in compliance with MWRA General Bond Resolution which requires a balance of one-sixth of annual operating expenses. Based on the FY18 Proposed Budget the required balance is \$41.3 million versus the \$39.2 million required in FY17.

Capital Financing

As a result of the Authority's Capital Improvement Program, capital financing as a percent of total expenses (before offsets) has increased steadily from 36% in 1990 to 62.6% in the FY18 Current Expense Budget. Much of this debt service is for completed projects, primarily the Boston Harbor Project and the Integrated Water Supply Improvement Program. The MWRA's capital spending, from its inception, had been dominated by projects mandated by court ordered or regulatory requirements, which in total have accounted for ~80% of capital spending to date. Going forward, and as the Combined Sewer Overflow (CSO) projects reached substantial completion in December 2015, the majority of spending will be focused on asset protection and water redundancy initiatives. The projected capital spending scheduled for fiscal year 2018 is less than scheduled principal payments which will contribute to decrease MWRA's outstanding indebtedness.

The Authority has actively managed its debt structure to take advantage of favorable interest rates. Tools used by the MWRA to lower borrowing costs and manage rates include current and advanced refunding of outstanding debt, maximizing the use of the subsidized State Revolving Fund (SRF) debt, issuance of variable rate debt, swap agreements, and the use of surplus revenues to defease debt. The MWRA also uses tax exempt commercial paper to minimize the financing cost of construction in process.

The FY18 Proposed Budget capital financing costs total \$469.1 million and remain the largest portion of the MWRA's budget, accounting for 62.6% of total expenses.

The FY18 Proposed Budget includes a planned defeasance of \$20.0 million which will reduce debt service by approximately \$21.1 million in FY22, and \$1,050,000 in years FY18-21.

The FY18 Budget assumes a 3.5% interest rate for variable rate debt which is 0.25% higher than the rate in FY17. The Authority's variable rate debt assumption is comprised of three separate elements: the interest rate for the daily and weekly series; liquidity fees for the Standby Bond

Purchase Agreement, Letter of Credit, and Direct Purchase providers; and remarketing fees. While MWRA continues to experience unusually low interest rates, they are not reflective of historical averages and there are projected increases in the future.

The FY18 Proposed Budget capital financing costs increased by \$14.0 million or 3.1% compared to the FY17 Budget. This increase in the MWRA's debt service is the result of projected FY18 borrowings and the structure of the existing debt, partially offset by the impact of the projected defeasance. The FY18 capital financing budget includes:

- \$263.1 million in principal and interest payments on MWRA's senior fixed rate bonds. This amount includes \$5.7 million to support issuances of \$100 million in May 2017 and \$3.5 million to support issuances of \$100 million of new money in May 2018. Also it includes a reduction of \$1,050,000 for the effect of the planned FY17 defeasance;
- \$87.6 million in principal and interest payments on subordinate bonds;
- \$87.0 million in principal and interest payments on SRF loans. This amount includes \$8.8 million to support issuances of \$105.0 million of replacement loans during 2017 and 2018;
- \$13.2 million to fund ongoing capital projects with current revenue and to meet coverage requirements;
- \$4.1 million to fund the interest expense related to the Local Water Pipeline Assistance Program; and,
- \$3.2 million for the Chelsea Lease.

Revenue

FY18 non-rate revenue totals \$27.9 million, which is an increase of \$3.1 million or 12.7% versus the FY17 Budget. The FY18 non-rate revenue budget includes:

- \$7.7 million in Other Revenue including, \$4.4 million from the sale of the Authority's Renewable Portfolio Credits, revenue from participating in load response program and sale of generated power to the grid, as well as \$2.2 million in permit fees and penalties. Other Revenue increased \$1.1 million from the FY17 Budget due to an increase in the load response program.
- \$11.3 million in Investment Income, an increase of \$1.8 million or 18.8% from the FY17 Budget, reflecting higher interest rate assumptions. The short-term interest rate assumption is at 1.25% which is at the 65 basis points above the FY17 Budget level.
- \$9.0 million in Other User Charges, including \$4.9 million for Chicopee Valley Aqueduct (CVA) communities, \$1.7 million for Deer Island water usage, \$727,000 for entrance fees from member communities, and \$500,000 for the Commonwealth's partial

reimbursement for Clinton Wastewater Treatment Plant expenses. Other User Charges are \$212,000 or 2.4% more than the FY17 Budget which is mainly due to assessment increases related to increases for Lancaster and Water Treatment Plants Residuals assessments.

The Rate Revenue Requirement for FY18 is \$721.2 million, an increase \$26.4 million or 3.79% over the FY17 Budget. The Rate Revenue Requirement is the difference between total expenses of \$749.1 million, less non-rate revenue of \$27.9 million.

Planning Estimates and Future Rate Projections

MWRA's planning estimates are projections based on a series of assumptions about future spending (operating and capital), interest rates, inflation, and other factors. MWRA uses the planning estimates to model and project what future rate increases might be based upon these assumptions, as well as to test the impact of changes to assumptions on future rate increases. The planning estimates are not predictions of what rate increases will be but rather they provide the context and framework for guiding MWRA financial policy and management decision making that ultimately determine the level of actual rate increases on an annual basis. Historically, the planning estimates were based on conservative financial assumptions. Conservative projections of future rate increases benefit the MWRA by providing assurance to the rating agencies that MWRA anticipates to raise revenues sufficient to pay for its operations and outstanding debt obligations now and over the long-term. Additionally, conservative forecasts of rate revenue increases enable member communities to adequately plan and budget for future payments to MWRA. In FY14 the Authority tightened certain planning estimate assumptions such as inflation on direct expenses and limiting the annual capital improvement spending.

Table 3 below presents the combined estimated future rate increases and household charges based on the Proposed FY18 Budget. The planning estimates shown below assume no Debt Service Assistance from the Commonwealth and use of Rate Stabilization and Bond Redemption reserves through FY27.

Table 3

Rates & Budget Projections											
Proposed FY18 CEB	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027
Total Rate Revenue (\$000)	\$ 694,879	\$ 721,238	\$ 748,179	\$ 777,081	\$ 806,851	\$ 837,644	\$ 858,538	\$ 851,261	\$ 853,800	\$ 863,976	\$ 871,071
Rate Revenue Change from Prior Year (\$000)	\$ 22,438	\$ 26,359	\$ 27,141	\$ 28,701	\$ 29,770	\$ 30,793	\$ 20,894	\$ (7,277)	\$ 2,549	\$ 10,167	\$ 7,094
Rate Revenue Increase	3.4%	3.8%	3.8%	3.8%	3.8%	3.8%	2.5%	-0.8%	0.3%	1.2%	0.8%
Use of Reserves (\$000)	\$ -	\$ -	\$ -	\$ -	\$ 4,197	\$ 10,910	\$ -	\$ -	\$ -	\$ 33,596	\$ 13,917
<i>Estimated Household Bill</i>											
Based on annual water usage of 61,000 gallons	\$1,095	\$1,144	\$1,196	\$1,250	\$1,306	\$1,365	\$1,420	\$1,462	\$1,511	\$1,567	\$1,623
Based on annual water usage of 90,000 gallons	\$1,616	\$1,689	\$1,764	\$1,844	\$1,927	\$2,014	\$2,095	\$2,157	\$2,229	\$2,312	\$2,395

CEB Review and Adoption Process

The Advisory Board has 60 days from the transmittal of the FY18 Proposed Budget to review the budget and prepare comments and recommendations. During the review period, Advisory Board and MWRA staff will continue to meet and evaluate the impact of changing circumstances as they arise. Following the receipt of the Advisory Board's comments and recommendations, MWRA presents its official responses to the Board of Directors at budget hearings. Staff will present the final budget and the final assessments and for Fiscal Year 2018 to the Board for approval in June 2017.

Attachments

- Attachment A FY18 Proposed Current Expense Budget compared to FY17 Budget
- Attachment B FY18 Proposed Current Expense Budget by Division vs. FY17 Budget
- Attachment C FY18 Proposed Current Expense Budget compared to FY17 Projection

ATTACHMENT A

FY18 Proposed Budget vs FY17 Approved Budget

TOTAL MWRA	FY16 Actuals	FY17 Approved Budget	FY18 Proposed Budget	Change FY18 Proposed Budget vs FY17 Approved Budget	
				\$	%
EXPENSES					
WAGES AND SALARIES	\$ 96,118,427	\$ 101,858,897	\$ 104,781,848	\$ 2,922,951	2.9%
OVERTIME	4,355,586	4,192,676	4,507,278	314,602	7.5%
FRINGE BENEFITS	19,131,139	20,242,324	21,515,134	1,272,810	6.3%
WORKERS' COMPENSATION	2,350,369	2,344,190	2,322,980	(21,210)	-0.9%
CHEMICALS	9,297,550	9,110,407	10,414,788	1,304,381	14.3%
ENERGY AND UTILITIES	18,744,867	21,541,078	25,750,207	4,209,129	19.5%
MAINTENANCE	30,978,045	31,080,642	32,496,381	1,415,739	4.6%
TRAINING AND MEETINGS	370,752	435,481	406,181	(29,300)	-6.7%
PROFESSIONAL SERVICES	5,886,717	6,531,939	6,685,715	153,776	2.4%
OTHER MATERIALS	6,186,216	6,219,630	6,697,290	477,660	7.7%
OTHER SERVICES	22,628,385	22,974,855	22,833,106	(141,749)	-0.6%
TOTAL DIRECT EXPENSES	\$ 216,048,053	\$ 226,532,117	\$ 238,410,908	\$ 11,878,791	5.2%
INSURANCE	\$ 1,953,053	\$ 1,997,898	\$ 2,113,452	115,554	5.8%
WATERSHED/PILOT/DEBT	27,469,847	24,291,268	25,024,006	732,738	3.0%
COMMONWEALTH DEBT PREPAYMENT	32,000,000	-	-	-	-
HEEC PAYMENT	1,342,141	773,859	670,978	(102,881)	-13.3%
MITIGATION	1,520,000	1,558,000	1,596,950	38,950	2.5%
ADDITIONS TO RESERVES	(34,927)	(167,742)	2,062,526	2,230,268	N/A
RETIREMENT FUND	8,159,521	3,132,624	3,277,369	144,745	4.6%
ADDITIONAL PENSION DEPOSIT	-	1,500,000	1,800,000	300,000	20.0%
POSTEMPLOYMENT BENEFITS	5,224,848	4,876,050	5,035,422	159,372	3.3%
TOTAL INDIRECT EXPENSES	\$ 77,634,483	\$ 37,961,956	\$ 41,580,703	\$ 3,618,746	9.5%
STATE REVOLVING FUND	\$ 78,131,559	\$ 86,971,915	\$ 87,044,610	72,695	0.1%
SENIOR DEBT	275,085,817	268,472,557	263,121,111	(5,351,446)	-2.0%
SUBORDINATE DEBT	49,222,442	69,997,992	87,554,667	17,556,675	25.1%
LOCAL WATER PIPELINE CP	262,498	4,149,242	4,086,863	(62,379)	-1.5%
CURRENT REVENUE/CAPITAL	11,200,000	12,200,000	13,200,000	1,000,000	8.2%
CAPITAL LEASE	3,217,060	3,217,060	3,217,060	-	0.0%
DEBT PREPAYMENT	-	10,994,960	10,900,000	(94,960)	-0.9%
VARIABLE RATE SAVINGS	(12,873,173)	-	-	-	-
DEFEASANCE ACCOUNT	-	-	-	-	-
DEBT SERVICE ASSISTANCE	(873,804)	(873,804)	-	873,804	-100.0%
TOTAL DEBT SERVICE	\$ 403,372,399	\$ 455,129,922	\$ 469,124,311	\$ 13,994,389	3.1%
TOTAL EXPENSES	\$ 697,054,934	\$ 719,623,995	\$ 749,115,922	\$ 29,491,926	4.1%
REVENUE & INCOME					
RATE REVENUE	\$ 672,440,000	\$ 694,878,500	\$ 721,238,000	26,359,501	3.79%
OTHER USER CHARGES	8,783,469	8,752,834	8,964,366	211,532	2.4%
OTHER REVENUE	15,749,464	6,519,171	7,658,774	1,139,603	17.5%
RATE STABILIZATION	-	-	-	-	-
INVESTMENT INCOME	10,303,841	9,473,490	11,254,782	1,781,292	18.8%
TOTAL REVENUE & INCOME	\$ 707,276,774	\$ 719,623,995	\$ 749,115,922	\$ 29,491,928	4.1%

ATTACHMENT B

FY18 Proposed Direct Expense Budget by Division

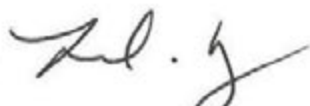
Division	FY17 Final Budget	FY18 Proposed Budget	Change FY18 Proposed Budget vs. FY17 Final Budget	
			\$	%
Executive	\$1,315,196	\$1,348,637	\$33,441	2.5%
Emergency Preparedness	3,180,579	3,627,257	\$446,678	14.0%
Administration	46,636,917	48,568,083	\$1,931,166	4.1%
Finance	4,267,780	4,146,902	-\$120,877	-2.8%
Law	1,967,409	2,111,728	\$144,319	7.3%
Affirmative Action	555,259	558,363	\$3,104	0.6%
Internal Audit	654,825	686,914	\$32,089	4.9%
Public Affairs	1,220,789	1,266,464	\$45,675	3.7%
Operations	166,733,363	176,096,561	\$9,363,198	5.6%
Total Authority	\$226,532,117	\$238,410,908	\$11,878,791	5.2%

ATTACHMENT C

FY18 Proposed vs FY17 Projection

TOTAL MWRA	FY17 Budget	FY17 Projection	FY18 Proposed	Change FY18 Proposed Budget vs FY17 Projection	
				\$	%
EXPENSES					
WAGES AND SALARIES	\$ 101,858,897	\$ 98,693,997	\$ 104,781,848	\$ 6,087,851	6.2%
OVERTIME	4,192,676	4,353,199	4,507,278	154,079	3.5%
FRINGE BENEFITS	20,242,324	19,688,233	21,515,134	1,826,901	9.3%
WORKERS' COMPENSATION	2,344,190	2,144,190	2,322,980	178,790	8.3%
CHEMICALS	9,110,407	9,479,801	10,414,788	934,987	9.9%
ENERGY AND UTILITIES	21,541,078	20,825,402	25,750,207	4,924,805	23.6%
MAINTENANCE	31,080,642	32,004,057	32,496,381	492,324	1.5%
TRAINING AND MEETINGS	435,481	414,086	406,181	(7,905)	-1.9%
PROFESSIONAL SERVICES	6,531,939	6,818,941	6,685,715	(133,226)	-2.0%
OTHER MATERIALS	6,219,630	6,156,271	6,697,290	541,019	8.8%
OTHER SERVICES	22,974,855	22,065,308	22,833,106	767,798	3.5%
TOTAL DIRECT EXPENSES	\$ 226,532,117	\$ 222,643,485	\$ 238,410,908	\$ 15,767,423	7.1%
INSURANCE	\$ 1,997,898	\$ 1,932,428	\$ 2,113,452	181,024	9.4%
WATERSHED/PILOT	24,291,268	23,900,159	25,024,006	1,123,847	4.7%
HEEC PAYMENT	773,859	773,859	670,978	(102,881)	-13.3%
MITIGATION	1,558,000	1,542,800	1,596,950	54,150	3.5%
ADDITIONS TO RESERVES	(167,742)	(167,742)	2,062,526	2,230,268	-1329.6%
RETIREMENT FUND	3,132,624	3,132,624	3,277,369	144,745	4.6%
ADDITIONAL PENSION DEPOSIT	1,500,000	1,500,000	1,800,000	300,000	20.0%
POSTEMPLOYMENT BENEFITS	4,876,050	4,876,050	5,035,422	159,372	3.3%
TOTAL INDIRECT EXPENSES	\$ 37,961,957	\$ 37,490,179	\$ 41,580,703	\$ 4,090,525	10.9%
STATE REVOLVING FUND	\$ 86,971,915	\$ 82,906,636	\$ 87,044,610	4,137,974	5.0%
SENIOR DEBT	268,472,557	263,027,504	263,121,111	93,607	0.0%
SUBORDINATE DEBT	69,997,992	69,997,992	87,554,667	17,556,675	25.1%
LOCAL WATER PIPELINE CP	4,149,242	1,011,093	4,086,863	3,075,770	304.2%
CURRENT REVENUE/CAPITAL	12,200,000	12,200,000	13,200,000	1,000,000	8.2%
CAPITAL LEASE	3,217,060	3,217,060	3,217,060	-	0.0%
DEBT PREPAYMENT	10,994,960	10,994,960	10,900,000	(94,960)	-0.9%
VARIABLE RATE SAVINGS	-	(9,643,716)	-	9,643,716	-100.0%
DEFEASANCE ACCOUNT	-	22,292,195	-	(22,292,195)	-100.0%
DEBT SERVICE ASSISTANCE	(873,804)	(873,804)	-	873,804	-100.0%
TOTAL DEBT SERVICE	\$ 455,129,920	\$ 455,129,920	\$ 469,124,311	\$ 13,994,391	3.1%
TOTAL EXPENSES	\$ 719,623,994	\$ 715,263,584	\$ 749,115,922	\$ 33,852,339	4.7%
REVENUE & INCOME					
RATE REVENUE	\$ 694,878,500	\$ 694,878,500	\$ 721,238,000	26,359,500	3.79%
OTHER USER CHARGES	8,752,834	8,752,834	8,964,366	211,532	2.4%
OTHER REVENUE	6,519,171	13,719,271	7,658,774	(6,060,497)	-44.2%
RATE STABILIZATION	-	-	-	-	-
INVESTMENT INCOME	9,473,490	9,309,490	11,254,782	1,945,292	20.9%
TOTAL REVENUE & INCOME	\$ 719,623,996	\$ 726,660,096	\$ 749,115,922	\$ 22,455,827	3.1%
VARIANCE:		\$ 11,396,512		\$ (11,396,512)	


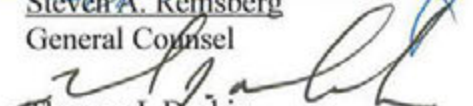
STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: February 15, 2017
SUBJECT: Appointment of Proxy for Fore River Railroad Corporation

COMMITTEE: Administration, Finance & Audit

VOTE
 INFORMATION

Sean R. Cordy, Senior Financial Analyst *src*
Matthew R. Horan, Treasurer *mh*
Preparer/Title


Steven A. Remsberg
General Counsel

Thomas J. Durkin
Director of Finance

RECOMMENDATION:

That the MWRA Board of Directors, as holder of all voting rights of all the issued and outstanding shares of stock of the Fore River Railroad Corporation, vote to appoint Kathy Soni, with the power of substitution, to vote as proxy at the next annual meeting and any special meeting of the stockholders for the Fore River Railroad Corporation in accordance with the form of proxy attached hereto and filed with the records of this meeting. In addition, the MWRA Board of Directors directs the proxy to elect the following board members:

Thomas J. Durkin
Lisa R. Grollman
Brian Peña
John J. Walsh

Godfrey O. Ezeigwe
Michael J. Hornbrook
Steven A. Remsberg

Michele S. Gillen
Frederick A. Laskey
John P. Vetere

DISCUSSION:

In 1987, MWRA purchased the Fore River Staging Area from General Dynamics. Included in the sale was the purchase of the Fore River Railroad Corporation (FRRC). The railroad operates during weekdays and services MWRA's Residuals Plant and Twin Rivers Technologies, Inc. Since July 2001, FRRC has leased its operating rights to Fore River Transportation Corp., a short-line railroad operator. Pursuant to the by-laws of the FRRC, an annual meeting of the shareholders must be held in the first quarter of each calendar year to elect the Board of Directors. MWRA is the sole stockholder of the Fore River Railroad Corporation.

The primary purpose of the proxy for the stockholders at the Annual Stockholders' meeting is to elect the FRRC Board of Directors as set forth on the Shareholder's Annual Meeting Agenda. Each Director's term extends until the next annual meeting. The FRRC by-laws state that the

Board shall consist of a minimum of five members.

The current Board Members are listed below:

Thomas J. Durkin
Lisa R. Grollman
Brian Peña
John J. Walsh

Godfrey O. Ezeigwe
Michael J. Hornbrook
Steven A. Remsberg

Michele S. Gillen
Frederick A. Laskey
John P. Vetere

Staff recommend that all current members be reappointed to serve on the FRRRC Board in 2017.

Attachment: Form of Proxy

FORE RIVER RAILROAD CORPORATION
PROXY

The undersigned, on behalf of MWRA's Board of Directors and duly representing the holder of all the issued and outstanding shares of stock of the Fore River Railroad Corporation hereby appoints Kathy Soni to vote as proxy for the undersigned at the upcoming Annual Meeting of the Stockholders and at any Special Meeting of the Stockholders of the Fore River Railroad Corporation. The proxy is instructed to vote on all business as may properly come before the stockholders meetings and to sign any waivers of notice to be taken thereat, with all the powers the undersigned would possess if personally present.

Thomas J. Durkin
Lisa R. Grollman
Brian Peña
John J. Walsh

Godfrey O. Ezeigwe
Michael J. Hornbrook
Steven A. Remsberg

Michele S. Gillen
Frederick A. Laskey
John P. Vetere

MASSACHUSETTS WATER RESOURCES
AUTHORITY

By: _____
Matthew A. Beaton
Chairman
Board of Directors

Dated: Boston, Massachusetts
February 15, 2017

Massachusetts Water Resources Authority: 1,470 Shares



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

to be held on

Wednesday, February 15, 2017

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

Time: Immediately following AF&A Comm.

AGENDA

A. Contract Awards

1. Long-Term Energy Supply Alternatives Analysis, Deer Island Treatment Plant: Burns & McDonnell, Contract 6963
2. Oxygen Generation Services, Deer Island Treatment Plant: Solutionwerks, Inc., Contract S562
3. Nut Island Headworks Odor Control and HVAC Improvements Inspections, Evaluations, Design, Construction Administration and Resident Engineering Services: Hazen & Sawyer, PC, Contract 7517

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the
Wastewater Policy and Oversight Committee

December 14, 2016

A meeting of the Wastewater Policy and Oversight Committee was held on December 14, 2016 at the Authority headquarters in Charlestown. Vice-Chairman Walsh presided. Present from the Board were Messrs. Blackmon, Carroll, Cotter, Flanagan, Foti, and Vitale. Among those present from the Authority staff were Fred Laskey, Steve Remsberg, Mike Hornbrook, Carolyn Fiore, John Vetere, Dave Kubiak, Steve Cullen, Kathleen Cullen, Nava Navanandan, Ted Regan, David Duest, Rick Adams and Linda D'Addario. The meeting was called to order at 11:30 a.m.

Approvals

*Memorandum of Understanding and Financial Assistance Agreement with the City of Cambridge for the Implementation of CSO Control Projects, Amendment 13 and Progress of Cambridge Implemented CSO Projects and Financial Assistance through March 2017

There was general discussion and question and answer. The Committee recommended approval (ref. agenda item A.1)

*Financial Assistance Agreement with BWSC for Implementation of CSO Projects, Amendment 16

There was general discussion and question and answer. The Committee recommended approval of Amendment 16 (ref. agenda item A.2)

Contract Awards

* Management, Operations and Maintenance of the Union Park Pump Station/CSO Projects: Woodard & Curran, Inc., Contract S559

The Committee recommended approval of the contract award (ref. agenda item B.1).

*Sewer Section 4, 5, 6 and 186 Study: Hazen and Sawyer, P.C. Contract 7423

Staff gave a presentation about the project. The Committee recommended approval of the contract award (ref. agenda item B.2).

* Approved as recommended at December 14, 2016 Board of Directors meeting.

*Janitorial Services at the Deer Island Treatment Plant: Star Building Services, Inc.

Representatives of SEIU attended the meeting and through the Executive Director, submitted a letter to the Committee regarding the retention of current janitorial employees, wages and health insurance. Staff had previously addressed these issues. The Committee recommended approval of the contract award (ref. agenda item B.3).

*Deer Island Treatment Plant Motor Control Center and Switchgear Replacement Design, Engineering Services During Construction, and Resident Engineering/Inspection Services: AECOM, Contract 7419

The Committee recommended approval of the contract award (ref. agenda item B.4).

*Deer Island Treatment Plant Personnel Dock Rehabilitation: Coastal Marine Construction, Contract 7168

Staff gave a presentation about the project. The Committee recommended approval of the contract award (ref. agenda item B.5).

The meeting adjourned at 11:15 a.m.

* Approved as recommended at November 16, 2016 Board of Directors meeting.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the
Wastewater Policy and Oversight Committee

January 18, 2017

A meeting of the Wastewater Policy and Oversight Committee was held on January 18, 2017 at the Authority headquarters in Charlestown. Vice-Chairman Walsh presided. Present from the Board were Messrs. Blackmon, Carroll, Cotter, Foti, Pappastergion, Peña, and Vitale. Among those present from the Authority staff were Fred Laskey, Steve Remsberg, Carolyn Fiore, Betsy Reilly, Carolyn Francisco Murphy, Mike Hornbrook, Dave Duest, Rick Adams, and Bonnie Hale. The meeting was called to order at 11:00 a.m.

Information

Clinton Wastewater Treatment Plant Reissued NPDES Permit

Staff summarized the provisions of the permit, and there was general discussion and question and answer.

Contract Awards

*Electrical Equipment Testing, Deer Island Treatment Plant: American Electrical Testing Company, Contract S561

There was general discussion and question and answer. The Committee recommended approval of the contract award (ref. agenda item B.1).

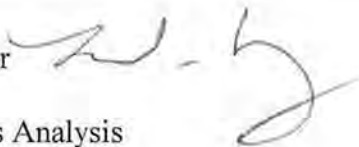
The meeting adjourned at 11:25 a.m.

* Approved as recommended at January 18, 2017 Board of Directors meeting.

ITEM POSTPONED

STAFF SUMMARY


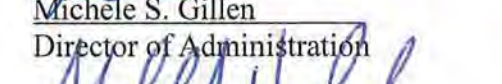
TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: February 15, 2017
SUBJECT: Long-Term Energy Supply Alternatives Analysis
Deer Island Treatment Plant
Burns & McDonnell Engineering Company, Inc.
Contract 6963



COMMITTEE: Wastewater Policy & Oversight

INFORMATION
 VOTE

David F. Duest, Director, Deer Island WWTP
Richard J. Adams, Manager, Engineering Services
Preparer/Title


Michele S. Gillen
Director of Administration

Michael J. Hornbrook
Chief Operating Officer

Contract 6963 is an engineering contract that will evaluate existing energy assets on Deer Island, perform a condition assessment to better understand remaining asset life, perform a power and economics analysis into the next 25 years, then develop and evaluate energy system alternatives that will provide Deer Island with a roadmap to obtaining the most cost effective, reliable energy operations for Deer Island's future. An alternative combined heat and power system will be further evaluated together with a natural gas line and/or second electric cable. These and other alternatives will be studied and a recommended comprehensive Deer Island Energy Master Plan will be recommended to increase energy efficiency and maximize our use and value of digester gas with the ultimate goal of operating at net zero energy.

