

MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report

on

Key Indicators of MWRA Performance

for

First Quarter FY2021

Q1	Q2	Q3	Q4



Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
November 18, 2020

Board of Directors Report on Key Indicators of MWRA Performance

1st Quarter - FY21

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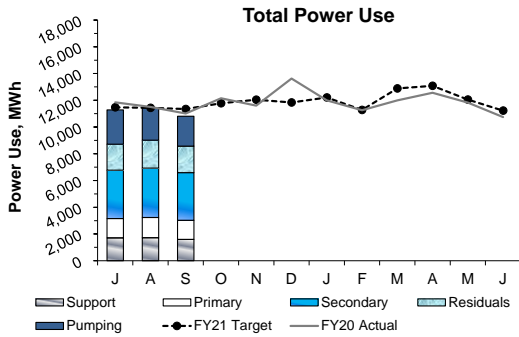
This quarterly report is prepared by MWRA staff to track a variety of MWRA performance measures for routine review by MWRA's board of directors. The content and format of this report is expected to develop as time passes. Information is reported on a preliminary basis as appropriate and available for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

Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
November 18, 2020

OPERATIONS AND MAINTENANCE

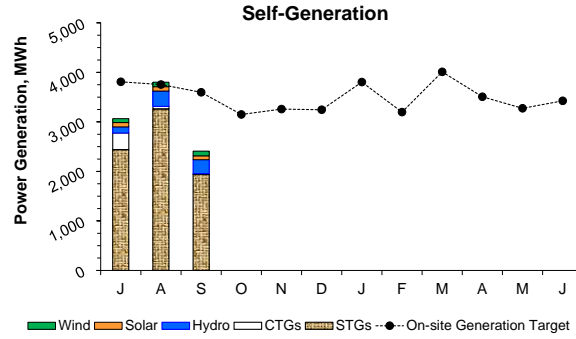
Deer Island Operations

1st Quarter - FY21

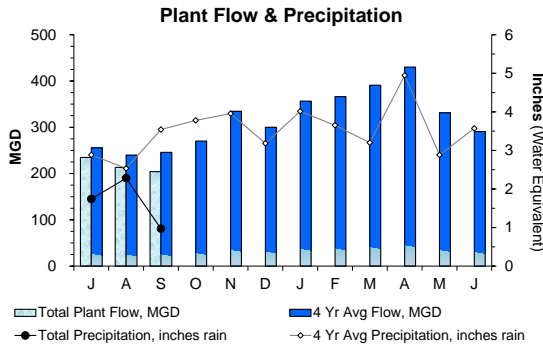


Total power usage in the 1st Quarter was 2.1% below target. Plant flow for this period was 12.0% below target with historical data (4 year average) as rainfall was 44.3% below the 4 year average rainfall target (8.96 inches expected vs. 4.99 inches actual). While power usage was near or below target for most plant processes, power usage for Secondary treatment processes was 5.2% above target. More power was needed due to a higher-than-expected dissolved oxygen demand, necessary for supporting the activated sludge biomass, and thus a higher-than-expected power usage for cryogenic oxygen generation and for mixer operation in the secondary treatment process. Power usage for raw wastewater pumping was 9.4% below target.

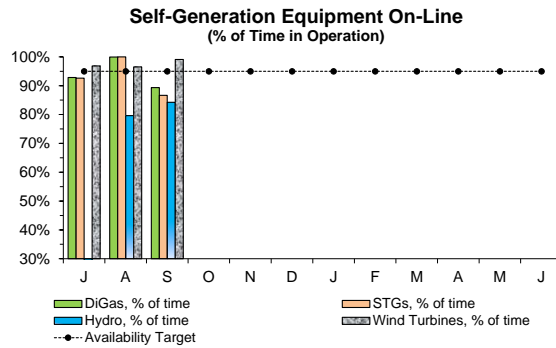
Note: Power usage projections are based on 4 year averages.



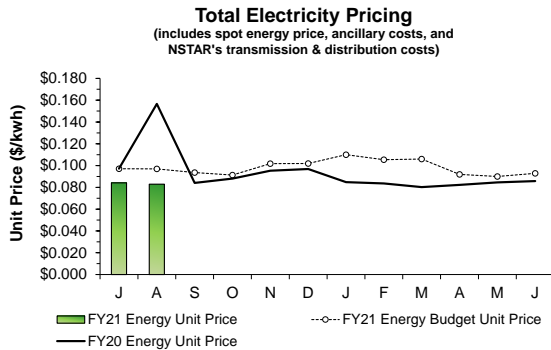
Power generated on-site during the 1st Quarter was 16.9% below target. CTG generation fell below target by 40.5% as the FY21 budget estimate included more CTG operation for peak system demand to avoid the capacity charge, as well as more operation for anticipated utility cable maintenance outage periods. STGs generation was 15.4% below target due partially to an annual Thermal Power Plant maintenance shutdown and to lower-than-expected digester gas production. Hydro Turbine generation was 24.6% below target due to low plant flow, as well as scheduled maintenance and an issue with the wicket gate on Turbine #1. Turbine #2 remains offline pending repairs to the runner blade assembly. Generation from the Solar Panels was 8.9% below target, while Wind Turbine generation was 17.5% above target.



Total Plant Flow for the 1st Quarter was 12.0% below target with the budgeted 4 year average plant flow (217.4 MGD actual vs. 247.2 MGD expected) as precipitation was 44.3% below target (4.99 inches actual vs. 8.96 inches expected).

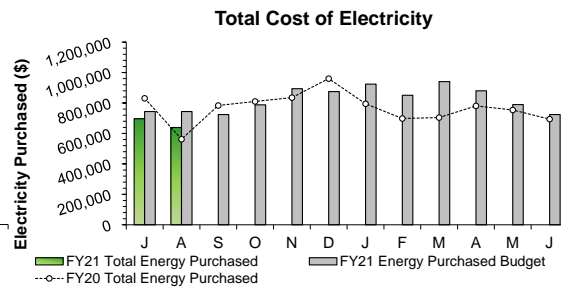


The availability of the DiGas system, STGs, and Hydro Turbines all fell below the 95% availability target, while the Wind Turbines remained above target during the 1st Quarter. The availability of both the DiGas system and the STGs was reduced because of essential maintenance on the steam system in July, as well as the annual Thermal Power Plant maintenance shutdown in September. Hydro Turbine #1 was taken offline in July for scheduled maintenance and also had an issue with the wicket gate in September, while Turbine #2 has been off line all of Quarter 1 pending repairs to the runner blade assembly.



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 through August (the most current invoice available) was 13.9% below target with budgetary estimates. The actual total energy unit price in September is not yet available as the complete invoices have not been received. 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 one (1) month due to the timing of invoice receipt and review.



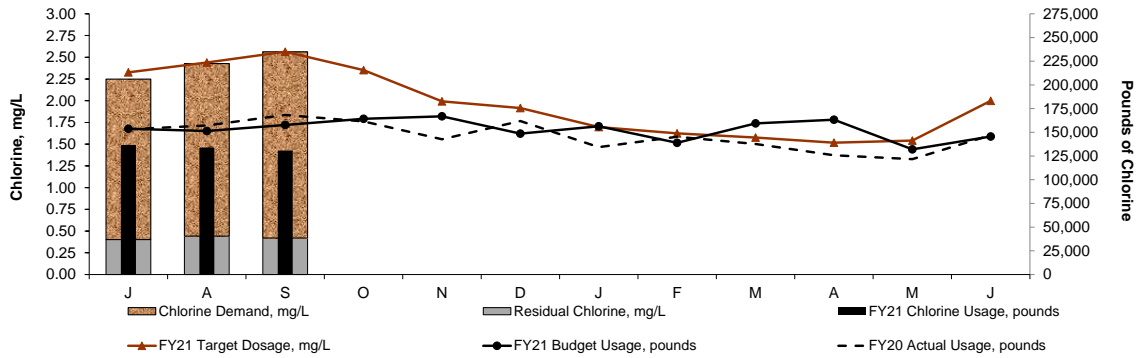
The Electricity cost data for Electricity Purchased in September is not yet available. Year-to-date Total Cost of Electricity is \$152,748 (10.3%) lower than budgeted through August. Even though the Total Electricity Purchased was 4.2% above target through August, the Total Energy Unit Price was 13.9% lower than target.

Note: Only months with complete Electricity Purchased data are reported. Therefore, the dataset lags by one (1) month due to the timing of invoice receipt and review.

Deer Island Operations

1st Quarter - FY21

Deer Island Sodium Hypochlorite Use



The disinfection dosing rate in the 1st Quarter was 1.0% below target with budgetary estimates. Actual sodium hypochlorite usage in pounds of chlorine was 13.3% lower than expected as the 4 year average plant flow used for estimating the hypochlorite usage target was 12.0% lower-than-expected. DITP maintained an average disinfection chlorine residual of 0.42 mg/L this quarter with an average dosing rate of 2.41 mg/L (as chlorine demand was 1.99 mg/L).

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

Secondary Blending Events

99.99% of all flows were treated at full secondary during the 1st Quarter. There was one (1) secondary blending event due to high plant flows resulting from heavy rain and high plant flows.

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	1	1	0	99.97%	1.17
S	0	0	0	100.0%	0.00
O					
N					
D					
J					
F					
M					
A					
M					
J					
Total	1	1	0	99.99%	3.79

This blending event resulted in a total of 1.17 hours of blending and 1.97 MGal of primary-only treated effluent with secondary effluent. The Maximum Secondary Capacity for the entire quarter was 700 MGD.

Secondary permit limits were met at all times during the 1st Quarter of FY21.

Deer Island Operations & Maintenance Report

Environmental/Pumping:

The plant achieved an instantaneous peak flow rate of 795.5 MGD during the evening of August 23. This peak flow occurred during a storm event that brought 1.33 inches of precipitation to the metropolitan Boston area. Overall, Total Plant Flow in the 1st Quarter was 12.0% below target with the 4 year average plant flow estimate for the quarter.

The Monthly Total Plant Flow (213.32 MGD) and the Monthly North System Influent Flow (145.34 MGD) for August 2020 set new low flow records for the month of August. The Monthly Total Plant Flow (204.12 MGD) and the Monthly North System Influent Flow (138.78 MGD) for September 2020 set new low flow records for the month of September in addition to setting the lowest monthly flow for all-time regardless of month (since the plant's startup in July 1998). The Daily Average Total Plant Flow on September 6 (186.03 MGD) and on September 26 (187.35 MGD) both broke the previous all-time daily low flow record of 188.82 MGD that was set on September 4, 2016.

August Low Plant Flow Records

	Previous August Low Flow Record (since plant startup July 1998)	New August Low Flow Record (set 2020)	Previous All-time Monthly Low Flow Record (since plant startup July 1998)
Total Plant Influent Flow	215.04 MGD (2016)	213.32 MGD	214.64 MGD (Sept. 2016)
North System Influent Flow	152.08 MGD (2016)	145.34 MGD	149.34 MGD (Oct. 2013)

September Low Plant Flow Records

	Previous September Low Flow Record (since plant startup July 1998)	New September Low Flow Record (set 2020)	Previous All-time Monthly Low Flow Record (since plant startup July 1998)
Total Plant Influent Flow	214.64 MGD (2016)	204.12 MGD	213.32 MGD (Aug. 2020)
North System Influent Flow	152.40 MGD (2016)	138.78 MGD	145.34 MGD (Aug. 2020)
South System Influent Flow	No new record set (62.28 MGD in 2016)	No new record set (65.34 MGD)	No new record set (62.28 MGD in Sept. 2016)
Precipitation	No new record set (0.70 inches in 2014)	No new record set (0.97 inches)	No new record set (0.00 inches in June 1999)
All-time lowest Daily Average Total Plant Influent Flow	-----	186.03 MGD (Sept. 6) and 187.35 MGD (Sept. 26)	188.82 MGD (Sept. 4, 2016)

Deer Island Operations & Maintenance Report (continued)

Environmental/Pumping:

Work on the Winthrop Terminal Facility (WTF) VFD (Variable Frequency Drive) and Synchronous Motor Replacement project was started by the contractor in 2018 and entails the demolition of existing older obsolete equipment (electrical systems, motors and VFDs on each of the six (6) raw wastewater pumps). The pumps are currently powered by 600 volts service and will be changed to 4,160 volts, consistent with other major pumps in both the South System Pump Station (SSPS) and the NMPS. The contractor completed the upgrade for WTF Pump #4 and has been upgrading WTF Pump #3 since August 31 which is expected to be ready for performance testing in early November. To date, work has been completed on four (4) of the six (6) pumps (#6, #2, #5, and #4).

Secondary Treatment:

Annual turnaround maintenance was performed on Train #2 at the Cryogenic Oxygen Facility in July. This turnaround maintenance is typically performed in the spring (in April) but was postponed as a result of the work and travel restrictions related to COVID-19 at that time. The rescheduled maintenance in July involved scheduled preventative maintenance and inspections on roughly half of the components and systems in the Cryogenic Oxygen Facility. Train #1 was in operation during the turnaround maintenance activities and Train #2 was placed into operation on July 27 after the turnaround maintenance was completed and both trains remained in operation to provide sufficient oxygen generation to support the seasonal oxygen demand requirements. The same turnaround maintenance will likely be performed on Train #1 later in the fall.

Odor Control:

The East Odor Control (EOC) Facility, which is responsible for treating the process airflows from the primary clarifiers in Batteries A and B, and the East Grit Facility, experienced an unanticipated power outage on September 29 caused by a faulty electrical switch. The EOC Facility was offline for 1 hour and 16 minutes and was restarted when power was restored to the facility. Process air was contained within the building and there were no resident odor complaints received during the ROC or the EOC airflow treatment shutdowns.

The internal lining for carbon adsorber (CAD) unit #6 in the EOC Facility was recoated in September and was returned to operation once the unit was refilled with fresh activated carbon in early October. The activated carbon media in CAD unit #2 in the ROC Facility was also replaced in September as part of routine practice of replacing spent carbon with fresh carbon.

Residuals Treatment:

The rehabilitation of Gravity Thickener #3 under the major Gravity Thickener Rehabilitation project was completed in late August and Gravity Thickener #6 was given to the contractor to begin rehabilitation work. DITP has six (6) gravity thickeners used to concentrate sludge that is generated from the primary treatment process, and scum that is generated from all treatment processes. The sludge and scum thickening equipment and five (5) of the six (6) Fiberglass-Reinforced Plastic (FRP) domed covers have reached the end of their useful lives and are in need of replacement. This rehabilitation project will upgrade all six (6) gravity thickeners including complete replacement of each tank's sludge and scum thickening equipment as well as replacement of five (5) of the six (6) FRP dome covers (the FRP domed cover for Gravity Thickener #2 has already been replaced). Additionally, critical components which were previously fabricated from carbon steel, including the center columns and center cages, will now be fabricated from type 316 stainless steel in order to provide superior protection against hydrogen sulfide gas which is present in high concentrations in this highly corrosive environment. The entire rehabilitation project is anticipated to take nearly three (3) years to complete in 2021. The rehabilitation of Gravity Thickeners #1, #2, #3, and #4 has now been completed.

Energy and Thermal Power Plant:

Overall, total power generated on-site accounted for 27.7% of Deer Island's total power use for Quarter 1. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 26.5% of Deer Island's total electrical power use for the quarter.

Annual maintenance at the Thermal Power Plant (TPP) began on September 13 and continued through September 26. Various maintenance activities on the Steam Turbine Generators (STGs) and the two (2) Zurn boilers included maintenance on various pumps, valves, and instrumentation throughout the power plant. Maintenance on Boiler 201 began on September 13, and Boiler 101 was placed on-line on September 9 ahead of the Boiler 201 maintenance. On September 13, the main STG was taken out of service for maintenance while Boiler 101 and the BP-STG remained in operation. The BP-STG was operated at maximum capacity to minimize the loss of power generation during this period when the main STG was out of service. Boiler 101 and the BP-STG were then also taken out of service on September 20 (shutdown of the entire TPP) to allow for maintenance on these units and on the common systems including the steam, condensate, and feed water systems. Boiler 201 was returned to service on September 23, and the main STG and BP-STG were returned to operation on September 24, while maintenance work and repairs continued for Boiler 101. This boiler was successfully operated briefly on September 26 for checkout purposes.

A failed start air compressor for CTG-1A was replaced at the end of September. There are two (2) compressors, one (1) for each CTG unit, but each compressor can be used to start up either one of the CTG units. The compressor that failed was rebuilt a few times in the past (most recently in February of this year), but is the original compressor supplied to the plant 25 years ago, so it was at the end of its useful life.

Regulatory:

Emissions compliance testing for the North Pumping Control (NPOC) treatment system at DITP was conducted by consultants on August 18 to August 19. The NPOC system treats process air from the North Main Pump Station and the Winthrop Terminal Facility. The DITP Air Quality Operating Permit issued by the MA DEP requires that DITP conduct emissions compliance testing for the various emission units once every five (5) years to demonstrate compliance with applicable total reduced sulfur (TRS) and non-methane hydrocarbon (NMHC) emission limits. This testing requires the continuous emissions monitoring of the inlet and outlet of the odor control system over a 24-hour period for TRS at the outlet (stack) of the odor control system and for NMHC at the inlet. All emissions test results show that DITP was in compliance. The final report has been submitted to the MA DEP.

Clinton Operations & Maintenance Report

Dewatering Building

Maintenance staff cleaned and repaired the wash box squeegees on both belt filter presses. They also replaced damaged conveyor buckets and greased both presses. Maintenance rebuilt thickened sludge transfer pumps #1 and #3. Staff replaced five air purge valves in dewatering building boiler room heat piping system.

Chemical Building

Maintenance replaced two drive gears on soda ash machine. Staff replaced a spider coupling for return activated sludge (RAS) pump #4. Operations and maintenance worked to successfully install a blank flange on #1 RAS pump to isolate it because of a leaking mechanical seal. Staff replaced chlorine contact chamber pump. Maintenance cleaned suction line, discs and discharge line on soda ash pump #2. Replaced soda ash mixer on primary and secondary mix tanks and replaced gearbox drive motor on primary mix tank.

Aeration Basins

Staff cleaned and calibrated PH and DO probes. Maintenance replaced aeration blower #4 A with the assistance from Aerzen compressor.

Phosphorus Building

Staff acid washed all three disk filters, cleaned troughs and inspected all nozzles. Operations staff switched to polymer pump #1, they will clean #2 now that it is off line. Maintenance replaced the oil seal, diaphragm and check valves on #2 ferric pump.

Digester Building

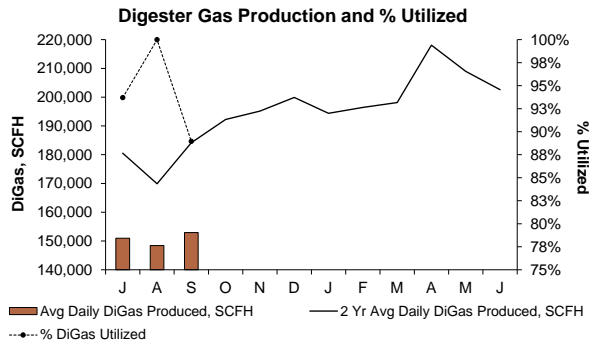
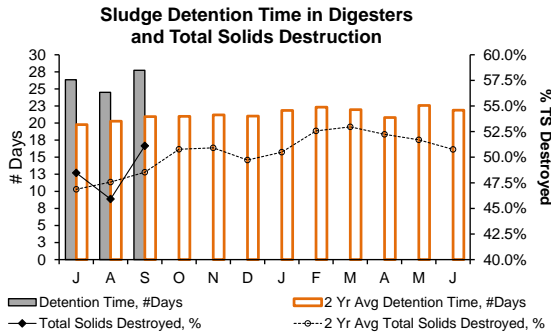
Maintenance staff checked all equipment for proper operation. They changed oil in secondary digester mixer.

Head works

Maintenance reinstalled the #2 grit tank screw and also installed a new safety chain on same grit tank.

Deer Island Operations and Residuals

1st Quarter - FY21



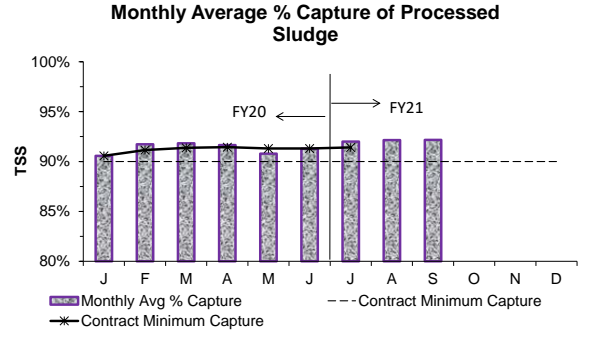
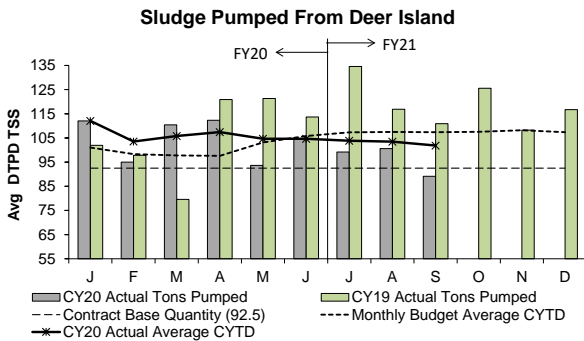
Total solids (TS) destruction following anaerobic sludge digestion averaged 48.5% during the 1st Quarter, 1.8% above the 2 year average of 47.7%. Sludge detention time in the digesters was 26.2 days, 28.8% above target, as DI operated with an average of 8.0 digesters. The higher detention time is mainly attributed to lower-than-expected sludge production due to much lower-than-expected plant flows.

The Avg Daily DiGas Production in the 1st Quarter was 15.4% below target with the 2 Year Avg Daily DiGas Production due to much lower-than-expected primary sludge production which breaks down more readily during anaerobic sludge digestion. On average, 94.2% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant (TPP), less than usual due to the annual Thermal Power Plant Shutdown maintenance and other essential maintenance shutdowns.

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

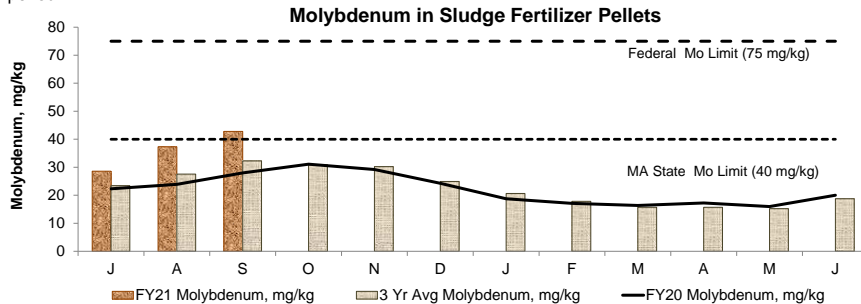
New England Fertilizer Company (NEFCO) operates the MWRA Biosolids Processing Facility (BPF) in Quincy under contract. MWRA pays a fixed monthly amount for the calendar year to process up to 92.5 DTPD/TSS as an annual average. The monthly invoice is based on 92.5 DTPD/TSS (Dry Tons Per Day/Total Suspended 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. On average, MWRA processes more than 92.5 DTPD/TSS each year (FY20's budget is 107.4 DTPD/TSS and FY21's budget is 107.9 DTPD/TSS).



The average quantity of sludge pumped to the Biosolids Processing Facility (BPF) in the 1st Quarter was 96.3 TSS Dry Tons Per Day (DTPD) - 12.8% below target with the FY21 budget of 110.4 TSS DTPD for the same period. Sludge delivered to the BPF was lower than expected during the quarter mainly due to lower-than-expected overall sludge production.

The contract requires NEFCO to capture at least 90.0% of the solids delivered to the Biosolids Processing Facility. The average capture for the 1st Quarter was 92.1% and the CY20 to date average capture is 91.6%.

The CY20 average quantity of sludge pumped through September is 101.9 DTPD - 5.1% below target compared with the CY20 average budget of 107.4 DTPD during the same time period.



Copper, lead, and molybdenum (Mo) are metals of concern for MWRA as their concentrations in its biosolids have, at times, exceeded regulatory standards for unrestricted use as fertilizer. Molybdenum-based cooling tower water is a significant source of Mo in the sludge fertilizer pellets. The Federal standard for Mo is 75 mg/kg. In 2016, Massachusetts Type I biosolids standard for molybdenum was changed to 40 mg/kg from the previous standard of 25 mg/kg. This has allowed MWRA to sell its pellets in-state for land application 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 since NEFCO does not distribute product that does not meet the suitability standards.

Overall, the levels have been below the DEP Type 1 limit for all three (3) metals. For Mo, the level in the MWRA sludge fertilizer pellets during the 1st Quarter averaged 36.2 mg/kg, 31% above the 3 year average, 9% below the MA State Limit, and 52% below the Federal Limit. However, the September Mo level of 42.8 mg/kg was 7% above the MA State Limit, causing the sales of the pellets to be restricted to a smaller market where the product is still able to be utilized.

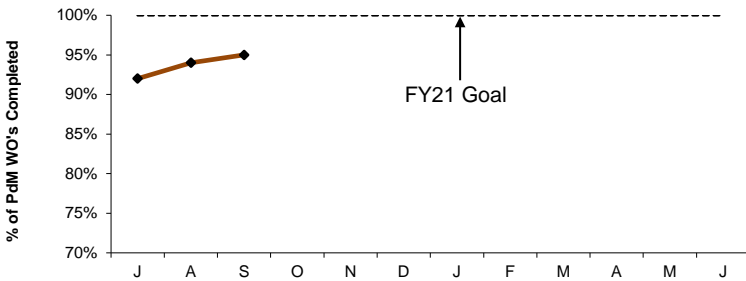
Deer Island Maintenance

1st Quarter - FY21

Productivity Initiatives

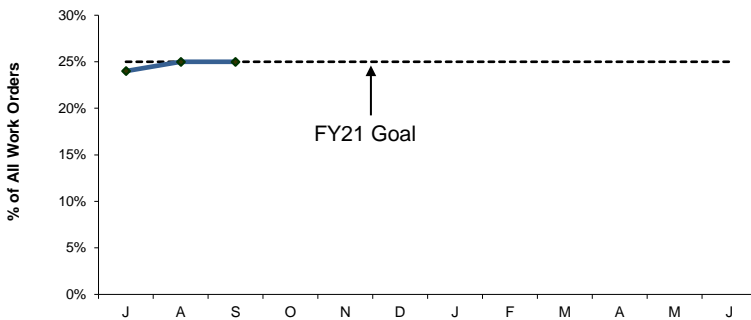
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in overall maintenance backlog.

Predictive Maintenance Compliance



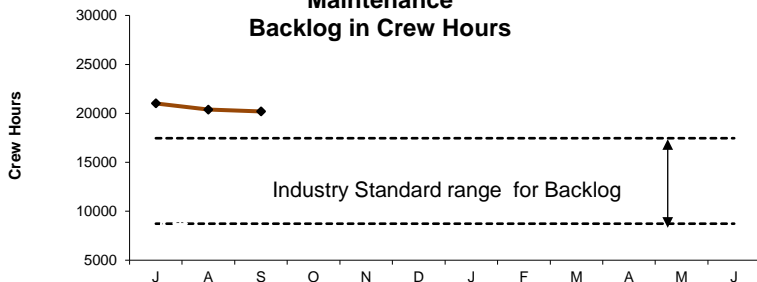
Deer Island's FY21 predictive maintenance goal is 100%. DITP completed 95% of all PdM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program. Due to COVID-19 and limited staffing prior to June 22, 2020, our percentage is below our goal of 100%, we anticipate meeting our goal withing the next few months.

Predictive Maintenance



Deer Island's increased FY21 predictive maintenance goal is 25% of all work orders to be predictive. 25% 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

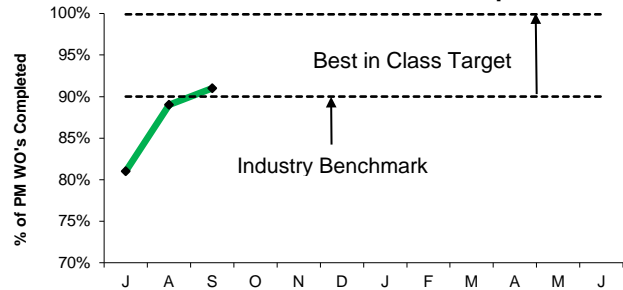


DITP's maintenance backlog at Deer Island is 20,194 hours this quarter. DITP is at the upper end of the industry average for backlog. The industry Standard for maintenance backlog with 97 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog is affected by five vacancies; (1) HVAC Tech (3) Electricians, and (1) I&C Tech. Management continues to monitor backlog and to ensure all critical systems and equipment are available. While our Backlog is over Industry Standards, maintenance staff has returned to regular hours and the Backlog is slowly moving towards Industry Standards.

Proactive Initiatives

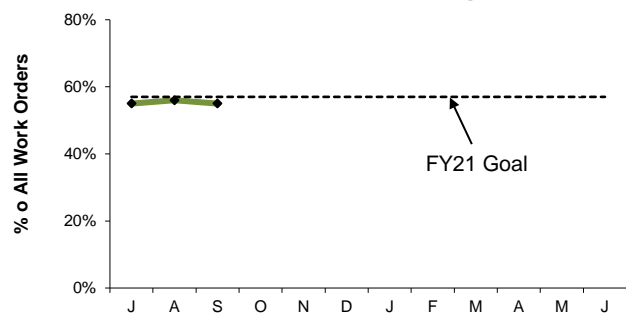
Proactive initiatives include completing 100% of all preventative maintenance tasks and increasing preventative maintenance kitting. These tasks should result in lower maintenance costs.

Preventive Maintenance Compliance



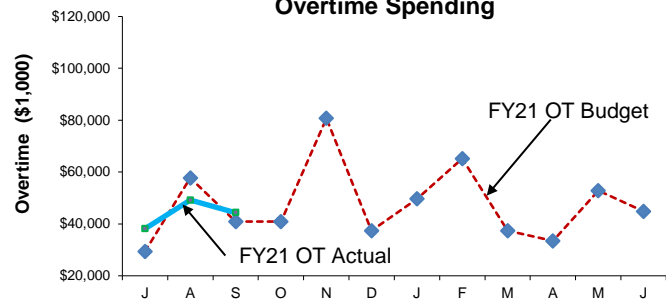
Deer Island's FY21 preventative maintenance goal is 100% completion of all work orders from Operations and Maintenance. DITP completed 91% of all PM work orders this quarter. Due to COVID-19 and limited staffing prior to June 22, 2020, our percentage is below our goal of 100%, we anticipate reaching our goal withing the next few months.

Maintenance Kitting



Deer Island's increased FY21 maintenance kitting goal is 57% of all work orders to be kitted. 55% 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.

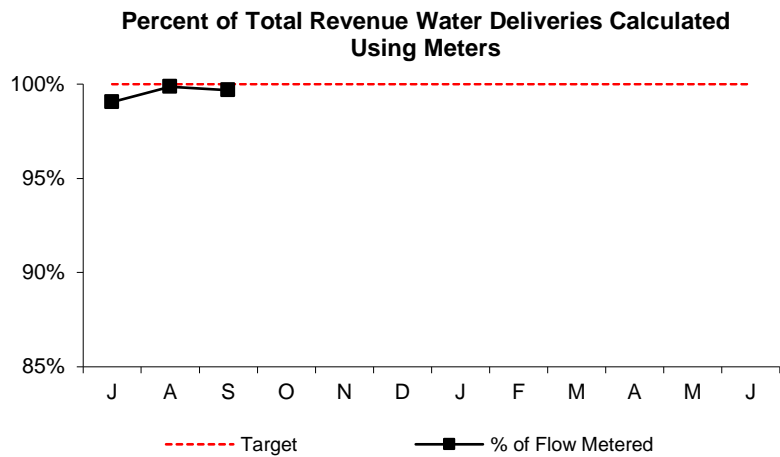
Overtime Spending



Maintenance overtime was over budget by \$7K this quarter and \$7k over for the year. Management continues to monitor backlog and to ensure all critical equipment and systems are available. This quarter's overtime was predominately used for Storm Coverage/High Flows, Replacement of Centrifuges #11 and #12, GTO Pump Glogging Issues, Hydro Facility Generator #1 Startup, and Thermal Power Plant Boiler Outage.

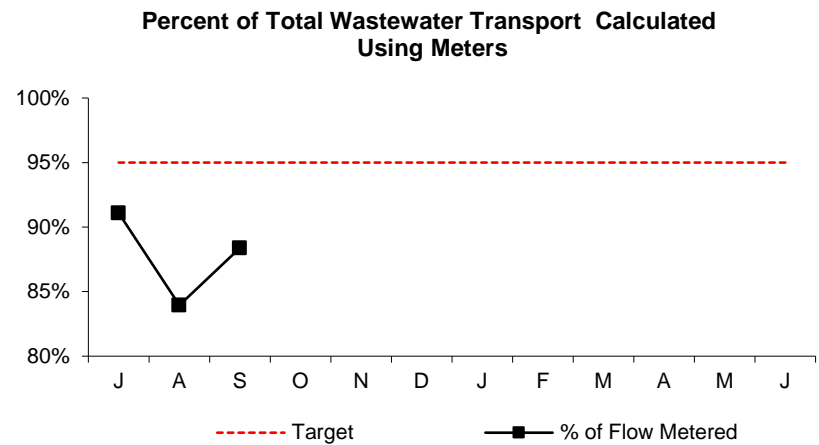
Operations Division Metering & Reliability 1st Quarter - FY21

WATER METERS



The target for revenue water deliveries calculated using meters is 100%. Estimates are generated for meters that are out of service due to instrumentation problems or in-house and capital construction projects. During Q1 of FY21, 0.47% of the billed water flow was estimated. 99.53% was based on meter actuals. The entirety of this value was from instrumentation failure.

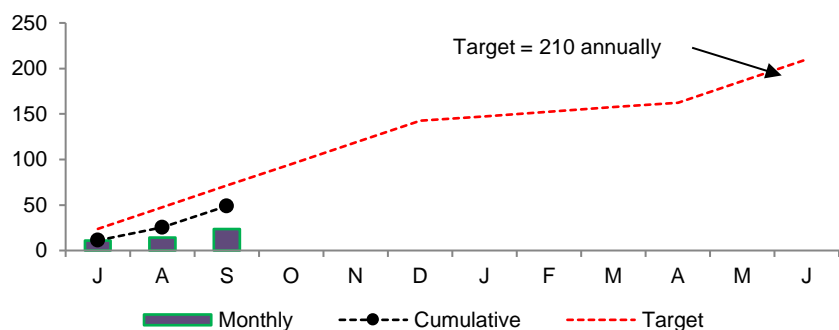
WASTEWATER METERS



The target for revenue wastewater transport calculated using meters is 95%. Estimates are generated for meters missing data due to instrument failure and/or erratic meter behavior. The data capture rate in Q1 of FY21 was 86.7%. Nearly 50% of the estimated flow required in FY21Q1 was related to the largest single meter in our system, BO-MI-1. Which was offline intermittently from Early August until September 18. This meter is an obsolete technology and meter maintenance can no longer order parts for service. The meter technology will be updated as a part of the Wastewater metering replacement project scheduled for FY 2021.

WATER DISTRIBUTION SYSTEM PIPELINES

Miles Surveyed for Leaks



During the 1st Quarter of FY21, 48.86 miles of water mains were inspected.

Leak Backlog Summary													
Month	J	A	S	O	N	D	J	F	M	A	M	J	Totals
Leaks Detected	2	2	5										9
Leaks Repaired	2	1	3										6
Backlog	6	7	9										n/a

During the 1st Quarter of FY21 nine new leaks were detected, and six were repaired. Refer to FY21 Leak Report below for details. Also, community service ranging from individual leak location to hydrant surveys were conducted for: Arlington, Boston, Malden, Marlborough, Medford, Revere, Swampscott and Wakefield.

1st Quarter - FY21 Leak Report

Date Detected	Location of Leaks	Repaired
07/05/20	Riverside Ave. @ Commercial St. Medford	07/08/20
07/28/20	Harvard Pilgrim Health, Wellesley	07/30/20
08/03/20	#93 Worcester Street, Wellesley	08/05/20
09/03/20	Felton St. @ Water St., Waltham	09/22/20
09/12/20	#56 Forbes Hill Rd., Quincy. Sec-22	09/12/20
09/24/20	Frontage Rd. @ Venner Rd., Arlington	09/25/20

Date Detected	Location of Leaks/Unrepaired
06/08/15	Allandale Rd. @ Grove St., Brookline, Sect 78, located acoustically. Not surfacing. No redundancy.
06/17/15	Washington St. at East St., Dedham; Sect 77, located acoustically. Not surfacing. Need redundant SEH pipeline to enable isolation.
07/01/16	241 Forest St. Winchester, Sect 89, leaking blow off valve. Not surfacing. Need redundant NIH pipeline to enable isolation.
12/04/16	1025 W Roxbury Pkwy, Brookline, Sect 95, located acoustically. Not surfacing. Leaking blow off valve. No redundancy.
12/04/16	710 Ashland St/Summer St. Lynn, Sect 91. Not surfacing. Leaking emergency connection valve between MWRA and LWSC systems. LWSC has difficulty isolating 16" main.
07/20/17	Mystic Valley Parkway, Medford. Not surfacing.
08/27/20	Hyde Park Ave. @ River St., Hyde Park. BWSC is in process of isolating their water main first.
09/02/20	Mt Vernon Ave @ E. Albion St, Somerville. Waiting on repair parts.
09/24/20	#93 Worcester St., Wellesley. Sec-80. <i>*Repaired in October</i>

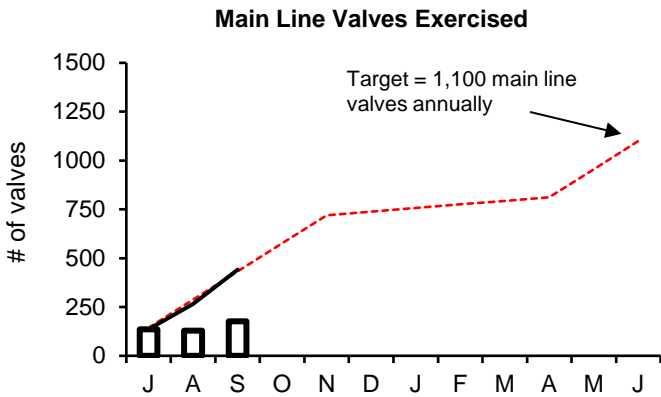
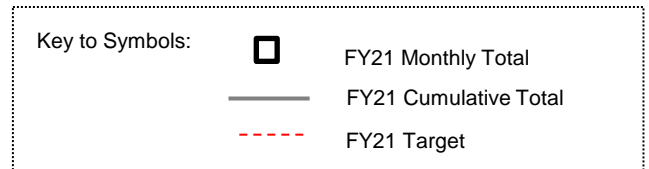
Water Distribution System Valves

1st Quarter - FY21

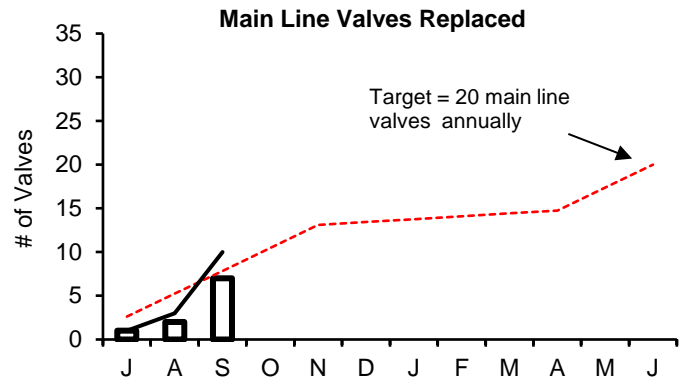
Background

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.

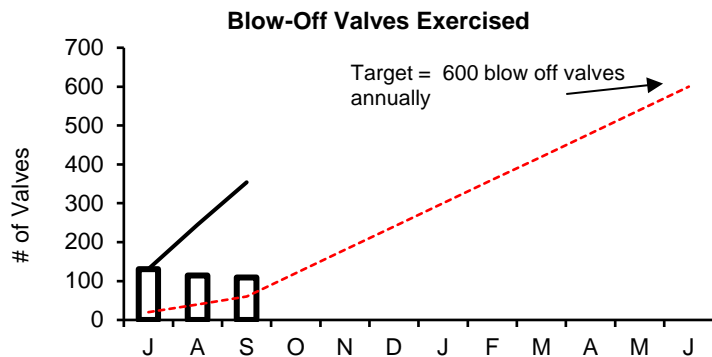
Type of Valve	Inventory #	Operable Percentage	
		FY21 to Date	FY21 Targets
Main Line Valves	2,159	97.4%	95%
Blow-Off Valves	1,317	98.6%	95%
Air Release Valves	1,380	95.0%	95%
Control Valves	49	100.0%	95%



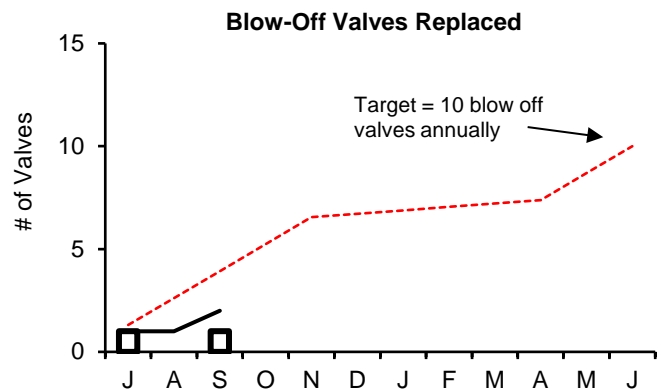
During the 1st Quarter of FY21, 441 main line valves were exercised. The total exercised for the fiscal year to date is 441.



During the 1st Quarter of FY21, there were ten main line valves replaced. The total replaced for the fiscal year to date is ten.



During the first Quarter of FY21, 354 blow off valves were exercised. The total exercised for the fiscal year to date is 354.



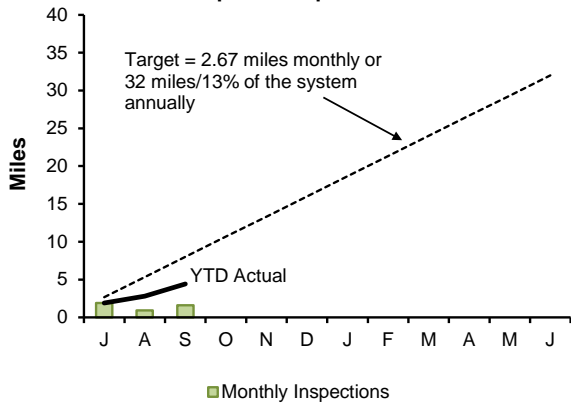
During the first Quarter of FY21, there were two blow off valve replaced. The total replaced for the fiscal year to date is two. Below target due to isolation & permit issues and Covid 19.

Wastewater Pipeline and Structure Inspections and Maintenance

1st Quarter - FY21

Inspections

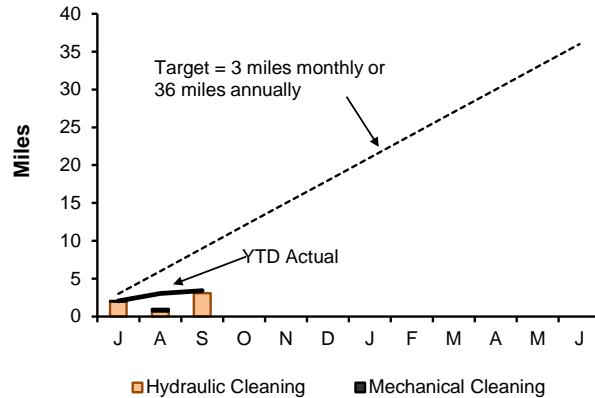
Pipeline Inspections



Staff internally inspected 4.42 miles of MWRA sewer pipe during this quarter. No Community Assistance was provided. Shortcomings for this quarter were a direct results of assisting E&C with inspections, as part of MWRA Siphon Rehabilitation 6224.