RECOMMENDATION:

To approve the recommendation of the Consultant Selection Committee to award Contract No. Contract 6963, Long-Term Energy Supply Alternatives Analysis, Deer Island Treatment Plant, to Burns & McDonnell Engineering Company, Inc., and to authorize the Executive Director, on behalf of the Authority, to execute said contract for a guaranteed maximum price of \$829,500, for a contract term of 12 months from the Notice to Proceed.

BACKGROUND:

The Deer Island Wastewater Treatment Plant is one of the largest wastewater treatment facilities in North America. The facility provides primary and secondary treatment of wastewater collected from 43 member sewer communities in the Greater Boston area. The facility systems came on-line sequentially beginning in 1992 and were completed in 2001 at a cost of \$3.8

billion. Deer Island consists of a number of complex wastewater treatment processes that consume a significant amount of energy in the form of both heat and electricity.

The main source of electrical power required to operate Deer Island is transmitted from a 115 kV submarine cable which spans approximately six miles from Eversource's K Street Substation in South Boston, buried below the sea bed in Boston Harbor, to the HEEC Substation on Deer Island. The cable was constructed and is owned by Harbor Electric Energy Company (HEEC), a subsidiary of Eversource. The HEEC cable has been the subject of numerous staff summaries to the Board principally dealing with the cable's location and impacts associated with Massport's Boston Harbor dredging project.

The voltage in the cable is lowered from 115 kV to 13.8 kV through two transformers in the HEEC substation on Deer Island. This power is distributed to and fulfills the power requirements on Deer Island. The cable was placed into service in 1990, and has a projected life expectancy of well over 40 years.

Should the connection to the electrical grid through the HEEC cable be lost, Deer Island can meet all of its on-island electrical demand by operating two 26 MW Pratt & Whitney FT-8 combustion turbine generators (CTGs) which are located inside the On Site Thermal/Power Plant (Power Plant). The CTGs, which operate on No. 2 ultra low sulfur diesel fuel, are "black start" capable and can reach Deer Island's nominal load in 10 to 15 minutes. Deer Island is required by federal and state permits to have sufficient back-up power to operate the treatment plant at full operation.



Combustion Turbine Generator (1 of 2)

Deer Island also generates a significant portion of its energy requirements through on-site generation. The plant collects sludge from its primary and secondary treatment processes and transports it to twelve 3-million gallon egg-shaped digesters for further processing by anaerobic microorganisms. The biogas generated within the digesters (primarily methane and carbon dioxide) is then piped into two 3-million gallon capacity gas and digested sludge holding tanks. The gas is compressed and then piped to the Power Plant. A digester gas purification system in the Power Plant removes hydrogen sulfide from the digester gas before it is fired in one of the two high pressure boilers to create steam. Each boiler is designed to produce 150,000 pounds per hour of 700° superheated steam at 600 psig, which is passed through an 18 MW Steam Turbine Generator (STG) and a 1.2 MW Back Pressure Steam Turbine Generator (BPSTG) to generate electricity. The low-pressure steam discharged from the STG and BPSTG also provides the heat required throughout the Deer Island for the anaerobic digestion process and all other building heat demands, through a system of heat exchangers connected to the continuously-operating hydronic heat loop distribution system. The boilers can also operate on No. 2 ultra low-sulfur diesel fuel if, for any reason, digester gas is not available or during sustained extreme cold periods during the winter months when digester gas alone cannot meet the heating demand. The fuel is stored in two 750,000 gallon tanks located adjacent to the Power Plant.



High Pressure Boiler (1 of 2)

The current Deer Island Combined Heat and Power (CHP) system utilizes the methane gas from the digesters to meet the heat demands of the plant and the treatment process. As an additional benefit, electricity is generated. The current use of digester gas in the existing CHP system meets

greater than 98% of the heat needs of the plant and over 20% of the electrical demand of the plant and provides between \$16 and \$24 million dollars in energy savings annually.

In 2013, MWRA contracted with CDM Smith to conduct a Residuals Technology Options Assessment (MWRA Contract 7147A). CDM Smith also did a conceptual level evaluation of DITP's existing CHP to evaluate ways to improve its operation by gaining efficiencies in the use of its digester gas. CDM Smith concluded it was possible for Deer Island to basically change the concept of how it produced electricity and heat. CDM recommended MWRA replace its existing CHP system with a new CHP that would first generate electricity and then perform heat recovery. This would maintain the ability to meet the plant's heat needs but also increase its electric power generation by a factor of 3-4 times bringing electrical generation by digester gas above 70% of Deer Island energy demand. The new CHP concept offered paybacks in the order of 7-9 years.

DISCUSSION:

Staff have determined that there is a need to initiate a process to ensure Deer Island's long-term energy needs are reliably and economically met. The first step in this process is to conduct a long-term energy supply alternatives analysis to identify options for implementation. The scope of Contract 6963 consists of evaluating the existing energy infrastructure of Deer Island and performing a comprehensive evaluation of multiple long-term energy supply and on-site generation alternatives to cost-effectively meet the demands of Deer Island while also satisfying the critical regulatory requirement for an independent backup power system. The major components of the alternatives analysis include:

- Information Review & Site Visits: The Consultant will visit the site to become familiar with the operation of the plant's energy systems and obtain pertinent operational data which will be used in the alternatives analysis;
- Existing Energy System Asset Condition Evaluation: The expected remaining useful life of energy system assets will be estimated for use in subsequent economic evaluations performed under this contract;
- Existing Power Asset Economic Analysis: An economic analysis of the existing energy system assets will be performed and used as a baseline for comparing the future performance of the alternatives that will be evaluated under this contract;
- Background Information Analyses: An analysis of 24 discrete topics requiring research will be performed which will factor into the alternatives analysis. Topics include an analysis of future electricity, natural gas and oil markets, identifying potential grants and financial incentive opportunities and evaluating air emissions regulatory and permitting requirements as they relate to each alternative;
- Long-Term Energy Supply Alternatives Analysis: A total of twelve alternatives, which are broken-out into four groups, will be evaluated by the Consultant and are described briefly below.
 - Alternative Group 1 contains four alternatives. One alternative will evaluate Deer Island's existing power assets, including in-kind replacement of the equipment at the end of its useful life. This alternative will serve as a "base case" and will be used to compare the performance and economics of the other alternatives that will be evaluated. Two of these alternatives will be similar to the base case except that

they will evaluate the installation of a new submarine cable from Eversource's proposed switchyard in East Boston. One alternative within this group will also evaluate the modification of the existing boilers and CTGs to be fed via a new natural gas supply to Deer Island.

- Alternative Group 2, which contains two alternatives, will evaluate the addition of combined heat and power (CHP) equipment that is designed to operate on Deer Island's digester gas supply.
- Alternative Group 3, which contains four alternatives, will evaluate the addition of CHP equipment that is sized to meet all of the Deer Island's electrical needs using a combination of digester gas and natural gas. One of these alternatives will size the CHP equipment to supply all of the Deer Island's electrical and thermal loads while providing electrical redundancy from a new submarine cable. Another alternative in this group will size the CHP equipment to meet the Deer Island's electrical and thermal loads while also including full redundancy so that a submarine cable is not required. The third alternative will size the CHP equipment to meet Deer Island's electrical and thermal loads while also having the ability to export electricity for sale to other users. The fourth alternative will evaluate repurposing the existing CTGs into CHP units to provide full electrical redundancy.
- Alternative Group 4 contains two additional Consultant-proposed alternatives that will be a variation of the alternatives listed above.

Attachment A includes additional information regarding the alternatives to be evaluated under this contract.

- The analysis performed for each alternative will consist of the following activities:
 - Conceptual Design: Prepared to confirm the engineering viability of each alternative and show how the proposed equipment will be connected to existing Deer Island systems. The conceptual design will also determine the installed cost of each alternative for input into the economic analysis.
 - Performance Simulation: Performed to simulate the operation of the power system assets as part of a complete system in order to determine the performance of each alternative and to enable comparisons to other alternatives. The results of the performance simulation will be input into the economic analysis.
 - Economic Analysis: Performed to determine the economic benefit of each alternative, including payback period, and to enable comparisons between each alternative.

The Consultant will also be required to conduct a number of workshops with staff as the work progresses.

The Consultant will prepare a report which will provide a detailed discussion of the performance and economic analyses that were performed for each of the twelve alternatives. The Consultant is also required to include in the report a recommendation for the alternative that most reliably and economically meets Deer Island's long-term energy needs and goals to maximize on-site generation and reduce the purchase of electricity. This information will be used by staff to develop Deer Island's long term capital budget.

Procurement Process

Staff issued a one-step Request for Qualifications/Proposal (RFQ/P) on October 19, 2016. A pre-proposal meeting and site visit was held on October 28, 2016 and attended by representatives from ten different companies. On December 2, 2016, MWRA received proposals from two firms: Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) and Black & Veatch Corporation (Black & Veatch). Each of the proposals included teaming arrangements with additional consultant firms. Staff contacted the other firms who received the RFQ/P and attended the site visit to find out why they did not submit a proposal. The reasons offered for not submitting a proposal included: the inability of energy consulting firms to meet the mandatory professional engineering staff requirements in-house and the lack of resources in the engineering firms to fully meet the project's complexity.

Proposals were evaluated in accordance with weighted criteria and the recommendation for award is to the proposer that had the highest overall ranking. Proposals were evaluated by using the following criteria: Cost (25 points), Qualifications and Key Personnel (25 points), Experience/Past Performance on Similar Non-Authority Projects (25 points), Technical Approach/Capacity / Organization and Management Approach (15 points) and Past Performance on Authority Projects (10 points).

The Burns & McDonnell and the Black & Veatch cost proposals with level of effort are presented below:

<u>Proposer</u>	<u>Proposed Contract Cost</u>	<u>Level of Effort</u>
<i>Engineer's Estimate</i> ¹⁾	\$767,524.00	4,146 hours
Burns & McDonnell	\$829,500.00	3,981 hours
Black & Veatch	\$972,093.38	5,887 hours

1) The original Engineer's Estimate was adjusted prior to issuing the RPQ/P to incorporate scope of services changes requested by the Selection Committee.

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

<u>Proposers</u>	<u>Points</u>	<u>Total Rank*</u>	<u>Final Ranking</u>
Burns & McDonnell	396	7	1
Black & Veatch	381	8	2

* Total Rank 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 Burns & McDonnell first. Burns & McDonnell has a dedicated energy and power group which specializes in utility planning and design. The firm proposed an excellent project team with significant relevant experience and past performance on several non-MWRA projects. While the firm has no prior experience with MWRA, it is utilizing Hazen & Sawyer as a subconsultant, a firm with whom MWRA has

frequently contracted. The Selection Committee was in agreement that Burns & McDonnell's technical approach was comprehensive and provided relevant details on how evaluate the alternatives. Burns & McDonnell's proposal included an acceptable number of total hours, which was distributed appropriately among a very experienced staff.

The Selection Committee concluded that Black & Veatch proposed a highly qualified project team with excellent past performance on non-MWRA projects and very good experience on MWRA projects. However, the Selection Committee determined that Black & Veatch's technical approach was lacking in detail and did not provide adequate detail on its planned execution of the scope of services. In addition, the Selection Committee opined that Black & Veatch's proposed level of effort was excessive for both project management and certain portions of the alternatives analysis scope of services.

The Selection Committee determined that Burns & McDonnell's proposal represents the best overall value (total cost and level of effort by a highly qualified team) of the two proposals. The Selection Committee was of the opinion that Burns & McDonnell included the best team and the appropriate number of hours, by category, with the proper staffing mix (senior and junior level) to successfully complete the scope of services. The Selection Committee concluded that Burns & McDonnell's past experience on several similar non-Authority projects was excellent.

Subsequent to the Selection Committee meeting, Staff conducted a series of telephone interviews with representatives of Burns & McDonnell to confirm that they understood the requirements of the RFQ/P and that they were confident that their proposed level of effort was sufficient to execute the scope of services. Burns & McDonnell confirmed that it fully understood the requirements of the RFQ/P and that the proposed level of effort and budget was sufficient to execute the scope of services. Burns & McDonnell further agreed to complete the specified services on the basis of a guaranteed maximum price given the detail contained in the scope of services and its ability to successfully execute the project.

Therefore, the Selection Committee recommends approval of Contract 6963 to Burns & McDonnell in a guaranteed maximum price of \$829,500.00.

BUDGET/FISCAL IMPACT:

The Final FY17 CIP includes \$6,000,000 for Contract 6963, the Combined Heat and Power Design project. This Long Term Energy Supply Alternatives Analysis project was added to the CHP scope, in order to determine the most feasible and beneficial option for the Authority to pursue for subsequent design and construction of a new CHP facility. The Final FY17 CIP contains adequate funding for the energy alternatives analysis.

MBE/WBE PARTICIPATION:

There are no MBE and WBE participation requirements for this project due to the specialized nature of the services.

ATTACHMENT:

Attachment A – Summary of Long-Term Energy Supply Alternatives

ATTACHMENT A
SUMMARY OF LONG-TERM ENERGY SUPPLY ALTERNATIVES

Alternative Group 1

Alternative Group 1 evaluates Deer Island's existing power assets, including replacement in-kind at the end of their useful life. Alternative Group 1 consists of the following four alternatives:

1. Alternative 1A – Maintain Existing Equipment

Alternative 1A will evaluate the expected costs of operating the existing energy system over the next 25 years. Depending upon the expected equipment life (which will be estimated by the Consultant), this will include potential replacement of the existing cross harbor cable, CTGs, boilers, etc. As this case represents continuing to operate the system as it currently exists, this is the "base case." When determining how other alternatives compare to the current system, this is the alternative that captures the current system performance.

2. Alternative 1B – Maintenance of Existing Equipment with New Utility Cable

Alternative 1B is identical to Alternative 1A except with the addition of keeping the existing HEEC cable until the end of its useful life and replacing it with a new 115 kV utility cable.

3. Alternative 1C – Maintenance of Existing Equipment with Redundant Utility Feed

Alternative 1C is similar to Alternative 1A in that all the existing thermal equipment is retained or replaced in-kind at the end of its useful life and the existing HEEC cable is maintained or replaced. However, Alternative 1C includes the addition of a second new 115 kV utility cable. The evaluation will include a determination if the added redundancy provided by the second cable will allow for the removal of the CTGs as on-site standby power.

4. Alternative 1D – Maintenance of Existing Equipment with addition of Natural Gas

Alternative 1D includes the evaluation of modifying the existing CTGs and/or boiler to be fed with natural gas. As the CTGs currently run on fuel oil only, they would have to be converted to operate on natural gas. The boilers would be modified to blend natural gas and digester gas.

Alternative Group 2

Alternative Group 2 evaluates the addition of combined heat and power (CHP) that runs off of the Deer Island's digester gas supply and is supplemented with diesel fuel in accordance with Alternative 2B. Alternative Group 2 consists of the following two alternatives:

1. Alternative 2A – New Digester Gas CHP – Sized for Digester Gas Supply

Alternative 2A includes the evaluation of a new CHP system that is sized to burn all the existing digester gas produced at Deer Island.

2. Alternative 2B – New Digester Gas/Diesel CHP – Sized for Heat Load

Alternative 2B includes the evaluation of a new CHP system that is sized to supply all the heating demands of the Deer Island facility burning primarily digester gas, but it can also run off of diesel fuel. Full redundancy for the CHP system will be provided to fulfill the facility heating demand.

Alternative Group 3

Alternative Group 3 evaluates the addition of CHP that is sized to supply all of the electrical needs of the DITP using a combination of natural gas and digester gas. Each alternative includes the installation of a new natural gas service to Deer Island of a size sufficient to serve the alternative's thermal and electrical load. Alternative Group 3 consists of the following four (4) alternatives:

1. Alternative 3A – CHP Sized For the Deer Island Electrical and Thermal Demand

Alternative 3A includes the evaluation of retaining the CTGs and sizing the new CHP to supply all the electrical and thermal loads of DITP while retaining one boiler for thermal redundancy.

2. Alternative 3B – Full Islanded Operation

Alternative 3B includes the evaluation of installing a new CHP to supply all the electrical and thermal loads of Deer Island with full redundancy and constant islanded operation. Deer Island would separate from the utility keeping the HEEC cable installed, but not maintaining it or drawing power over it. Deer Island would generate all of its electrical and thermal energy from digester gas and natural gas on site and not require an electrical utility connection.

3. Alternative 3C – New CHP Sized for Electrical Export

Alternative 3C includes the evaluation of installing a new CHP to supply all the thermal loads of Deer Island with full redundancy. The CHP system will also be designed to export electricity for sale to other users. The economic analysis shall evaluate selling excess electrical power to other users and recommend the optimal transaction means.

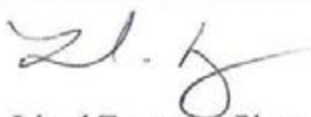
4. Alternative 3D – Repurpose CTGs into CHP

Alternative 3D includes the evaluation of repurposing the existing CTGs into CHP units with full electrical redundancy. As the CTGs currently run on fuel oil only, they would have to be converted to operate on natural gas and digester gas.

Alternative Group 4

The Consultant will propose two additional long-term energy supply alternative for analysis. The proposed alternative will be a variation of the alternatives listed in Alternative Groups 1, 2 or 3. The proposed alternatives will require approval from staff before the Consultant is allowed to proceed.

STAFF SUMMARY


TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: February 15, 2017
SUBJECT: Oxygen Generation Facility Services, Deer Island Treatment Plant
Solutionwerks, Inc.
Contract S562

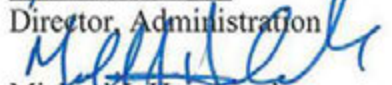
COMMITTEE: Wastewater Policy & Oversight

Ethan Wenger, Deputy Director, Deer Island WWTP
David Duest, Director, Deer Island WWTP
Preparer/Title

 INFORMATION

 X VOTE


Michele S. Gillen
Director, Administration


Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To approve the award of Contract S562, Oxygen Generation Facility Services, Deer Island Treatment Plant, to the lowest responsive bidder, Solutionwerks, Inc., and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of \$1,929,750, for a contract term of 1,095 calendar days from the Notice to Proceed.

DISCUSSION:

Secondary wastewater treatment at the Deer Island Treatment Plant is an aerobic process. A biomass of aquatic microorganisms is developed and maintained to help reduce the organic solids and other undesirable compounds present in primary effluent. These microorganisms require oxygen in order to thrive and complete the task of improving the wastewater quality. To minimize the size of the reactor tanks where the microorganisms and primary effluent are first mixed, 97% pure oxygen is piped into the headspace above the wastewater (rather than atmospheric air, which contains approximately 21% oxygen). Large mixers/aerators in the reactor tanks prevent solids from settling and facilitate the gas transfer process necessary to keep the microorganisms alive.

The Oxygen Generation Facility, also referred to as the Cryogenics Plant (due to the freezing temperatures employed) or simply the "Cryo Plant," produces the required quantities of pure oxygen. The facility is actually comprised of one building, the Air Compressor Building, and several other large integrated equipment systems (see pictures on the following page). The total estimated value of the Cryo Plant and all of the associated equipment to be maintained under this contract is approximately \$30 million.

The Cryo Plant consists of two process trains, individually capable of producing approximately 90-150 tons of 97% pure gaseous oxygen per day via a process known as fractional distillation.

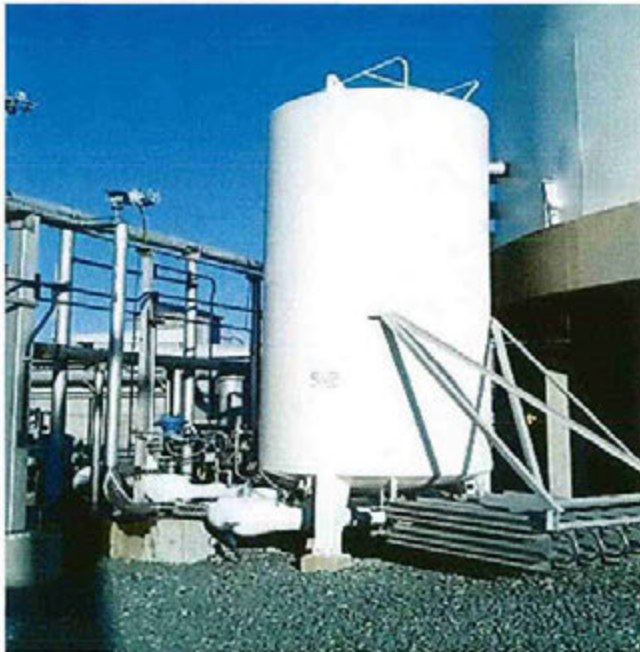
This process separates atmospheric air into the oxygen and nitrogen components at subzero temperatures. Nitrogen is discharged to the atmosphere, while the oxygen is utilized for the process. Depending on operating parameters, each train can also produce up to 12 tons per day of liquid oxygen. Any excess liquid oxygen produced during the generation process flows to a transfer tank and then into a 1,000-ton storage tank. Stored liquid oxygen can be vaporized through one of two vaporizers. On average, 120 tons per day of oxygen are required for the wastewater treatment process.



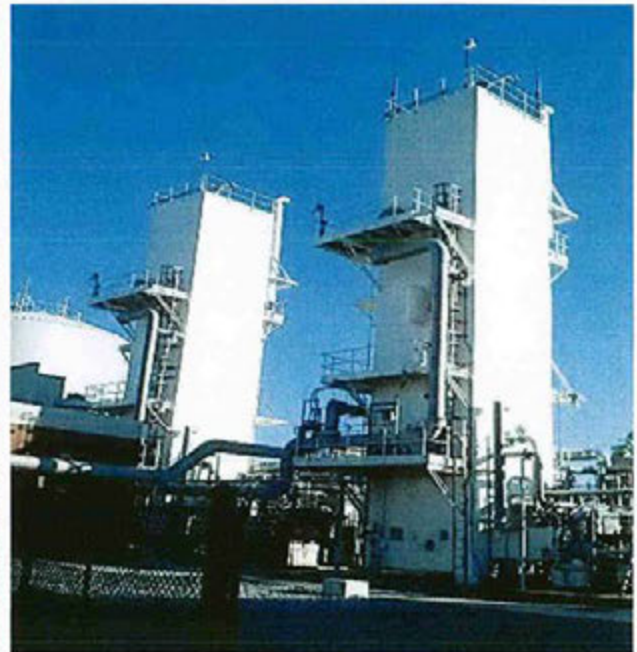
Air Compressor Building with Air Intake Ducts



Two Mole Sieves



Six-Ton Liquid Oxygen (LOX) Transfer Tank



1,000-Ton LOX Storage Tank (in background) and two "Cold Boxes"

Most of the time, because of improvements implemented by MWRA staff, only one process train needs to be in operation continuously to meet the oxygen demand of the treatment plant; occasionally, during short periods of high oxygen demand, both trains are needed. If a problem arises causing both oxygen generation trains to be shut down, a full liquid oxygen storage tank

can provide enough oxygen for approximately seven days of operation. It takes three to four days to start up one oxygen process train.

The Cryo Plant is very complex, with unique safety concerns due to the extreme high and low temperatures required to generate liquid oxygen (350°F to -300°F) and the hazards inherent in high concentrations of oxygen and nitrogen. There are hundreds of instrumentation and control points, numerous safety valves, and other specialized equipment. The knowledge and experience necessary to keep all of the process monitoring equipment calibrated while continuously operating the facility requires highly trained and skilled technicians.

MWRA requires a service contract with a firm that possesses the expertise necessary to ensure that the Cryo Plant operates reliably and as designed at all times. A constant supply of oxygen is necessary for the operation of the wastewater plant and compliance with Deer Island's National Pollution Discharge Elimination System (NPDES) permit.

The scope of work under Contract S562 includes two scheduled annual service visits per year (one for each oxygen train), twelve scheduled monthly service visits per year, as-needed training for MWRA staff, emergency and non-emergency on-call assistance, and servicing of ancillary equipment, such as four main air compressors and three air chillers. Allowances have been included for consumable parts and materials and factory-authorized service technicians. These allowances will only be expended based on actual costs incurred.

The procurement history of this contract has shown that there are few companies capable of providing these services. From August 2002 until February 2005, Mixing and Mass Transfer Technologies, LLC, d/b/a LOTEPRO (Mixing and Mass Transfer), the original design and start-up contractor, serviced the oxygen generation facility under MWRA's first contract. In 2005, Solutionwerks, Inc. was the low bidder (of two) and provided the required services for three years. In 2008, Mixing and Mass Transfer again was low bidder on the contract which ran for three years and ended in February 2011. Solutionwerks won the next three year contract which ended in 2014. Solutionwerks again won the contract in 2014, which will expire on March 14, 2017. Mixing and Mass Transfer left the oxygen plant support business entirely, and did not submit a bid in 2014.

Procurement Process

Contract S562 was advertised and publicly bid as a non-professional services contract. A pre-bid site visit and walkthrough was conducted and bids were opened on Feb 2, 2017. Two bids were received as follows:

CONTRACTOR	BID PRICE
<i>Engineer's Estimate</i>	\$1,722,825
Solutionwerks, Inc.	\$1,929,750
Ranch Cryogenics, Inc.	\$2,185,845*

* corrected clerical error in amount included in bid for allowance

Ranch Cryogenics has been in the plant construction and start-up business for a number of years, and has now entered the equipment servicing business as well.

In an attempt to increase competition for this contract in prior bids, staff contacted representatives at other companies that operate oxygen plants. However, none have ever submitted a bid. The firms contacted indicated that they only had sufficient personnel to operate and maintain their own oxygen generation facilities and were not in the business of providing technicians to service other plants.

The value of the previous contract, S529, is \$1,474,400. Staff increased the Engineer's Estimate for Contract S562 to \$1,722,825 to provide for a higher parts allowance, and increased support due the aging facility. Solutionwerks' bid is 12% higher than the Engineer's Estimate. When asked about the cost difference, Solutionwerks stated that higher labor cost was the primary reason. Staff reviewed Solutionwerks' bid and determined that it is reasonable, complete, and complies with all of the requirements of the bid specifications.