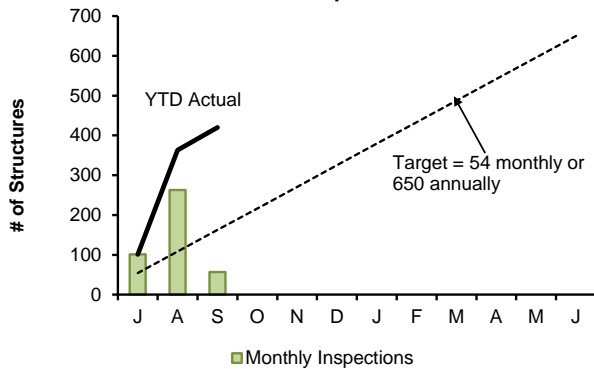
Maintenance

Pipeline Cleaning



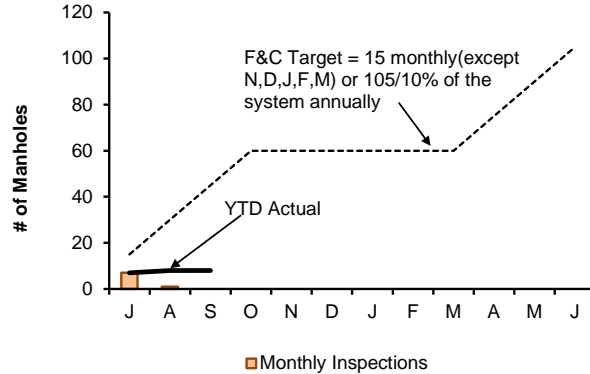
Staff cleaned 3.42 miles of MWRA sewer pipe, and removed 27 yards of grit this quarter. No Community Assistance was provided. Shortcomings for the quarter were a direct results of assisting E&C with inspections, as part of MWRA Siphon Rehabilitation 6224.

Structure Inspections



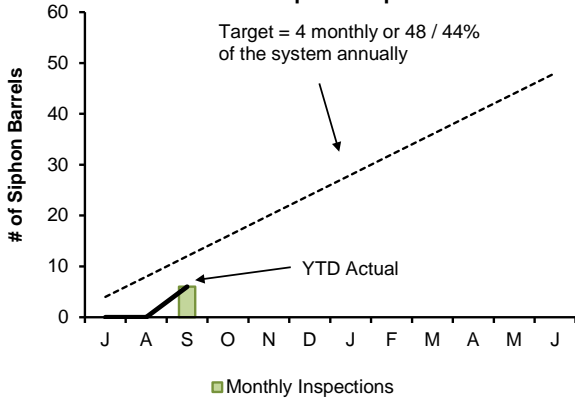
Staff inspected the 36 CSO structures and performed 384 other additional manhole/structure inspections during this quarter. Shortcomings for the quarter were a direct results of assisting E&C with inspections, as part of MWRA Siphon Rehabilitation 6224.

Manhole Rehabilitation



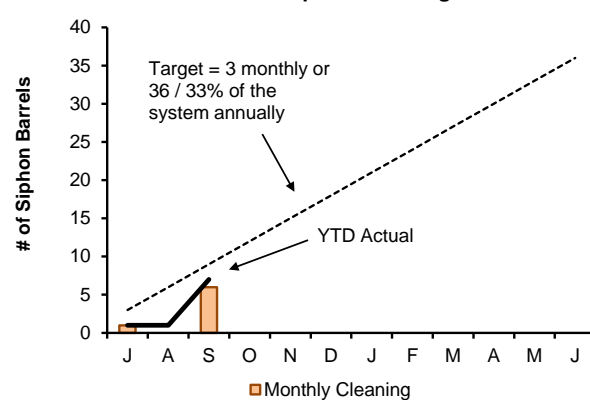
Staff performed 8 frame and cover replacements this quarter. Shortcomings for the quarter were a direct results of assisting E&C with inspections, as part of MWRA Siphon Rehabilitation 6224.

Inverted Siphon Inspections



Staff performed 6 siphon barrel inspections this quarter. Shortcomings for the month were a direct results of assisting E&C with inspections, as part of MWRA Siphon Rehabilitation 6224.

Inverted Siphon Cleaning

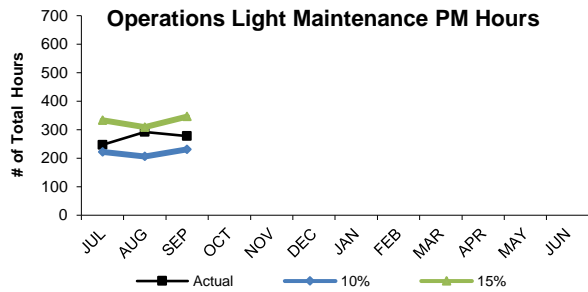


Staff cleaned 7 siphon barrels this quarter. Shortcomings for the quarter were a direct results of assisting E&C with inspections, as part of MWRA Siphon Rehabilitation 6224.

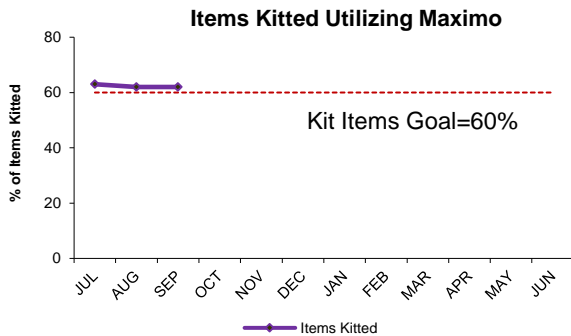
Field Operations' Metropolitan Equipment & Facility Maintenance

1st Quarter - FY21

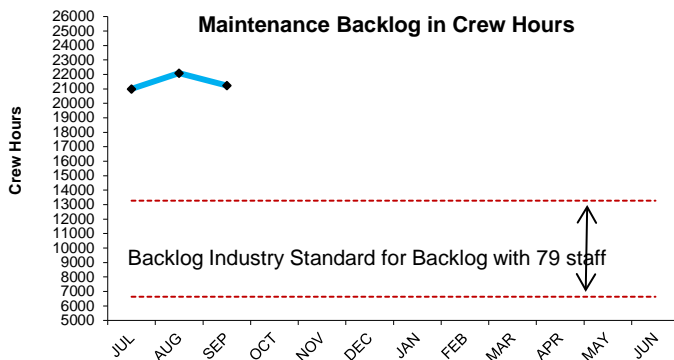
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus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



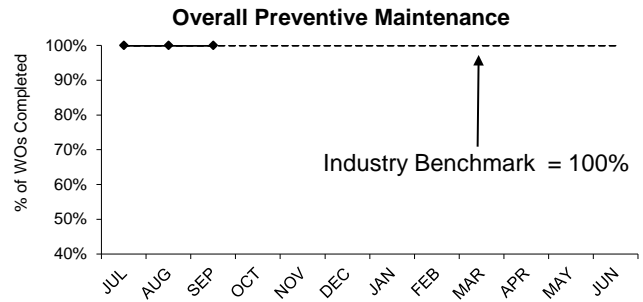
Operations staff averaged 272 hours per month of preventive maintenance during the 1st Quarter, an average of 12% of the total PM hours for the 1st Quarter, which is within the industry benchmark of 10% to 15%.



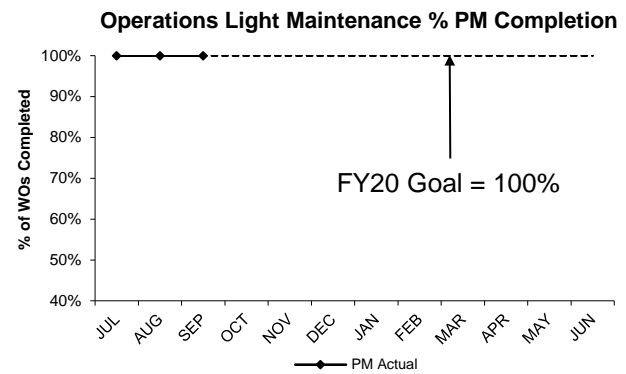
Operations' FY21 maintenance kitting goal has been set at 60% of all work orders to be kitted. Kitting is the staging of parts or material necessary to complete maintenance work. In the 1st Quarter, 62% of all applicable work orders were kitted. This resulted in more wrench time and increased productivity.



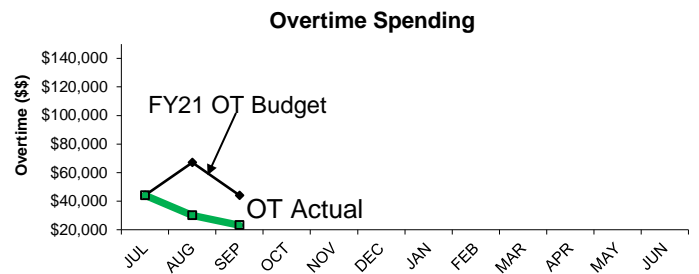
The 1st Quarter backlog average is 21,440 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6,636 to 13,275 hours. The increase is due to reduced staffing levels due to COVID19.



The Field Operations Department (FOD) preventive maintenance goal for FY21 is 100% of all PM work orders. Staff completed 100% of all PM work orders in the 1st Quarter.



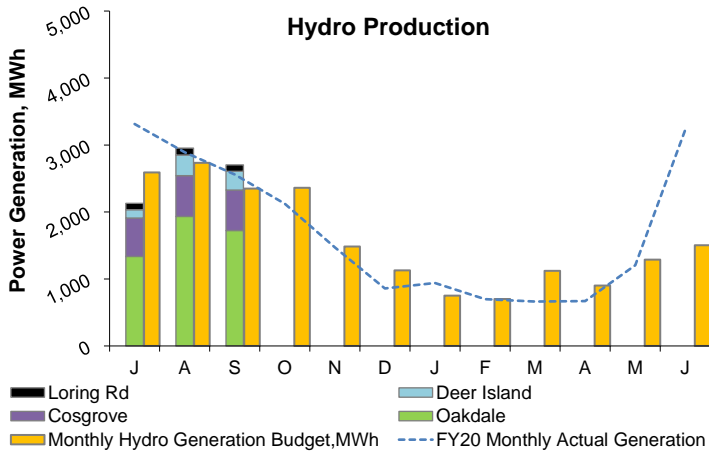
Wastewater Operations complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY21 PM goal is completion of 100% of all PM work orders assigned. Operations completed 100% of PM work orders in the 1st Quarter.



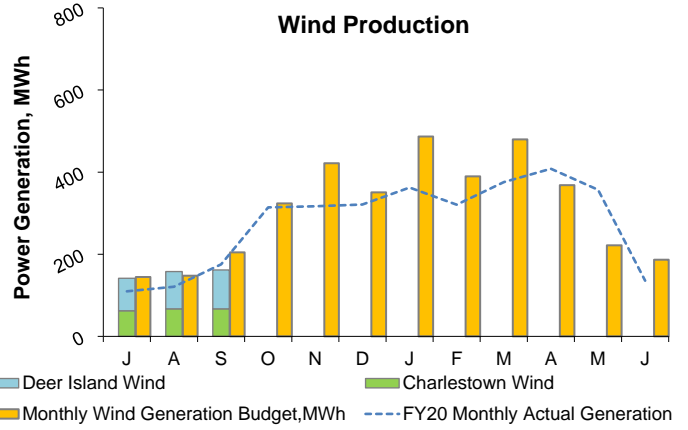
Maintenance overtime was \$19k under budget on average, per month, for the 1st Quarter. Overtime was used for critical maintenance repairs and wet weather events. The overtime budget for FY21 is \$155k and is \$58k under budget for the fiscal year.

Renewable Electricity Generation: Savings and Revenue

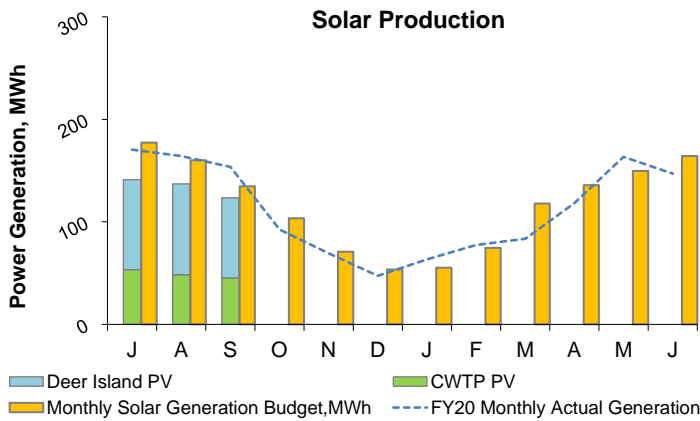
Q1 - FY21



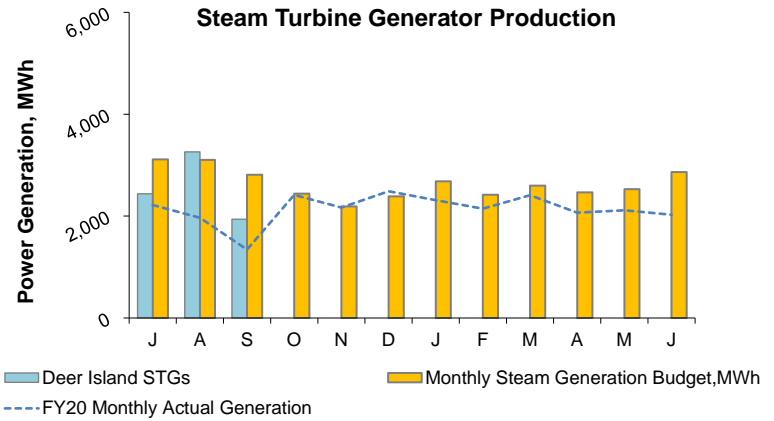
In the first quarter of FY21, the renewable energy produced from all hydro turbines totaled 7895 MWh; 10% above budget³. The total savings and revenue² to date in FY21 (actuals through August¹) is \$174,563; 13% above budget³. The savings and revenue value does not include RPS REC revenue (see next page).



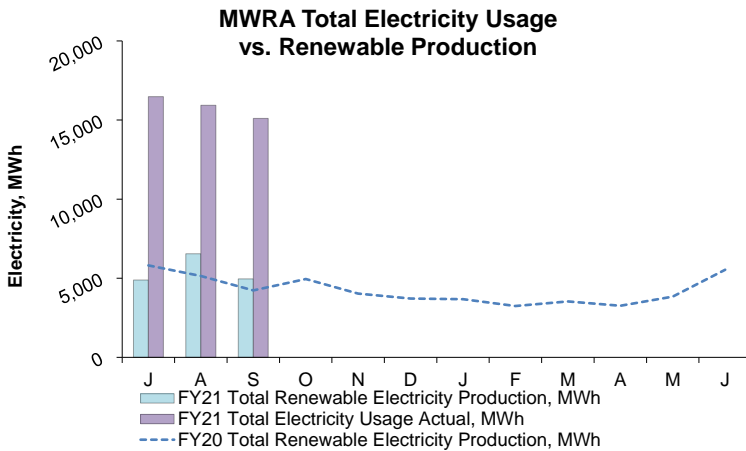
In the first quarter of FY21, the renewable energy produced from all wind turbines totaled 461 MWh; 7% below budget³. The total savings and revenue² to date in FY21 (actuals through August¹) is \$42,233, 6% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



In the first quarter of FY21, the renewable energy produced from all solar PV systems totaled 402 MWh; 15% below budget³. The total savings and revenue² to date in FY21 (actuals through August¹) is \$32,114, 26% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



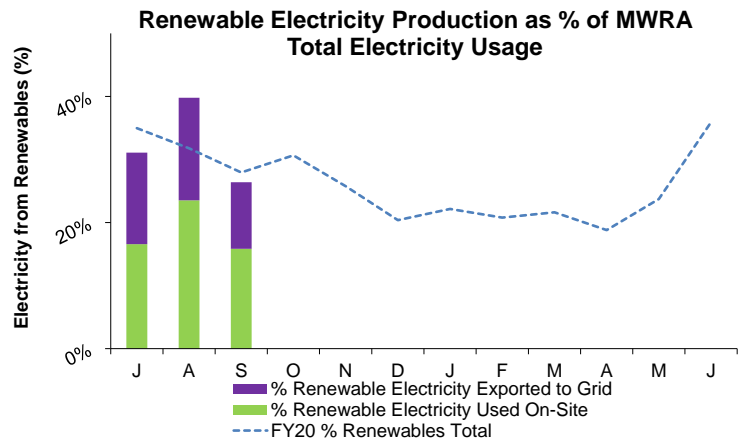
In the first quarter of FY21, the renewable energy produced from all steam turbine generators totaled 7,638 MWh; 15% below budget³. The total savings and revenue² to date in FY21 (actuals through August¹) is \$270,331, 10.2% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



In the first quarter of FY21, MWRA's electricity generation by renewable resources totaled 16,396 MWh. MWRA's total electricity usage was approximately 47,513 MWh. The overall Q1 electricity from renewables was 34.5%.

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.

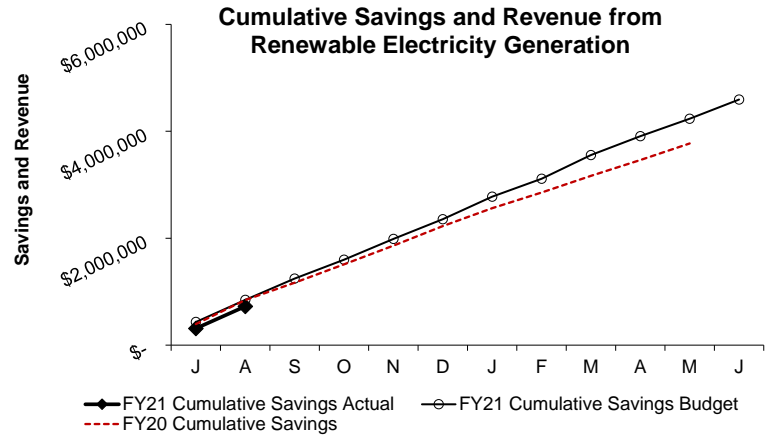
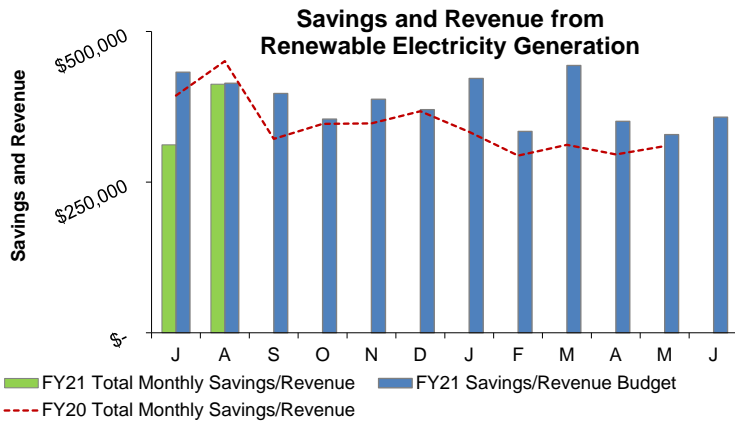
All renewable electricity generated on DI is used on-site (this accounts for more than 50% of MWRA renewable generation). Almost all renewable electricity generated off-DI is exported to the grid.



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

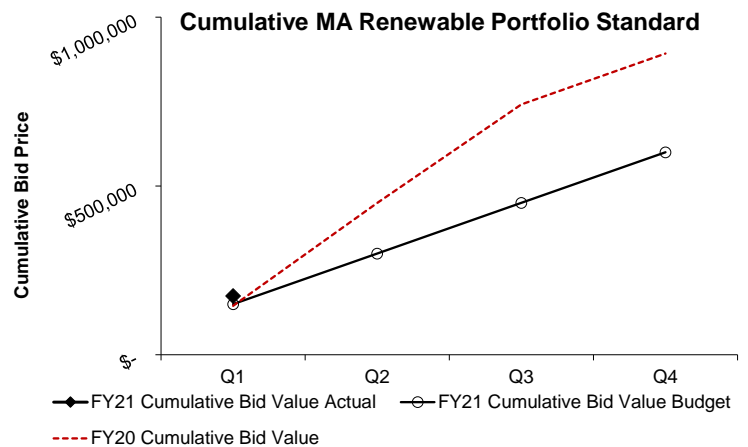
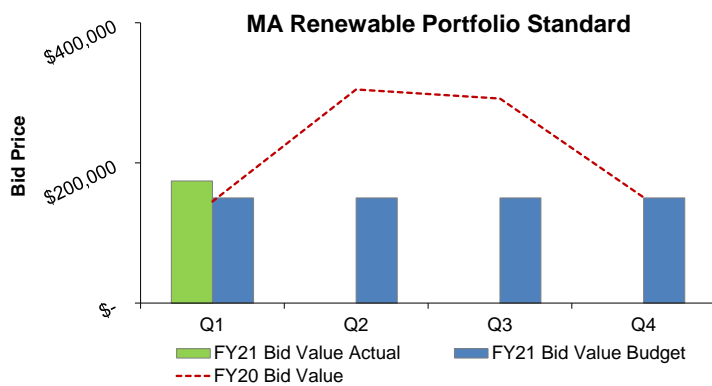
Renewable Electricity Generation: Savings and Revenue

Q1- FY21



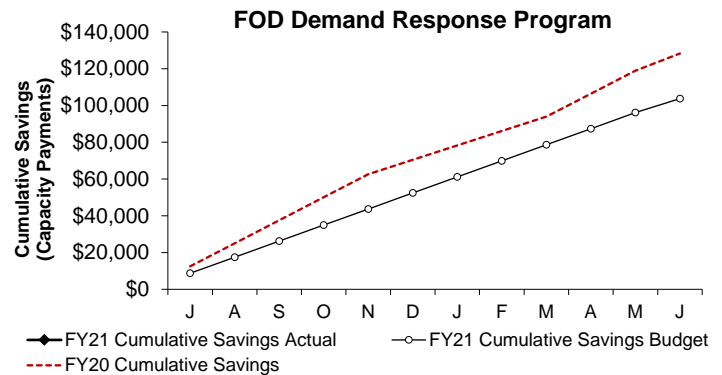
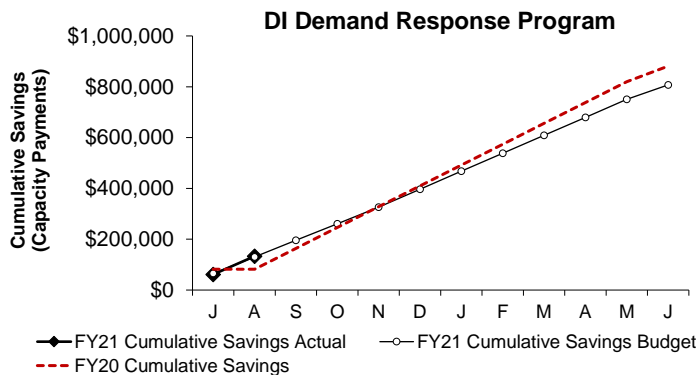
Savings and revenue from MWRA renewable electricity generation in the first two months of FY21 (actuals only through August¹) is \$724,460; which is 14% below the budget³.