References were checked and found to be favorable. As discussed above, Solutionwerks has successfully performed this work for MWRA under prior contracts. Staff have been satisfied with the firm's past performance on the current and previous contracts. Staff are of the opinion that Solutionwerks possesses the skill, ability, and integrity necessary to perform the work under this contract and is qualified to do so. Therefore, staff recommend the award of this contract to Solutionwerks as the lowest responsive bidder.


BUDGET/FISCAL IMPACT:

There are sufficient funds available for the first portion of this contract in Deer Island's FY17 Current Expense Budget. Appropriate funding will be included in subsequent CEB requests for the remaining term of the contract.

MBE/WBE PARTICIPATION:

Due to the limited opportunities for subcontracting, there were no MBE or WBE participation requirements established for this contract.



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: February 15, 2017
SUBJECT: Nut Island Headworks Odor Control and HVAC Improvements
Inspections, Evaluations, Design, Construction Administration and Resident
Engineering Services
Hazen and Sawyer, P.C.
Contract 7517

COMMITTEE: Wastewater Policy & Oversight

INFORMATION
 VOTE

David K. Pottle, P.E., Program Manager
A. Navanandan, P.E., Chief Engineer
John P. Vetere, Deputy Chief Operating Officer
Preparer/Title

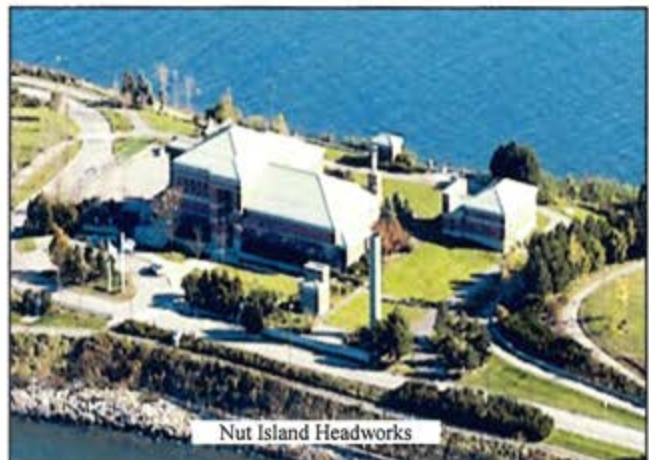

Michele S. Gillen
Director of Administration

Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To approve the recommendation of the Consultant Selection Committee to award Contract 7517, Nut Island Headworks Odor Control and HVAC Improvements to Hazen and Sawyer, P.C., and to authorize the Executive Director, on behalf of the Authority, to execute said contract in an amount not to exceed \$5,736,900.77, for a contract term of 57 months from the Notice to Proceed.

BACKGROUND:

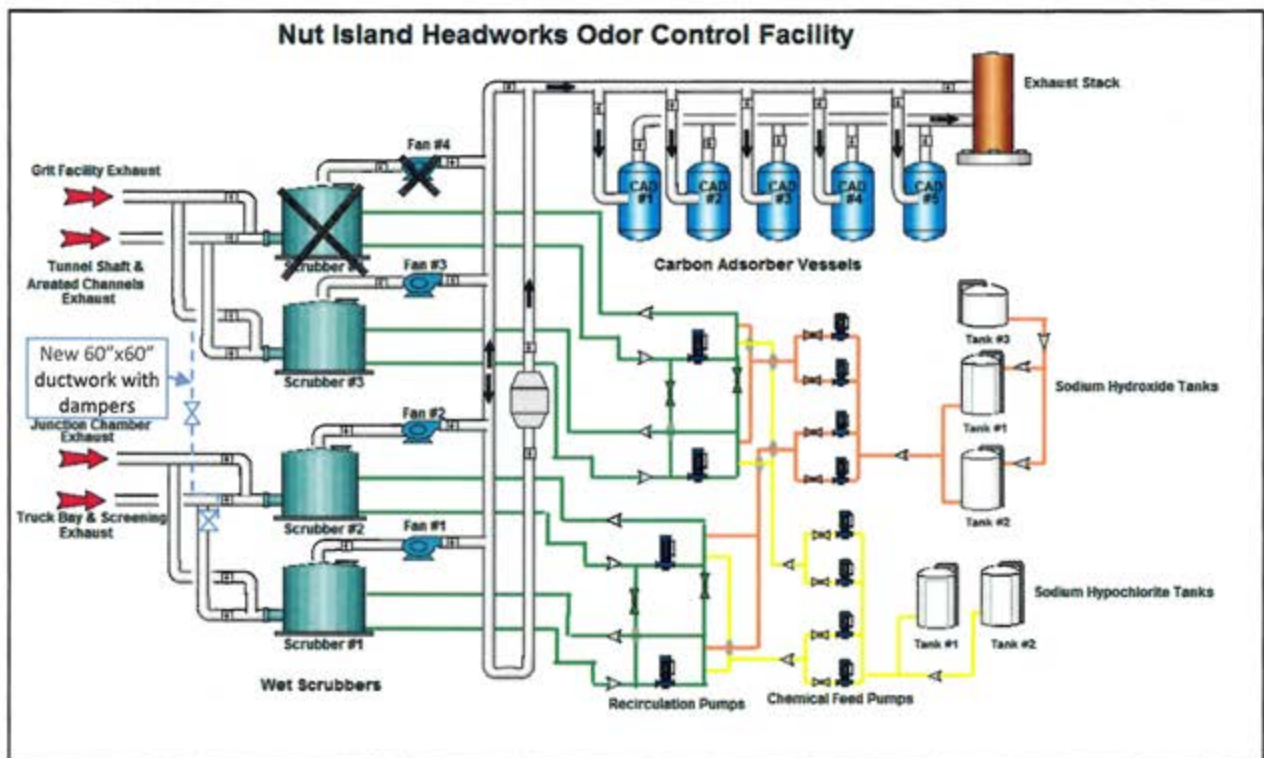
The Nut Island Headworks, located in the Hough's Neck section of Quincy, was placed into operation in 1998. The facility provides screening and grit removal, flow metering, and flow control for Deer Island's Lydia Goodhue (South System) Pump Station. The facility receives flow from almost the entire MWRA south collection system. The Nut Island Headworks serves 22 communities and has a peak hydraulic capacity of 360 million gallons per day. The odor control area of the



facility includes carbon absorbers and wet scrubbers.

Odor Control Room Fire

Following the January 25-26, 2016 fire that consumed wet Scrubber 4 and damaged equipment throughout the odor control area, significant recovery work was undertaken to restore operation of the odor control system. Demolition, cleaning, testing and repair of electrical and instrumentation systems, rebuilding fan motors, and repair and reconfiguration of ductwork has been performed. Smoke and water damage throughout the facility has been addressed. The odor control system was returned to operation in April 2016 and has been in continuous operation since. The current odor control configuration consists of Fans 1, 2 and 3 drawing air from process areas for treatment through activated carbon Adsorbers 1-5. Scrubber 4 and Fan 4 have been removed, and Scrubbers 1-3 now serve as extensions of the inlet ductwork, having been emptied of their media and mist eliminators and cleaned. An interconnection between the inlets to Scrubbers 2 and 3 has been added for redundancy and flexibility. The system is shown in the figure below:



DISCUSSION:

Contract 7517 provides inspections, evaluations, preliminary and final design, construction administration and resident inspection services for long-term improvements to the odor control and HVAC systems and other equipment of the facility, some of which was damaged by the

January 2016 fire. Required work was identified in the Contract 7494 Nut Island Headworks Odor Control, HVAC and Energy Management System Study completed in December 2016 and by staff over the course of the fire recovery.

Improvements to the odor control system include, but are not limited to, replacement of carbon adsorbers 1-5, fans 1-4, ductwork dampers, and the odor control SCADA system including PLC and sensors; installation of a sixth carbon adsorber, ductwork to bypass the scrubbers, roof hatches to provide maintenance and emergency access into the odor control room, and static eliminators within odor control ductwork. Scrubbers 1-3, chemical tanks and associated equipment will also be replaced and maintained ready to return to service.



Outline of Odor Control Room showing Locations for Hatches and emergency access into the odor control room, and static eliminators within odor control ductwork. Scrubbers 1-3, chemical tanks and associated equipment will also be replaced and maintained ready to return to service.

Improvements to the HVAC system include replacement of all air handling units and unit heaters, the energy management system, boiler burners, and corroded segments of ductwork; and installation of equipment to provide ventilation setbacks and recirculation as allowed by code.



KA:SA.AHU-4 in Pump/Blower



AHU-11 in Odor Control Room

Contract 7517 also includes replacement of the underground fuel oil storage tanks serving the standby generator and boilers; replacement of portions of the structural steel fireproofing in the odor control room; improvements to the dewatering system serving the bottom level; and improvements to the emergency spillway isolation sluice gates, grit channels and grit channel slide gates.

Design and bidding of the construction contract is estimated to take 21 months. Construction is estimated to take 24 months due to equipment lead times and required sequencing of portions of

the work, followed by 12 months of warranty period.

Procurement Process

On December 6, 2016, MWRA issued a one-step Request for Qualifications Statements/Proposals (RFQ/P) that was publically advertised in the Central Register, Boston Herald, Banner Publication and El Mundo. In addition, notice was sent directly to fourteen firms. Thirteen firms requested the RFQ/P documents; five of which were potential prime consultants.

The RFQ/P included the following evaluation criteria: Cost - 25 points; Qualifications and Key Personnel - 20 points; Technical Approach - 15 points; Capacity/Organization and Management Approach - 15 points; Past Performance on Authority Projects - 15 points; Experience/Past Performance on Similar Non-Authority Projects - 5 points; and MBE/WBE participation - 5 points.

A pre-proposal meeting and site visit was held on December 13, 2016 and was attended by representatives from four firms. On January 20, 2017, MWRA received proposals from two firms: Hazen and Sawyer, P.C. and RDK Engineers. One of the firms that attended the site visit subsequently notified staff that it was too busy with other projects to respond to the solicitation. As detailed below, of the three remaining firms that attended the site visit, two submitted a proposal as a team and one submitted on its own. The proposed cost and level of effort by Hazen and Sawyer and RDK are as follows:

PROPOSER	PROPOSED CONTRACT COST	LEVEL OF EFFORT
<i>Engineer's Estimate</i>	<i>\$2,774,435.00</i>	<i>20,869 hours</i>
Hazen and Sawyer, P.C.	\$5,736,900.77	36,784 hours
RDK Engineers	\$7,422,191.10	45,779 hours

The Selection Committee reviewed, scored, and ranked the proposals as follows:

PROPOSER	TOTAL POINTS	*ORDER OF PREFERENCE/ TOTAL SCORE	FINAL RANKING
Hazen and Sawyer, P.C.	377.55	5	1
RDK Engineers	280.65	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.

Hazen and Sawyer presented very strong qualifications, experience, past performance, technical

approach and capacity. The Hazen and Sawyer team will be led by a project manager and project engineer with significant, recent experience working together on the evaluation of the odor control, HVAC and energy management systems at the Nut Island facility. The project manager and project engineer are based in Boston and are at appropriate levels in their organization for their assignments. The qualifications of Hazen and Sawyer's technical staff are very high and Hazen and Sawyer's demonstrated odor control systems experience is very applicable to this project. Hazen and Sawyer is using Arcadis as a primary subconsultant on this project for electrical design and SCADA integration. The pairing of Hazen and Sawyer and Arcadis provides a very strong team with both firms having previously worked on Nut Island projects. Previous experience with Hazen and Sawyer and Arcadis has been good. Internal and external references were found to be favorable and all respondents indicated they would rehire the firm. Hazen and Sawyer's technical approach demonstrated thorough understanding of the project and appropriately identified key project issues and discussed solutions.

Hazen and Sawyer's cost is the lowest of the two proposals, but is \$2.96 million higher than the Engineer's Estimate. In accordance with MWRA's procurement procedures, staff entered into discussions with Hazen and Sawyer to confirm and gain a better understanding of the proposed costs and level of effort. Hazen and Sawyer proposed higher hourly rates that were higher (by approximately 10%) than in the Engineer's Estimate. Hazen and Sawyer's proposed hourly rates reflect the experience and quality of staff proposed for this project with the technical staff having 25-40 years of engineering experience. Also, Hazen and Sawyer's proposal includes a greater level of effort for design work and other tasks than the Engineer's Estimate. Considerations by Hazen and Sawyer in estimating its proposed level of effort included the design of numerous temporary construction-phase installations of HVAC equipment, odor control equipment, ductwork, and power and control systems that are required to maintain airflows and treatment of process air throughout construction, design of temporary wastewater bulkheading and flow diversions required to access flow channels to perform slide gate replacements and grit channel repairs, and the modifications of approximately two thirds of all original Nut Island engineering drawings (200 drawings). Staff agree these design efforts are necessary to allow construction to occur and maintain continuous operation of the facility. The Engineer's Estimate did not, but should have, assumed temporary construction-phase air handling and air treatment and wastewater flow handling systems that will be explicitly designed by the consultant, or the development and detailing of numerous configurations for such phasing and the resulting impact on the preparation of the associated engineering drawings. Hazen and Sawyer's design and construction engineering proposal is 21% of a rough Hazen and Sawyer construction cost estimate (\$27.5 million) for the facility improvements, which is within MWRA's normal range. Due to complexity of the design and experience with this type of work, staff are of the opinion that Hazen and Sawyer's estimate more accurately reflects the costs and hours required for this project, and the Engineer's Estimate underestimated such costs and hours. The second proposal for this project from RDK also greatly exceeded MWRA's engineering estimate in both hours and cost further indicating MWRA's engineering estimate was too low.

RDK presented good qualifications and experience, and average past performance, technical

approach and capacity. RDK's proposed project manager and project engineer have relevant experience, including design of HVAC, plumbing and fire protection systems for the original Nut Island Headworks design during the Boston Harbor Project. RDK has less odor control design experience than Hazen and Sawyer. RDK's technical approach was generic and failed to include sufficient discussion on project challenges and solutions. Internal references for the one current MWRA project was only fair. External references cited good electrical engineering work, but not as good mechanical engineering work. In general, RDK's proposal was not of a high quality, and included many typographical errors and a lack of detail.

RDK proposed a significantly higher cost, nearly \$1.69 million higher than Hazen and Sawyer and \$4.65 million higher than MWRA's estimate. RDK's proposed project manager and project engineer are principals of the firm, Executive Principal and President respectively. The Selection Committee concluded that this was inappropriate for their proposed project assignments, especially since both carry very high hourly rates. RDK's proposed level of effort is was significantly higher than Hazen and Sawyer.

Staff determined that Hazen and Sawyer submitted a high quality proposal with the best engineering team, excellent technical approach, and proven prior experience working at Nut Island and non-MWRA odor control systems installations, and an appropriate level of effort for this project. Hazen and Sawyer agreed to complete the specified administrative, management, design and resident engineering services on the basis of a guaranteed maximum price.

Based on final rankings and for the reasons set forth above, the Selection Committee recommends the award of this contract to Hazen and Sawyer, P.C., in an amount not to exceed \$5,736,900.77.

BUDGET/FISCAL IMPACT:

The FY17 CIP includes a budget of \$2,750,000 for Contract 7517. The contract award amount is \$5,736,900.77 or \$2,986,900.77 over budget. The FY18 Proposed CIP budget will reflect the new amount for this contract.

MBE/WBE PARTICIPATION:

The minimum MBE and WBE participation requirements for this project were established at 7.18% and 5.77% respectively. Hazen and Sawyer has committed to 7.19% MBE and 5.78%WBE participation.



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. Blackmon
Vice-Chair: B. Peña
Committee Members:
J. Carroll
J. Foti
A. Pappastergion
H. Vitale
J. Walsh
J. Wolowicz

to be held on

Wednesday, February 15, 2017

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

Time: Immediately following Wastewater Comm.

AGENDA

A. Information

1. Update on Lead and Copper Local and National Activities

B. Approvals

1. Redundancy for the Metropolitan Tunnel System

C. Contract Awards

1. Slide Gate Installation, Quabbin Aqueduct at Shaft 12: Arcadis, U.S., Inc., Contract 7509

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the Water Policy and Oversight Committee

December 14, 2016

A meeting of the Water Policy and Oversight Committee was held on November 16, 2016 at the Authority headquarters in Charlestown. Chairman Blackmon presided. Present from the Board were Messrs. Carroll, Cotter, Flanagan, Foti, Vitale, and Walsh,. Among those present from the Authority staff were Fred Laskey, Steve Remsberg, Pam Heidell, Carolyn Fiore, Nava Navanandan, Bill Sullivan, Vincent Spada, Cori Barrett and Linda D'Addario. The meeting was called to order at 12:00 p.m.

Approvals

*Water Supply Contract Renewals – Southborough, Stoughton, Wakefield and Worcester

The Committee recommended approval of the Water Supply Contract Renewals (ref. agenda item A.1).

Contract Amendments/Change Orders

*Wachusett Aqueduct Pumping Station Design, Construction Administration and Resident Inspection Services; Stantec Consulting Services, Inc., Contract 7156, Amendment 3

Staff gave a presentation and there was general discussion and question and answer. The Committee recommended approval of Amendment 3 (ref. agenda item B.1).

*Wachusett Aqueduct Pumping Station: BHD/BEC JV 2015, Joint Venture, Contract 7157, Change Order 5

Staff gave a presentation and there was general discussion and questions and answers. The Committee recommended approval of Change Order 5 (ref. agenda item B.2).

The meeting adjourned at 12:15 p.m.

* Approved as recommended at December 14, 2016 Board of Directors meeting.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the Water Policy and Oversight Committee

January 18, 2017

A meeting of the Water Policy and Oversight Committee was held on January 18, 2017 at the Authority headquarters in Charlestown. Chairman Blackmon presided. Present from the Board were Messrs. Carroll, Cotter, Foti, Pappastergion, Peña, Vitale and Walsh. Among those present from the Authority staff were Fred Laskey, Steve Remsberg, Steve Estes-Smargiassi, Daniel Nvule, Pam Heidell, Tom Durkin, John Vetere, Maureen McAvoy, Nava Navanandan, Carolyn Francisco Murphy, Pat Barrett, Cori Barrett, Jerry Sheehan, and Bonnie Hale. The meeting was called to order at 11:25 a.m.

Information

Report on 2016 Water Use Trends and Reservoir/Drought Status

Staff gave a presentation on the previous year's water use data and discussed trends.

Update on EPA Unregulated Contaminant Monitoring Rule

Staff provided a brief update.

Approvals

*First Amended and Restated Water Supply Continuation Agreement with Town of Wilmington

The Committee recommended approval of the amended and restated agreement (ref. agenda item B.1).

Contract Amendments/Change Orders

*Settlement Agreement for Various Design Contracts and Hatchery Pipeline and Hydroelectric Project Design, Construction Administration and Resident Inspection Services: Stantec Consulting Services, Inc., Contract 7017A, Amendment 2

Staff gave a presentation describing the settlement agreement which would reimburse MWRA \$70,000 for claims associated with designer error and omissions on three design contracts and apply those funds to Contract 7017A. There was general discussion and question and answer. The Committee recommended approval of the settlement agreement and Amendment 2 to extend the contract by three months (ref. agenda item C.1).

* Approved as recommended at January 18, 2017 Board of Directors meeting.

*Northern Intermediate High Redundant Pipeline Design, Construction Administration and Resident Inspection Services: Stantec Consulting Services, Inc., Contract 6906, Amendment 2

Staff gave a presentation on the project and the components of the amendment. There was general discussion and question and answer. The Committee recommended approval of Amendment 2 (ref. agenda item C.2).

*Northern Intermediate High Section 110 – Reading and Woburn: Albanese D&S, Inc., Contract 7471, Change Order 7

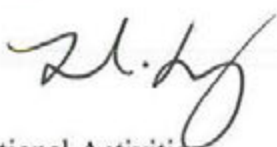
Staff gave a presentation on the project and the Committee recommended approval of Change Order 7 (ref. agenda item C.3).

The meeting adjourned at 12:20 p.m.

* Approved as recommended at January 18, 2017 Board of Directors meeting.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: February 15, 2017
SUBJECT: Update on Lead and Copper Local and National Activities



COMMITTEE: Water Policy & Oversight

INFORMATION
 VOTE

Joshua Das, Project Manager, Public Health
Steve Rhode, Laboratory Manager
Carl Leone, Senior Program Manager
Stephen Estes-Smargiassi, Director, Planning
Preparer/Title



Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

For information only.

DISCUSSION:

Staff most recently updated the Board on lead related issues in November 2016. This staff summary provides a brief overview of each of the current on-going efforts related to lead in drinking water.

Lead and Copper Rule Sampling

The next sampling round is in March 2017 for the two communities that were over the Lead Action Level in September 2016: Malden and Quincy. Quincy and Malden will stay on twice a year monitoring until they have two rounds with results under the Action Level. DEP is working with both communities to develop more comprehensive programs for replacing lead services, as well as educating their customers about the lead in drinking water. MWRA staff had provided assistance to both communities.

All communities will sample again in September 2017. Staff will be working with all communities to ensure that their sampling plans are up to date and meet current regulatory expectations.

Update on School Testing Program

MWRA is continuing to work with MWRA communities on testing school fixtures used for drinking or cooking. DEP created a technical assistance and laboratory analysis program to test schools throughout the state, and MWRA offered lab services in parallel of the DEP program. From April 2016 through the end of January, the MWRA Laboratory has performed 23,716 tests on samples from 285 schools in 35 different MWRA communities. Approximately 5.0% of all lead samples were above the Action Level, similar to the results of recent community LCR sampling. 102 of the 285 schools had at least one sample test over the Action Level.

All of these communities and schools have been contacted and provided with technical assistance materials. All test results from all the schools across the state that have participated in the DEP and MWRA programs have been posted on-line by DEP, and most communities have developed local outreach efforts.

School systems have been taking remedial actions in schools with any fixtures with elevated lead levels. These have included shutting off fixtures and providing bottled water; replacing older fixtures with new lead free ones; conducting regular flushing each morning; and doing more extensive plumbing improvements. The DEP web site is set up to allow schools systems to provide information on what actions they have taken at each school.

The DEP Program is coming to an end, and the number of samples the MWRA laboratory is receiving is beginning to slow down. DEP is recommending that communities test one-third of schools, particularly older schools with higher results, on an annual basis, in line with the national guidance contained in the Lead Contamination and Control Act (LCCA) which governs lead control efforts in schools. Therefore, MWRA expects to continue to receive an increased number of samples for the foreseeable future.

Update on Lead Service Line Replacement Loan Program

In March 2016, the Board approved an enhancement to the Local Water System Assistance Program to provide up to \$100 million in 10-year zero-interest loans to communities solely for efforts to fully replace lead service lines, and approved the Program Guidelines for the Lead Loan Program in May 2016. Each community can develop its own program, tailored to their local circumstances.

MWRA staff continue to work with communities to develop their lead service line replacement programs, and interest has continued to increase. Four communities have progressed as far as submitting loan applications to MWRA. So far, MWRA has distributed funds for one community program: \$1.5 million for Quincy for complete replacement of all their lead services from main to house at city expense. Quincy is continuing to review their records to develop an inventory of any lead-lined steel service lines. Staff anticipate that a loan disbursement of \$4 million will be made to Newton shortly, as the city is finalizing their approach to replacement of the portion of the lead service line on private property. Two other communities, Winchester and Somerville, have submitted applications for programs. Winchester is planning a multi-phase project for both service lines and lead goose necks. The first disbursement is expected in Winter 2017. Somerville is planning a phased program – with an estimated \$1.2 million for the first phase. Disbursement is expected in Spring 2017.

Based on staff contacts, six other MWRA communities seem likely to participate and start a replacement program in the near future: Malden, Medford, Marlborough, Needham, Revere, and Winthrop. Staff anticipate applications under the Lead Loan Program are likely to begin with smaller distributions and ramp up as communities develop their individual programs, enhance existing inventories/records, and engage individual customers via outreach and education. Future EPA requirements may stimulate lead service line removal work over the next few years.

Staff are developing plans for a regional forum for local water department staff on lead issues this Spring, including regulatory updates, current scientific findings, results of school testing, and what has been learned over the past year on lead service line replacement programs.

MWRA staff have been participating in a national Lead Service Line Replacement Collaborative with representatives from about two dozen public health, environmental, water supply and other groups. While the various groups typically do not share common agendas, they all agreed to work together on efforts to accelerate the replacement of lead service lines. The Collaborative completed its first product, an extensive web site designed to provide information to individuals and communities on lead service lines in January. USA Today ran a national story on the launch of the web site. A link to the Collaborative's website is on MWRA's web site.

Update on MWRA Coordination with MDPH on Testing Homes

Massachusetts Department of Public Health (MDPH) has now moved ahead with their partnership with MWRA to sample for lead in the tap water at homes where a child has an elevated blood lead level, and identify if there is a lead service line at that home. MWRA staff assisted in training the MDPH field staff that visit homes, and coordinated how to perform the sampling. Sample bottles, appropriate chain of custody forms, as well as boxes with return postage were also provided to MDPH staff for use in home within the MWRA service area (Samples from homes outside the MWRA service area are analyzed by a MDPH contract laboratory). MDPH staffers were trained to evaluate whether there was a lead service line present, and provided information and materials to encourage its removal.

Samples began to arrive in October. So far, all of the test results from the MWRA locations have been below the EPA Lead Action Level, and most have been below the detection level. MWRA has reported the test results back to MDPH which then provides the results to the residents, preserving the required confidentiality. MWRA staff currently do not have information on how many lead service lines are being found.

Staff from MWRA and MDPH will be meeting later in February to review current program results, including any information gathered by MDPH on lead service lines, and evaluate if any adjustments to the program are needed to improve its effectiveness.