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



Bids were awarded during the 1st Quarter¹ from MWRA's renewable energy assets; 4,624 Q1 CY2020 Class I Renewable Energy Certificates (RECs) and 53 Q1 CY2020 Solar RECs were sold for a total value of \$174,206 RPS revenue; which is 16% above budget³ for the Quarter. REC values reflect the bid value on the date that bids are accepted. Cumulative bid values reflects the total value of bids received to date.

*Only Class I and Solar RECs are being reported for Q1 CY2020 sales. Class II RECs have not been sold and are currently reserved for future sale.

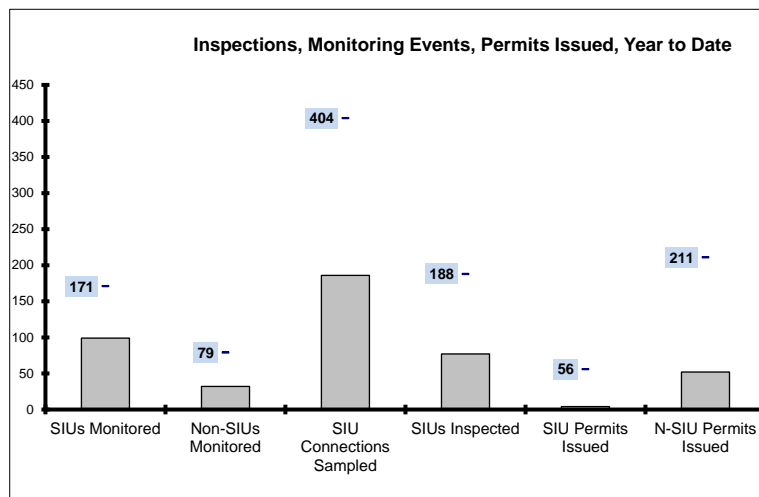


Currently Deer Island, JCWTP, and Loring Rd participate in the ISO-New England Demand Response Programs⁴. By agreeing to reduce demand and operate the facility generators to help reduce the ISO New England grid demand during periods of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates the generators during an ISO-NE called event, MWRA also receives energy payments from ISO-NE. FY21 Cumulative savings (Capacity Payments only) through August¹ total \$133,085 for DI and payments for FOD have not yet been received for this reporting period¹.

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

1st Quarter - FY21



EPA Required SIU Monitoring Events for FY20: 171
YTD: **99**

Required Non-SIU Monitoring Events for FY20: 79
YTD: **32**

SIU Connections to be Sampled For FY20: 404
YTD: **186**

EPA Required SIU Inspections for FY20: 188
YTD: **77**

SIU Permits due to Expire In FY20: 56
YTD: **4**

Non-SIU Permits due to Expire for FY20: 211
YTD: **52**

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; 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. Monitoring of SIUs and Non-SIUs is dynamic for several reasons, including: newly permitted facilities; sample site changes within the year requiring a permit change; non-discharging industries; a partial sample event is counted as an event even though not enough sample was taken due to the discharge rate at the time; and, increased inspections leading to permit category changes requiring additional monitoring events.

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.

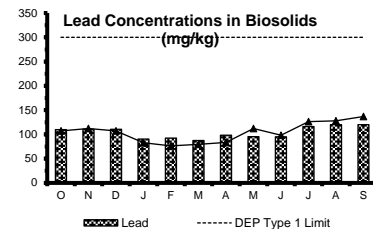
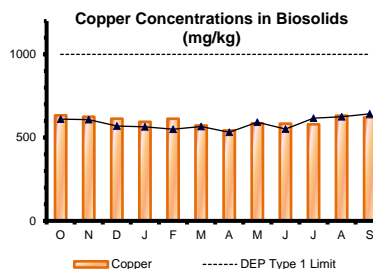
	Number of Days to Issue a Permit						Permits Issued	
	0 to 120		121 to 180		181 or more		SIU	Non-SIU
Jul	1	4	0	4	0	3	1	11
Aug	2	15	0	1	0	1	2	17
Sep	1	20	0	3	0	1	1	24
Oct							0	0
Nov							0	0
Dec							0	0
Jan							0	0
Feb							0	0
Mar							0	0
Apr							0	0
May							0	0
Jun							0	0

% YTD	100%	75%	0%	15%	0%	10%	4	52
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EPA requires MWRA to issue or renew 90 percent 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 percent of SIU permits to be issued within 180 days.

In the 1st quarter of FY21, 56 permits were issued, 4 of which were SIUs. All of the SIU permits were issued within the 120-day timeframe. Thirteen of the non-SIU permits were issued after the 120-day timeframe with five of them issued after the 180-day timeframe. Those 13 included hotel operations, new start-ups, septage hauling and construction dewatering - industries with operations that were most impacted by the COVID-19 pandemic. Late payment of the relevant permit charges was the primary reason for some of these late issuances.

For the Clinton Sewer Service area, no SIU permit was issued in this quarter - the first in this fiscal year.



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.

Overall, copper and lead levels remain relatively constant, below the DEP Type 1 Limit, and within the range of values over the past several years.

A discussion of molybdenum concentrations in biosolids is included in the Deer Island Residuals Pellet

Field Operations Highlights

1st Quarter – FY21

Due to COVID-19 restrictions Operations staff maintained physical and social distance from each other throughout the first quarter. Staff has been given PPE including masks (N95 and cloth masks) and facilities and vehicles have been equipped with gloves and cleaning supplies.

Western Water Operations and Maintenance

- Carroll Water Treatment: Staff operated emergency generators for load shedding, vibration testing, and (at the request of ISO New England) for reduced power consumption. Staff worked with Calgon to install modified gas pressure UV lamps in the primary bank of lamps in each reactor.
- Staff began installation of lead pipe test coupons into the test stands.
- Aquatic Invasive Plants Control: Survey and removal efforts were completed or underway at Wachusett Reservoir, Sudbury Reservoir, Chestnut Hill and the Ware River/Shaft 8. Staff continued with weekly cyanobacteria monitoring at emergency reservoirs.
- Staff participated in State Drought Management Task Force meetings, and provided reservoir status reports.

Metro Water Operations and Maintenance

- Valve Program: Valve operations to support in-house work included providing isolations for valve installations on Sections 8, 37 and 48, and isolations to support two blow-off retrofits. Staff isolated, drained and refilled the Turkey Hill Storage Tank to improve water quality. Support of CIP work included isolations on the suction side of the East Pumping Station and portions of WASM 5 & 6 for the Commonwealth Avenue Pump Station contractor to tie in the new Section 113. Staff flushed segments of the new Section 111. Work to support communities included activation of Meter 145 to support Cambridge's test of the connection and disinfecting Marblehead's storage tank.
- Water Pipeline Program: Staff completed the replacement of ten mainline valves and two blow-off retrofit projects during the quarter. Six leaks were identified and repaired during the quarter. Leak detection was performed on over 48 miles of MWRA water main and assistance was provided to eight customer communities. Additional work included repairing an eroded area on Dam #8 at the High Fells open reservoir in Stoneham.

Operations Engineering

- Due to Covid-19 staffing restrictions there was a decrease

in field activity support during the quarter. Technical support continued for design projects and active construction projects.

- Staff continued to provide technical support for Design and Construction Contracts including; SEH Section 111, Comm. Ave Pump Station, Chestnut Hill Emergency Pump. Station Upgrades, Sections 50/57, Braintree Weymouth Pump Station, Chelsea Creek Headworks, Nut Island Odor Control Improvements, NEH improvements, WASM3, Sections 21/22, and Section 89
- Staff continued providing management and coordinating with Arcadis to support design efforts on the Carroll Water Treatment Plant System Upgrades PLC.

Wastewater Operations & Maintenance

- CoVid-19: Wastewater Operations OCC staff rotate weekly and direct report to various wastewater facilities (Hayes PS, Quincy PS, and Prison Point CSO) in order to maintain social distancing. The limited staff in the OCC do a complete wipe down of phones, radios and touchable surfaces after every shift and also keep a log.
- Remote Headworks Upgrades: Staff continued to work with Engineering & Construction staff and the contractor on the Remote Headworks Upgrades Project Channels 1, 2 and 3 are now in service. Channel #4 has been turned over to the contractor for rehabilitation. The temporary chain for Channel 2 was put in service on 6/17/20 but will be used for emergencies only.
- CSO Metering and Public Notification Planning: Operations staff, along with various departments, remotely attended a virtual public notification meeting on July 14, where volume reporting, the use of the service Everbridge, data collection and more was discussed

Metering

- Metering staff continues to meet to support the ad-hoc CSO public notifications team. The CSO monitoring database for non-revenue meters went live in August to power the CSO Notification tool.
- The Wastewater Meter Upgrade Project was put out to bid in the 1st quarter of FY21 and was awarded to ADS Environmental Services at the October Board meeting. Meter installation should begin in early 2021 and be completed by the end of the year.
- The shutdown of Verizon's 3G network is scheduled for January 1, 2021. As of October 1, 2020, 387 of 400

Field Operations Highlights

1st Quarter – FY21

total sites have been moved over to the Verizon 4G network. Maintenance crews are addressing the remaining sites.

Toxics Reduction and Control

58 Notices of Violation, two Letters of Extension and one Ruling on Request for Reconsideration.

- During the first quarter of FY21, TRAC staff issued a total of 68 MWRA 8(m) Permits allowing companies to work within an easement or other property interest held by the Authority. The total number includes 39 permits issued for work within water infrastructure easements and 29 permits issued for work within sewer infrastructure easements. Permits issued this quarter were issued in an average of 79 days from the date the application for 8(m) permit was received by the MWRA.

Environmental Quality-Water

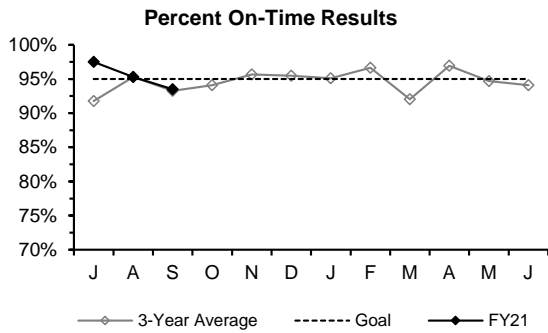
- Sampling staff continued UCMR4 cyanotoxin monitoring at 28 fully served, entry-point locations across the service area. Community sampling will continue through November.
- MWRA's algae monitoring season continued. DCR collected samples at Basin North and MWRA collected samples at Cosgrove Intake. Additionally, DCR collected samples weekly at Quabbin Reservoir. Levels of nuisance algae remained low at both reservoirs.
- Sampling staff worked with the standby reservoir inspection and sampling contractor during July. Cyanobacteria visual monitoring continued this quarter at all standby and active reservoir locations. Staff continued to use the web-based ESRI application to report field inspection results.
- Sampling staff performed algal toxin and taste and odor compound sampling at Cosgrove Intake Reservoir; Wachusett and Quabbin raw water inlet taps; and treated water taps at CWTP and Ludlow Monitoring Station. Algal toxin results were non-detect during the quarter.
- Staff continue to monitor disinfection byproduct levels within the CVA system. During Q3, there were no exceedances for any disinfection byproduct components at any of the CVA communities.
- Throughout the quarter, staff notified communities with low chlorine residuals, and provided guidance to Winthrop and Reading on coliform detections. Provided assistance to Marblehead to drain, disinfect, refill and test their Burkes Hill standpipe to improve water quality.

- In July and August, staff presented at MWRA's Community Emergency Response Planning Training on building flushing after lengthy shutdowns due to COVID19 and proper coliform sampling technique. Provided a virtual presentation to the Chelsea sampling staff on proper coliform sampling technique and chlorine residual measurement.
- Staff continued weekly updates on bulk chemical supply conditions. All bulk water and wastewater chemical inventories continue to be at acceptable levels and vendors are not experiencing any issues with manufacture, distribution or transport.

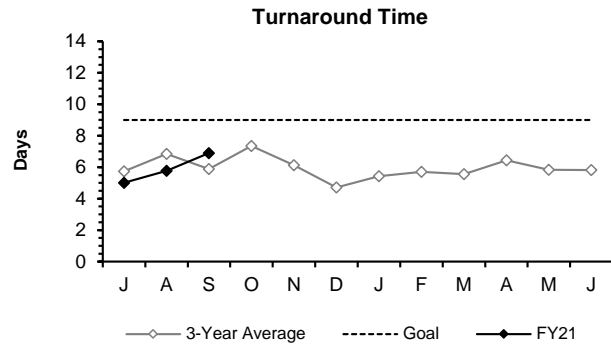
Environmental Quality-Wastewater

- Harbor/CSO Receiving Water Monitoring: Seasonal CSO Receiving Water monitoring in variance waters continues, at a reduced level of effort due to COVID-19 safety restrictions. Biweekly harbor wide monitoring continues. Annual water quality report for the Charles and Mystic Rivers required by the CSO variances submitted to EPA and DEP on July 15.
- Staff began sending out notifications shortly after MWRA CSO discharges, updating the revised website with times, and with post-storm volume estimates for most discharges. Staff briefed senior management on issues that may arise in a new DITP permit.
- Staff submitted comments on the draft NPDES permits for Hampton/Rye NH, and for Marlborough (the Carroll Water Treatment Plant is a significant industrial user of the Marlborough system.) Staff briefed senior management on issues that may arise in a new DITP permit.
- Staff continued work on the receiving water quality analysis portion of the CSO Post-Construction Monitoring & Performance Assessment project. Provided detailed review of draft receiving water model calibration report and submitted it the MassDEP and EPA. Participated in coordination meetings with Cambridge, Somerville, and BWSC.
- Beach testing results from DCR's monitoring of Boston Harbor beaches were posted daily on MWRA's web site throughout the summer swimming season. Staff provided an analysis of the summer's beach postings Save the Harbor/Save the Bay.

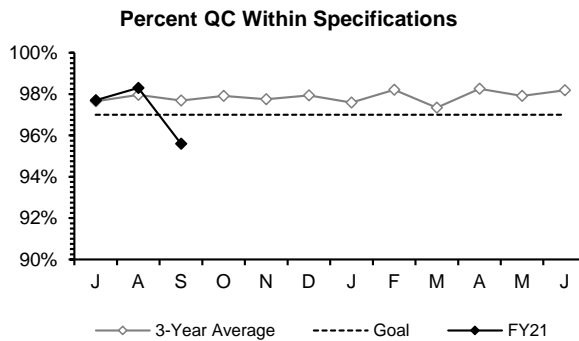
Laboratory Services 1st Quarter - FY21



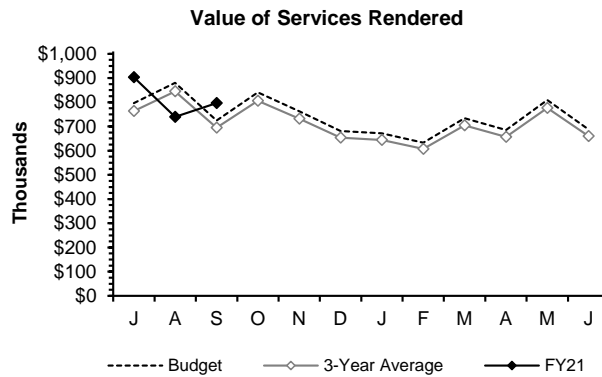
The Percent On-Time measurement met the 95% goal YTD.



Turnaround Time met the 9-day goal.



Percent of QC tests meeting specifications was below the 97% in-house goal due to a training error.



Value of Services Rendered met the annual budget projection YTD.

Highlights:

Performance: Met Turnaround Time, Percent on time and Value of Services Rendered indicators for the quarter. at reduced staffing level. Percent QC within Specification fell below the target in one month due to a training error that impacted a large number of QC results, but did not impact any client sample results.

School Lead Program: During the 1st quarter of FY21, MWRA's lab completed 214 tests from 34 schools and childcare facilities in 15 communities. Since 2016, MWRA's Laboratory has conducted over 38,000 tests from 503 schools and daycares in 44 communities.

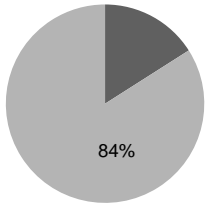
COVID-19 Testing: The wastewater pilot project continued throughout the 1st quarter. Sample results are posted on MWRA.com as they are received.

CONSTRUCTION PROGRAMS

Projects In Construction

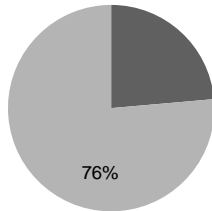
1st Quarter – FY21

Money



- Amount Remaining
- Billed to Date

Time



- Days Remaining
- Days Expended

Southern Extra High Pipeline Section 111

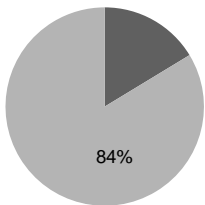
Project Summary: This project consists of 6,800 linear feet of 36-inch water main in Dedham and Westwood and includes pipe jackings at the Dedham Corporate MBTA Station and at the MassDOT Route 95 East Street Rotary.

Contract Amount: \$17,375,000 *Contract Duration:* 1,025 Days

Notice to Proceed: 10-Aug-2018 *Contract Completion:* 31-May-2021

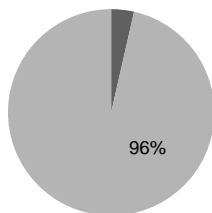
Status and Issues: As of September, Crew 1 excavated, cut and capped a line to isolate for leak detection of a 36" DI pipe and installed a 36" mechanical joint solid sleeves to reattach 36" DI pipe. Crew 2 completed slope restoration by loaming & installing erosion control mats on Northbound and Southbound Sides of I-95. Also, they repaired the granite curb at the East Street Rotary.

Money



- Amount Remaining
- Billed to Date

Time



- Days Remaining
- Days Expended

Chelsea Creek Headworks Upgrade

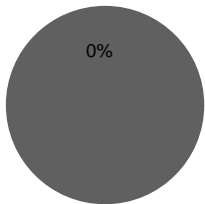
Project Summary: This project involves a major upgrade to the entire facility including: automation of screening collection & solids conveyance, replacement of the odor control, HVAC and electrical systems.

Contract Amount: \$72,859,000 *Contract Duration:* 1,460 Days

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

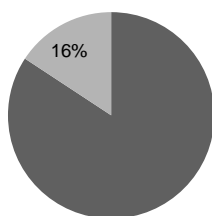
Status and Issues: As of September, the Contractor placed concrete for the Channel 4 influent sluice gate thimble, submarine door closure and perimeter curb section on the upper roof and the south entrance security gate pedestals and light pole foundation. In addition, they worked on power and control systems for the Channel 4 influent and effluent sluice gates.

Money



- Amount Remaining
- Billed to Date

Time



- Days Remaining
- Days Expended

Dorchester Interceptor Sewer

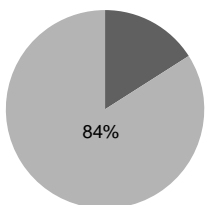
Project Summary: MWRA's Dorchester Interceptor conveys flows to MWRA's Columbus Park Connection and Headworks in South Boston

Contract Amount: \$4,707,485 *Contract Duration:* 540 Days

Notice to Proceed: 6-Jul-2020 *Contract Completion:* 28-Dec-2021

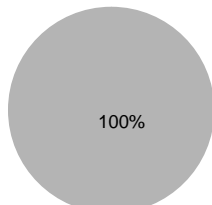
Status and Issues: As of September, the Contractor began cleaning and vactoring the line from Central Avenue through the Baker Condominiums. They also TV inspected the line from sta. 193+71 to sta. 172+90 (Adams Street).

Money



- Amount Remaining
- Billed to Date

Time



- Days Remaining
- Days Expended

Commonwealth Ave Pump Station Improvements

Project Summary: This project will provide a new connection to the station from two low service pipelines in Commonwealth Avenue and add low service pumps so that the City of Newton can be supplied in the event of a City Tunnel failure.

Contract Amount: \$6,879,500 *Contract Duration:* 760 Days

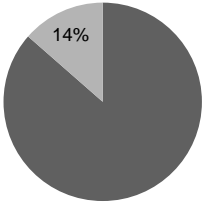
Notice to Proceed: 28-Feb-2019 *Contract Completion:* 30-Sep-2020

Status and Issues: As of September, the Contractor excavated and demolished existing piping and installed pipe, tee and restrained couplings for the Shaft 6 replacement and tie-in with Vault D piping. They also excavated asphalt and topsoil from the median/Carriage Rd. for WASM 2 pipe replacement and tie-in.

Projects In Construction

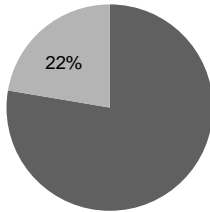
1st Quarter – FY21

Money



- Amount Remaining
- Billed to Date

Time



- Days Remaining
- Days Expended

Nut Island Odor Control and HVAC

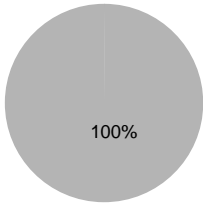
Project Summary: This project will provide upgrades to the odor control system, heating, ventilation and air conditioning system and other equipment.

Contract Amount: \$57,565,399 **Contract Duration:** 1,034 Days

Notice to Proceed: 12-Feb-2020 **Contract Completion:** 12-Dec-2022

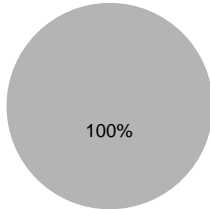
Status and Issues: As of September, the Contractor met with the Quincy Fire Department to review the overall project scope and specific fire protection system work and construction sequence. They also excavated test pits to locate the existing fire protection pipe at new UST excavation.

Money



- Amount Remaining
- Billed to Date

Time



- Days Remaining
- Days Expended

Capital Improvements at the Biosolids Facility

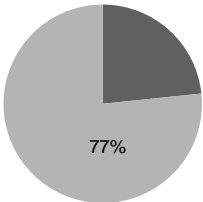
Project Summary: This project involves the replacement of nine mechanical conveyors and ancillary equipment, as well as three sludge processing rotary dryer drums.

Contract Amount: \$8,800,303 **Contract Duration:** 500 Days

Notice to Proceed: 9-Apr-19 **Contract Completion:** 21-Aug-20

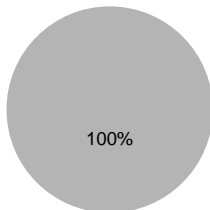
Status and Issues: As of September the contract was declared substantially complete.

Money



- Amount Remaining
- Billed to Date

Time



- Days Remaining
- Days Expended

Winthrop Terminal VFD and Motor

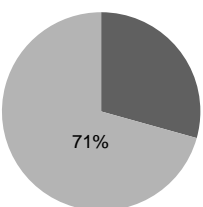
Project Summary: This project involves the replacement of 6, 600-HP motors, VFDs and associated electrical components in the Winthrop Terminal Facility.

Contract Amount: \$11,950,754 **Contract Duration:** 1,549 Days

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

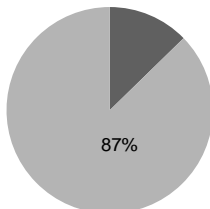
Status and Issues: As of September, the VFD/Motor No 3 installation is on-going. The contract is behind schedule.

Money



- Amount Remaining
- Billed to Date

Time



- Days Remaining
- Days Expended

Gravity Thickener Rehabilitation

Project Summary: This project involves the upgrade of all six gravity thickeners, including the complete replacement of each tank's sludge and scum thickening equipment and 5 of the 6 FRP dome covers.

Contract Amount: \$19,762,165.49 **Contract Duration:** 1,000 Days

Notice to Proceed: 11-May-2018 **Contract Completion:** 4-Feb-2021

Status and Issues: As of September, the Contractor installed the new pedestals and weir walls for GT-6. They began installation of the new mechanism and completed the enclosure for sandblasting GT-6 after which they began sandblasting work.

CSO CONTROL PROGRAM

1st Quarter – FY21

All 35 projects in the CSO Long-Term Control Plan (LTCP) were complete as of December 2015 in compliance with milestones in the Federal District Court Order. MWRA is conducting a multi-year CSO post-construction monitoring program and performance assessment that will culminate in a report to EPA and DEP in December 2021 verifying whether the court-ordered LTCP levels of CSO control are attained. Of the \$912.5 million budget in the FY21 CIP for the CSO Control Program, approximately \$7.1 million remain to be spent.

Project/Item	Status as of September 30, 2020
<p>BWSC Dorchester Interceptor Inflow Removal</p>	<p>The CSO MOU/FAA with BWSC included \$5.4 million for additional inflow removal from BWSC's Dorchester Interceptor system as part of the South Dorchester Bay Sewer Separation project, of which MWRA transferred \$1.7 million to the BWSC CSO account and \$1.6 million of that was withdrawn by BWSC to fund related design and construction work. On May 17, 2017, MWRA's Board of Directors authorized removing the remaining \$3.76 million from the MOU/FAA (which ended on June 30, 2017) and including this funding amount in a separate, 4-year financial assistance agreement with BWSC effective July 1, 2017. The new agreement limits MWRA financial assistance to reimbursement of the eligible costs of BWSC construction work reviewed and approved by MWRA, up to \$3.76 million.</p> <p>BWSC submitted construction plans and a related cost estimate and estimated I/I removal quantity to MWRA on May 27, 2020. MWRA sent a letter to BWSC on July 21, 2020, approving the eligibility of the construction contract. BWSC awarded the contract to National Water Main in the amount of \$1,581,387. BWSC continues to evaluate additional I/I removal work it may pursue within the term of the agreement. The agreement is in effect through June 30, 2021.</p>
<p>City of Cambridge Memorandum of Understanding and Financial Assistance Agreement</p>	<p>The City of Cambridge attained substantial completion of its last project, CAM004 Sewer Separation, in December 2015 in compliance with Schedule Seven, and attained substantial completion of related surface restoration work by the end of 2017. MWRA made a final transfer of funds to the Cambridge CSO account in December 2017, in the amount of \$1,254,551, to cover eligible costs through June 30, 2018, when the 22 year-old, \$100.2 million MOU/FAA ended.</p> <p>Cambridge continues to support ongoing MWRA review of the construction contracts Cambridge managed under the CSO MOU and Financial Assistance Agreement. Staff expect to complete the review and issue a final eligibility certification by December 31, 2020.</p>
<p>City of Somerville Financial Assistance Agreement</p>	<p>By this agreement, MWRA will provide up to \$1.4 million for Somerville's repair of its combined sewer trunk line upstream of the Somerville Marginal CSO Facility. Pursuant to the agreement, the repair work is intended to maintain the full in-system storage capacity of the trunk sewer to support CSO control. Somerville is in design and expects to award the construction contract in 2021.</p>
<p>MWRA CSO Performance Assessment – Contract 7572</p>	<p>MWRA issued the Notice to Proceed with the contract for CSO Post-Construction Monitoring and Performance Assessment to AECOM Technical Services, Inc., in November 2017. The contract includes CSO inspections, overflow metering, hydraulic modeling, system performance assessments and water quality impact assessments, culminating in the submission of a report to EPA and DEP in December 2021 verifying whether the court-ordered levels of CSO control are attained. Amendment 2 was executed on May 13, 2020, in the amount of \$1,431,700, bringing the total contract not-to-exceed amount to \$5,284,405.</p> <p>On August 30, 2019, DEP issued five-year CSO variances to water quality standards for the Lower Charles River/Charles Basin and the Alewife Brook/Upper Mystic River effective through August 31, 2024. The variance conditions include receiving water quality modeling and CSO and stormwater sampling; the evaluation of additional CSO controls; other requirements intended to minimize CSO discharges, their impacts and public health risk; and preparation of updated CSO control plans for these waters.</p> <ul style="list-style-type: none"> • AECOM updated the hydraulic model to mid-2020 system conditions and continued to utilize CSO meter data to quantify CSO discharges and compare them to model predicted discharges for storms in the period Jan 1 - Jun 30, 2020, which will be reported in Semiannual Progress Report No. 5 on October 30, 2020. • AECOM substantially completed the development and calibration of receiving water quality models for the Charles River Basin and the Alewife Brook/Upper Mystic River and issued a draft report for review by MWRA, EPA, DEP, Cambridge and Somerville. • AECOM is making progress with Amendment 2 work that includes CSO variance required project evaluations and other site-specific investigations to mitigate CSO discharges at locations where long-term levels of control are not yet attained. At some discharge locations, the CSO communities and/or MWRA are pursuing specific CSO reduction measures identified from these evaluations. In these efforts, MWRA is maintaining close coordination with the CSO communities. • In compliance with the CSO variances for the Charles River Basin and the Alewife Brook/Upper Mystic River, MWRA has implemented a subscriber-based system to notify the public of CSO discharges at its permitted outfalls within four hours of the start of discharge at each location, using meter readings. Cambridge and Somerville, also parties to the variances, are developing notification systems for their own outfalls.

CIP Expenditures

1st Quarter – FY21

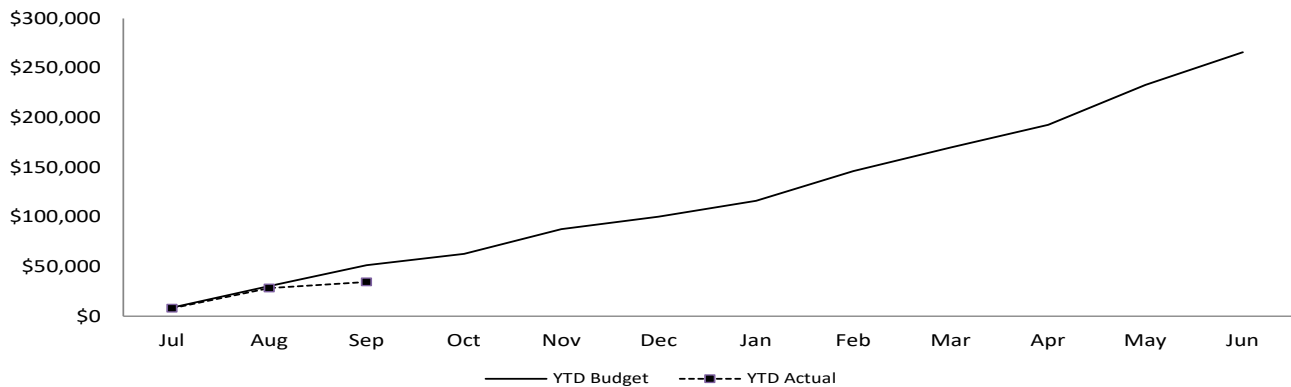
FY21 Capital Improvement Program Expenditure Variances through September by Program (\$ in thousands)				
Program	FY21 Budget Through September	FY21 Actual Through September	Variance Amount	Variance Percent
Wastewater	25,904	19,638	(6,266)	-24%
Waterworks	22,966	13,905	(9,061)	-39%
Business and Operations Support	2,464	931	(1,532)	-62%
Total	\$51,334	\$34,474	(\$16,859)	-33%

Project underspending within Wastewater was due to delay in start of Channel 4 work for the Chelsea Creek Headworks Upgrades Construction, timing of community repayments due to less than anticipated communities deferring their loan repayments, delays in equipment delivery for the Nut Island Odor Control & HVAC Construction, updated schedule for the Dorchester I/I Removal work, work anticipated in FY21 that was completed in FY20 for the Pellet Plant Pipe Relocation contract, delay in commencement of work for the Dorchester Interceptor Sewer, and contractor behind schedule for the Gravity Thickener Rehabilitation contract.. This underspending was partially offset by timing of work for the DI Gravity Thickener and Overflow Pipe, and contractor progress for the Gas Protection System Replacement Phase 1 contract. Project underspending in Waterworks was due to timing of community repayments due to less than anticipated communities deferring their loan repayments, delay in award for CP-1 Shafts 6, 8, and 9A contract, and timing of consultant work for the Tunnel Preliminary Design & MEPA Review, This underspending was partially offset by contractor progress for SEH Section 111 Construction 2 and 3, Commonwealth Avenue Pumping Station Rehab, and work anticipated in FY20 that was completed in FY21 for the Cosgrove Intake Roof Repair..

Budget vs. Actual CIP Expenditures

(\$ in thousands)

Total FY21 CIP Budget of \$265,774



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 as of 9/26/20	\$313.3 million
Unused capacity under the debt cap:	\$1.59 billion
Estimated date for exhausting construction fund without new borrowing:	Aug-21
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 / Revolving Loan	\$350 million
Budgeted FY21 Cash Flow Expectancy*:	\$203 million

* Cash based spending is discounted for construction retainage.

DRINKING WATER QUALITY AND SUPPLY

Source Water – Microbial Results and UV Absorbance

1st Quarter – FY21

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 raw water tap before being treated and entering the CVA system.

All samples collected during the FY21 Quarter were below 20 cfu/100ml. **For the current six-month period, 0.0% of the samples have exceeded a count of 20 cfu/100mL.**

Sample Site: Wachusett Reservoir

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

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

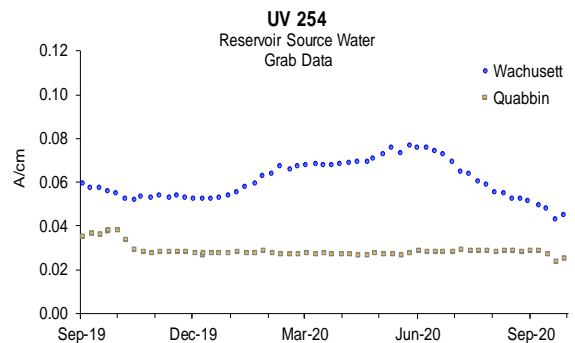
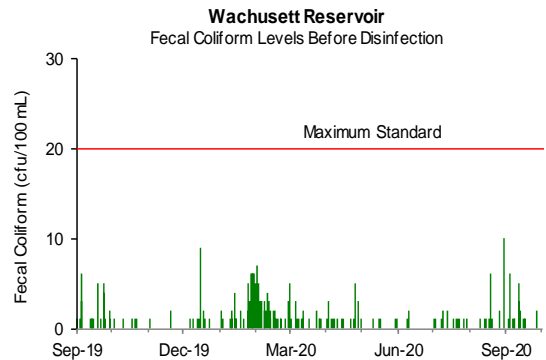
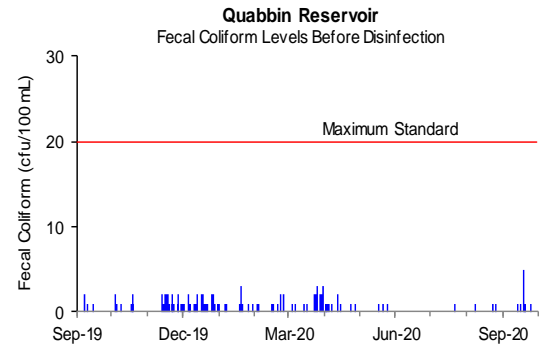
All samples collected during the 1st Quarter were below 20 cfu/100ml. **For the current six-month period, 0.0% of the samples exceeded a count of 20 cfu/100mL.**

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 averaged 0.27 A/cm for the quarter.

Wachusett Reservoir UV-254 levels averaged 0.53 A/cm for the quarter.



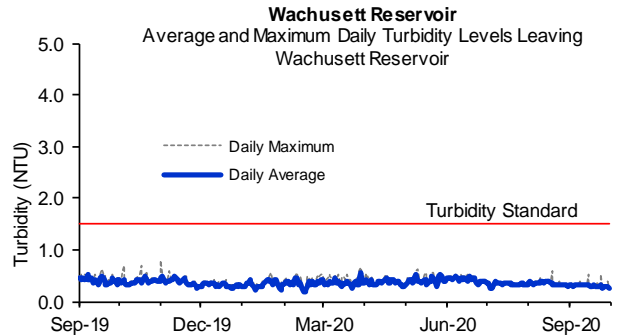
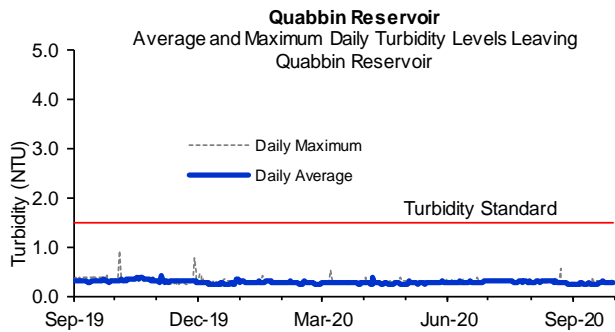
Source Water – Turbidity

1st Quarter – FY21

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 five NTU (Nephelometric Turbidity Units), and water only can be above one 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.

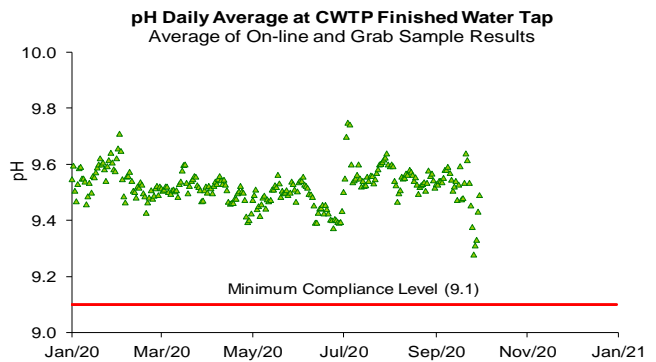
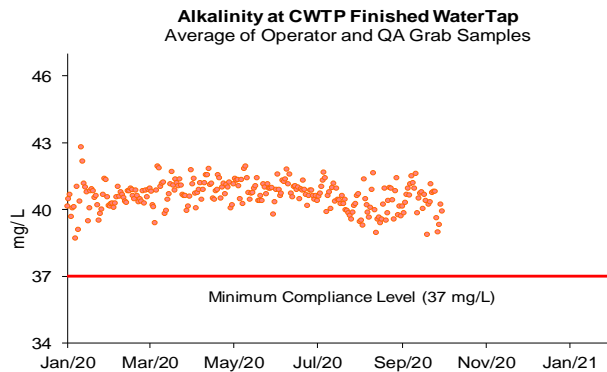


Treated Water – pH and Alkalinity Compliance

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.

Second quarter distribution system samples were collected over a course of three weeks. Distribution system sample pH ranged from 9.2 to 9.6 and alkalinity ranged from 39 to 42 mg/L. No sample results were below DEP limits for this quarter.



Treated Water – Disinfection Effectiveness

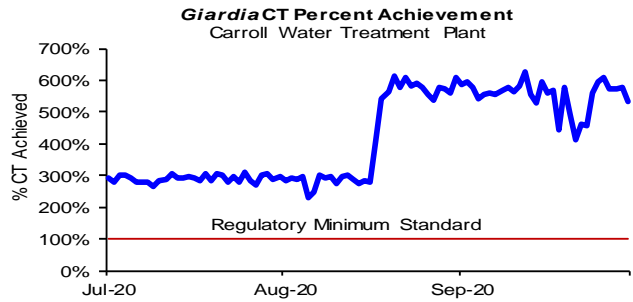
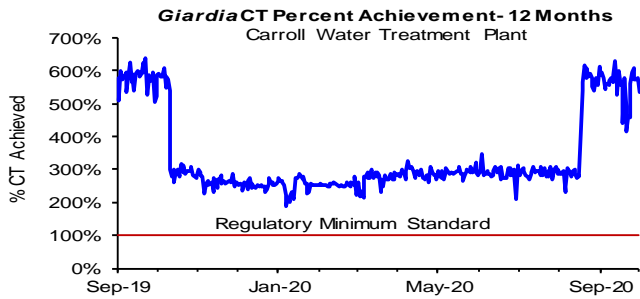
1st Quarter – FY21

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

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

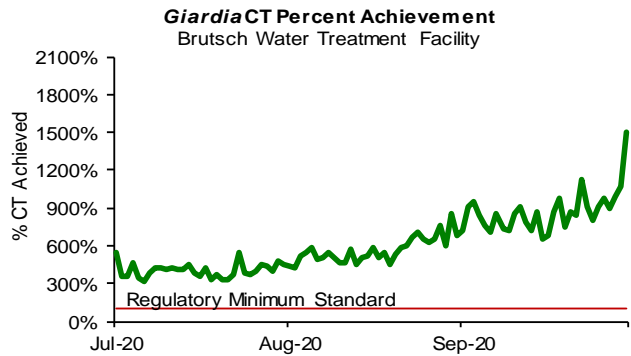
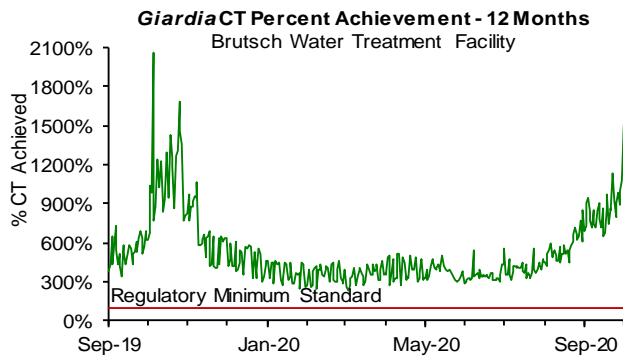
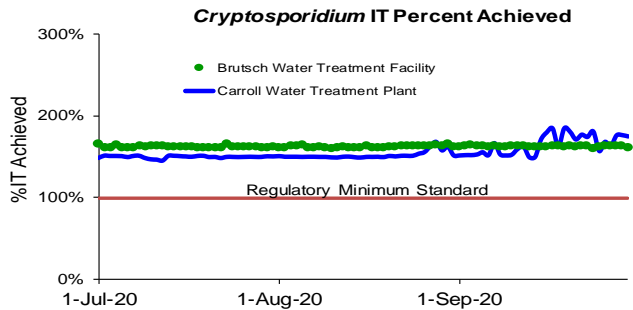
Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 1.8 to 2.4 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%.
- The ozone dose was proactively increased from early September 2019 to mid October 2019 in response to a *Chryso-sphaerella* algae bloom. This is visible in the top left graph.
- The ozone dose was proactively raised mid-August 2020 in response to elevated reservoir total coliform levels. This is visible in the top left graph.



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

- The chlorine dose at BWTF is adjusted in order to achieve MWRA's seasonal target of 0.75 - 0.85 mg/L (November 1 – May 31) and 0.85 - 1.05 mg/L (June 1 – October 31) at Ludlow Monitoring Station.
- The chlorine dose at BWTF varied between 1.3 to 1.5 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%.



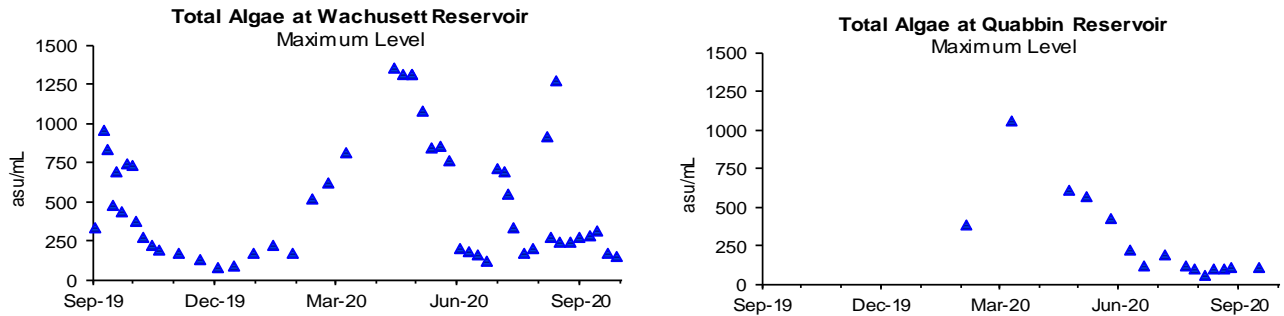
Source Water - Algae

1st Quarter – FY21

Algae levels in the Wachusett and Quabbin 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 reservoirs 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 1st quarter, no taste and odor complaints which may be related to algae were reported from the local water departments.