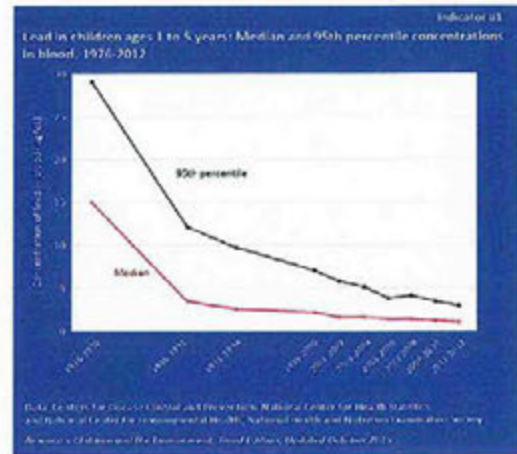
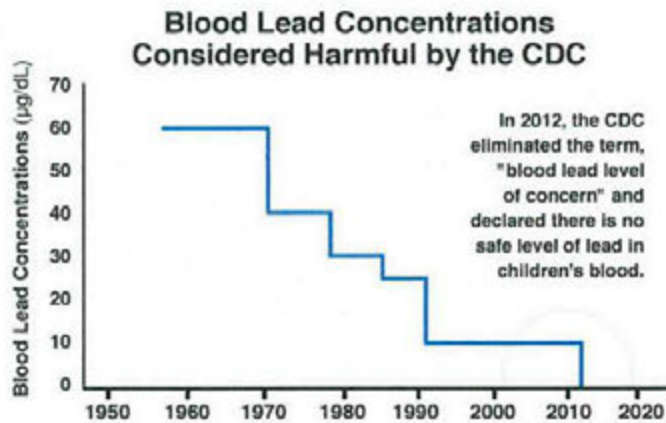
Lead Service Line Detection Research

MWRA and BWSC staff are working with the Water Research Foundation to develop a project to evaluate the potential feasibility of detecting the presence of a lead service line through non-invasive testing using precision electrical resistance or other electrical properties. A major obstacle to an effective program to replace lead service lines has been that existing inventories are incomplete and inaccurate due to their age, and methods or opportunities to determine the composition of buried service lines without excavating down to the line are not available.

The joint research effort using an experienced research team may result in the production of a practical method to non-invasively and reliably determine if a particular property had a lead line. Bench scale methods development would be followed by field scale verification at specific properties identified and made available by BWSC.

National Issues that MWRA Staff are Tracking

Change in CDC Reference Level: As discussed in previous Board updates, the Centers for Disease Control and Prevention (CDC), has periodically lowered its benchmark for action on children's blood lead levels, as additional information on health risks have become available, and as nationally children's blood lead levels have decreased dramatically, as shown on the chart at right.



Given that CDC believes that there is no safe level for lead, it has shifted its language from “level of concern” to “reference level,” as shown in the left hand chart above. In 2012, CDC lowered the level from 10 to 5 µg/dl, and announced that it would periodically reset the level at the 97.5 percentile level for all tested children¹. CDC is essentially saying that the level where some action should be taken would be set so that no more than 2.5 percent of children would be above it. As lead levels continue to decline, it has been reported that CDC is about to reset the “reference level” to 3.5 µg/dl. While this is very good news in that it recognizes continued progress on children's health, it does mean that there will be increased pressure on reducing exposures for all sources including water to maintain that continued progress.

Revisions to the Lead and Copper Rule: EPA is continuing to work on revisions to the Lead and Copper Rule. In addition to the recommendations of the National Drinking Water Advisory Council (previously described to the Board), EPA has received extensive comments from Congressional committees and other groups investigating the Flint situation, as well as many comments from the public and other interested parties. In October 2016, EPA issued a White Paper providing an overview of the issues and approaches they are considering as they draft the revisions.

The White Paper provided few specifics beyond what had already been discussed in the National Drinking Water Advisory Council (NDWAC) recommendations. MWRA staff will continue to track EPA's efforts, evaluating their potential impact on MWRA or MWRA communities, and will be involved in commenting as appropriate.

EPA Health Based Benchmark: In January 2017, EPA released a paper on modeling approaches for developing a health based benchmark for lead in drinking water. EPA will be undertaking a formal external peer review of the various approaches. This is the first step necessary to propose in the

¹ There is no direct relationship between the level of lead in water, usually reported in µg/l (micrograms per liter or parts per billion) and the level of lead in a child's blood, usually measured in µg/dl (micrograms per deciliter (1/10th of a liter)). The EPA effort described above in developing a health-based benchmark is attempting to establish some mathematical relationship between the two based on various assumptions.

draft rule some type of individual health-based benchmark or standard to be used is assessing whether the water in a particular home is “safe.” The end product will be a concentration of lead in water above which a child’s blood lead level might be increased by some “significant level” or would increase the percentage of children with blood lead levels above the then current CDC reference level by a significant amount. These benchmarks could be used to prioritize homes for lead service line replacement or to refer residents to local health officials, in line with one of the NDWAC recommendations to EPA.

Unfortunately, there is substantial opportunity for mis-application of the proposed modeling approaches or the benchmarks that arise out of them. The first issue is that the input to the models will be the level of lead in water that is actually consumed: this is very different from levels in the worst case stagnant water samples which are required by the current rule, and few water systems have data appropriate for use with the models. Thus, using the current sampling data will grossly overestimate the potential impact on children’s blood lead levels. The second is that all the modeling approaches have layers of safety factors built in which will make it difficult to understand the actual impact on any particular individual.

Both issues could tend to unnecessarily alarm consumers. MWRA staff are working with the American Water Works Association (AWWA) and other groups to participate in the peer review process and develop materials to assist communities in understanding and explaining the ultimate benchmarks.


Health Canada Report on Lead in Drinking Water: Health Canada, essentially the Canadian equivalent of EPA and CDC, released a report for public review in late 2016 on lead in drinking water as part of its efforts to review and revise their drinking water guidelines. Given the substantial overlap among the scientists and advocacy groups between the two countries, and the fact that both rely on the same published research, analyses and actions taken by either EPA or Health Canada often influence the actions of the other.

The Health Canada report suggests a different sampling approach than the current EPA LCR approach, as well as a different regulatory benchmark. Testing in the US is currently based on taking worst case samples - stagnant water - in high risk homes to understand whether the water is corrosive to lead, and whether corrosion control treatment is being effectively implemented. No more than 10 percent of those samples can be above the EPA Action Level of 15 ppb.

Health Canada appears to be moving toward an approach of using “random daytime samples” designed to more nearly capture actual exposure levels in water consumers are likely to be drinking, and comparing that to a benchmark of 5 ppb². As with the EPA peer review of their modeling approaches, a potential issue associated with this recommendation is that almost all of the data currently collected in the US is not comparable with the Canadian approach, and may lead to consumer and press confusion. As with the EPA report, staff are working closely with AWWA and others to track the Health Canada review process and develop appropriate communication materials to reduce consumer confusion.

² In Great Britain the random day time sampling is conducted across all homes. The Health Canada report considers random daytime sampling either targeted to certain higher risk homes or across all homes.

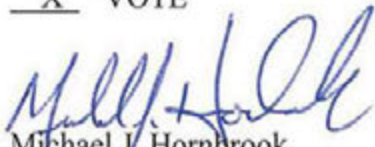
STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: February 15, 2017
SUBJECT: Redundancy for the Metropolitan Tunnel System

COMMITTEE: Water Policy & Oversight

INFORMATION
 VOTE

Frederick Brandon, P.E. Assistant Director of Engineering
A. Navanandan, P.E., Chief Engineer
David Coppes, P.E., Director, Waterworks
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

The following provides a summary of recent efforts towards advancing a program to provide redundancy for the Metropolitan Tunnel System (the City Tunnel, City Tunnel Extension, and the Dorchester Tunnels) for future maintenance and rehabilitation, and requests approval of the project to allow staff to proceed with preliminary design, geotechnical investigations and Massachusetts Environmental Policy Act (MEPA) review of the project.

RECOMMENDATION:

To approve staff's preferred alternative of construction of northern and southern deep rock tunnels from the Hultman Aqueduct and MetroWest Water Supply Tunnel to the Weston Aqueduct Supply Main (WASM) 3 and to the Southern Spine water mains for the purpose of providing redundancy for the Metropolitan Tunnel System (City Tunnel, City Tunnel Extension and Dorchester Tunnel) and to direct staff to proceed with preliminary design, geotechnical investigations and Massachusetts Environmental Policy Act (MEPA) review of the project.

DISCUSSION:

At the October 6, 2016 Special Meeting of the Board of Directors on Redundancy for the Metropolitan Tunnel System, staff provided a briefing to the Board of Directors on the status of the existing MWRA water transmission system and the lack of redundancy for the City Tunnel (1950), City Tunnel Extension (1963), and the Dorchester Tunnel (1976) with an accompanying binder of supporting materials. A summary of the briefing and staff recommendations follows:

- While the tunnels and shafts require little or no maintenance and represent a low risk of failure, staff have determined that the cast iron and steel pipe and valves at the tops of the shafts are in poor condition and in need of rehabilitation and maintenance. Failure at the tops of shafts in the existing system could result in wide-spread outages of water service impacting 60% of the service area which would require activation of emergency back-up

sources of supply, water-use restrictions, pressure swings, and a boil order. The economic impact to the metropolitan region was determined through Federal Emergency Management Agency (FEMA) methodology to be on the order of \$300 million per day.

- After discussion of staff efforts to develop and analyze many alternative approaches over several years, staff presented on the advantages and disadvantages of long distance large diameter surface pipelines through dense urban areas and pump station alternatives versus deep rock tunnel alternatives. Staff concluded that:
 - Large diameter long distance surface pipeline options present significant community disruption and have serious implementation challenges;
 - There are operational reliability problems associated with use of Chestnut Hill Emergency Pump Station and other possible pump station options;
 - Tunnel alternatives would allow planned maintenance of the existing tunnel system infrastructure
 - Tunnel alternatives allow emergency response at normal levels of service; and
 - Tunnel alternatives are constructible with reduced impacts to communities.
- Staff presented financial considerations of advancing a capital program to address metropolitan tunnel redundancy with the goal of: preserving sustainable and predictable rates at the water utility level; ensuring adequate capital is available when necessary; and minimizing the cost of borrowing.
- Staff outlined plans for interim improvements to reduce the risk of failure and improve system operating conditions in the event that an emergency occurs. The preferred long-term alternative consists of two deep rock tunnels beginning in the vicinity of the MassPike/Route 128 interchange (see Attachment 1). The Northern Tunnel would be approximately 4.5 miles in length and would connect to the mid-point of MWRA's WASM 3 pipeline. The Southern Tunnel would be approximately 9.5 miles in length and would connect to the southern surface mains at Shaft 7C of the Dorchester Tunnel.

At the conclusion of the Special Meeting, staff were directed to brief member communities and state and local officials on the Metropolitan Tunnel Redundancy initiative in order to build consensus and support for staff's preferred project approach.

On December 8, 2016, staff took part in a Long-Term Water Redundancy Forum hosted by the MWRA Advisory Board at Boston College. MWRA staff presented the history of the MWRA waterworks system, the need for Metropolitan Tunnel redundancy and the challenges, both implementation and financial, of building redundancy. The Honorable Jeanette A. McCarthy, Mayor of Waltham provided the perspective of local communities on the potential for impacts and disruption. The meeting was well attended; with 130 people present. Tours of the nearby Shaft 7, Shaft 7B, and Chestnut Hill Emergency Pump Station facilities were given following the

presentations and the question and answer period.

On January 19, 2017, the MWRA Advisory Board met and voted to support moving forward with a deep-rock, two-tunnel project versus surface piping alternatives. They voted also to recommend: a Program Management Division Approach, similar to the model used for the Boston Harbor Project; concurrent construction of both tunnels, rather than a phased approach; and use of revenue from non-typical or one time water users (e.g. drought connections) for the program.

The Utilities Contractors' Association of New England (UCANE), an organization comprised of contractors who perform underground utility construction projects wrote in opposition of the tunnel option. MWRA staff met with UCANE on February 1, 2017 at the Board's direction to provide information and context on the MWRA program and satisfied the concerns of the organization. UCANE's main concern was that the tunnel program would not divert MWRA funds and staffing resources away from other MWRA necessary pipeline replacement or rehabilitation projects. Staff informed UCANE that would not be the case.

Staff now request approval from the Board of Directors for the preferred alternative which would include construction of a northern and a southern deep-rock tunnel, as presented to the Board of Directors on October 6, 2016 and as recently endorsed by the MWRA Advisory Board. Staff are now evaluating project staffing and alternative organizational structures to oversee planning, design and construction phases of the project and will make a recommendation to the Board in future meetings.

The next step will be development of a scope of services and procurement of a consultant(s) to provide preliminary design, geotechnical investigations, and Massachusetts Environmental Policy Act (MEPA) environmental review for the project. These services would be undertaken over the next couple of years and will provide opportunities for staff briefings and direction from the Board before proceeding with final design of the project.

BUDGET/FISCAL IMPACT:

Budget for the Metropolitan Tunnel redundancy plan in the amount of \$1.4 billion has been included in the Draft FY18 CIP as a placeholder.

ATTACHMENT:

Metropolitan Redundancy - Preferred Alternative

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: February 15, 2017
SUBJECT: Shaft 12 Isolation Gate
Design, Engineering Services during Construction and
Resident Engineering Services
Arcadis, U.S., Inc.
Contract 7509

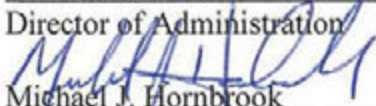
COMMITTEE: Water Policy & Oversight

INFORMATION

VOTE


Michele S. Gillen

Director of Administration


Michael J. Hornbrook
Chief Operating Officer

A. Navanandan, P.E., Chief Engineer
Maureen K. McAvoy, P.E., Program Manager
Preparer/Title

RECOMMENDATION:

To approve the recommendation of the Consultant Selection Committee to award Contract 7509, Design, Engineering Services during Construction and Resident Engineering Services for the Shaft 12 Isolation Gate to Arcadis U.S., Inc., and to authorize the Executive Director, on behalf of the Authority, to execute said contract in an amount not-to-exceed \$1,706,312, for a contract term of 40-months from the Notice To Proceed.

BACKGROUND:

The Quabbin Aqueduct is a concrete lined rock aqueduct that is 24.6 miles long with a typical section that has the shape of a horseshoe. At its largest dimension, the aqueduct is 11 feet wide and 12 feet 9 inches tall. With the piping restrictions at Oakdale Power Station the hydraulic capacity is reduced to 550 MGD due to a bypass and hydropower generation.

The Quabbin Aqueduct is used to transfer water from the Quabbin Reservoir at the Shaft 12 Intake to the Wachusett Reservoir at Shaft 1 of the Oakdale Power Station which ultimately supplies the water to metropolitan Boston. The Quabbin Aqueduct is also used to transfer supplemental water in the opposite direction from the Ware River Intake at Shaft 8 in Barre to Shaft 11A at the Quabbin Reservoir in Hardwick. If the isolation valves at Shaft 1 in Oakdale fail, there is currently no way to stop flow from the Quabbin Aqueduct to Wachusett Reservoir. Another method of isolation is recommended to prevent potential flooding at the Wachusett Reservoir. This contract provides engineering services for a future construction contract to add an isolation gate at the Shaft 12 Intake to provide backup isolation of the Quabbin Aqueduct.



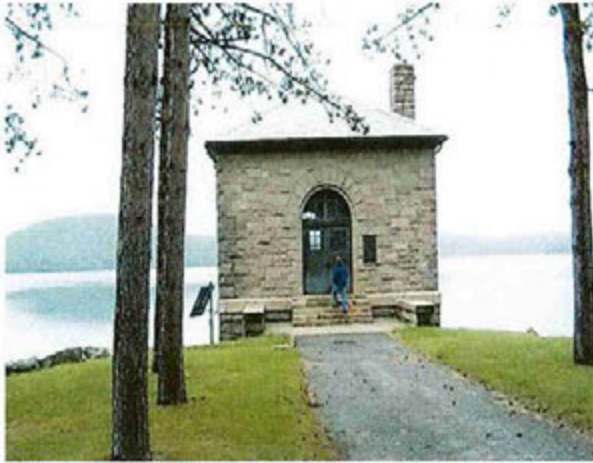
Quabbin Aqueduct

DISCUSSION

This professional services contract will provide design, engineering services during construction and resident engineering services for two 4-foot x 12-foot motorized isolation slide gates at the Shaft 12 Intake on the Quabbin Aqueduct. The installation of the slide gates requires significant modifications to the Shaft 12 Intake components and underwater construction activities. The slide gates will be designed to close during all potential flow conditions. The scope of the improvements includes:

- Dive inspections to verify existing and post construction conditions;
- Remove existing bar racks and shutter gates/stop logs and then clean and rehabilitate all three sets of vertical notched grooves;
- Install bar racks in the upstream set of grooves;
- Install new stop logs and shutters in the most upstream set of grooves;
- Complete Shaft modifications to accommodate new slide gate;
- Assemble and install new slide gates in the downstream set of grooves; and
- Complete repairs to Shaft 12 Upper Intake.

Of the total 40-month contract duration, 16-months is for design services, 12-months for engineering services during construction and resident engineering services, and 12-months for the construction warranty period.



Shaft 12 Intake-Exterior



Shaft 12 Intake-Interior

Procurement Process

On November 9, 2016, MWRA issued a one-step Request for Qualifications Statements/Proposals (RFQ/P) and was publically advertised in the Central Register, Boston Herald, Banner Publication and El Mundo. In addition, notice of the advertisement was sent directly to 20 firms and 11 firms requested the RFQ/P documents. On December 1, 2016 a non-mandatory pre-proposal conference/site visit was held. Three firms attended the site visit.

The RFQ/P utilized the following criteria and points: Cost – 25 points; Qualifications and Key Personnel – 20 points; Technical Approach/Capacity/Organization and Management Approach – 20 points; Past Performance on Authority Projects – 20 points; and Experience Past Performance on similar Non-Authority Projects – 15 points.

On December 22, 2016, MWRA received one proposal from Arcadis U.S., Inc. Staff contacted the other two firms that had attended the pre-proposal conference/site visit to determine why they did not submit proposals. Reasons offered included: the highly specialized nature of the project; inability to be competitive with firms with more relevant experience and more qualified key people; not having the appropriate team qualifications for this specific project; conflicting resources; and a business decision to propose on a different MWRA project. Staff are of the opinion that additional deterrents to proposing on this project include not only the remote location of the work site in Hardwick, but the risk firms would be undertaking as the prime consultant for the project. The prime consultant is required to hire a diving subconsultant to perform shaft inspections of the existing shaft structure and concrete at a cost of \$300,000, a considerable percentage of the work when also factoring in other subconsultants typically hired for this type of project (e.g., structural consultant, RE/RI services).

The proposal costs are presented below:

<u>CONSULTANT FIRM</u>	<u>PROPOSED CONTRACT COST</u>	<u>LEVEL OF EFFORT</u>
Engineer's Estimate	\$1,000,000	6,658 hours
Arcadis	\$1,706,312	10,730 hours

Upon a thorough review of the proposal, the Section Committee determined that the Arcadis proposal more accurately represented the level of effort necessary to complete the tasks when compared to the Engineer's Estimate. MWRA reviewed Arcadis' cost proposal to determine those factors that contributed to the proposal being \$706,312 over the Engineer's Estimate. Staff found that the primary reasons for the cost variance is the additional level of effort necessary with the specialized nature of this design work, which involves large slide gates and underwater construction and design specialists with higher salary rates. Additional level of effort to address uncertainty of the existing Shaft 12 conditions, which may significantly impact the design, was also not included in Engineer's Estimate. Arcadis identified 39 drawings that are required for this installation due to the sequencing of work and detailed installation details where the Engineer's Estimate assumed only 10 drawings. The preparation of each additional drawing requires engineering design time and resources that result in additional level of effort. The level of effort and cost variation was also due to the significant effort required for hydraulic modeling to ensure that the facility will operate under a range of flow conditions. The Engineer's Estimate underestimated the level of effort required for specialized design services for the underwater construction of the slide gates, the number of drawings required for this project, and the hydraulic modeling.

The Selection Committee was in agreement that Arcadis's proposal presented an appropriate level of effort, distribution of work and cost. Arcadis's Technical Approach demonstrated a good understanding of the project issues. Arcadis's Qualifications and Key Personnel were viewed as experienced and knowledgeable and as having specific experience in the design and installation of slide gates. All non-MWRA references were highly favorable; these projects included three similar projects conducted for the New York City Department of Environmental Protection. Arcadis's received mostly favorable reviews on reference checks conducted for its work on MWRA projects.

Staff entered into discussions with Arcadis to confirm costs, scope of services and staffing. Arcadis agreed to complete the specified design services on the basis of a guaranteed maximum price. Given the level of effort proposed and Arcadis' understanding of the complexities of the project staff are confident that Arcadis can complete the specified design services for the proposed cost of \$1,706,312.

Based on the Selection Committee's review of the proposal, the selection criteria and the appropriateness of the cost, the Selection Committee recommends awarding this contract to Arcadis in an amount not to exceed of \$1,706,312.

BUDGET/FISCAL IMPACT:

The FY17 CIP includes a budget of \$2,220,000 for Contract 7509. In addition to Shaft 12 work this contract initially included design and construction phase services for Shaft 2 rehabilitation. This contract (Contract 7509), in the amount of \$1,706,312, is for Shaft 12 work only.

MBE/WBE PARTICIPATION:

Due to the highly specialized nature of this work and limited subcontracting opportunities, no MBE or WBE participation requirements were included for this project.



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: J. Wolowicz
Vice-Chair: K. Cotter
Committee Members:
J. Carroll
P. Flanagan
J. Foti
A. Pappastergion
H. Vitale
J. Walsh

to be held on

Wednesday, February 15, 2017

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

Time: Immediately following Water Comm.

AGENDA

A. Approvals

1. Approval of the Affirmative Action Plan
2. PCR Amendments – February 2017
3. Appointment of Project Manager, Process Monitoring, Deer Island Treatment Plant
4. Appointment of Business Systems Analyst III, MIS

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the
Personnel and Compensation Committee

December 14, 2016

A meeting of the Personnel and Compensation Committee was held on December 14, 2016 at the Authority headquarters in Charlestown. Vice-Chairman Cotter presided. Present from the Board were Messrs. Blackmon, Carroll, Flanagan, Foti, Vitale, and Walsh,. Among those present from the Authority staff were Fred Laskey, Steve Remsberg, Michele Gillen, Karen Gay-Valente and Linda D'Addario. The meeting was called to order at 12:15 p.m.

Approvals

*PCR Amendment – December 2016

The Committee recommended approval of an amendment to the Position Control Register (ref. agenda item A.1).

*Appointment of Program Manager Security/Safety

The Committee recommended approval of the appointment of Mr. Joseph Bibbo (ref. agenda item A.2).

The meeting adjourned at 12:20 p.m.

* Approved as recommended at December 14, 2016 Board of Directors meeting.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the Personnel and Compensation Committee

January 18, 2017

A meeting of the Personnel and Compensation Committee was held on January 18, 2017 at the Authority headquarters in Charlestown. Vice-Chair Cotter presided. Present from the Board were Messrs. Blackmon, Carroll, Foti, Peña, Vitale, and Walsh. Among those present from the Authority staff were Fred Laskey, Steve Remsberg, Mike Hornbrook, Michele Gillen, and Bonnie Hale. The meeting was called to order at 12:20 p.m.

*PCR Amendments – January 2017

The Committee recommended approval of amendments to the Position Control Register (ref. agenda item A.1).

*Appointment of Program Manager, Process Engineering, Deer Island

The Committee recommended approval of the appointment of Mr. Timothy Beaulieu (ref. agenda item A.2).

The meeting adjourned at 12:25 p.m.

* Approved as recommended at January 18, 2017 Board of Directors meeting.

STAFF SUMMARY

P&CA.1
IV A.4
2/15/17

To: Board of Directors
From: Patterson Riley, Special Assistant, Affirmative Action & Compliance Unit
Date: February 15, 2017
Subject: Approval of the Affirmative Action Plan

COMMITTEE: Personnel & Compensation

 INFORMATION

 X VOTE



Patterson Riley, Special Assistant, AACU
Preparer/Title

RECOMMENDATION:

That the Board of Directors approve the Massachusetts Water Resources Authority's (MWRA) Affirmative Action Plan effective for a one-year period from January 1, 2017 through December 31, 2017.

DISCUSSION:

The Affirmative Action Plan sets out the basic parameters of MWRA's commitment to Equal Opportunity in the areas of Employment (EEO) and Minority/Women Business Enterprise (M/WBE) participation in MWRA procurements and contracted services. The Plan has been prepared pursuant to Section 7(g) of the Authority's Enabling Act, which states:

“The Authority shall develop policies and plans for affirmative action in employment, procurement, and contracting in accordance with laws and consistent with general policies and plans for the Commonwealth.”

MWRA updates its Affirmative Action Plan annually and provides information on the development, implementation and monitoring of the various plan elements in accordance with guidelines of the U.S. Department of Labor, Office of Federal Contract Compliance Programs (OFCCP). Since 2002, MWRA has utilized PeopleClick, a nationally known computer software package, to produce the required workforce staffing summary reports for each Affirmative Action Plan. Affirmative Action and Compliance Unit staff works with staff from the MIS and Human Resources departments to convert personnel transaction data from the MWRA's Human Resources Information System and to validate the proposed workforce goals for CY2016

The text of the plan is attached (Attachment A). Copies of the full plan including appendices will be available in the Board Lounge on February 15, 2017. Attachment B, "MWRA Job Group Representation," shows the actual number of minority and female employees currently, along with the numbers over-and under-utilized. The underutilized job groups denote areas for AACU recruitment focus if positions become available. This report is included in the MWRA Orange Notebook presented to the Board on a quarterly basis.

During the 2016 Affirmative Action Plan year, MWRA hired a total of 75 new employees, including 21 (28%) females and 22 (29%) minorities. There were 79 employees promoted during this period, including 16 (20%) females and 27 (34%) minorities. MWRA is in full compliance with all aspects and requirements of its federally approved affirmative action program and in following those strict guidelines with its Affirmative Action Plan, a promotion only occurs when the individual employee moves from a position within one job group to a new position within a different job group. However, as an employer, the MWRA considers an employee to be promoted at such time that the individual moves into a new position within the same job group, with an increase in pay, grade, different and new job duties. In addition, to enhance upward mobility and avail all employees of a career track where one exists, there were 27 such promotions during the 2016 Affirmative Action Plan year and of these, 12 (15%) were minorities and 8 (10%) were females.

A total of 71 terminations occurred during CY 2016. Of the total number of terminations, 11 (15%) were females and 16 (23%) were minorities. Of the total number of terminations, 93% left voluntarily, and of those, 72% were employees who retired and 21% were employees who resigned.

In comparison, during the 2015 Affirmative Action Program year, a total of 55 terminations occurred, including 21 (22%) females and 11 (20%) minorities. Of the total number of terminations, 26% were employees who resigned and 56% were employees who retired. A review of the total number of termination statistics for calendar years 2014, 2015 and 2016 is included in Table A below.

Table A

Termination Statistics	Employee Count	Minority		Female	
		Count	Percentage	Count	Percentage
Total Terminations CY2014	66	19	29%	11	17%
Total Terminations CY2015	55	11	20%	12	22%
Total Terminations CY2016	71	16	23%	11	15%

The race/sex composition of the workforce did not change significantly during the 2016 Affirmative Action Plan year, particularly as compared to Plan years 2014 and 2015.

The current overall MWRA affirmative action workforce staffing goal for females is 23.0% in the aggregate and workforce staffing at the end of the 2016 Plan Year was 22.9% for females. The current overall MWRA affirmative action workforce staffing goal for minorities is 16.0% in the aggregate and workforce staffing at the end of 2016 Plan Year was 21.1%.

A review of MWRA workforce staffing statistics for calendar years 2014, 2015, and 2016 is included in Table B below:

Table B

Calendar Year	Minority	Female
12/31/14	20.1%	22.8%
12/31/15	20.2%	23.0%
12/31/16	21.1%	23.8%

The 2016 Affirmative Action Plan documents include detailed workforce data for the reporting period December 1, 2015 through November 30, 2016. The data indicate that the number of underutilized job groups for females has increased. In calendar year 2016, there were 6 job groups underutilized by women and this number has increased to 9 job groups for 2017. In calendar year 2016, there were 9 job groups underutilized by minorities and this number has decreased to 8 job groups for 2017.

MWRA will continue its good faith efforts to maintain minority and female workforce staffing representation and to further reduce the number of job groups underutilized by women and minorities. There may be opportunities to fill critical positions through promotions of qualified internal candidates, including women and minority employees. The Affirmative Action and Compliance Unit will continue to focus its efforts to assist senior management to fill vacancies through the promotion of qualified women and minorities in the Management, Skilled Crafts, Operator, and Professional job groups. In addition, where external recruitment efforts are necessitated by the absence of qualified internal candidates, and senior management deem that the need exists to fill critical position vacancies, AACU will work with MWRA hiring managers and Human Resources to source qualified minority and female candidates.

It is the policy of the Massachusetts Water Resources Authority (MWRA) to ensure the equitable participation of Minority Business Enterprises (MBEs) and Women Business Enterprises (WBEs) in the award of all contracts including contracts for construction, goods/non-professional services and professional services. As required by Massachusetts Department of Environmental Protection via Environmental Protection Agency, the program will also include Disadvantaged Business Enterprises (DBEs) which means an ongoing, independent small business concern which is at least 51% owned and controlled by one or more individual(s) who are both socially and economically disadvantaged and meets the U.S. Department of Transportation eligibility criteria specified under 49 CFR Part 23 and 26 and has certification issued by the federal government or the Massachusetts Supplier Diversity Office. The D/MBE and D/WBE goals are 3.4% and 3.8% respectively in both the construction and professional services categories.

The Plan also includes information on the MBE/WBE/DBE Procurement Program. The MWRA spent \$2.9 million and \$2.6 million respectively with minority and women owned businesses in the last fiscal year. These amounts were 42% and 60% of the respective MBE and WBE targets, which reflect the achievements of the last fiscal year.

MASSACHUSETTS WATER RESOURCES AUTHORITY



AFFIRMATIVE ACTION PROGRAM

JANUARY 1, 2017 - DECEMBER 31, 2017

Frederick A. Laskey
Executive Director

Patterson A. Riley
Special Assistant
Affirmative Action & Compliance Unit

Affirmative Action Program

Massachusetts Water Resources Authority
Charlestown Navy Yard
100 First Avenue
Boston, Massachusetts 02129

AAP Completed by: Patterson A. Riley 1/27/2017
Patterson A. Riley Date
(Special Assistant for Affirmative Action)

Telephone Number: (617) 788-4070

Approved by: Frederick A. Laskey 1/27/17
Frederick A. Laskey Date
(Executive Director)

Inclusive Dates of the AAP: January 1, 2017 - December 31, 2017

**Massachusetts Water Resources Authority
Affirmative Action Plan**

Table of Contents

Section		Page
	<u>Introduction</u>	1
I	Legal Sections	
	Description of Organization	2
II	<u>Policy Statement</u>	
	Executive Director's Statement	3
	Board of Directors' Statement	4
III	<u>Responsibility for Implementation</u>	5
IV	<u>Equal Employment Opportunity</u>	
	Dissemination of the Plan	6
	Internal	
	External	
	 <u>Development and Execution of the Plan</u>	 8
	Development: Workforce Analysis	
	Employment Activities 12/1 -11/30	9
	Availability Analysis	
	Action-Oriented Program	
	Identification of Areas for Special Attention/Goals	
	Execution: Recruitment and Advertising	12
	Training/Career Development	13
	Consideration of Minorities and Females not Currently in the Workforce	
	Support of Community Action Programs	14
	 <u>Sex Discrimination Guidelines</u>	 15
	 <u>Religion and National Origin Discrimination Guidelines</u>	 17
	 <u>Affirmative Action Program For Individuals With Disabilities</u>	 18
	 <u>Affirmative Action Program for Protected Veterans</u>	 21
	 <u>Internal Audit and Reporting Systems</u>	 23
	Internal Complaint Procedure	
V	<u>MBE/WBE/DBE Program</u>	25

INTRODUCTION

The Affirmative Action Plan for the Massachusetts Water Resources Authority (the "MWRA" or "Authority"), is prepared and adopted under Section 7(g) of the Enabling Act, which states:

"The Authority shall develop policies and programs for Affirmative Action in employment, procurement and contracting in accordance with law and consistent with general policies and programs of the Commonwealth."

The AA Plan was developed to be consistent with federal and state laws and regulations:

Federal Executive Order 11246, as amended.

41 CFR Parts 60-1, 60-2, 60-20, 60-50, 60-250, 60-300, 60-741; Office of Federal Contract Compliance Programs (OFCCP): Affirmative Action Requirements.

The Rehabilitation Act of 1973, as amended.

The Vietnam-era Veterans' Readjustment Assistance Act of 1974, as amended.

In addition, MWRA's policies and personnel practices adhere to the nondiscrimination provisions of all applicable federal and state laws, as amended, including the following:

- Title VII of the Civil Rights Act of 1964.
- Civil Rights Act of 1991.
- Age Discrimination in Employment Act of 1967.
- Equal Pay Act of 1963.
- Americans with Disabilities Act of 1990.
- Massachusetts General Laws, Chapter 151B.
- Massachusetts Comparable Pay Act.

The AA Plan has been developed by the Affirmative Action and Compliance Unit (AACU) to cover the time period January 1, 2017 through December 31, 2017. The Plan includes a results-oriented set of procedures designed to achieve the full utilization of minorities and women in all levels of the MWRA's workforce and to promote job opportunities for individuals with disabilities and covered veterans. The Plan has been reviewed by the MWRA Board of Directors, voted on and approved for full implementation.

The Massachusetts Legislature created the Massachusetts Water Resources Authority in December 1984 to manage water and sewer services for 2.5 million people and 5,500 businesses in 61 communities. While the Boston Harbor Clean-up is the best known of its projects, MWRA has also completed a modernization of the drinking water system. MWRA also maintains 400 miles of water pipes, aqueducts, and tunnels and 228 miles of sewers. Also, nearly completed are projects to control combined sewer overflows, provide adequate water delivery and meet all federal, state and local water and wastewater standards.

II. POLICY STATEMENT

Executive Director's Statement

Our agency serves citizens in every neighborhood, economic class and cultural group in our service area. MWRA will be in harmony with its social role only when our work environment reflects our broader social aspirations for equal opportunity, justice, personal dignity and cross-cultural respect. To that end, we must take personal responsibility for diversity in our organization and in our community.

All of us at the Massachusetts Water Resources Authority recognize that we must take affirmative action to prevent and to remedy any discriminatory effects of business or employment practices based on race, color, religion, sex, sexual orientation, gender identity and expression, genetic information, national origin, age, ancestry, citizenship, disability, veteran and marital status.

On behalf of the MWRA, its managers and employees, I am committed to taking those steps which ensure equitable participation in our employment opportunities by the members of any protected class group without regard to race, color, religion, sex, sexual orientation, gender identity and expression, genetic information, national origin, age, ancestry, citizenship, disability, veteran status and marital status. We are committed to achieving equal opportunity for all through fair and effective implementation of our affirmative action plan.

Frederick A. Laskey
Executive Director

Board of Directors' Statement

We, the Board of Directors of the Massachusetts Water Resources Authority, take great pride in our diverse and talented workforce. We recognize that our continued success depends largely on the collective strengths of our employees. Developing the right mix of skills, ideas and individuals requires an unwavering commitment to Equal Employment Opportunity and Affirmative Action. Accordingly, it is our policy to recruit, hire, and advance individuals without regard to their race, color, religion, sex, sexual orientation, gender identity and expression, genetic information, national origin, age, ancestry, citizenship, disability, veteran and marital status.

Our commitment to the principles of Affirmative Action and Equal Employment Opportunity is reflected in all of our policies and procedures from recruitment and hiring to training, compensation, benefits, transfers and promotions. This commitment is based on sound management and business practices, as well as legal requirements.

In keeping with fair employment practices, we will maintain a positive and productive work environment which calls for the highest standard of personal conduct. In accordance with this standard, any type of harassment or discrimination directed toward any employee or applicant for employment on the basis of race, color, religion, sex, sexual orientation, gender identity and expression, genetic information, national origin, age, ancestry, citizenship, disability, veteran and marital status will not be tolerated.

MWRA is committed to Equal Employment Opportunity and Affirmative Action. We expect each employee to be an active partner in this effort by supporting, in word and deed, the spirit and principles of Equal Employment Opportunity and Affirmative Action. Further, we expect that these values will govern the relationships we establish with communities we serve and others with whom we do business. Working together, we can build upon this commitment and create an environment that reflects diversity in its fullest and truest sense.

The Special Assistant, Affirmative Action and Compliance Unit, has responsibility for implementing and monitoring the Authority's Affirmative Action and Compliance Plan. Employees are encouraged to contact the Affirmative Action & Compliance Unit directly in order to obtain a copy of the Authority's Policy on Equal Employment Opportunity and Affirmative Action.

III. RESPONSIBILITY FOR IMPLEMENTATION

Senior Management Responsibilities

The responsibility for achieving affirmative action goals and objectives rests with the Executive Director, the Special Assistant of Affirmative Action and Compliance Unit, the Director of Human Resources, Division/Department Directors and other managers and supervisors.

Affirmative Action and Compliance Staff

The Special Assistant, AACU is provided with sufficient authority, senior management support, and staff to execute these responsibilities, and is identified in all internal and external communications regarding the AAP. The Special Assistant may propose additional programs and activities to strengthen the MWRA's commitment to equal employment opportunity and affirmative action and to effectively address AAP/EEO matters.

The Special Assistant, AACU in conjunction with the appropriate staff, is responsible for:

- Implementing affirmative action programs.
- Developing policy statements.
- Designing and conducting audit and reporting systems to monitor protected class status for the following:
 - Recruiting
 - Hiring
 - Promotions
 - Transfer
 - Terminations
 - Demotions
- Periodically reviewing, with the Chairman of the Board of Directors and the Executive Director, the progress of senior managers in furthering the achievement of the Authority's goals.
- Serving as a liaison between MWRA and enforcement agencies.
- Acting as a liaison between MWRA and minority organizations, women's organizations and community action groups concerned with employment opportunities of minorities and women.
- Reviewing the MWRA's AAP with managers and supervisors to ensure the policy is understood and followed.

The MBE/WBE Program Manager in conjunction with the appropriate staff is responsible for:

- Administration and monitoring of the MWRA's MBE/WBE/DBE Plan.
- Assisting divisions in the implementation of the MWRA's MBE/WBE/DBE Program.

- Ensuring that the program is consistent with the MWRA's Supplementary Provision for Equal Employment Opportunity, Anti-Discrimination, and Affirmative Action.

Line Management Responsibilities

Managers and supervisors will implement the program in the following ways:

- Assist in identifying problem areas, establishing goals, and developing time lines.
- Maintain open door policy for employees to discuss issues of equal opportunity and affirmative action.
- Meet with other managers, supervisors, and employees to adhere to MWRA EEO/AA policies.
- Assist in the performance of internal audits to determine compliance.
- Evaluate the performance of subordinate managers and supervisors in achieving affirmative action plan objectives.

Other Key Staff

The Director, Human Resources, has developed and implemented appropriate mechanisms to ensure equal employment opportunity for all applicants and employees.

The General Counsel and the Associate General Counsel for Labor & Employment provide legal advice regarding equal employment opportunity and affirmative action as they affect the Authority.

IV. EQUAL EMPLOYMENT OPPORTUNITY

Dissemination of the Plan

MWRA will communicate its equal employment opportunity policies and affirmative action programs to all relevant audiences in the following manner:

Internally

Communicate to employees the existence of the Affirmative Action Plan and make it available for inspection. Prominently display EEO/AA posters throughout all business locations identifying appropriate staff to contact.

Conduct special meetings with managers, supervisors and employees to explain the intent of the equal employment opportunity policies, discuss individual responsibility for implementation and make clear the Executive Director's support of the policies.

Discuss the policies in employee orientation sessions and reference it in management training sessions.

Include the policies in the Policies and Procedures Manual.

Publicize the policy on the MWRA's internal and external websites, reports and other media.

Publish articles covering EEO programs, updates, and promotions in newsletters and other publications.

Include non-discrimination clauses in union agreements, and work to eliminate contract provisions that may have discriminating effects.

Externally

Communicate to applicants for employment the existence of the Affirmative Action Plan, and make it available for review if requested.

Incorporate the EEO clause in all purchase orders, leases and contracts.

Ensure that both minority and non-minority men and women, Veterans, and persons with disabilities are represented in recruitment advertisements.

Communicate to all recruitment sources the existence of the Affirmative Action Plan.

Development and Execution of the Plan

Development

Workforce Analysis

As of November 30, 2016, MWRA employed 1162 people. The MWRA divides its workforce into 30 organizational units in Executive, Administration, Finance, Law, and Operations as follows:

Board of Directors	Operations - Administration
Executive - Office of the Executive Director	Operations - ENQUAL
Executive - Affirmative Action	Operations - Facilities Management
Executive - Office of Emergency Preparedness Services	Operations - Laboratory Services
Executive - Internal Audit	Operations - Planning
Executive - Public Affairs	Operations - Toxic Reduction & Control
Administration - MIS	Operations - Engineering & Construction
Administration - Facilities	Operations - Wastewater Operations
Administration - Fleet Services	Operations - Water Distribution & Pumping
Administration - Human Resources	Operations - Water & Wastewater O&M
Administration - Procurement	Operations - Water Treatment & Transmission
Administration - Real Property & Environmental	Operations - Operation Support
Finance - Director's Office	
Finance - Rates & Budget	
Finance - Treasury	
Finance- Controller	
Finance - Risk Management	
Law	

Office of Federal Contract Compliance Programs requires that non-construction contracts maintain an organizational profile or a workforce analysis to depict staffing patterns. It is a method to determine whether barriers to equal opportunity exist within an organization.

Pursuant to 41 C.F.R. § 60-2.11(a), the Workforce Analysis Report (Appendix A) lists each job title as it appears in the applicable collective bargaining agreements or payroll records, ranked from the highest paid to the lowest paid within each of the 30 organizational units.

The reports display within each organizational unit for each job title, the total number of incumbents, the total number of male and female incumbents, and the total number of male and female incumbents who are White, Black, Hispanic, Asian, American Indian, Native Hawaiian and Other, and Two or More Races. Finally, the reports also supply a wage rate code for each job title.

From December 1, 2015 through November 30, 2016, there were a total of 75 new hires at the MWRA, including 21 (28%) females and 22 (29%) minorities. The current race/sex composition of the workforce for minorities of 20.0% is less than the overall 2015 MWRA workforce staffing goal of 21.5%; however, the current race/sex composition of the workforce for females of 22.9% is above the overall 2015 workforce staffing goal of 22.4%.

A total of 79 promotions occurred during this reporting period, including 16 (20%) females and 27 (34%) minorities. For Affirmative Action Plan reporting purposes 52 of these promotions reflect employee promotions where there has been a change in Job Group as described herein under "Availability Analysis". In addition, to enhance upward mobility and avail all employees of a career track where one exists, there were 27 such promotions during the 2016 Affirmative Action Plan year and of these 12 (15%) were minorities and 8 (10%) were females.

A total of 71 terminations occurred within the period, and of these, 11 (15%) were females and 16 (23%) were minorities. Of the total number of terminations, 93% left voluntarily, and of those, 72% were employees who retired and 21% were employees who resigned.

Availability Analysis

Pursuant to 41 C.F. R. 60-2.11(b), an analysis of all major Job Groups is included in the Plan (see Appendix B Job Group Analysis Report). Those jobs having similar content, wage rates and opportunities had been grouped together into 18 Job Groups:

Administrator A	Management A
Administrator B	Management B
Clerical A	Operator A
Clerical B	Operator B
Engineers A	ParaProfessional
Engineers B	Professional A
Craft A	Professional B
Craft B	Technical A
Laborers	Technical B

Moreover, the 18 Job Groups have been kept sufficiently large enough to make for meaningful statistical analyses. The grouping avoids placing job titles from different EEO-4 categories within the same Job Group, wherever possible. Alternative job groupings were reflected because they do not make substantial differences and do not mask any potential underutilization of minorities or women. This analysis of the major Job Groups on the Availability Analysis forms is shown in Appendix C.

Action-Oriented Program for Affirmative Employment Opportunities

MWRA is committed to a strong policy of equal employment opportunity and affirmative action and this commitment is clearly expressed in its Affirmative Action Plan, which covers all aspects of the employment process from recruiting and hiring to training and promotion.

MWRA takes affirmative action to ensure that applicants for employment and employees are treated fairly during employment, without regard to their race, color, religion, sex and national origin. MWRA also takes affirmative action steps and make good faith efforts to develop and implement action-oriented programs designed to remove any employment barriers, expand employment opportunities and strive to achieve established workforce staffing goals and objectives.

During the 2017 Affirmative Action Plan year and continuing, MWRA will make good faith efforts to continue to develop and implement an action-oriented program designed to increase employment opportunities, while tailoring the size of its workforce to meet its future mission and maintain organizational efficiency.

The Special Assistant of the Affirmative Action and Compliance Unit, working in conjunction with MWRA Division Directors, will take affirmative steps to establish the following joint accountability good faith efforts to direct their attention toward employee development programs and career counseling initiatives to prepare all interested employees including individuals in targeted EEO groups for consideration of future promotional opportunities, as follows:

- Assist Divisions in efforts to promote qualified employees including minorities and females to fill current or unanticipated vacancies, particularly those positions in underutilized job groups.
- Review the appropriate education, experience and skill requirements for successful job performance.
- Participate in programs, which may impact protected group members, especially in the areas of the development of training and recruitment.
- Schedule confidential meetings with employees who request information on MWRA affirmative action policies, including promotion and training.
- Encourage current employees to take advantage of the above listed training and developmental opportunities, as well as opportunities for promotion.
- Monitor and review, where appropriate, the qualifications of all employees to assure that protected group members are given full opportunities for training and promotion.
- Implement strategic recruitment strategies for underutilized positions likely to require external recruitment.
- Ensure that all promotional opportunities are posted.

Identification of Areas for Special Attention/Goals

Underutilization exists in the following job groups: Administrator B, Engineer A, Engineer B, Craft A, Craft B, Laborers, Management B, Operator A, Operator B, and Professional A. Special attention is required to increase the representation of minority and/or females in these job groups by the following:

- Identify any applicable barriers to equal employment opportunity.
- Conduct training/awareness sessions with managers and continue to make them aware of the Affirmative Action Plan elements designed to ensure that the Authority policy and affirmative action program objectives are being followed.

During this affirmative action plan period, there may be 107 opportunities to fill vacant positions. These positions may be filled by new hires, promotions or transfers. For unanticipated position vacancies that occur in other job groups, good faith efforts will be made to attain the established goals for women and minorities. Based on the two-factor availability analysis, the following goals have been set. The chart listed below identifies the goals for those projected vacancies.

Goals for Projected Vacancies							
JOB GROUP ENGINEER A	# Opportunities	% Availability		% Workforce		Goal	
		Minority	Female	Minority	Female	Minority	Female
Total	12	0.00	20.40	0.00	18.10	0	5
JOB GROUP CRAFT A	# Opportunities	% Availability		% Workforce		Goal	
		Minority	Female	Minority	Female	Minority	Female
Total	18	23.63	6.77	15.20	0.00	4	3
JOB GROUP CRAFT B	# Opportunities	% Availability		% Workforce		Goal	
		Minority	Female	Minority	Female	Minority	Female
Total	30	22.11	5.67	20.90	2.90	8	5
JOB GROUP MANAGEMENT A	# Opportunities	% Availability		% Workforce		Goal	
		Minority	Female	Minority	Female	Minority	Female
Total	8	24.57	41.14	13.10	36.40	2	2
JOB GROUP OPERATOR A	# Opportunities	% Availability		% Workforce		Goal	
		Minority	Female	Minority	Female	Minority	Female
Total	8	16.39	4.92	6.00	1.50	2	2
JOB GROUP OPERATOR B	# Opportunities	% Availability		% Workforce		Goal	
		Minority	Female	Minority	Female	Minority	Female
Total	10	19.76	27.92	17.70	4.80	3	2
JOB GROUP PARAPROFESSIONAL	# Opportunities	% Availability		% Workforce		Goal	
		Minority	Female	Minority	Female	Minority	Female
Total	7	36.11	86.11	30.00	48.30	1	2
JOB GROUP PROFESSIONAL A	# Opportunities	% Availability		% Workforce		Goal	
		Minority	Female	Minority	Female	Minority	Female
Total	2	22.62	0.00	15.20	0.00	1	0

Execution

Advertising and Recruitment

- The Special Assistant, AACU, annually submits an ad specifically targeted at a publication that has a high minority and female readership.
- The Director, Human Resources ensures that reasonable recruiting and advertising dollars are being targeted to reach minority and female candidates and conducts an analysis to determine the effectiveness of the employment advertisements.
- Recruiters send vacancy announcements to over 30 public and private recruitment sources. The sources included state employment offices, community organizations, interest groups, and other sources.
- Recruiters distribute literature, attend career fairs, and maintain contact with referral sources to assure a steady flow of qualified protected class applicants.

Selection

- Human Resources and Affirmative Action staff review existing promotion, transfer, training and selection procedures to ensure equal opportunity.
- Human Resources, Affirmative Action, and Division staff develop selection criteria that do not discriminate or tend to screen out women, minorities, covered veterans and/or individuals with disabilities.
- Human Resources and Affirmative Action staff monitor the selection process to ensure equal opportunity and the absence of adverse impact on protected class applicants.
- Human Resources and Affirmative Action staff review application forms to ensure non-discrimination.
- Managers and Supervisors ensure that employees in protected classes receive equal consideration in all selections.

Promotion, Transfer, Layoff and Recall

Promotions and transfer policies are designed to provide equal opportunity to all employees regardless of race, color, religion, sex, sexual orientation, gender identity and expression, national origin, age, ancestry, citizenship, disability, veteran and marital status. All employees who demonstrate management potential are encouraged to seek advancement into supervisory or other managerial positions. All employees are encouraged to take advantage of the benefits and financial support provided to them for professional development and continuing education, which may enhance their promotional opportunities.

Compensation

The principle of equal pay for equal work for all employees is a reality. All employees, including females and minorities, receive compensation in accordance with the same standards. Opportunities for overtime work or otherwise earning increased compensation, when available, is afforded to qualified employees without discrimination based on race, color, religion, sex, sexual orientation, gender identity and expression, genetic information, national origin, age, ancestry, citizenship, disability, veteran and marital status. MWRA does not reduce the amount of compensation offered because of any disability income, pension or other benefit the applicant or employee receives from another source.

Facilities

MWRA maintains all of its facilities on a non-segregated basis. MWRA maintains appropriate facilities for both sexes and handicapped individuals unless the construction of such facilities would create an undue burden on the Authority, its facilities or its operations.

Training/Career Development

MWRA assures that training programs and seminars are offered to all employees, including members of protected classes on the basis of appropriate and realistic need. All eligible employees are encouraged to participate in the Authority's tuition reimbursement and tuition remission benefit for continued education, career development and job advancement. Training programs are monitored to assure equal opportunity for protected class employees in all training opportunities.

Training needs are re-evaluated annually to determine the areas of highest priority. Emphasis is on programs to increase productivity and meet job requirements.

Human Resources and Division staff have conducted cross-functional training, to facilitate reorganizations and reassignments. This training often requires new skills, licenses and/or certifications.

During calendar year 2017, the Authority will continue to offer, as needed, a series of 6 classes which make up the training component of the Unit 2 and Unit 3 Productivity Improvement Program (PIP) and a series of 12 classes which make up the Unit 1 Administrative Certificate Program (ACP). While PIP and ACP classes are required for employees in designated job titles, classes are available for general enrollment by individuals developing their qualifications for future job openings.

Consideration of Minorities and Females not Currently in the Workforce

MWRA recruits minorities and women, not currently in our workforce, who have the qualifications and requisite skill for employment. All employees engaged in recruiting are committed to the development of sources of minorities and females from organizations, institutions, community agencies, training schools and colleges.

Support for Community Action Programs

School Education Program

The MWRA offers School Education Program presentations for grades K-12. The MWRA School Education Program has provided meaningful educational experiences to a number of students of the MWRA service community, including those in the urban communities of the metropolitan area.

Subjects range from the Quabbin Reservoir and the water distribution system to Deer Island and the transformation of wastewater into effluent. One of the School Education Program's goals and objectives is to increase outreach to the schools in the communities that reflect the diverse population of the MWRA service area. The School Education Program has been instrumental in informing students, and by extension, the general public of these communities, of the operation and work of the MWRA.

Sex Discrimination Guidelines

MWRA does not discriminate against any applicant or employee on the basis of sex in hiring, recruiting, promoting, transferring, layoff, termination, compensation or in selecting employees for training or other related programs.

Recruiting and Advertising

Job advertisements placed by the MWRA in newspapers and other media for employment do not express a sex preference.

Job Policies and Practices

- Written personnel policies for affirmative action expressly indicate that there shall be no discrimination against employees on account of sex.
- Employees of both sexes have equal opportunity to any available position which the individuals are qualified to perform.
- MWRA does not make any distinction based upon sex in employment opportunities, wages, hours or other conditions of employment. MWRA contribution for insurance, pension, welfare programs and other fringe benefits is the same for men and women, resulting in equal benefits.
- MWRA does not support distinctions between married and unmarried persons of one sex that are not made between married and unmarried persons of the other sex.
- MWRA provides appropriate and comparable physical facilities to both sexes.
- MWRA does not deny a female employee the right to any job which she is qualified to perform.
- MWRA does not penalize women in their conditions of employment because they require time away from work on account of child bearing.
- MWRA does not specify differences for male or female employees on the basis of sex in either involuntary or optional retirement age.