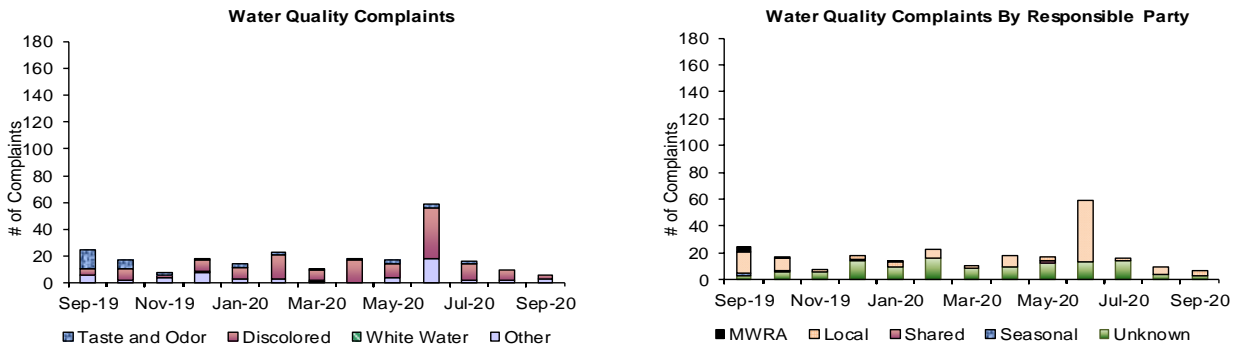


Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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

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

Communities reported 33 complaints during the quarter compared to 183 complaints from 1st Quarter of FY20. Of these complaints, 23 were for "discolored water", 3 were for "taste and odor", and 7 were for "other". Of these complaints, 12 were local community issues and 21 were unknown in origin.



Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

1st Quarter – FY21

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.

Samples are tested for total coliform and *Escherichia coli* (*E.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 repeat tests confirm the presence of *E.coli* or total coliform.

Total coliform provide a general indication of the sanitary condition of a water supply. If total coliform are detected in more than 5% of samples in a month (or if more than one sample is positive when less than 40 samples are collected), the water system is required to investigate the possible source/cause with a Level 1 or 2 Assessment, and fix any identified problems.

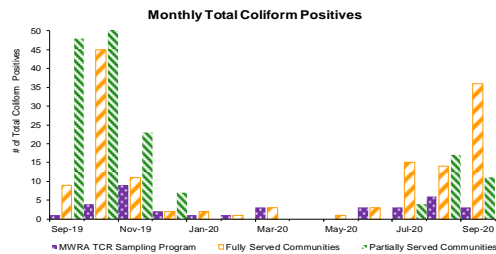
A disinfectant residual is intended to maintain the sanitary integrity of the water; MWRA considers a residual of 0.2 mg/L a minimum target level at all points in the distribution system.

Highlights

In the 1st Quarter, ninety-seven of the 6,434 samples (1.51% system-wide) submitted to MWRA labs for analysis tested positive (Bedford, Somerville, Stoneham, Lynnfield, Watertown, Winthrop - July; Brookline, Canton, Peabody, South Hadley FD1, Wakefield, Wilmington, Winthrop - August; Boston, Brookline, Chelsea, Framingham, Hanscom AFB, Reading, Southborough, South Hadley FD1, Wakefield, Waltham, Winthrop, Woburn - September). Twelve of the 2003 MWRA locations or Community/MWRA Shared samples (0.60%) tested positive for total coliform. Bedford (July), Hanscom AFB (September) and Winthrop (July, August, September) had more than one positive coliform sample and, therefore, are required to conduct a Level 2 Assessment since this is the second occurrence within a rolling 12-month period. South Hadley FD1 (August) had more than one positive total coliform sample and, therefore, is required to conduct a Level 1 Assessment. Wakefield (August) had greater than 5.0% of their samples that were total coliform positive and, therefore, is required to conduct a Level 1 Assessment. Reading (September) had greater than 5.0% of their samples that were total coliform positive and, therefore, are required to conduct a Level 2 Assessment since this their second occurrence within a rolling 12-month period. In August, MWRA was required to conduct a Level 1 Assessment for the CVA system based on positive total coliform samples at Ludlow Monitoring Station. No samples tested positive for *E.coli*. Only 0.6% of the Fully Served community samples had chlorine residuals lower than 0.2 mg/L for the quarter.

NOTES:

- MWRA total coliform and chlorine residual results include data from community locations. In most cases these community results are indicative of MWRA water as it enters the community system; however, some are strongly influenced by local pipe conditions. Residuals in the MWRA system are typically between 1.0 and 2.8 mg/L.
- The number of samples collected depends on the population served and the number of repeat samples required.
- These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.
- Part of the Chicopee Valley Aqueduct System. Free chlorine system.
- MADEP determined that five Somerville total coliform samples collected from one routine sample site (sampling period from October through November) were invalid and not representative of the distribution system. Therefore, they are not represented in the table.



	Total Coliform		<i>E.coli</i> Positive	# Assessment Required
	# Samples (b)	# (%) Positive		
MWRA	MWRA Locations	407	9 (2.21%)	0
	Shared Community/MWRA sites	1596	3 (0.19%)	0
	Total: MWRA	2003	12 (0.60%)	0
Fully Served	ARLINGTON	169	0 (0%)	0
	BELMONT	104	0 (0%)	0
	BOSTON	807	6 (0.74%)	0
	BROOKLINE	223	1 (0.45%)	0
	CHELSEA	172	1 (0.58%)	0
	DEER ISLAND	52	0 (0%)	0
	EVERETT	169	0 (0%)	0
	FRAMINGHAM	238	1 (0.42%)	0
	LEXINGTON	126	0 (0%)	0
	LYNNFIELD	18	0 (0%)	0
	MALDEN	234	0 (0%)	0
	MARBLEHEAD	72	0 (0%)	0
	MARLBOROUGH	126	0 (0%)	0
	MEDFORD	198	0 (0%)	0
	MELROSE	117	0 (0%)	0
	MILTON	102	0 (0%)	0
	NAHANT	30	0 (0%)	0
	NAHANT	276	0 (0%)	0
	NORTHBOROUGH	48	0 (0%)	0
	NORWOOD	99	0 (0%)	0
	QUINCY	364	0 (0%)	0
	READING	146	5 (3.42%)	0
	REVERE	180	0 (0%)	0
	SAUGUS	104	0 (0%)	0
	SOMERVILLE	288	8 (2.78%)	0
	SOUTHBOROUGH	30	0 (0%)	0
	STONEHAM	94	1 (1.06%)	0
SWAMPSCOTT	55	0 (0%)	0	
WALTHAM	222	2 (0.90%)	0	
WATERTOWN	143	1 (0.70%)	0	
WESTON	45	0 (0%)	0	
WINTHROP	111	39 (35.14%)	0	
	Total: Fully Served	5162	65 (1.26%)	
Partially Served	BEDFORD	63	4 (6.35%)	0
	CANTON	94	1 (1.06%)	0
	HANSCOM AFB	39	6 (15.38%)	0
	NEEDHAM	123	0 (0%)	0
	PEABODY	211	1 (0.47%)	0
	WAKEFIELD	144	5 (3.47%)	0
	WELLESLEY	114	0 (0%)	0
	WILMINGTON	90	1 (1.11%)	0
	WINCHESTER	98	0 (0%)	0
	WOBURN	204	3 (1.47%)	0
	SOUTH HADLEY FD1	92	11 (11.96%)	0
		Total: CVA & Partially Served	1272	32 (2.52%)
	Total: Community Samples	6434	97 (1.51%)	

Chlorine Residuals in Fully Served Communities

	2019					2020								
	Sep	Oct	Nov	Dec	Jan	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
% <0.1	0.7	1.1	1.7	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.3
% <0.2	2.3	3.3	3.3	1.5	0.4	0.2	0.2	0.2	0.2	0.3	0.4	0.5	0.4	1.0
% <0.5	7.2	8.7	7.7	4.1	2.0	1.5	1.1	1.6	1.3	1.5	2.2	2.9	4.4	4.4
% <1.0	14.9	17.8	12.6	7.3	3.9	2.9	3.5	4.6	4.0	4.3	6.5	8.4	10.7	10.7
% ≥1.0	85.1	82.2	87.4	92.7	96.1	97.2	96.5	95.4	96.0	95.7	93.6	91.6	89.4	89.4

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

1st Quarter – FY21

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.

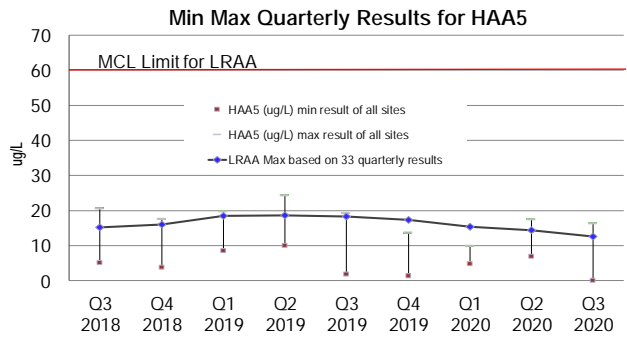
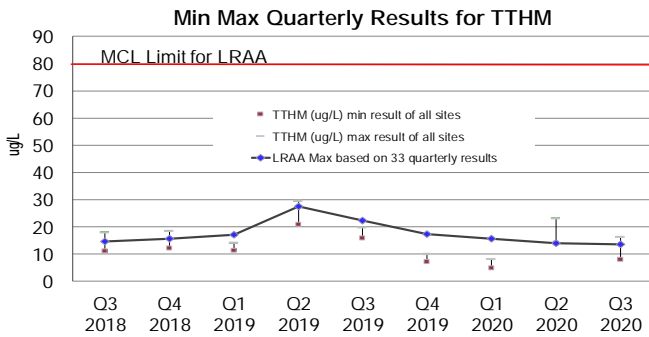
The locational running annual average calculated quarterly at each individual sampling location must be below the Total HAA5 or Total TTHM MCL standard. The charts below show the highest and lowest single values for all sites, and the LRAA of the highest location each quarter.

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 data for all three CVA communities data (Chicopee, Wilbraham and South Hadley FD1). Each community is regulated individually.

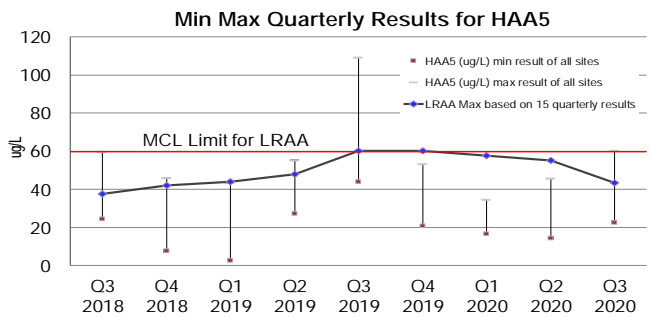
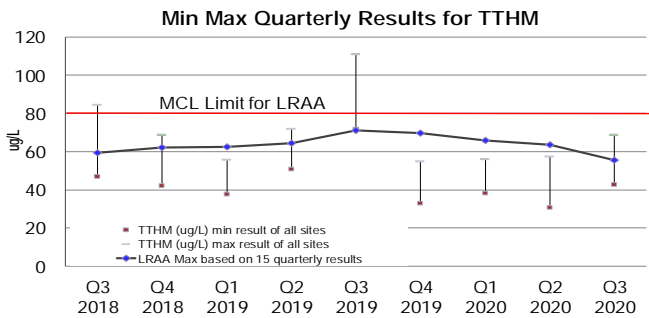
Bromate is tested monthly as required for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA's RAA MCL standard for bromate is 10 µg/L.

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 = 13.6 µg/L; HAA5s = 12.6 µg/L. The current RAA for Bromate = 0.0 µg/L. During the Q4 2019 sampling, one CVA location exceeded an HAA5 Operational Evaluation Level. While this does not result in a violation this requires an analysis and review of their water system and a report to MADEP. No LRAA exceedances or violations occurred for Q1, Q2, and Q3 of 2020 for any of the CVA communities. MWRA and the CVA communities continue to closely monitor and manage the disinfection process to minimize DBP production.

MetroBoston Disinfection By-Products



CVA Disinfection By-Products (Combined Results)



Water Supply and Source Water Management

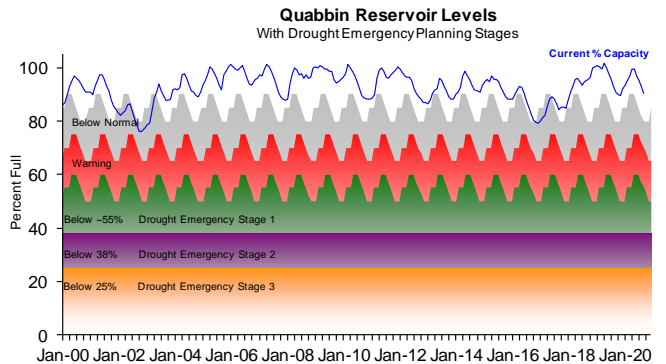
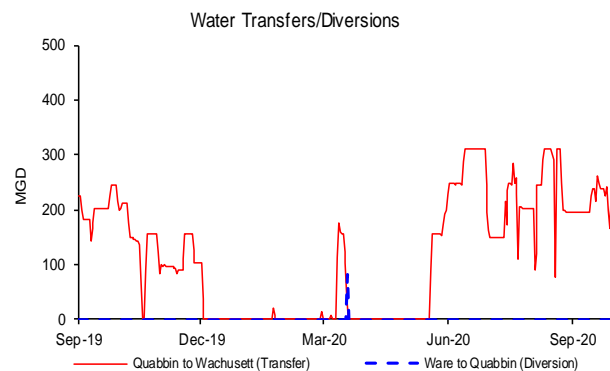
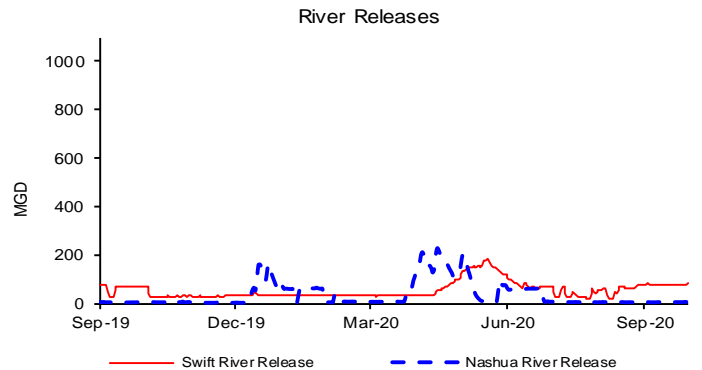
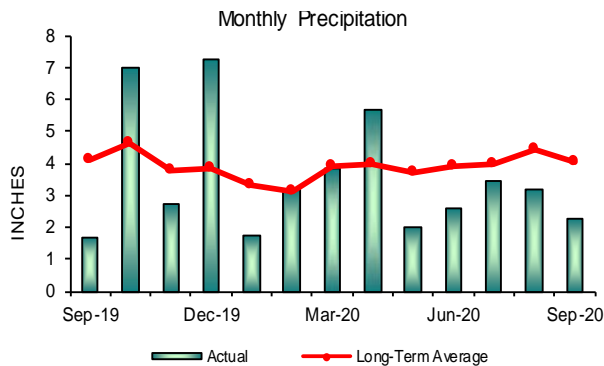
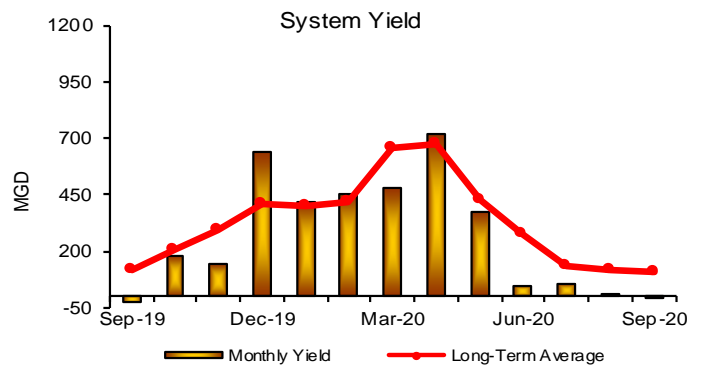
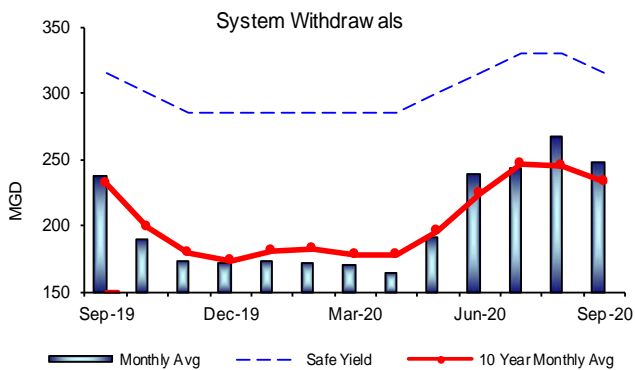
1st Quarter – FY21

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

The volume of the Quabbin Reservoir was at 90.2% as of September 30, 2020; a 6.6% decrease for the quarter, which represents a loss of more than 27.4 billion gallons of storage and a decrease in elevation of 3.64' for the quarter. System withdrawal, precipitation and yield were below their respective long term quarterly averages. System stage remains in Normal Operating Range.



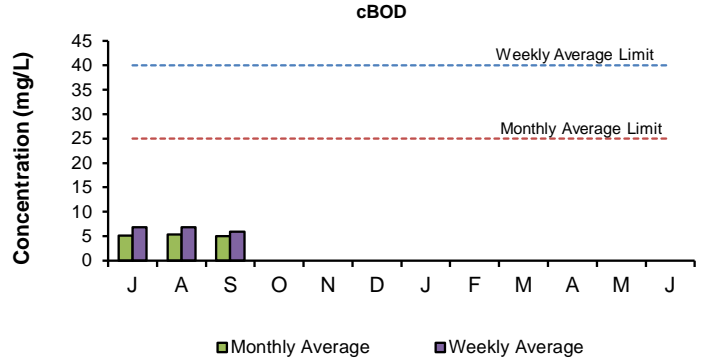
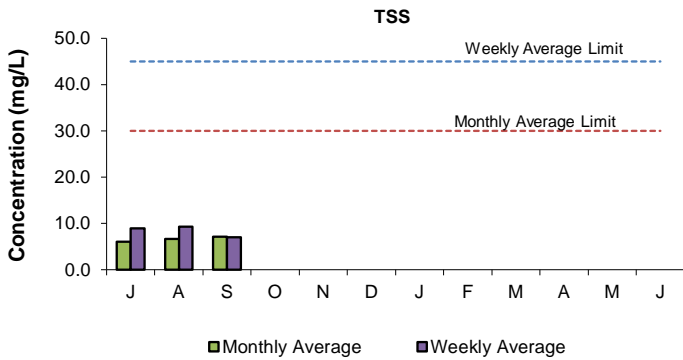
WASTEWATER QUALITY

NPDES Permit Compliance: Deer Island Treatment Plant 1st Quarter - FY21

NPDES Permit Limits

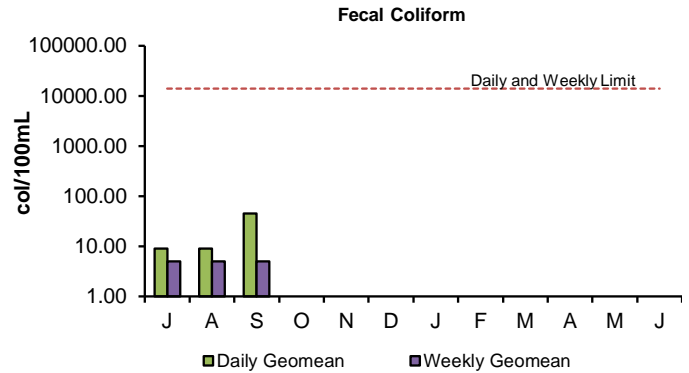
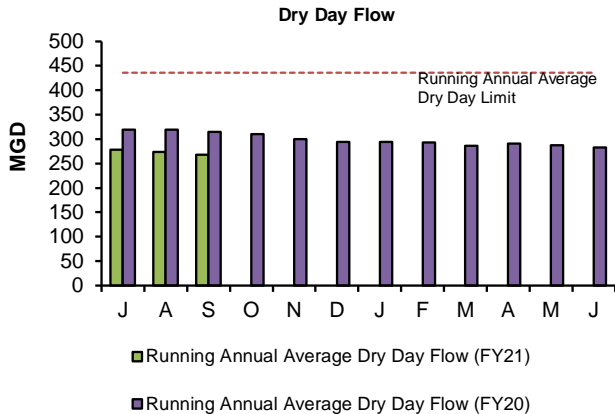
Effluent Characteristics	Units	Limits	July	August	September	1st Quarter Violations	FY21 YTD Violations	
Dry Day Flow (365 Day Average):	mgd	436	277.9	273.2	268.6	0	0	
cBOD:	Monthly Average	mg/L	5.1	5.4	5.0	0	0	
	Weekly Average	mg/L	6.9	6.8	5.9	0	0	
TSS:	Monthly Average	mg/L	6.1	6.6	7.1	0	0	
	Weekly Average	mg/L	8.9	9.3	7.0	0	0	
TCR:	Monthly Average	ug/L	456	0.0	0.0	0	0	
	Daily Maximum	ug/L	631	0.0	0.0	0	0	
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	9.0	9.0	45.0	0	0
	Weekly Geometric Mean	col/100mL	14000	5.0	5.0	5.0	0	0
	% of Samples >14000	%	10	0.0	0.0	0.0	0	0
	Consecutive Samples >14000	#	3	0.0	0.0	0.0	0	0
pH:	SU	6.0-9.0	6.3-6.9	6.4-6.9	6.6-6.9	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	50	50	0	0

There have been no permit violations in FY21 to date at the Deer Island Treatment Plant (DITP).