Wages

- MWRA's wage schedules do not relate to and are not based on the sex of its employees.
- MWRA does not discriminatorily restrict one sex to certain job classifications.

Sexual Harassment

Acts of harassment by employees are prohibited employment practices under Title VII of the Civil Rights Act of 1964, Massachusetts General Laws, Chapter 151(B) and MWRA policy and are subject to sanctions and disciplinary measures.

It is the goal of the MWRA to promote a workplace that is free from sexual harassment. Sexual harassment means sexual advances, requests for sexual favors, and verbal or physical conduct of a sexual nature when:

- Submission to or rejection of such advances, requests or conduct is made explicitly or implicitly a term or condition of employment or as a basis for employment decisions; or
- Such advances, requests or conduct have the purpose or effect of unreasonably interfering with an individual's work performance by creating an intimidating, hostile, humiliating or sexually offensive work environment.

MWRA's Harassment Prevention Policy, policy HR.21, re-issued January 1, 2014, sets forth procedures for employees to follow and notify management of any sexual harassment violations.

MWRA personnel investigate complaints of sexual harassment in a prompt, thorough and confidential manner, and recommend appropriate discipline up to and including termination for offenders. Employees should feel confident that retaliation against an individual who has complained about sexual harassment and retaliation against individuals for cooperating with an investigation of a sexual harassment complaint is unlawful and will not be tolerated by this organization.

Religion and National Origin Discrimination Guidelines

MWRA's affirmative action policy prohibits discrimination against employees or applicants for employment on the basis of religion or national origin.

MWRA makes every effort to accommodate the religious observances and practices of employees and prospective employees who regularly observe Friday evening or some other day of the week as their day of religious observance, and/or who observe certain religious holidays during the year and who are conscientiously opposed to performing work or engaging in similar activity on such days when such accommodations can be made without undue hardship on the operation of the Authority's business.

In determining the extent of its obligations under this section, MWRA considers the following factors:

- Business necessity;
- Financial cost and expenses; and
- Resultant personnel problems.

To assure non-discrimination based on religion or national origin, MWRA is engaged in the following activities:

- Internal communications;
- Development of internal procedures described previously;
- Regular notification to employees of EEO policy regarding religion or national origin;
- Utilization of external recruitment sources, including those educational institutions with substantial enrollments of students from various religious and ethnic groups;
- Utilization of religious and ethnic media for institutional and employment advertising.

Affirmative Action Program for Individuals with Disabilities

Policy Statement

The MWRA is committed to take affirmative action to assure equal employment opportunity for qualified individuals with disabilities.

Definition of Qualified Individual with Disability

A “qualified individual with a disability” is a person who:

- Has a physical or mental impairment that substantially limits a “major life activity”,
- Has a record of such an impairment, or
- Is regarded as having such an impairment and
- Is capable of performing the essential functions of the job with or without reasonable accommodation to his or her disability.

Pregnancy and Childbirth

Disabilities caused or contributed to by pregnancy, childbirth or other related medical conditions, will be treated the same as disabilities caused or contributed to by other medical conditions.

Definition of Reasonable Accommodation

A “reasonable accommodation” for a qualified individual with a disability may include, but is not limited to,

- Making existing facilities readily accessible;
- Job restructuring; part-time or modified work schedules; reassignment to a vacant position; modification of equipment or devices; or other similar accommodations.

Note: An accommodation must be reasonable and is not required if it would impose an “undue hardship” on the MWRA.

Request for Reasonable Accommodations

MWRA commits to making reasonable accommodations to the limitations of qualified individuals with disabilities and qualified disabled veterans, unless such an accommodation would impose on undue hardship on the MWRA’s business.

An employee with a disability may make a request for reasonable accommodations at any time to their supervisor or directly to the Affirmative Action and Compliance Unit or the Director of Human Resources. The Special Assistant of Affirmative Action & Compliance or his or her designee shall be notified of all reasonable accommodation requests by supervisors or managers and shall ensure that reasonable accommodation records are kept separate from individual employee files.

Communication of Policy

- The Executive Director or his designee will communicate to Division and Department Directors and other managers the MWRA's policy statement concerning employment of qualified individuals with disabilities.
- Where the MWRA conducts employment activities, posters will be prominently displayed setting forth such information regarding the employment of individuals with disabilities as may be required by government agencies.
- The MWRA will ensure that a list of schools, private and state placement agencies and community and social service organizations receive job listings which are externally posted and advertised by the Authority and that the list is reviewed annually.
- The MWRA will continue to notify relevant organizations as well as appropriate public employment agencies and unions, of MWRA's commitment to equal employment opportunity and affirmative action for individuals with disabilities, including veterans.
- A clause concerning the commitment to equal employment opportunity and affirmative action for individuals with disabilities will continue to be included in contracts and purchase orders of \$2,500 or more.
- The MWRA will continue to notify labor unions and (sub) contractors of the commitment to equal employment opportunity and affirmative action for individuals with disabilities and will seek their cooperation and assistance.

Voluntary Disclosure

An individual may voluntarily self-identify himself/herself as an individual with disabilities by completing the Affirmative Action Data Form, at any time.

Information submitted will be kept confidential, except that (i) supervisors and managers may be informed regarding restrictions on the work or duties of individuals with disabilities, and regarding necessary accommodations; (ii) first aid and safety personnel may be informed, when and to the extent appropriate, if the individual has a condition that might require emergency treatment; and (iii) Government officials engaged in enforcing laws administered by OFCCP, or enforcing the Americans with Disabilities Act, as amended, may be informed.

Review of Selection Process

All human resources processes shall be reviewed to determine whether present procedures assure careful, thorough and systematic consideration of the job qualifications of disabled applicants and employees for job vacancies filled either by hiring or promotion, and for all training opportunities offered or available.

Consideration of Qualifications

Records are kept by the Human Resources Department identifying those vacancies, including promotions, for which known disabled persons has been considered. Should any known disabled person be rejected for employment, promotion, or training, a record is made and kept of the reason. If such reason is medically related, the record is treated as a confidential medical record.

Where applicants or employees are selected for hire, promotion, or training, MWRA will undertake any reasonable accommodation which makes it possible to place a disabled person on the job. Records are maintained to describe the accommodation; such records are treated as confidential medical records.

Miscellaneous

- All MWRA job descriptions reflect the essential qualifications and requirements of each job.
- When an opportunity for hiring or promotion occurs, the MWRA will review the applicable job descriptions to ensure that the qualifications are job related and consistent with business necessity and the safe performance of the job.

Affirmative Action Program for Protected Veterans

Policy Statement

The Authority is committed to take affirmative action to assure equal employment opportunity in every respect for disabled veterans, Armed Forces service medal veterans, recently separated veterans, or other veterans who served during a war, or in a campaign or expedition for which a badge has been authorized.

Communication of Policy

- The Executive Director or his designee will communicate to Division and Department Directors and other managers the Authority's policy statement concerning employment of qualified protected veterans.
- The MWRA will ensure that a list of established veteran's organizations and public and private recruitment services, included in Appendix D of this Plan, including the appropriate local employment service offices, will receive copies of all positions, which are externally posted and advertised by the MWRA, and that this list will be reviewed annually and MWRA will continue to notify veteran's service organizations as well as appropriate public employment agencies of the commitment to equal employment opportunity and affirmative action for protected veterans.
- A clause concerning the commitment to equal employment opportunity and affirmative action for protected veterans will continue to be included in contracts and purchase orders of \$10,000 or more.
- The MWRA will continue to notify labor unions and contractors of the commitment to equal employment opportunity and affirmative action for protected veterans and will seek their cooperation and assistance.
- The MWRA will use the outreach measures it uses for others covered by MWRA's Affirmative Action Program to recruit and employ veterans also covered by this program.
- The MWRA will submit to the Office of the Assistant Secretary of Veterans Employment and Training no later than March 31st of each year, a form titled Federal Contract Veterans Employment Report, which shall contain a list of new employees, and those individuals who have self-identified as protected veterans hired during the period covered by the Report.

Voluntary Disclosure

- Subsequent to making a job offer, but prior to commencing duties, a prospective employee will be offered the opportunity to self-identify as a special disabled veteran, disabled veteran, a veteran of the Vietnam Era or other protected veteran. The MWRA will consider only that portion of the veteran's military record that is relevant to the job for which the veteran is being considered. After beginning employment, an employee may voluntarily self-identify him/herself at any time as a protected veteran.
- Information submitted will be kept confidential, except that (i) supervisors and managers may be informed regarding restrictions on the work or duties of disabled veterans, and regarding necessary accommodations; (ii) first aid and safety personnel may be informed, when and to the extent appropriate, if a veteran has a condition that might require emergency treatment; and (iii) Government officials engaged in enforcing laws administered by OFCCP, or enforcing the Americans with Disabilities Act, as amended, may be informed.

Review of Selection Process

All human resources processes shall be reviewed to determine whether present procedures assure careful, thorough and systematic consideration of the job qualifications of protected veteran applicants and employees for job vacancies filled either by hiring or promotion, and for all training opportunities offered or available.

Consideration of Qualifications

In determining the qualifications of a covered veteran, MWRA will consider only that portion of the military record, including discharge papers, relevant to the specific job qualifications for which the veteran is being considered.

Records are kept by the Human Resources Department identifying those vacancies, including promotions, for which known disabled persons and protected veterans have been considered. Should any known disabled person or protected veteran be rejected for employment, promotion, or training, a record is made and kept of the reason. If such reason is medically related, the record is treated as a confidential medical record.

Where applicants or employees are selected for hire, promotion, or training, MWRA will undertake any reasonable accommodation which makes it possible to place a disabled person or veteran on the job, that is not an undue hardship. Records are maintained to describe the accommodation; such records are treated as confidential medical records.

Miscellaneous

- All MWRA job descriptions reflect the essential qualifications and requirements of each job.
- When an opportunity for hiring or promotion occurs, the MWRA will review the applicable job descriptions to ensure that the qualifications are job related and consistent with business necessity and the safe performance of the job.

- The MWRA will not reduce the amount of compensation to veterans by the amount the veteran receives from disability income, pension or other benefits related to his or her status as a veteran.

Internal Auditing and Reporting Systems

Internal auditing and reporting for Affirmative Action is managed through the use of monthly, quarterly, and annual reports generated by AACU and shared with management. Reports reflecting workforce compensation, promotions, transfers and terminations are reviewed to ensure that the policy of non-discrimination and equal employment opportunity is carried out. State and local government information reports (EEO-4) are prepared and submitted in accordance with regulation and written instructions.

Internal Complaint Procedure

The internal complaint procedure provides the opportunity for any individual (employee or applicant) who believes that she or he has been harassed, discriminated against or unfairly treated by the MWRA to file a complaint using the procedures set forth below.

Filing a Complaint

- The individual alleging discrimination should file a written and signed complaint with the Special Assistant of Affirmative Action and Compliance Unit (form available in AACU), or the Director of Human Resources. Detailed and specific allegations must be provided along with an indication of the action(s) or resolution the individual is seeking.
- The complaint must be filed in as timely a fashion as possible.

Procedure

- The Special Assistant of Affirmative Action and Compliance Unit and/or Director of Human Resources, will be responsible for accepting complaints of discrimination in writing.
- Upon receiving a complaint of discrimination, a complaint investigator will be assigned, who shall attempt to determine through preliminary fact finding if a formal investigation is warranted.
- Upon determination that an investigation is warranted, a date will be scheduled for an in-depth interview with the complainant and other relevant parties. The complaint investigator shall attempt to bring about a satisfactory resolution with the complainant and appropriate management and make recommendations accordingly.

- Any agreement or resolution may be in writing and if in writing, copies provided to all appropriate parties.
- The complaint resolution process shall be concluded in an expeditious manner. It is the MWRA's intention to resolve all complaints internally and every effort will be made to maintain confidentiality to the extent practicable.
- The complaint investigator will advise the complainant of his or her administrative rights and the right to file a formal charge with a state or federal agency and the time limits imposed on the exercise of these rights.

Rejection or Cancellation of the Complaint

The MWRA will indicate when a complaint has been rejected for further processing.

In the event an individual files an external complaint, the MWRA's legal counsel will handle all communications. All investigations shall be conducted in a confidential manner to the extent practicable.

In addition to the above, you may file a formal complaint with the government agencies listed below. Using MWRA's complaint process does not prohibit you from filing a complaint with these agencies.

Massachusetts Commission Against
Discrimination (MCAD)
One Ashburton Place, 6th Floor
Boston, MA 02108

Massachusetts Office of Diversity and Equal
Opportunity
One Ashburton Place - Rm. 213
Boston, MA 02108

Springfield Office
MCAD
436 Dwight Street - Rm. 220
Springfield, MA 01103

U.S. Equal Employment Opportunity
Commission
JFK Federal Building
475 Government Center
Boston, MA 02203

Worcester Office
MCAD
455 Main Street - Rm. 101
Worcester, MA 01608

U.S. Department of Labor
Office of Federal Contract
Compliance Programs
JFK Federal Building - Rm. E235
Boston, MA 02203

New Bedford Office
MCAD
800 Purchase Street - Rm. 501
New Bedford, MA 02740

V. MBE/WBE/DBE Program

Policy Statement

It is the policy of the Massachusetts Water Resources Authority (Authority) to ensure the equitable participation of Minority Business Enterprises (MBEs) and Women Business Enterprises (WBEs) and Disadvantaged Business Enterprise (DBEs) in the award of all contracts including contracts for construction, goods/non-professional services (supplies and equipment) and professional services (design selection and consultants).

Definitions

- Minority Business Enterprise (MBE) means an ongoing and independent business enterprise which is owned and controlled by one or more minority persons and meets the Massachusetts Supplier Diversity Office (SDO) criteria specified under 425 CMR 2.03 (d) (and, if applicable, one or more of the provisions of 425 CMR 2.06).
- Women Business Enterprise (WBE) means an ongoing and independent business enterprise which is owned and controlled by one or more women and meets SDO certification criteria specified under 425 CMR 2.03 (d) (and, if applicable, one or more of the provisions of 425 CMR 2.06).
- Disadvantaged Business Enterprise (DBE) means an ongoing, independent small business concern which is at least 51% owned and controlled by one or more individual(s) who are both socially and economically disadvantaged and meets the U.S. DOT eligibility criteria specified under 49 CFR Part 23 and 26 and has certification issued by the federal government or the SDO.

Outreach

The Authority communicates with appropriate advocacy groups and representatives such as SDO, New England Minority Supplier Development Council, Massachusetts Minority Contractors, and National Association of Minority and Women Owned Law Firms, as well as others, to develop new sources of supply, discuss the M/W/DBE Program and develop initiatives designed to enhance the Plan's effectiveness.

Monitoring and Reporting

The Affirmative Action and Compliance Unit will maintain such records, data and information as may be required to document compliance with Authority policies and procedures, and applicable federal, state and local laws and regulations.

MassDEP Procurement Goals

Based upon the Massachusetts Department of Environmental Protection and the Massachusetts Water Pollution Abatement Trust's 2010 Availability Study, the D/MBE and D/WBE procurement goals for EPA assisted contracts are as follows:

Procurement Categories

	Construction Goals	Professional Goals
D/MBE	3.4%	3.4%
D/WBE	3.8%	3.8%

Nearly 90 percent of EPA-assisted contracts were for construction with the balance related to engineering, environmental consulting and other services. On this basis MassDEP has utilized the same goals for both construction and professional services. The specific sub-industries such as water and wastewater engineering, etc. accounted for most of the dollars of these prime contracts and subcontracts.

MWRA Procurement Goals

Based upon the Authority's 2002 Availability Study, the MBE and WBE procurement goals are as follows:

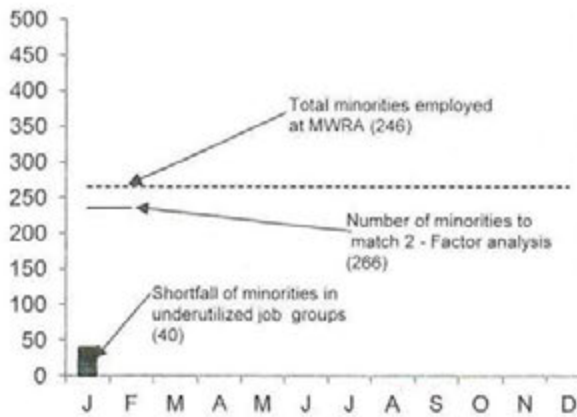
Procurement Categories

	Construction Goals	Professional Goals	NonProfessional Goals
MBE	7.24%	7.18%	5.61%
WBE	3.60%	5.77%	4.88%

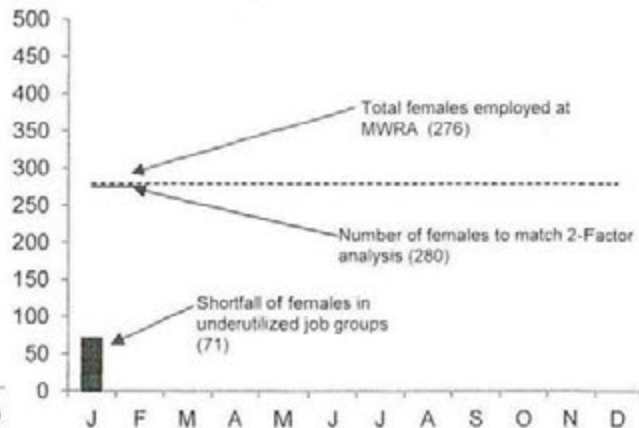
For FY15 the MWRA spent \$2.9 million and \$2.6 million respectively with minority and women owned business. These amounts were 42% and 60% of the respective MBE and WBE targets.

Attachment B MWRA Job Group Representation CY17

Minority - Affirmative Action Plan Goals



Female - Affirmative Action Plan Goals

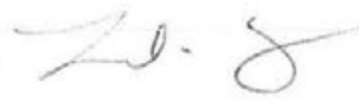


Underutilized Job Groups - Workforce Representation

Job Group	Total Employees as of 1/1/2017	Actual Minorities as of 1/1/2017	Achievement Level	Minority Over or Under utilized	Actual Females As of 1/1/2017	Achievement Level	Female Over or Under utilized
Administrator A	21	2	2	0	7	6	1
Administrator B	22	1	4	-3	2	4	-2
Clerical A	36	13	10	3	31	16	15
Clerical B	29	7	7	0	11	8	3
Engineer A	83	20	19	1	15	17	-2
Engineer B	57	17	13	4	12	6	6
Craft A	111	17	26	-9	0	8	-8
Craft B	142	29	31	-2	4	8	-4
Laborer	69	19	15	4	5	3	2
Management A	99	13	24	-11	36	41	-5
Management B	48	10	7	3	11	6	5
Operator A	67	4	11	-7	1	3	-2
Operator B	63	11	12	-1	3	18	-15
Professional A	34	5	8	-3	22	16	6
Professional B	163	46	43	3	83	54	29
Para Professional	60	18	22	-4	28	52	-24
Technical A	51	13	11	2	5	12	-7
Technical B	6	1	1	0	0	2	-2
Total	1161	246	266.0	20/-40	276	280	67/-71

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: February 15, 2017
SUBJECT: February PCR Amendments



COMMITTEE: Personnel and Compensation

Karen Gay Valente
Karen Gay-Valente, Director of Human Resources
Joan C. Carroll, Manager Compensation
Preparer/Title

INFORMATION
X VOTE
Michele S. Gillen
Michele S. Gillen
Director, Administration

RECOMMENDATION:

To approve the amendments to the Position Control Register (PCR) included in the attached chart.

DISCUSSION:

The Position Control Register lists all positions of the Authority, filled and vacant. It is updated as changes occur and it is published at the end of each month. Any changes to positions during the year are proposed as amendments to the PCR. All amendments to the PCR must be approved by the Personnel Committee of the Board of Directors. All amendments resulting in an upgrade of a position by more than one grade level, and/or an amendment which creates a position increasing annual cost by \$10,000 or more, must be approved by the Board of Directors after review by the Personnel Committee.

February PCR Amendments

There are three PCR amendments related to changes in the Operations Division.

The amendments are:

1. Title change to a vacant position in the Engineering & Construction Department, Operations Division, Program Manager, Unit 9, Grade 29, to Program Manager, Electrical, Unit 9, Grade 29, to align title with current needs in the department.
2. Title and grade change to a vacant position in the Clinton Department, Operations Division, Operator, Unit 3, Grade 16, to Heavy Equipment Operator I, Unit 3, Grade 17, to address current needs in the department.
3. A new position, HVAC Technician, Unit 2, Grade 15, to be assigned to the Chelsea Facility, Operation Division, to address staffing needs at the Chelsea Facility.

The first two amendments require approval by the Personnel and Compensation Committee. The third requires Board approval after review by the Personnel and Compensation Committee.

BUDGET/FISCAL IMPACT:

The annualized budget impact of these PCR amendments is between a savings of \$31,461 and a cost of \$70,070 depending on the individuals selected for the vacant positions upon the completion of the hiring processes. Staff will ensure that any cost increase associated with these PCR amendments will not result in spending over the approved FY17 Wages and Salary budget.

ATTACHMENTS:

New/Old Job Descriptions

**MASSACHUSETTS WATER RESOURCES AUTHORITY
POSITION CONTROL REGISTER AMENDMENTS
FISCAL YEAR 2017**

PCR AMENDMENTS REQUIRING PERSONNEL & COMPENSATION COMMITTEE APPROVAL -February 15, 2017

Number	PCR #	V/F	Type	Current Title	UN	GR	Amended Title	UN	GR	Salary	New Salary	\$ Impact	For Amendment
P9	Operations E&C 5625044	V	T	Program Manager	9	29	Program Manager, Electrical	9	29	N/A	N/A N/A	N/A N/A	To align title with current needs in the E&C Department, Operations Division
P10	Operations Clinton 2910006	V	T,G	Operator	3	16	Heavy Equipment Operator I	3	17	\$69,791	\$53,105 - \$73,247	-\$16,686 - \$3,456	To address current staffing needs in the Clinton Department, Operations
PERSONNEL & COMP COMMITTEE TOTAL =					2		SUBTOTAL:					-\$16,686 - \$3,456	

PCR AMENDMENTS REQUIRING BOARD APPROVAL - February 2017

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 Technician	2	15	N/A	\$48,147 - \$66,614	\$48,147 - \$66,614	To address current staffing needs at the Chelsea facility, Operations Division
BOARD TOTAL =					1		SUBTOTAL:					\$48,147 - \$66,614	
GRAND TOTAL =					3		TOTAL ESTIMATED COSTS:					\$31,461 - \$70,070	



POSITION DESCRIPTION

POSITION: Program Manager
PCR#:
DIVISION: Operations
DEPARTMENT: Engineering and Construction

BASIC PURPOSE:

Supervises project teams in the department to oversee professional engineering and design projects related to the rehabilitation and capital improvement of waterworks and wastewater facilities and infrastructure from conceptual planning through construction. Additionally, manages engineering and design projects related to the rehabilitation and capital improvement of water and wastewater facilities and infrastructure.

SUPERVISION RECEIVED:

Works under the general supervision of a senior manager in the Engineering and Construction Department.

SUPERVISION EXERCISED:

Exercises close supervision of a staff of professional and technical employees and or consultants.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Oversees projects, including the planning and design of rehabilitation and capital engineering projects for waterworks and wastewater facilities and pipelines. Additionally, manages the planning and design phases of assigned water and wastewater engineering and or maintenance projects including, feasibility and environmental impact reports, detailed plans and specifications, permitting, project schedules, technical assistance, progress review and evaluation.

- Oversees the work of professional engineering consultants, including all work products for quality of work, budget, schedule, and compliance with contractual terms and MWRA objectives and policies.
- Supervises and manages professional staff, including assignment of projects, evaluation of performance, and staff development planning. Provides technical and administrative assistance to staff in the development and management of projects which include design and engineering services during construction of new and rehabilitation water and wastewater projects, development of maintenance and operations procedures and working closely with MWRA Safety staff, development of safety procedures.
- Supervises professional multi-discipline engineering work of substantial difficulty and importance, requiring application of professional engineering principles and the exercise of independent engineering judgment.
- Oversees and coordinates cooperative project development with other MWRA divisions and departments to ensure complete and coordinated projects. Coordinates projects with communities, government agencies and other MWRA departments. Provides technical information and assistance. Addresses professional and community groups and initiates outreach projects as required.
- Participates in consultant selection procedures and contract negotiations for projects. Additionally, oversees all phases of consultant selection for assigned projects including development of scope of services, specifications, cost estimates, work schedules, negotiations, and preparations of contract award recommendations. Ensures compliance with contract budgets, schedules and terms.
- Prepares annual and supplementary budget requests for the projects in the Capital Improvement Program. Oversees and reviews projects' budgets and schedules for compliance with established department, division, and MWRA program goals.
- Ensures compliance with MWRA procedures and policies, regulatory requirements and applicable engineering standards. Ensures all project activities are coordinated with MWRA divisions and departments, outside regulatory and permitting agencies and communities, as appropriate.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Completion of a four (4) year college program in civil or related engineering field; and
- (B) Seven (7) to nine (9) years of civil engineering experience of which three (3) years must be in a supervisory capacity and three (3) years in project management; or
- (C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Knowledge of principles and practices of engineering.
- (B) Understanding of issues related to design, construction and operation of water and wastewater facilities and infrastructure.
- (C) Demonstrated ability to work effectively as part of a project team and also to function independently with minimal supervision.
- (D) Knowledge of Massachusetts bidding laws, including M.G.L Chapter 30 and Chapter 149 construction bidding regulations.
- (E) Familiarity with computer software such as Word and Excel
- (F) Proven interpersonal, managerial, written and oral communications skills are required.

SPECIAL REQUIREMENTS:

Registered Massachusetts Professional Engineer preferred.

TOOLS AND EQUIPMENT USED:

Office machines as normally associated with the use of telephone, personal computer, including word processing and other software, copy fax machine, measuring equipment, light tools and mobile radio.

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 sit and to use hands to finger, handle, feel or operate objects, tools or controls. The employee is frequently required to talk or hear. The employee is occasionally required to stand, walk, and reach with hands and arms.

The employee must occasionally lift and/or move up to 10 pounds. There are no special visual requirements for this job.

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 is not exposed to any unusual environmental conditions.

The noise level in the work environment is loud in field setting and moderately quiet in an office setting.

January 2013

MWRA
POSITION DESCRIPTION

NEW

POSITION: Program Manager, Electrical

PCR#:

DIVISION: Operations

DEPARTMENT: Engineering - Chelsea

BASIC PURPOSE:

Provides electrical engineering support to operation and maintenance departments. Supervises project teams in the department to oversee professional engineering and design projects related to the rehabilitation and capital improvement of waterworks and wastewater facilities and infrastructure from conceptual planning through construction. Additionally, manages engineering and design projects related to the rehabilitation and capital improvement of water and wastewater facilities and infrastructure.

SUPERVISION RECEIVED:

Works under the general supervision of a Senior Program Manager

SUPERVISION EXERCISED:

Supervises electrical engineering staff, medium voltage technicians, and electrical distribution staff as needed.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Performs design, engineering and finalization of in-house projects involving repair/replace/modification activities, layout changes for shops, laboratories, offices and warehouses, lighting systems, and power distribution, including substation & power generation equipment.

- Develops preliminary designs, detailed designs and the preparation of plans and specifications for proposed electrical modifications/replacement and construction projects.
- Oversees installation, operation, maintenance and repair of complex electrical equipment including generation, transmissions, distribution systems.
- Oversees the preparation of plans and specifications for vendor contracts for proposed electrical modifications.
- Oversees reviews of and modifications to all operations and maintenance documentation with respect to electrical design changes.
- Assists the operations staff with engineering resolution and recommendations to electrical engineering problems, which arise during normal operations.
- Assists the maintenance staff with complex work orders and with the development of contract maintenance contracts.
- Provides on-site engineering inspection of construction projects generated by the Technical Services group, central engineering and outside consultants.
- Develops and maintains files and familiarity with all codes, code addends, code cases, and industry standards applicable to the electrical field and ensure that facility specifications comply.
- Performs periodic inspections to ensure facility-wide compliance with local and national electrical codes and other rules of safe electrical practice are enforced.
- Reviews electrical and related portions of design plans by outside firms who have been hired to design improvements or additions to facilities and infrastructure.
- Assists with the coordination of project activities with engineering consultants as required.
- Supervises the updating of electrical engineering drawings and records, and the subsequent forwarding (in accordance with established procedures) to the Technical Services Center.
- Provides oral and written reports to the Senior Program Manager detailing results of problem investigations, proposed resolution, and economic justification for the proposed

changes.

- Evaluates assigned employees performance according to MWRA procedures.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Knowledge of general and specific engineering and design principles and practices as attained through a accredited four (4) or (5) year college program in electrical engineering; and
- (B) Experience in design, installation and maintenance of a wide variety of electrical power and control equipment as normally acquired through seven (7) to nine (9) years of related electrical engineering experience; and
- (C) Experience with a complex processing facility and water or wastewater treatment operations and utility systems are desirable; or
- (D) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Personal computer skills including spreadsheet, database, word processing, project management and GDS, CADD and AutoCADD desired.
- (B) Knowledge of Massachusetts bidding laws, including M.G.L Chapter 30, Chapter 149, and Chapter 25A construction bidding regulations.
- (C) Excellent interpersonal, written and oral communication skills.

SPECIAL REQUIREMENTS:

Possession of Engineer-in-Training certification preferred.

A valid Massachusetts Licensed Professional Engineering certificate preferred.

A valid Massachusetts Drivers License required.

Page 3 of 4

Program Manager, Electrical - New

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 and occasionally lift and/or move up to 50 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.

October 2015

MWRA

POSITION DESCRIPTION

OLD

POSITION: Operator

PCR#:

Division: Operations

Department: Clinton, DI

BASIC PURPOSE:

Operates, monitors, and inspects assigned wastewater facilities and water treatment plant operational equipment, processes, and systems on an assigned shift in a designated area. Performs assigned maintenance functions as part of a team under the direction of the assigned Unit or Area Supervisor.

SUPERVISION RECEIVED:

Works under the general supervision of the Unit/Area Supervisor.

SUPERVISION EXERCISED:

May supervise or direct assigned employees at a lower grade.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Operates equipment manually and through instrument panel and programmable logic control units, system flows and levels in assigned process area. Equipment may include, but will not be limited to the following; pumps, valves, gates, meters, gauges, controllers, motor control centers, level controls devices, mixers, oxygen generation, chemical feed, odor control and hydroelectric equipment.
- Monitors and inspects operating conditions; records observations and data in area shift log.
- Provides oversight for all barge and truck loading/unloading operation.

- Provides oversight for chemical and fuel oil unloading to tank farm.
- Takes initial action to correct malfunctions of equipment and reports malfunctions and variances to the Area Supervisor/Unit Supervisor.
- Operators may be dispatched to critical facilities to make operational changes as directed or to investigate alarms.
- Samples various process fluids and gases (odor control), analyzes, records, and labels according to schedule.
- Prepares chemical solutions.
- Operates equipment through programmable logic control units.
- Operates the Processes Instrumentation and Control System (PICS), TELOG or SCADA and fills-in for the Area/Unit Supervisor as required.
- Calibrates critical process control equipment.
- Follows established safety, operating, and emergency response procedures and policies established by MWRA.
- Communicates with other operators regarding operational and process control conditions.
- Performs work in compliance with Authority established Integrated Contingency Plan.
- Inspects and troubleshoots mechanical, electromechanical, pneumatic or hydraulic equipment using tools and gauges of the trade. Performs preventive maintenance on operations equipment as directed by MAXIMO, such as but not limited to: greasing and lubrication, minor packing adjustments, opening hatches and installing safety rails, changing light bulbs, HVAC filters and performing minor maintenance during shift work as required.
- Performs, documents and reports results in the MAXIMO database of inspections and work performed.
- Assists other trades in the performance of their work, as required, or as assigned.
- Operates motor vehicles such as vans and pick-up trucks to transport materials to work sites, and pickup and deliver supplies and equipment.

- Performs light maintenance independently or as part of a team. Light maintenance shall include but not limited to:
 - Operates forklift or other light equipment that does not require a special license.
 - Generates inspection lists and maintenance reporting through the Computerized Maintenance Management System.
 - Inspects and troubleshoots various systems and equipment.
 - Installs and retrofits/new equipment related to plant systems.
 - Modifies and/or aligns existing equipment to specifications.
 - With proper safety training sets up ladders, staging and rigging and utilizes hoists, jacks, dollies, lifts, etc. for proper access to job and to remove and install equipment.
 - Operates portable pumping, ventilation and other equipment necessary to support and accomplish assigned tasks.
 - Greases and lubricates, replaces oil reserves, minor packing adjustments and opens hatches.
 - Installs safety rails, changes light bulbs and replaces HVAC filters.
 - Removes snow from immediate work area in order to perform tasks.
 - Conducts routine testing, lockout/tagout, operation (startup/shutdown) and adjustment of process equipment.
 - Performs necessary cleanup and housekeeping for work area and other light maintenance tasks.

SECONDARY DUTIES:

- Promotes and participates in the productivity improvement plan.
- Trains peers and subordinates as requested.

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A high school diploma or GED; and
- (B) Two (2) to three (3) years experience with a working knowledge of water/wastewater treatment and treatment plant equipment; and
- (C) Satisfactory completion of competency-based training program in accordance with the productivity improvement plan training program established at MWRA; or
- (D) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Basic reading, writing, mathematical, scientific and oral communication skills.
- (B) A working knowledge of treatment plant processes, systems and operation of related equipment, such as instrument panels, programmable logic control units, pumps, valves, motor control centers, level control devices, mixers, oxygen generation, chemical feed and odor control equipment.
- (C) Knowledge in safety practices in operation of water/wastewater equipment and the water treatment plant facility.
- (D) Ability to interpret data from meters, gauges and other equipment to operate manually and through instrument panels, all kinds of wastewater treatment equipment to control treatment processes.
- (E) Ability to work as a team to support the goals of Operations.
- (F) Ability to communicate orally and in writing, and maintain accurate logs and records.
- (G) Experience in operating distributive control systems preferred.
- (H) Computer skills necessary to access and use the MAXIMO and Lawson database.

- (I) Trained in Confined Space Entry, CPR and First Aid, and be capable of entering, setting up, installing, disassembling confined space equipment and ability to work in a confined space.
- (J) Ability to attain knowledge & work processes required to perform maintenance tasks required by Reliability Centered Maintenance or similar Maintenance Management Program.

SPECIAL REQUIREMENTS:

- A valid Massachusetts Wastewater Treatment Plant Operator Grade 4 license.
- A valid Massachusetts Class D motor vehicle Operator's license
- Complete productivity improvement competency-based training program related to **ESSENTIAL DUTIES AND RESPONSIBILITIES** as outlined above and successfully demonstrates required competencies.

TOOLS AND EQUIPMENT USED:

Office equipment as normally associated with the use of telephone, mobile radio, beeper, 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 stand and talk or hear. The employee is occasionally required to walk; sit; climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move more than 50 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 regularly 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.

The noise level in the work environment is usually loud in field settings, and moderately quiet in an office setting.

February, 2001

MWRA
POSITION DESCRIPTION

NEW

POSITION: Heavy Equipment Operator I

PCR#:

DIVISION: Operations

DEPARTMENT: Field Operations

BASIC PURPOSE:

Operates heavy equipment and vehicles.

SUPERVISION RECEIVED:

Works under the general supervision of the departmental Manager or Supervisor.

SUPERVISION EXERCISED:

Exercises close supervision of skilled laborers and laborers as assigned.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Operates a variety of heavy equipment such as, but not limited to, backhoe, front-end loader, cranes, tractor cab and trailers, excavators, pumps, generators, and pneumatic tools.
- Operates equipment for excavations for valve replacement, pipeline installation, leak repair, and other miscellaneous excavations.
- Installs trench boxes, mechanical shoring systems, and other support systems for the safety of excavations.
- Assists mechanics in the maintenance and repair of heavy vehicles and equipment as needed.

SECONDARY DUTIES:

- Promotes and participates in the cross-functional work practices.
- Trains peers and subordinates as requested.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Basic reading, writing, mathematical, scientific and oral communication skills normally attained through a high school education or the equivalent; and
- (B) Considerable knowledge of the methods and techniques used in the maintenance and safe operation of a wide variety of heavy and/or specialized maintenance and construction equipment and vehicles as acquired through five (5) years experience; or
- (C) Experience in urban utility excavation, construction, and installation.
- (D) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Ability to follow oral and written instructions.
- (B) Skill in the operation of listed tools and equipment.
- (C) Ability to operate heavy equipment for extended periods in a variety of climatic conditions.

SPECIAL REQUIREMENTS:

Valid Massachusetts Class A Commercial Driver's License.

Department of Public Safety Hoisting Engineer's License, 1A, 2A, 3A and 4A.

Must demonstrate proficiency for operating heavy equipment including but not limited to:

- 50 ton Linkbelt crane
- Volvo tracked excavator
- Tractor cab and lowboy trailer

- 10 wheel dumps with tagalong trailer
- Various types of backhoes (JCB, Caterpillar, John Deer)
- Front End Loader
- Truck Mounted crane

Complete productivity improvement competency-based training program related to **ESSENTIAL DUTIES AND RESPONSIBILITIES** as outlined above and successfully demonstrates required competencies.

TOOLS AND EQUIPMENT USED:

Motor vehicle, specialized maintenance and construction equipment, hand tools, hoist, mobile radio.

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 the 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 object, tools or controls and reach with hands and arms. The employee is frequently required to stoop, kneel, crouch or crawl. The employee is frequently required to stand, walk, talk, hear, sit, climb or balance.

The employee must regularly lift and/or move up to 60 pounds, frequently lift and/or move up to 100 pounds. Specific vision abilities required by this job include close, distance 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 near moving mechanical parts, is frequently exposed to wet and/or humid conditions and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and risk of electric shock, and vibration.

The noise level in the work environment is usually very loud in field settings and loud at other

work locations.

March 2012

NEW

**MWRA
POSITION DESCRIPTION**

POSITION: HVAC Technician
DIVISION: Operations
DEPARTMENT: Deer Island Maintenance, Metropolitan Maintenance

BASIC PURPOSE:

Inspects, maintains, repairs and installs heating, ventilation, air conditioning and odor control equipment and other light maintenance tasks.

SUPERVISION RECEIVED:

Works under the general supervision of a HVAC Specialist or Unit Supervisor.

SUPERVISION EXERCISED:

Exercises supervision of entry level staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Installs, modifies, troubleshoots, repairs and tests new and existing heating, ventilation, air conditioning and odor control systems, equipment, and fixtures.
- Performs HVAC related activities specified by work order.
- Inspects and troubleshoots heating, ventilating, air conditioning and odor control equipment using tools and instrumentation and techniques of the trade.
- Performs preventative, predictive and corrective maintenance on heating, ventilation, air conditioning and odor control equipment according to vendor specifications.
- Installs duct work, hoods, ventilation devices and assemblies using manual and powered tools.
- Obtains necessary parts through established procedures.
- Follows established safety, operating, and emergency response procedures and policies established by MWRA.

- Operates motor vehicles, such as vans and pick-up trucks to pick-up and deliver supplies and equipment to work sites.
- Performs work in a safe and professional manner.
- Performs, documents and reports results of inspections and work performed.
- Perform work in compliance with Authority Integrated Contingency Plan.
- Operates equipment manually and through instrument panels and programmable logic control units as required in performance of maintenance tasks. Equipment may include, but will not be limited to pumps, valves, gates, meters, gauges, controllers, motor control centers and level control devices.
- Troubleshoots & corrects equipment/systems through the use of condition monitoring methods & equipment.
- Works from manufacturer's manuals and specifications, blueprints, schematics and verbal instructions to install, repair, troubleshoot, inspect, check & maintain mechanical, electrical-mechanical & hydraulic systems.
- Assists other trades in the performance of their work, as required, or as assigned.
- Performs light maintenance independently or as part of a team. Light maintenance shall include but not limited to:
 - Operates forklift or other light equipment not requiring a special license.
 - Inspects and troubleshoots various systems and equipment.
 - Installs and retrofits/new equipment related to plant systems.
 - Modifies and/or aligns existing equipment to specifications.
 - With proper training sets up ladders, staging and rigging and utilizes hoists, jacks, dollies, lifts, etc. for proper access to job and to remove and install equipment.
 - Operates portable pumping, ventilation & other equipment necessary to support assigned task.
 - Greases and lubricates, replaces oil reserves, minor packing adjustments and opens hatches.
 - Installs safety rails.

- Removes snow from immediate work area in order to perform tasks.
- Routine testing, lockout/tagout, operation (startup/shutdown) and adjustment of process equipment.
- Performs necessary cleanup and housekeeping for work areas and other light maintenance tasks.
- Performs related duties as required.

SECONDARY DUTIES:

- Promotes and participates in productivity improvement plan.
- Trains peers and subordinates as requested.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Basic reading, writing, mathematical and oral communication skills as normally attained through a high school education or equivalent; and
- (B) Certification in HVAC from a recognized vocational or technical training school; and
- (C) Three (3) to five (5) years experience in the operation, repair and maintenance of industrial HVAC & related equipment; or
- (D) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Thorough knowledge of the standard practices, materials, tools, occupational hazards and safety practices common to the trade.
- (B) Skills in the operation of tools, instruments and equipment of the trades.
- (C) Thorough knowledge of the standard practices, material, tools, occupational hazards and safety practices common in the trade.
- (D) Trained in Confined Space Entry, CPR and First Aid, and be capable of entering, setting-up, installing, disassembling confined space equipment and ability to work in a confined space.

- (E) Ability to attain knowledge & work processes required to perform maintenance task required by Reliability Centered Maintenance or similar Maintenance Management Program.

SPECIAL REQUIREMENTS:

- Possession of a Valid Massachusetts Class D Operator's License.
- Chlorofluorocarbon (CFC) certificate (Type 1) or the ability to obtain within 6 months.

TOOLS AND EQUIPMENT USED:

Motor vehicle, power and hand tools, hoist, mobile truck radio.

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 essential functions 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 frequently required to stoop, kneel, crouch or crawl. The employee is occasionally required to stand, walk, talk, hear, sit, climb or balance.

WORK ENVIRONMENT:

The work environment 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 outside weather conditions. The employee regularly works near moving mechanical parts, and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and risk of electric shock. This job is hearing protection required and the noise level in the work environment is very loud in field settings and moderately loud at pumping stations.

August 2016

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: February 15, 2017
SUBJECT: Appointment of Project Manager, Process Monitoring
Deer Island Treatment Plant
Operations Division

COMMITTEE: Personnel & Compensation

Karen Gay-Valente, Director, Human Resources
David F. Duest, Director, Deer Island WWTP
Preparer/Title

 INFORMATION

 X VOTE


Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To approve the appointment of Mr. Nicholas Zechello, to the position of Project Manager, Process Monitoring (Unit 9, Grade 25), at an annual salary of \$89,433.09, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The position of Project Manager, Process Monitoring, became vacant upon the recent promotion of the incumbent. This position reports to the Program Manager, Process Monitoring, and will manage technical projects for process monitoring and compliance at the Deer Island Treatment Plant, including sampling and testing projects (for wastewater, air, and landfill groundwater). This includes coordinating projects directly with the Central Laboratory, Deer Island Operations, and the ENQUAL group as needed. This position is responsible for managing plant process data collection, collation, evaluation, and report generation. The Project Manager, Process Monitoring will also work directly to support operations and process control to ensure sufficient information is available to evaluate plant performance versus NPDES permit requirements, process goals and plant efficiencies.

Selection Process

The Project Manager, Process Monitoring position was posted internally and fourteen candidates applied. One candidate withdrew and thirteen candidates were interviewed for the position. The Manager Process Control, the Program Manager, Process Monitoring, and a representative from MWRA's Affirmative Action and Compliance Unit interviewed the thirteen candidates. Upon completion of those interviews, Nicholas Zechello was identified as the most qualified candidate based on his education, experience, and knowledge of the requirements of the position.

Mr. Zechello currently holds the position of Project Engineer, Process Monitoring in the Process Control Department. Mr. Zechello has more than twenty years experience working with the MWRA in positions of increasing responsibility. He was hired to be the Project Engineer, Process Monitoring in February 2015, a position that has enabled him to further his knowledge of wastewater and odor control treatment processes and to improve his breadth of knowledge in data generation and reporting. Prior to being promoted to the Project Engineer position, Mr. Zechello had been the Technical Assistant, Operations in the Deer Island Thermal/Power Plant since 1999 and has a thorough understanding of all aspects of the Thermal/Power Plant. He remains a vital part of the daily operational review of the Thermal Power/Plant in his current capacity as Project Engineer; in addition to overseeing all the required regulatory emissions monitoring and reporting. In both positions, Mr. Zechello has taken the lead on numerous maintenance and process optimization projects, some of which have led to significant improvements in the availability of equipment and a reduction in fuel costs.

Mr. Zechello has a Bachelor of Science Degree in Industrial Technology, Electronic Engineering Technology from Fitchburg State College. Mr. Zechello also holds a Massachusetts Grade 4 Wastewater Operator's License.

BUDGET/FISCAL IMPACT:

There are sufficient funds for this position in the FY17 Current Expense Budget.

ATTACHMENTS:

Resume of Nicholas Zechello
Position Description
Organization Chart

Nicholas Zechello

PROFESSIONAL EXPERIENCE

Massachusetts Water Resources Authority

Project Engineer, Operations, Deer Island Treatment Plant, 2015 to Present

- Manages the operation and maintenance of the continuous emissions monitoring system for high pressure boilers. Ensures validation of all emissions data and air permit compliance requirements.
- Schedules and coordinates all regulatory compliance testing and reporting for all Thermal Power Plant equipment.
- Assists in Odor Control H2S sampling and testing program.
- Identified and implemented additional online monitoring equipment to improve Thermal Plant performance.

Technical Assistant, Operations, Deer Island Treatment Plant, 1999 – Feb 2015

- Assisted in the Thermal Power Plant optimization and energy efficiency initiatives including reducing annual boiler fuel oil consumption from 2,600,000 to less than 200,000 gallons and increasing steam turbine generator uptime from 60% to greater than 95%.
- Managed all phases of the boiler water treatment program.
- Identified critical generator components and maintained spare part inventory of all Thermal Power Plant generators.
- Managed the continuous emissions monitoring maintenance service contract.
- Monitored the ISO-NE regional electrical grid pricing and system demand for operation of combustion turbine generators during peak days and demand response to reduce energy costs.
- Monitored performance of combustion turbine and steam turbine generators. Performed performance evaluations to maximize equipment availability and reliability and recommended maintenance projects to improve performance.
- Assisted in the development and management of all Thermal Power Plant maintenance service contracts including the coordination and scheduling of maintenance outages.
- Assisted in the training of the Thermal Power Plant Operators on the combustion gas turbine generators for both normal and emergency operations and synchronization to the Deer Island electrical distribution system.
- Assisted in all combustion turbine generator troubleshooting activities.
- Deer Island Safety Board member representing the Thermal Power Plant.
- Acted as a direct link to the Program Manager to operate and manage all combustion turbine generator activities when on vacation or out of the office.

Staff Engineer/Contract, Operations, Deer Island Treatment Plant, 1995 - 1999

- Assisted in the functional and compliance testing of all plant equipment associated with the Thermal Power Plant. Major equipment included: high pressure boilers, steam and combustion turbine generators.
- Developed and implemented a water treatment program for the power generation equipment. Program included training, sampling, monitoring and corrective action procedures.

Administrative Intern, Operations, Charlestown Navy Yard, 1993 – 1995

- Assisted the Director, Deputy Director and Employee Relations Director of the Sewerage Division in day to day activities.

Engineering Intern, Operations, Charlestown Navy Yard, 1992 -1993

- Performed site preparation for the I/I Management Program's system-wide wastewater metering project.
- Assisted in the delineation of wetlands and construction easements for the New Neponset Valley Relief Sewer Project.

EDUCATION

Fitchburg State College, Fitchburg, Massachusetts

Bachelor of Science, Industrial Technology, Electronic Engineering Technology

CERTIFICATION

Massachusetts Wastewater Treatment Plant Operator License Grade IV #8105

COMMUNITY ACTIVITIES

Town of Pembroke Energy Committee, Chair, 2007 to Present

- Leads the committee in the development and implementation of a comprehensive energy program that includes energy conservation, energy commodity procurement and development of a 3 MW solar project at the town landfill.
- Achieved MA Department of Energy Resources Green Community designation for the town of Pembroke.

Cross Creek Homeowners Association, President

**MWRA
POSITION DESCRIPTION**

POSITION: Project Manager, Process Monitoring
DIVISION: Operations
DEPARTMENT: Wastewater Treatment/Deer Island/Process Control

BASIC PURPOSE:

Manages technical projects for process monitoring at the Deer Island Treatment Plant, including sampling and testing projects, plant process data collection, collation, evaluation and report generation. Works directly to support operations and process control to ensure sufficient information is available to evaluate plant performance versus NPDES permit requirements, process goals and plant efficiencies.

SUPERVISION RECEIVED:

Works under the general supervision of the Program Manager, Process Monitoring

SUPERVISION EXERCISED:

May include supervision of Project Engineers, or other staff as assigned on a project basis.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Responsible for managing DITP sampling and testing projects (currently wastewater, air, and landfill groundwater). Coordinate projects directly with the Central Laboratory, DITP Operations, and the NPDES group as needed.
- Responsible for the DITP process laboratories (for quick turnaround-time testing to support daily plant operational changes) including managing inventory and analytical procedures.
- Collects, reviews, presents, and archives operational and laboratory test data from all available sources ensuring data is available to staff in/through the DITP Process Information System (PI) and/or DITP Operations Management System (DITP OMS). Current data sources include the DITP Operations Process Information and Control System (PICS), the Central Laboratory Information Management System (LIMS), Process

Laboratory Information System (PLIS) and the transport SCADA system, under the direction of the Program Manager, Process Monitoring.

- Responsible for all DITP Operational reporting. Reports must be generated regularly and in a timely fashion for Operations to make process adjustment and evaluate plant performance. Reporting will be both short term (e.g. real-time evaluation of PI data, daily reports) and long term (e.g. monthly operational summaries, annual reports) tailored to the need of DITP Operations. The candidate is responsible for maintaining DITP OMS to meet the needs of operations over time.
- Assists in preparing data reports or evaluations as needed for budgetary review, process improvement, or any other business purpose as requested by the Manager, Process Control or senior management.
- Trains staff in the procedures used by the department to collect, input, review, report and analyze data.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

Knowledge of wastewater unit operations, process control theory, practices and principles and computer applications as normally attained through a four-year Bachelor of Science Degree.

- (A) Four (4) to six (6) years experience in wastewater treatment process data generation, collation, analysis and presentation.
- (B) Two (2) to four (4) years in Microsoft Excel and Microsoft Access, or equivalent database applications. Two (2) years of environmental laboratory experience in wastewater sampling, chemical and microbiological analysis preferred
- (C) Demonstrated written and communication skills.
- (D) Any equivalent combination of education or experience.

SPECIAL REQUIREMENTS:

Massachusetts Wastewater Treatment Plant Operator Grade VI certification, or ability to obtain within one (1) year.

TOOLS AND EQUIPMENT USED:

Laboratory test equipment. 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.