Total Suspended Solids (TSS) in the effluent is a measure of the amount of solids that remain suspended after treatment. All TSS measurements for the 1st Quarter were within permit limits.

Carbonaceous Biochemical Oxygen Demand (cBOD) is a measure of the amount of dissolved oxygen required for the decomposition of organic materials in the environment. All cBOD measurements for the 1st Quarter were within permit limits.



Running Annual Average Dry Day Flow is the average of all dry weather influent flows over the previous 365 days. The Dry Day Flow for the 1st Quarter was well below the permit limit of 436 MGD.

Fecal Coliform is an indicator for the possible presence of pathogens. The levels of these bacteria after disinfection show how effectively the plant is inactivating many forms of disease-causing microorganisms. In the 1st Quarter, all permit conditions for fecal coliform were met.

NPDES Permit Compliance: Clinton Wastewater Treatment Plant
1st Quarter - FY21

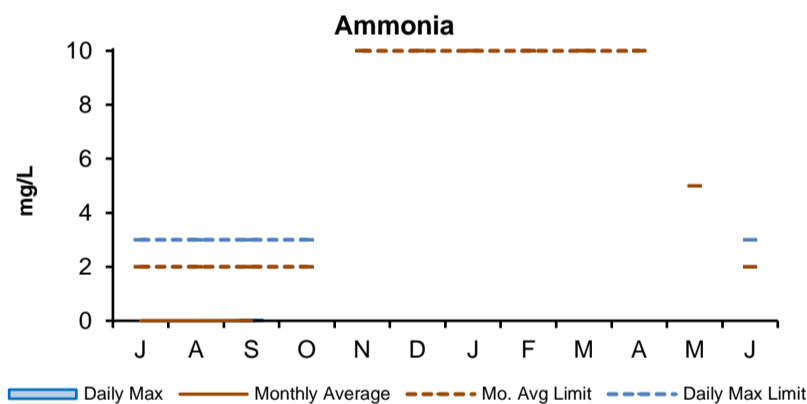
NPDES Permit Limits

Effluent Characteristics		Units	Limits	July	August	September	1st Quarter Violations	FY21 YTD Violations
Flow:	12-month Rolling Average:	mgd	3.01	2.35	2.34	2.34	0	0
BOD:	Monthly Average:	mg/L	20	1.80	1.40	1.80	0	0
	Weekly Average:	mg/L	20	1.60	3.20	2.10	0	0
TSS:	Monthly Average:	mg/L	20	1.20	0.40	0.90	0	0
	Weekly Average:	mg/L	20	2.30	0.70	2.10	0	0
pH:		SU	6.5-8.3	7.2-7.7	7.2-7.6	7.2-7.6	0	0
Dissolved Oxygen:	Daily Average Minimum:	mg/L	6	7.60	7.90	8.10	0	0
E. Coli:	Monthly Geometric Mean:	cfu/100mL	126	5	5	5	0	0
	Daily Geometric Mean:	cfu/100mL	409	9	5	7	0	0
TCR:	Monthly Average:	ug/L	17.6	0.13	0.00	0.40	0	0
	Daily Maximum:	ug/L	30.4	4.00	0.00	4.00	0	0
Copper:	Monthly Average:	ug/L	11.6	11.30	11.60	10.95	0	0
	Daily Maximum:	ug/L	14.0	11.30	12.10	11.40	0	0
Total Ammonia Nitrogen: June 1st - October 31st	Monthly Average:	mg/L	2.0	0.00	0.00	0.01	0	0
	Daily Maximum:	mg/L	3.0	0.00	0.00	0.03	0	0
Total Phosphorus: April 1st - October 31st	Monthly Average:	ug/L	150	75	66	75	0	0
	Daily Maximum:	ug/L	RPT	193	138	128	0	0
Acute Toxicity ⁺ :	Daily Minimum:	%	≥100	N/A	N/A	>100	0	0
Chronic Toxicity ⁺ :	Daily Minimum:	%	≥62.5	N/A	N/A	25	1	1

There has been one permit violation in FY21 at the Clinton Treatment Plant.

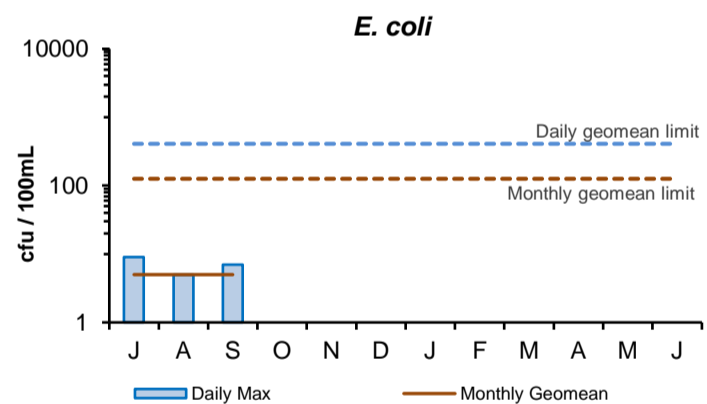
1st Quarter: There was one permit violation in the first quarter. The quarterly chronic toxicity result of 25% was below the minimum permit limit of 62.5%.

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

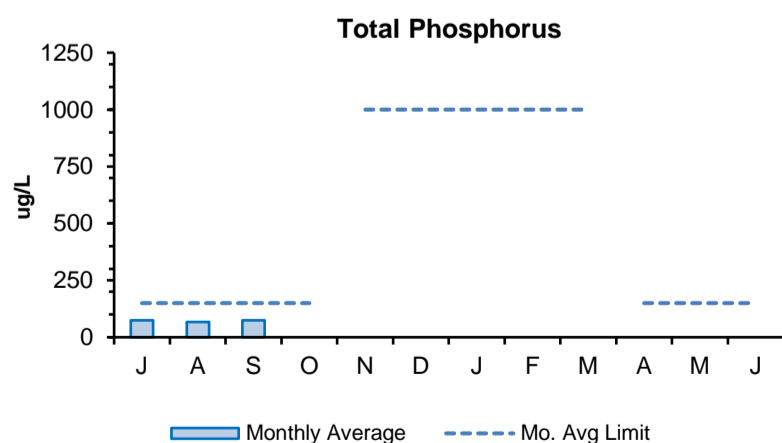


Legend: Daily Max (solid blue), Monthly Average (solid orange), Mo. Avg Limit (dashed orange), Daily Max Limit (dashed blue)

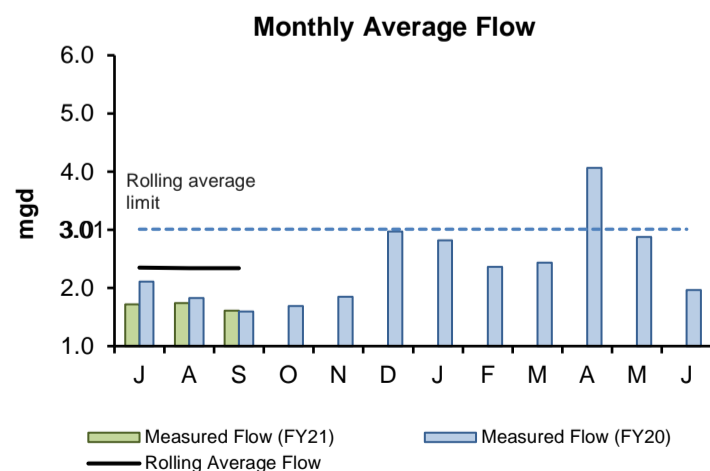
The 1st Quarter's monthly average and daily maximum concentrations of ammonia were below the permit limits. The monthly average and daily maximum limits for the 1st Quarter are 2.0 and 3.0 mg/L respectively. The permit limits are most stringent from June to October when warm weather conditions are most conducive to potential eutrophication.



E. coli is an indicator for the possible presence of pathogens. There were no violations of permit limits in the 1st Quarter. The monthly and daily limits are 126 cfu/100 mL and 409 cfu/100 mL respectively.



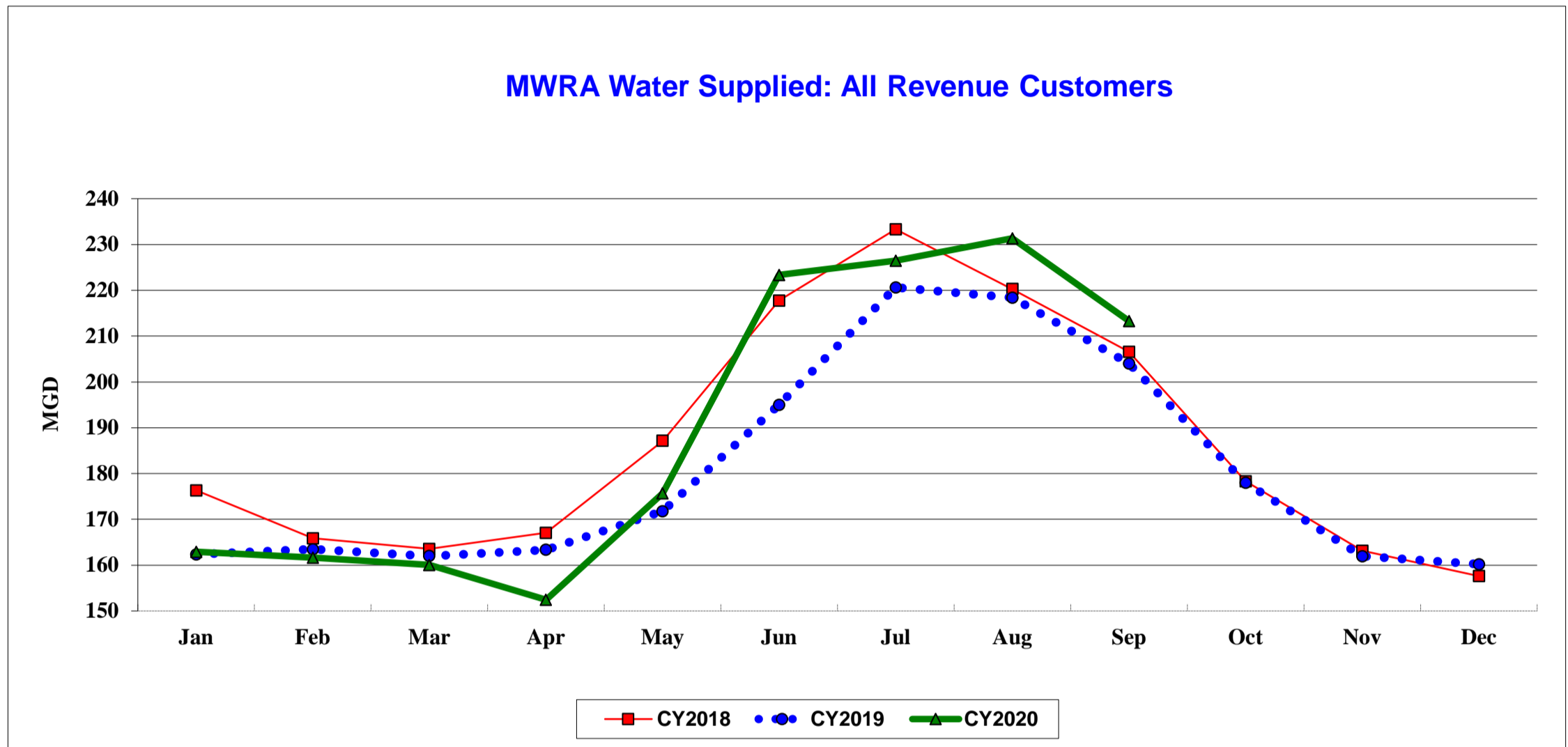
Total phosphorus limits are most stringent during the growing season from April to October. The 1st Quarter's monthly average concentrations for total phosphorus were below permit limits.



The graph depicts the rolling annual average monthly flow, measured in million gallons per day, exiting the plant. The 12-month rolling average flows during the 1st Quarter were below the permit limit.

COMMUNITY FLOWS AND PROGRAMS

Customer Water Use 1st Quarter - FY21



MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Annual Average
CY2018	176.294	165.841	163.539	167.056	187.145	217.776	233.321	220.268	206.586	178.340	163.125	157.612	193.347	186.553
CY2019	162.367	163.492	161.984	163.350	171.773	195.025	220.621	218.376	203.996	177.998	161.941	160.207	184.753	180.220
CY2020	162.897	161.651	160.048	152.439	175.665	223.338	226.454	231.347	213.306	0.000	0.000	0.000	189.814	189.814

MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Total	Annual Total
CY2018	5,465.125	4,643.548	5,069.719	5,011.695	5,801.508	6,533.267	7,232.949	6,828.310	6,197.590	5,528.550	4,893.739	4,885.979	52,783.711	68,091.978
CY2019	5,033.385	4,577.769	5,021.508	4,900.488	5,324.952	5,850.742	6,839.258	6,769.663	6,119.890	5,517.952	4,858.240	4,966.431	50,437.655	65,780.279
CY2020	5,049.800	4,687.883	4,961.499	4,573.173	5,445.609	6,700.130	7,020.088	7,171.764	6,399.179	0.000	0.000	0.000	52,009.127	52,009.127

The September 2020 Community Water Use Report was recently distributed to communities served by the MWRA Metropolitan and Chicopee Valley 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 2020 water use will be used to allocate the FY2022 water utility rate revenue requirement.

MWRA customers used an average of 223.8 mgd in the 1st quarter (Jul-Sep) of FY2021. This is an increase of 9.4 mgd or 4.4% compared to the 1st quarter of FY2020.

Community Wastewater Flows

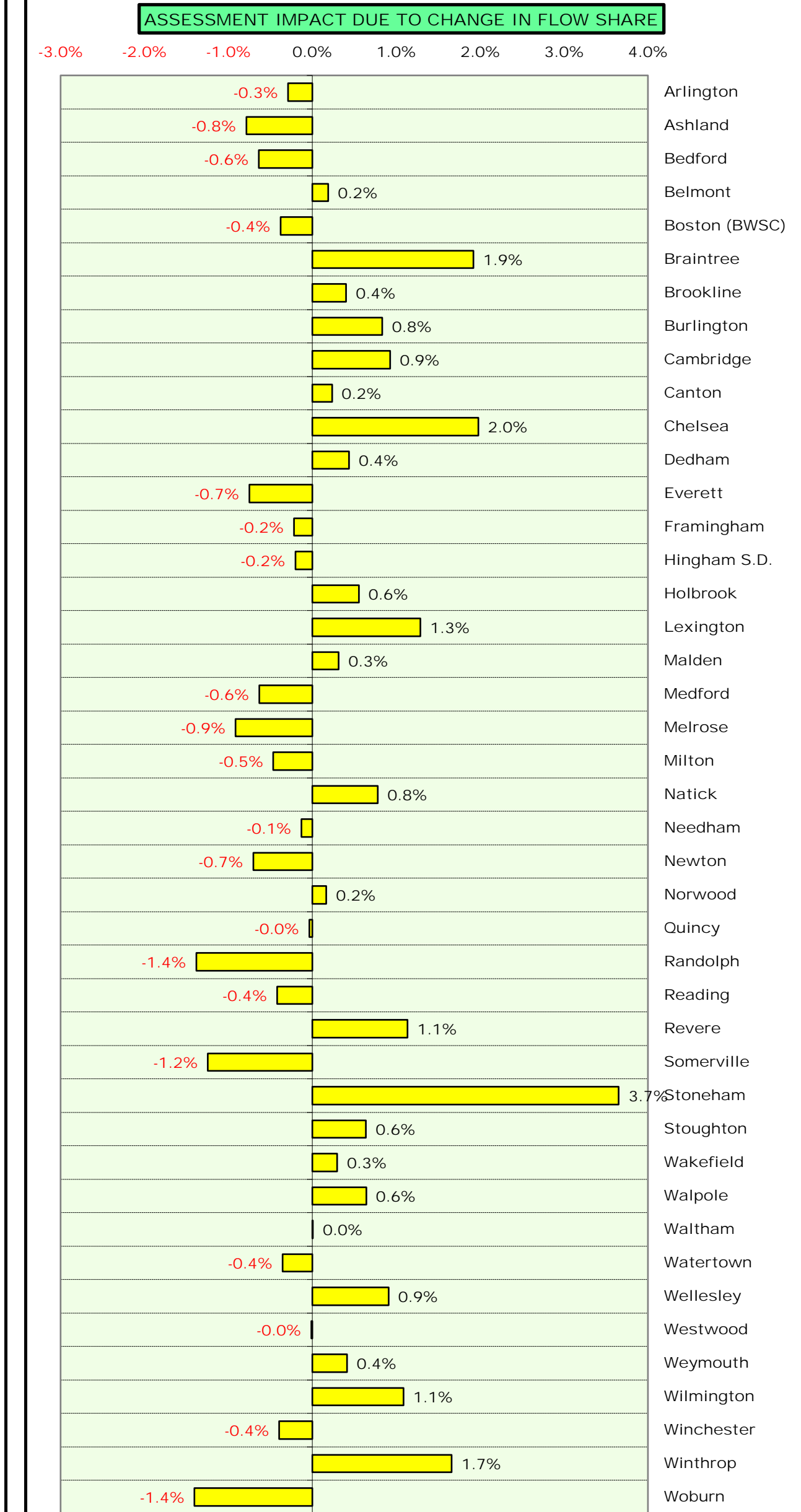
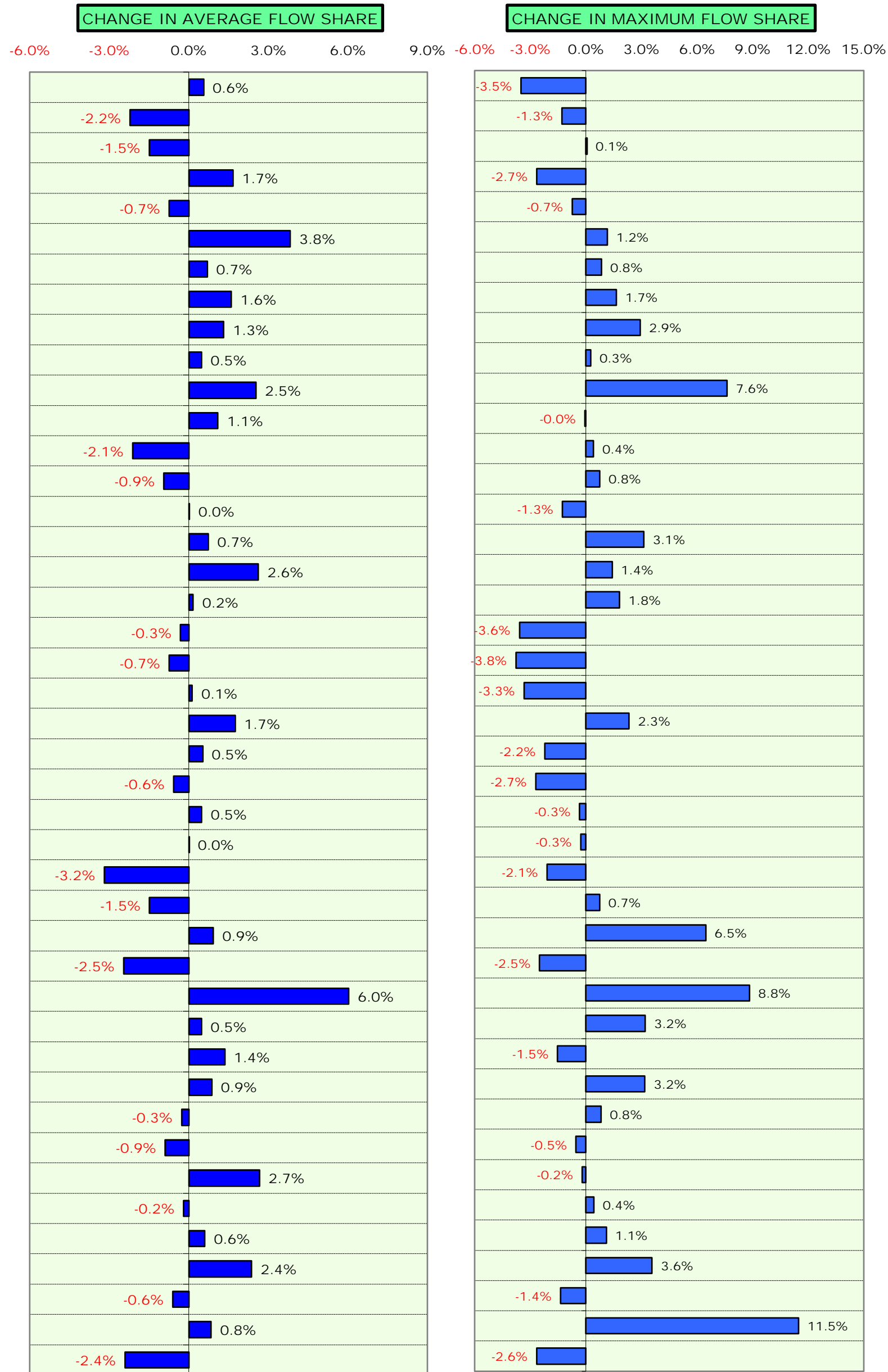
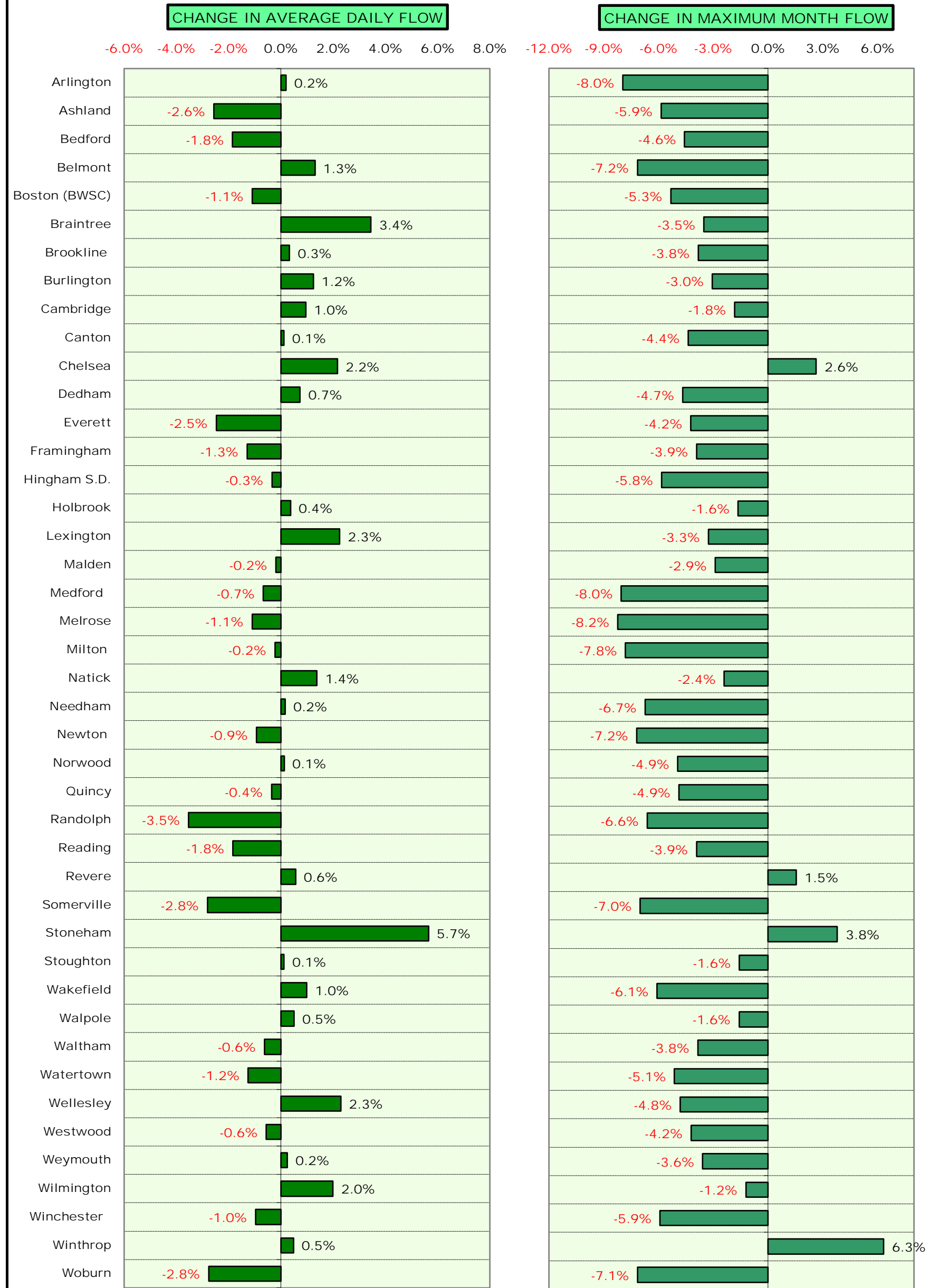
1st Quarter - FY21