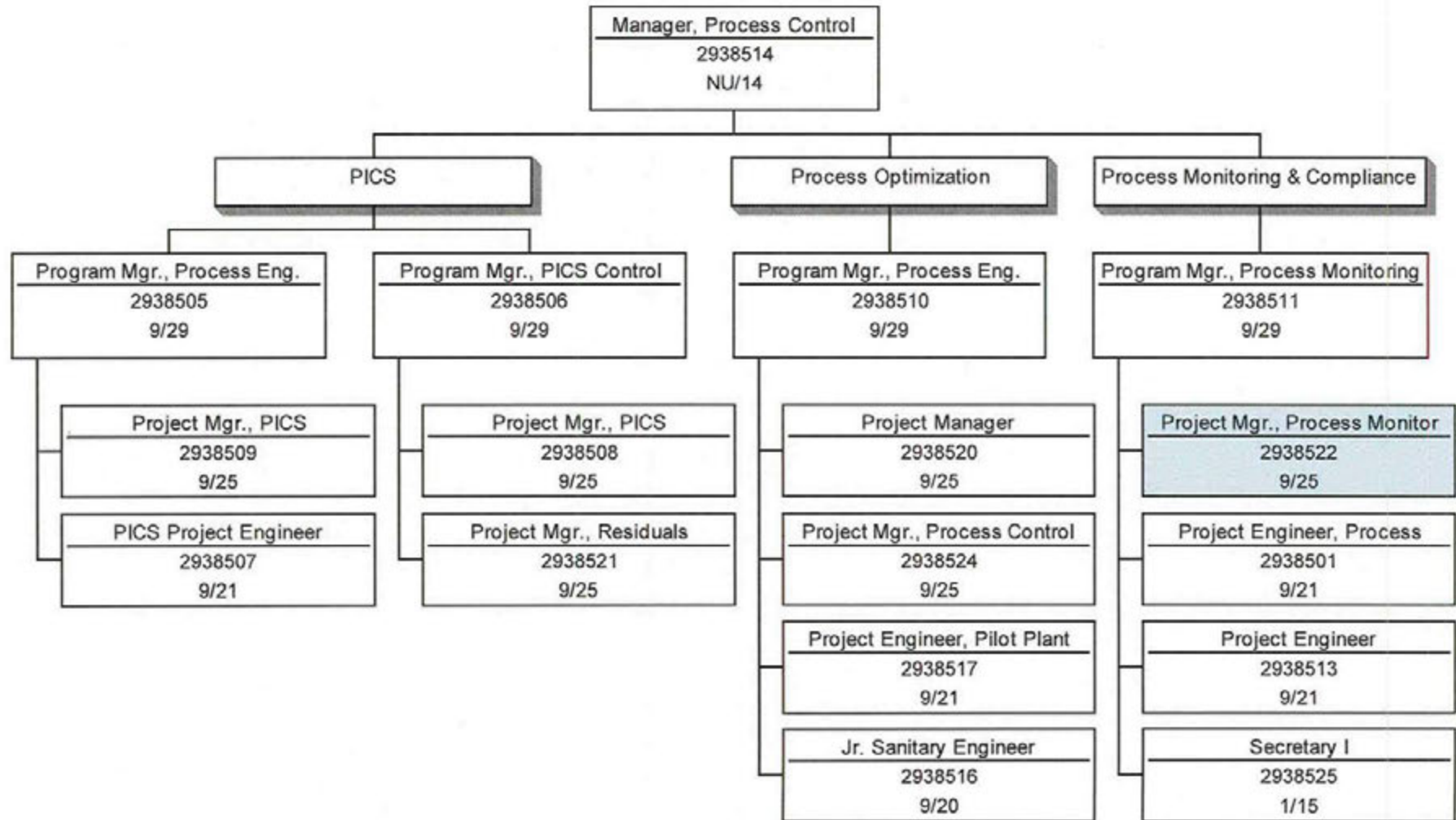
WORK ENVIRONMENT:

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 can occasionally work in highly 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
 February 2017



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: February 15, 2017
SUBJECT: Appointment of Business Systems Analyst III, MIS Department

COMMITTEE: Personnel and Compensation

INFORMATION
 VOTE

Karen Gay-Valente, Director Human Resources
Russell J. Murray, Jr., MIS Director
Joe Barrett, IS Custom Support Manager
Preparer/Title


Michele S. Gillen
Administration Division Director

RECOMMENDATION:

To approve the appointment of Ms. Janice Costa to the position of Business Systems Analyst III (Unit 6, Grade 12), MIS Department, at an annual salary of \$107,851.37 commencing on a date determined by the Executive Director.

DISCUSSION:

The MIS Business Systems Analyst III position, reports to the Program Manager, MIS in the MIS Custom Support group. This position works with all MWRA divisions and departments to assess, develop and implement IT application needs and requirements to support their operational and business needs.

The position serves as the primary liaison between the IT development team and MWRA's departments to ensure work processes are documented and understood, enhanced or revised as appropriate, and translated into IT system/application requirements used to develop or procure technology-based solutions.

The position's responsibilities include working collaboratively with MWRA staff to understand business needs and to identify appropriate technology improvements and solutions to satisfy those needs and to improve operations. The majority of these applications are Commercial-Off-The-Shelf (COTS) applications which are typically less expensive than custom developed applications and are more easily supported by staff. The Business Systems Analyst position determines how COTS applications need to be configured to support the MWRA specific business needs and serves as the technology implementation lead.

Selection Process

This position was posted internally and there were four applicants. Staff from MIS and Human Resources interviewed all four candidates. Ms. Costa was recommended for selection as the best candidate for the position based on her qualifications and experience.

Ms. Costa has 25 years of experience at MWRA in positions with increasing responsibility. She began working at MWRA in 1991 as a Technical Writer in the MIS Department and was promoted to Senior Systems Analyst in 1998. Prior to MWRA, Ms. Costa worked for several years at Wang Laboratories in a variety of positions including Technical Writer, Production Controller and Computer Operator.

Ms. Costa has strong working relationships across a variety of MWRA functional units and has led several important application improvement projects. She is highly regarded by her peers and her managers and is often requested to lead these efforts. Ms. Costa has successfully assisted in the implementation of electronic procurement application, the on-line employment application, and the Everbridge reverse all and notification tool. These applications have provided operational efficiencies and improved productivity. She has outstanding analytical and written communications skills and a proven track record of influencing business process changes and identifying application configurations that support the implementation of Commercial-Off-the-Shelf packages.

Ms. Costa has extensive IT business analysis training and strong HTML, browser screen and navigation skills. She is certified to teach Information Mapping Methodology® courses to MWRA staff. In addition, she possesses an Information Technology Infrastructure Library Foundation Certification as well as formal training on System Development Life Cycle. She attended Rivier College.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the MIS Department FY17 Current Expense Budget to fund this position.

ATTACHMENTS:

Resume of Janice Costa
Position Description
Organization Chart

JANICE A. COSTA

SUMMARY

Over thirty-five years' experience in an IT environment with a proven ability to:

- Identify business needs
- Streamline business processes
- Define project scope, requirements, and gap analysis
- Assess third-party software to meet business needs
- Create end-user and system documentation
- Support acceptance tests and system roll outs

EXPERIENCE

1991 to Present **Massachusetts Water Resources Authority, Boston MA**

Senior Systems Analyst

1998 – Present

- Analyze business requirements using various techniques such as interviews, workshops, brainstorm sessions, and user shadowing to find appropriate third party software solutions.
- Create project artifacts such as requirements documents, workflows, gap and risk analysis reports, use cases, and system and user documentation.
- Design and configure third party solutions to best fit user stakeholder needs.
- Develop test plans.
- Coordinate and manage user acceptance testing and when applicable; relate changes to internal programming staff or third party vendors.
- Coordinate and manage go live activities; train users as required.
- Maintain communication within the project team to ensure that system rollout is successful and user stakeholders are satisfied.
- Provide support to end users after implementation. Most recent projects included:
 - Everbridge - MWRA's reverse 911 and subscription-based communication system
 - Strategic Sourcing and Contract Management – Procurement's bid solicitation and contract award and tracking system
 - ApplicantPro – HR's online job posting and applicant tracking system

Technical Writer

1991 – 1998

Designed, wrote, edited, and published end-user documentation and training materials for MWRA business systems.

- Delivered stand-up training for office products and business systems.
 - Became a certified instructor of the Information Mapping Methodology®.
 - Served as an integral member of the MWRA Policies Group whose charter was to review and update current policies or write new ones using Information Mapping Methodology®.
 - Prototyped the internal and external MWRA websites. Successfully turned over the ownership of the websites and trained staff in html programming.
-

JANICE A. COSTA

EXPERIENCE, continued

1980 to 1991 Wang Laboratories Incorporated, Lowell MA

Technical Writer, Corporate Information Services 1986 – 1991

- Designed, wrote, and edited business-oriented documentation such as User Guides, Brochures, Policies and Procedures, and online help text for Purchasing, Marketing, Financial, Inventory, Manufacturing, and Distribution applications.
- Analyzed applications for user-apparent features such as screen design and ease of use. Recommended changes to improve application flow and usability.
- Worked in various capacities: as project leader, user advocate, technical consultant, and mentor to many junior writers.

Production Controller (I & II), Manufacturing Information Systems 1985 – 1986

Reviewed, edited, revised, and tested all new operations documentation. Scheduled regular and on-request batch jobs. Installed new software and upgrades. Acted as a liaison between operations, production support, development, and the user community.

Computer Operator (I, II, & III), Manufacturing Information Systems 1982 – 1985

Used various computer hardware and telecommunications devices. Trained junior operators. Wrote documentation for the operations staff. Performed routine operation's functions such as system backup and recovery. Executed batch jobs for various business applications such as Purchasing, Inventory Control, and Financial Reporting. Provided technical support to user community.

Group Leader, Incoming Quality Control 1982 – 1985

Responsible for teams of up to 22 staff in the Quality Control Department. Managed inventory from delivery, electrical/mechanical testing, manufacturer returns, stockroom, to issues (Dock-to-Stock application). Reconciled the department's physical inventory counts to system counts. Trained new employees, maintained personnel records, wrote office and application procedures, supervised data entry, determined system job priorities, and created Quality Control reports.

STRENGTHS

- Research, analysis, writing, and editing skills
- Problem detection and resolution skills
- Web page design and development with specific attention to usability factors
- Organization and planning
- Human factor and ease of use consideration
- Proficient in MS Office products

CERTIFICATIONS

- Certified to teach Information Mapping Methodology® 1993
- Certified in Information Technology Infrastructure Library (ITIL) Foundation 2012

RECENT TRAINING/SEMINARS

- Rapid Application Development SDLC Methodology 2016
- Requirements, Development, Documentation, and Management 2016
- Project Summit – Business Analysis Seminar sponsored by IIBA 2013, 2015, 2016

**MWRA
POSITION DESCRIPTION**

POSITION: Business Systems Analyst III
DIVISION: Administration
DEPARTMENT: Management Information System (MIS)

BASIC PURPOSE:

The Business Systems Analyst III works with business unit staff to understand business processes and to document and prioritize user requirements and functional specifications for new and existing systems that support the organizational needs. Serves as the conduit between the development team and the rest of the organization. Facilitates communications to expeditiously translate business requirements to help develop technical specifications as well as translate technical specification into language accessible to user and management audiences. Communicates and consults with end users or management to provide information regarding the costs and ramifications of the decisions made.

Evaluates MWRA application and business workflows, identifies improvements, documents requirements, prototyping, quality assurance and makes recommendations on how business processes can be improved through better implementation of technology. Identifies stake holders and develops Requirements Development Work Plans.

In addition, the Business Systems Analyst III will serve as Business Systems Analyst team lead and will update and maintain Business Systems Analysis specific project plans and schedules.

SUPERVISION RECEIVED:

Works under the general supervision of the Manager II, Business Systems Analysis

SUPERVISION EXERCISED:

Exercises supervision of assigned vendor resources and IT project team.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Use proven business analysis methodologies and elicitation techniques to:
 - Gather and document business, functional and technical requirements from business leaders, end users, and vendors for new and upgraded software applications (in-house and third party software).
 - Document project scope and vision documents.

- Support Quality Assurance/Quality Control activities including developing functional and user test acceptance test plans in conjunction with IT and user stakeholders.

- Research new approaches to improve business and system processes and develop reports and/or proposals for new or enhanced solutions.
- Identify and document documents gaps between the current as-is and recommended to-be processes.
- Collaborate with IT Department engineering staff contractors and vendors to support development of technical specification for appropriate system infrastructure hardware and software.
- Research, design, and test interfaces between existing and new system applications and platforms to produce seamless integration that complies with business requirements.
- Maintain professional interaction with the IT staff and user community to ensure adequate system functionality, promote team participation and encourage user confidence in the applications staff quality of service.
- Develop and maintains design documentation, report requirements and test plans of applications throughout the design process.
- Support user acceptance testing and release management activities.
- Coordinate vendor access and resources as assigned.
- Documents and communicates issues and risks.
- Develops and maintains Business Systems Analyst functional unit's business continuity documentation as appropriate.
- Maintains professional interaction with the Business Systems Analyst staff, user and extended IT community (i.e. project teams) to ensure adequate system functionality, promotes team participation and encourages user confidence in the IT Department's quality of service.
- Conducts stakeholder analyses by gathering and assessing information to determine whose interests should be taken into account for each project. Based on this analysis, identifies the stake holders for each project.
- Develops Requirements Work Plan.
- Manages Issue & Risk Lists as assigned.
- Coordinates project team testing and user acceptance testing for assigned projects ensuring testing is formalized, adheres to department standards and best practices.

SECONDARY DUTIES:

Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A four (4) year college program in management science, engineering management, computer science or related fields; and
- (B) Five (5) to seven (7) years experience gathering functional requirements, analyzing and accurately documenting requirements specifications, workflow diagrams, data flow diagrams, etc. to effectively communicate needs to internal and external development teams and/or developing and testing prototypes.
- (C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- A) Formal training or certification on methodologies/frameworks for business systems analysis, project management, software development and IT Service Management such as:
 - Rapid Application Development SDLC methodologies such as Agile.
 - Project Management concepts and tools.
- (B) Analytical and interpersonal skills.
- (C) Written and oral communication skills.
- (D) Knowledge of the following is desirable: MS Project, MS Visio, MS .Net, J2EE, Crystal Reporting, ORACLE, SQL Server and PL/SQL.

SPECIAL REQUIREMENTS:

Information Technology Infrastructure Library (ITIL) Foundation Certification is required or the ability to obtain within 6 months.

International Institute of Business Analysis (IIBA) Certification or formal IIBA Training 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 frequently lift and/or move up to 25 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision and color vision, and the ability to adjust focus.

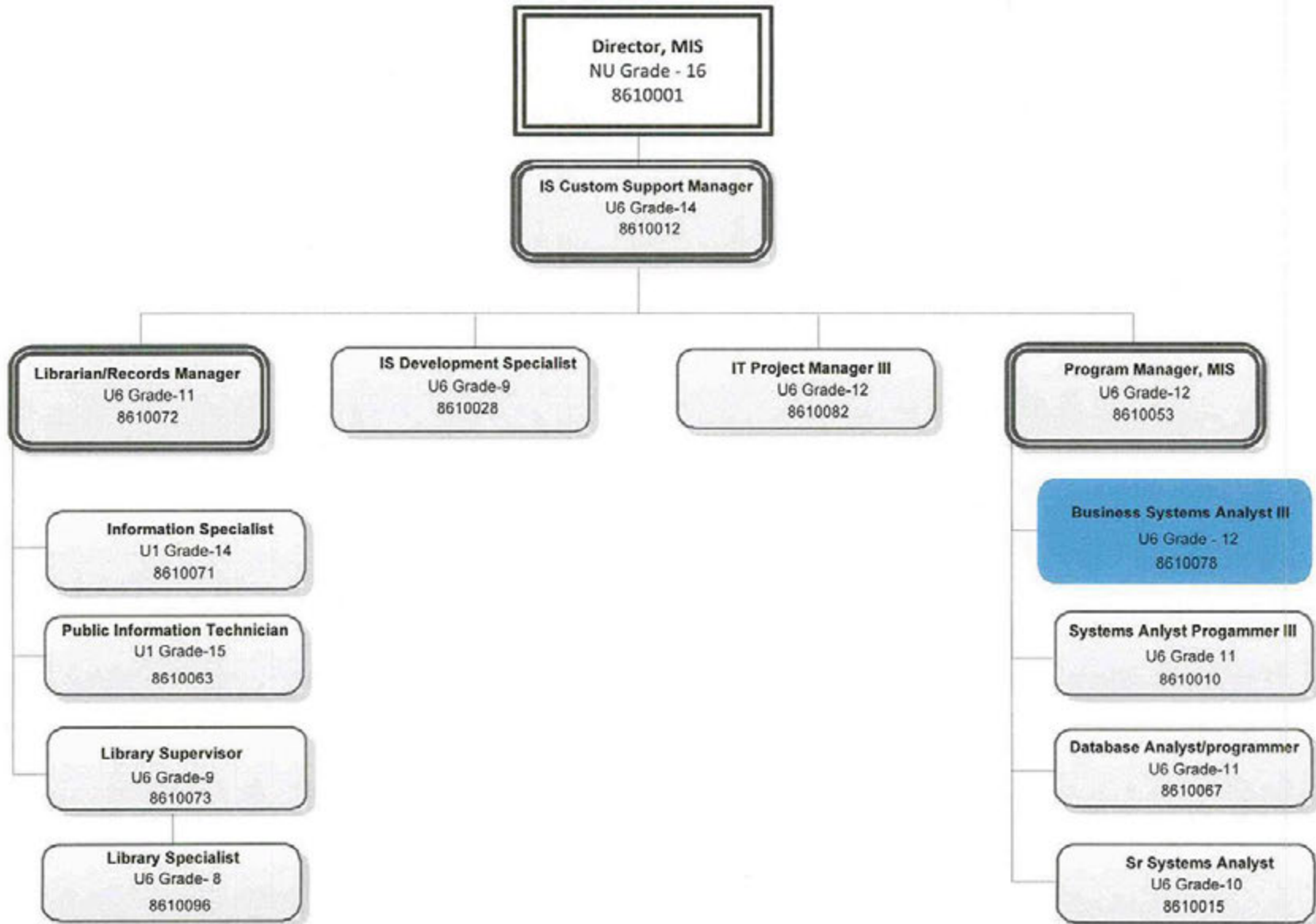
WORK ENVIRONMENT:

The work characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee occasionally works in various field settings and in an office environment. The employee regularly works near moving mechanical parts, and is occasionally exposed to risk of vibration.

The noise level in the work environment is very loud in field settings, moderately loud at other work locations and moderately quiet at office settings.

Business Systems Analyst III Organization Hierarchy
(February 2017)





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

Chair: M. Beaton
Vice-Chair: J. Carroll
Secretary: A. Pappastergion
Board Members:
A. Blackmon
K. Cotter
P. Flanagan
J. Foli
B. Peña
H. Vitale
J. Walsh
J. Wolowicz

BOARD OF DIRECTORS' MEETING

to be held on

Wednesday, February 15, 2017

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**
 - A. **PRESENTATION:** 2016 Extraordinary Service Awards
- IV. **BOARD ACTIONS**
 - A. **Approvals**
 1. Transmittal of the FY18 Proposed Current Expense Budget to the MWRA Advisory Board (ref. AF&A B.1)
 2. Appointment of Proxy for Fore River Railroad Corporation (ref. AF&A B.2)
 3. Redundancy for the Metropolitan Tunnel System (ref. W B.1)
 4. Approval of the Affirmative Action Plan (ref. P&C A.1)
 5. PCR Amendments – February 2017 (ref. P&C A.2)

A. Approvals (cont'd.)

6. Appointment of Project Manager, Process Monitoring, Deer Island Treatment Plant (ref. P&C A.3)
7. Appointment of Business Systems Analyst III, MIS (ref. P&C A.4)

B. Contract Awards

1. Long-Term Energy Supply Alternatives Analysis, Deer Island Treatment Plant: Burns & McDonnell, Contract 6963 (ref. WW A.1)
2. Oxygen Generation Services, Deer Island Treatment Plant: Solutionwerks, Inc., Contract S562 (ref. WW A.2)
3. Nut Island Headworks Odor Control and HVAC Improvements Inspections, Evaluations, Design, Construction Administration and Resident Engineering Services: Hazen & Sawyer, PC, Contract 7517 (ref. WW A.3)
4. Slide Gate Installation, Quabbin Aqueduct at Shaft 12: Arcadis, U.S., Inc., Contract 7509 (ref. W C.1)

V. CORRESPONDENCE TO THE BOARD

VI. OTHER BUSINESS

VII. EXECUTIVE SESSION

A. Real Estate:

1. Watershed Land Acquisition

B. Litigation:

1. Settlement Agreement with Barclay's Bank PLC and Barclays Capital Inc.
2. Cross Harbor Cable Litigation

C. Security:

1. Wachusett Reservoir Railroad

VIII. ADJOURNMENT

Meeting of the Board of Directors**January 18, 2017**

A meeting of the Board of Directors of the Massachusetts Water Resources Authority was held on January 18, 2017 at the Authority headquarters in Charlestown. Chairman Beaton presided. Present from the Board were Messrs. Blackmon, Carroll, Cotter, Foti, Pappastergion, Peña, Vitale and Walsh. Ms. Wolowicz and Mr. Flanagan were absent. Among those present from the Authority staff were Frederick Laskey, Executive Director, Steven Remsberg, General Counsel, Michael Hornbrook, Chief Operating Officer, Thomas Durkin, Director of Finance, Michele Gillen, Director of Administration, and Bonnie Hale, Assistant Secretary. The meeting was called to order at 1:15 p.m.

APPROVAL OF MINUTES

Upon a motion duly made and seconded, it was

Voted to approve the minutes of the Board of Directors' meeting of December 14, 2016, as presented and filed with the records of the meeting.

REPORT OF THE CHAIR**Annual Meeting: Election and Appointment of MWRA Officers and Committee Assignments**

Upon a motion duly made and seconded, it was

Voted to: (1) designate this January 18, 2017 meeting as the Annual Meeting which, as provided in the Authority's by-laws, will be deemed a special meeting of the Board for the purpose of election of officers; (2) elect John Carroll as Vice-Chairman of the Board; (3) appoint Andrew Pappastergion as Secretary of the Board and Bonnie Hale and Rosemarie Convery as Assistant Secretaries; Matthew Horan as Treasurer

and Robert Belkin and Kathy Soni as Assistant Treasurers; and (4) ratify the appointment of Board members to standing Committees, as presented and filed with the records of the meeting. New Committee Chairs will be appointed approximately every two years.

APPROVALS

First Amended and Restated Water Supply Continuation Agreement with Town of Wilmington

Upon a motion duly made and seconded, it was

Voted to authorize the Executive Director, on behalf of the Authority, to execute the First Amended and Restated Water Supply Continuation Agreement between MWRA and the Town of Wilmington, substantially in the form presented and filed with the records of the meeting.

PCR Amendments – January 2017

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.

Appointment of Program Manager, Process Engineering, Deer Island

Upon a motion duly made and seconded, it was

Voted to approve the Executive Director's recommendation to appoint Mr. Timothy Beaulieu to the position of Project Manager, Process Control (Unit 9, Grade 25) at an annual salary of \$108,599.56, to be effective on the date designated by the Executive Director.

CONTRACT AWARDS

Audit Services: CliftonLarsonAllen LLP, Contract F242

Upon a motion duly made and seconded, it was

Voted to approve the recommendation of the Consultant Selection Committee to select CliftonLarsonAllen LLP to provide Audit Services to the Authority, and to authorize the Executive Director, on behalf of the Authority, to execute and deliver Contract F242 with CliftonLarsonAllen LLP in an amount not to exceed \$499,000 for a term of four years, from April 1, 2017 to March 31, 2021.

Drug and Alcohol Testing Program: Advantage Drug Testing LLC, Contract A610

Upon a motion duly made and seconded, it was

Voted to approve the recommendation of the Consultant Selection Committee to select Advantage Drug Testing LLC for the provision of Drug and Alcohol Testing Services, and to authorize the Executive Director, on behalf of the Authority, to execute Contract A610 with Advantage Drug Testing LLC in an amount not to exceed \$32,050 for a term of 36 months from the Notice to Proceed.

Electrical Equipment Testing, Deer Island Treatment Plant: American Electrical Testing Company, Contract S561

Upon a motion duly made and seconded, it was

Voted to approve the award of Contract S561, Electrical Equipment Testing - Deer Island Treatment Plant, to the lowest eligible and responsible bidder, American Electrical Testing Company, Inc., and to authorize the Executive Director, on behalf of the Authority, to execute and deliver Contract S561 in an amount not to exceed \$1,972,160, for a term of 1,095 calendar days from the Notice to Proceed.

CONTRACT AMENDMENTS/CHANGE ORDERSSettlement Agreement for Various Design Contracts and Hatchery Pipeline and Hydroelectric Project Design, Construction Administration and Resident Inspection Services: Stantec Consulting Services, Inc., Contract 7017A, Amendment 2

Upon a motion duly made and seconded, it was

Voted to authorize the Executive Director, on behalf of the Authority, to execute a settlement agreement with Stantec Consulting Services Inc. in the amount of \$70,000, which represents reimbursement to MWRA for claims associated with designer error and omissions in the following Stantec design contracts: Contract 6854, Lynnfield/ Saugus Pipelines Project; Contract 7259, North Dorchester Bay Ventilation Building; and Contract 7085A, Installation of Second Gaseous Oxygen Line at the John J. Carroll Water Treatment Plant. Further, to authorize the Executive Director, on behalf of the Authority, to approve Amendment 2 to extend the term of Contract 7017A with Stantec Consulting Services Inc., Hatchery Pipeline and Hydroelectric Design, Construction Administration and Resident Inspection Services, by three months to September 1, 2018 with no increase in the contract amount.

Northern Intermediate High Redundant Pipeline Design, Construction Administration and Resident Inspection Services: Stantec Consulting Services, Inc., Contract 6906, Amendment 2

Upon a motion duly made and seconded, it was

Voted to authorize the Executive Director, on behalf of the Authority, to approve Amendment 2 to increase the amount of Contract 6906 with Stantec Consulting Services, Inc., Northern Intermediate High Redundant Pipeline Design, Construction Administration and Resident Inspection Services, in the amount of \$900,854.00 and to extend the term by 39 months to December 23, 2020.

Northern Intermediate High Section 110 – Reading and Woburn: Albanese D&S, Inc., Contract 7471, Change Order 7

Upon a motion duly made and seconded, it was

Voted to authorize the Executive Director, on behalf of the Authority, to approve Change Order 7 to increase the amount of Contract 7471 with Albanese D&S, Inc., Northern Intermediate High Section 110 - Reading and Woburn, in an amount not to exceed \$564,239, with no increase in contract term. Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 7471 in amounts not to exceed the aggregate of \$250,000, in accordance with the Management Policies and Procedures of the Board of Directors.

CORRESPONDENCE TO THE BOARD

Letter from Utility Contractors of New England, Inc. (UCANE)

There was general discussion of the above-referenced January 11, 2017 letter expressing UCANE'S concerns regarding the recent MWRA staff recommendation to utilize deep tunnels vs. surface piping to create redundancy for the existing Metropolitan Tunnels. By general consensus, the Board authorized the Executive Director to meet with UCANE to explain the reasoning why the construction of tunnels was the preferred alternative. Mr. Favaloro indicated that the Advisory Board Executive Committee had endorsed the deep rock tunnel approach, and it was expected that the full Advisory Board would endorse it as well at its January 19, 2017 meeting. Mr. Laskey stated that further discussion on Metropolitan Tunnel Redundancy Planning would occur at the next Board meeting scheduled for February 15, 2017.

EXECUTIVE SESSION

It was moved to enter Executive Session to discuss security 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>
Blackmon		
Carroll		
Cotter		
Foti		
Pappastergion		
Peña		
Vitale		
Walsh		
Beaton		

Voted to enter executive session to discuss collective bargaining, in that such discussion may have a detrimental effect on the negotiating position of the Authority, and to consider the deployment of security personnel or devices, or strategies with respect to security.

It was stated that the meeting would return to open session solely for the consideration of adjournment.

EXECUTIVE SESSION

The meeting returned to open session at 2:00 p.m. and adjourned.