How Projected CY2020 Community Wastewater Flows Could Effect FY2022 Sewer Assessments ^{1,2,3}

The flow components of FY2022 sewer assessments will be calculated using a 3-year average of CY2018 to CY2020 wastewater flows compared to FY2021 assessments that used a 3-year average of CY2017 to CY2019 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 CY2018 to CY2020 flow share compared to CY2017 to CY2019 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



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 actual flows for 2017 to 2019, and January to March, and June to August 2020 (as of 10/15/20). April & May 2020 based on the average of three prior years, adjusted for 2020 water use. September-December 2020 based on the average of the three prior years.
³ Flow data is preliminary and subject to change pending additional MWRA and community review.
⁴ Represents ONLY the impact on the total BASE assessment resulting from the changes in average and maximum wastewater FLOW SHARES.

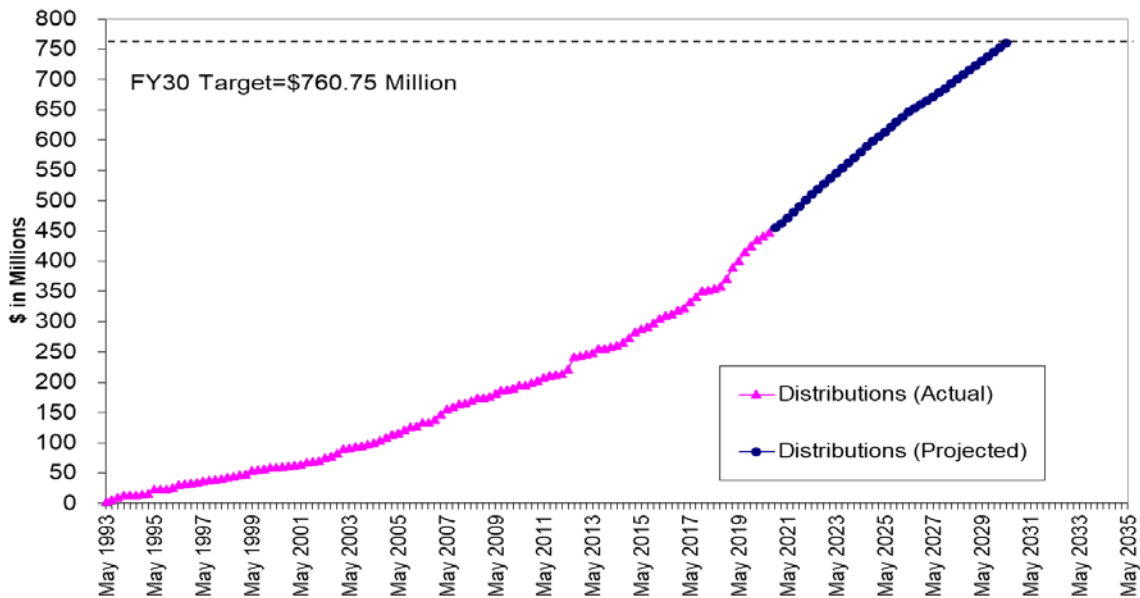
Community Support Programs

1st Quarter – FY21

Infiltration/Inflow Local Financial Assistance Program

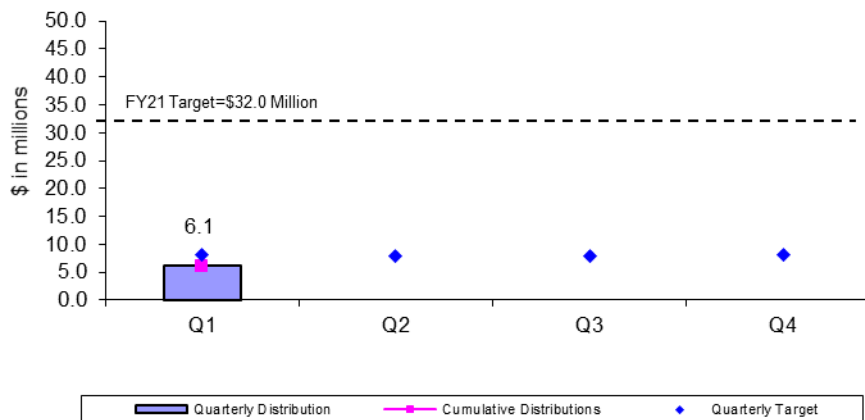
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$760.75 million in grants and interest-free loans (average of about \$20 million per year from FY93 through FY30) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned 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 through 12 funds (total \$360 million) are distributed as 75% grants and 25% loans with interest-free loans repaid to MWRA over a ten-year period. Phase 13 provides an additional \$100 million in loan-only funds.

I/I Local Financial Assistance Program Distribution FY93-FY30



During the 1st Quarter of FY21, \$6.1 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Chelsea, Milton, Wakefield, Wellesley, and Winchester. Total grant/loan distribution for FY21 is \$6.1 million. From FY93 through the 1st Quarter of FY21, all 43 member sewer communities have participated in the program and \$447 million has been distributed to fund 610 local I/I reduction and sewer system rehabilitation projects. Distribution of the remaining funds has been approved through FY30 and community loan repayments will be made through FY40. All scheduled community loan repayments have been made.

FY21 Quarterly Distributions of Sewer Grant/Loans



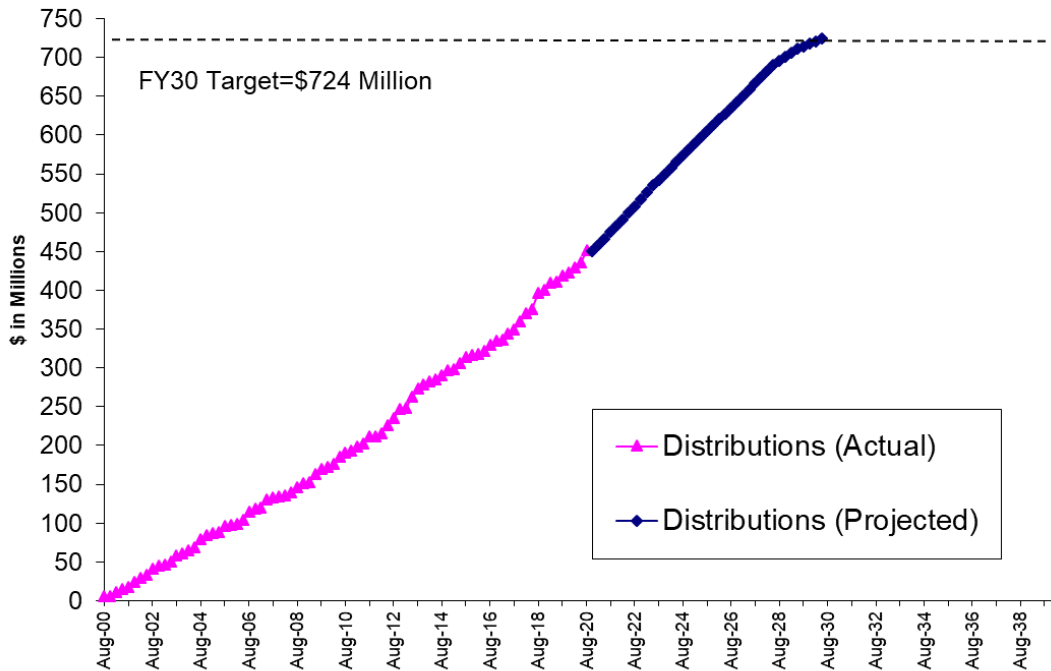
Community Support Programs

1st Quarter – FY21

Local Water System Assistance Program

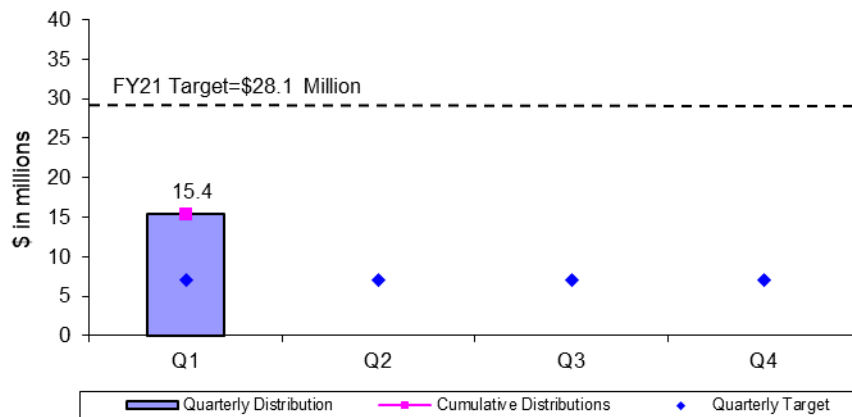
MWRA's Local Water System Assistance Programs (LWSAP) provides \$724 million in interest-free loans (an average of about \$24 million per year from FY01 through FY30) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. There have been 3 phases: Phase 1 at \$222 Million, Phase 2 at \$210 Million, and Phase 3 at \$292 Million. 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 FY23. The Phase 3 Water Loan Program is authorized for distributions FY18 through FY30.

Local Water System Assistance Program Distribution FY01-FY30



During the 1st Quarter of FY21, \$15.4 million in interest-free loans was distributed to fund local water projects in Belmont, Boston, Canton, Chicopee, Milton, Norwood, and Stoneham. Total loan distribution for FY21 is \$15.4 million. From FY01 through the 1st Quarter of FY21, \$452 million has been distributed to fund 475 local water system rehabilitation projects in 43 MWRA member water communities. Distribution of the remaining funds has been approved through FY30 and community loan repayments will be made through FY40. All scheduled community loan repayments have been made.

FY21 Quarterly Distributions of Water Loans



Community Support Programs

1st Quarter – FY21

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 was the first year of the Lead Service Line Replacement Loan Program – MWRA made three Lead Loans.

FY18 was the second year of the Lead Loan Program - MWRA made five Lead Loans.

FY19 was the third year of the Lead Loan Program - MWRA made four Lead Loans.

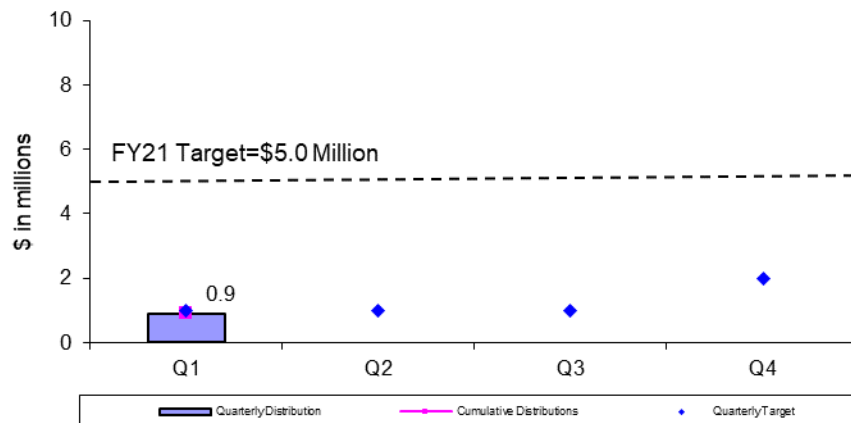
FY20 was the fourth year of the Lead Loan Program - MWRA made eight Lead Loans.

FY21 is the fifth year of the Lead Loan Program – two Lead Loans were made during the 1st quarter of FY21: \$300,000 to Chelsea and \$600,000 to Winchester.

Summary of Lead Loans:

Chelsea in FY21	\$0.3 Million
Winchester in FY21	\$0.6 Million
Everett in FY20	\$0.5 Million
Marlborough in FY20	\$1.0 Million
Winchester in FY20	\$0.6 Million
Winthrop in FY20	\$0.7 Million
Weston in FY20	\$0.2 Million
Everett in FY20	\$1.0 Million
Somerville in FY20	\$0.9 Million
Chelsea in FY20	\$0.3 Million
Marlborough in FY19	\$1.0 Million
Winthrop in FY19	\$0.5 Million
Chelsea in FY19	\$0.1 Million
Everett in FY19	\$1.0 Million
Needham in FY18	\$1.0 Million
Winchester in FY18	\$0.5 Million
Revere in FY18	\$0.2 Million
Winthrop in FY18	\$0.3 Million
Marlborough in FY18	\$1.0 Million
Newton in FY17	\$4.0 Million
Quincy in FY17	\$1.5 Million
Winchester in FY17	\$0.5 Million
TOTAL	\$17.6 Million

FY21 Quarterly Distributions of Lead Service Line Replacement Loans

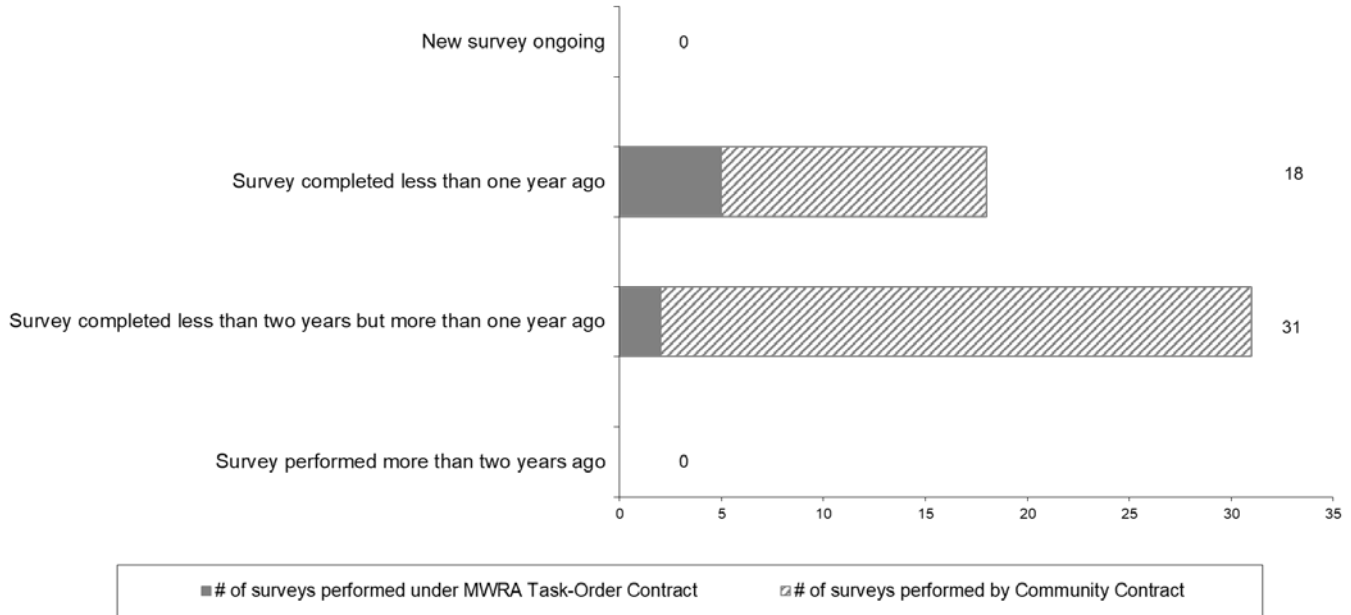


Community Support Programs

1st Quarter – FY21

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 1st Quarter of FY21, 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 approximately 200 mgd. The local Water Conservation Program includes distribution of water conservation education brochures (indoor - 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	30,614				30,614
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	408				408
Toilet Leak Detection Dye Tablets	_____	761				761

BUSINESS SERVICES

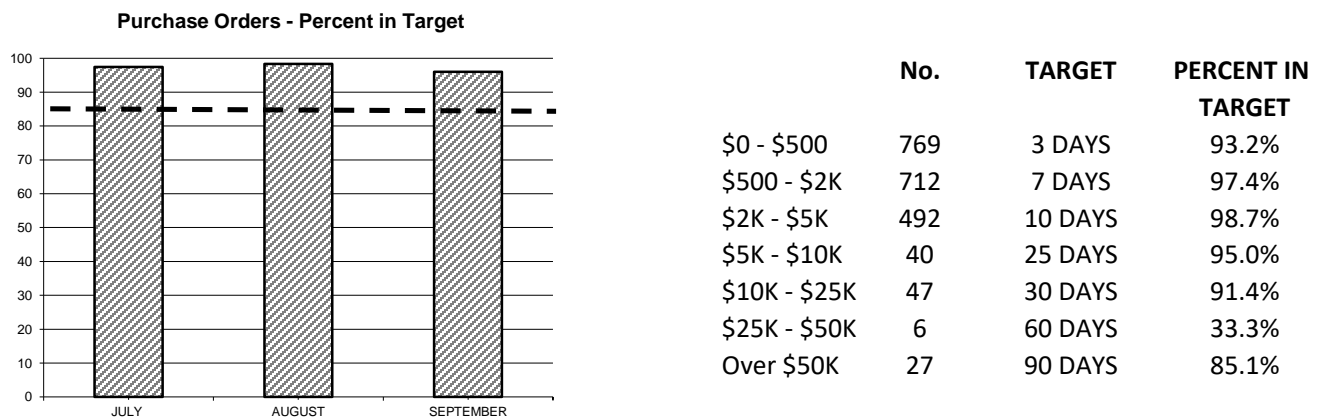
Procurement: Purchasing and Contracts

1st Quarter - FY21

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

Outcome: Processed 96% of purchase orders within target; Average Processing Time was 3.85 days vs. 4.59 days in Qtr 1 of FY20. Processed 30% (3 of 10) of contracts within target timeframes; Average Processing Time was 217 days vs. 182 days in Qtr 1 of FY20.

Purchasing



The Purchasing Unit processed 2093 purchase orders, 274 more than the 1819 processed in Qtr 1 of FY20 for a total value of \$8,763,760 versus a dollar value of \$11,891,739 in Qtr 1 of FY20.

The purchase order processing target was not met for the \$25K-\$50K category due to end user evaluations and staff summary approvals.

Contracts, Change Orders and Amendments

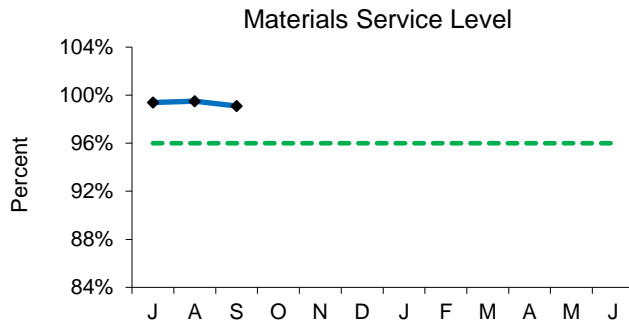
Procurement processed ten contracts with a value of \$20,193,024 and five amendments with a value of \$1,570,325. Twenty nine change orders were executed during the period. The dollar value of all non-credit change orders during Q1 FY21 was \$747,206 and the value of credit change orders was (\$399,163).

Seven contracts were not processed within the target timeframes. One contract was procured as part of a two step process, an RFQ followed by and an RFP which requires additional time. Also, due to the size of the project, proposers were given additional time to prepare their proposals. Each of these factors resulted in delays executing the contract. Another contract was delayed due to an extension of the existing contract after the procurement of the new contract was initiated. A third contract was delayed due to Covid-19 circumstances which necessitated additional requirements for electronic reviews and approvals. A fourth contract was delayed due to the postponement of the award by one month, insurance negotiations and additional time required to obtain signatures, both internally and externally. A fifth contract was delayed due to Covid-19 circumstances, however, the current contract was still in place. The final two contracts were delayed due to additional procurement requirements necessary for insurance services. Insurance for all categories of coverage was obtained according to schedule.

Staff reviewed 37 proposed change orders and 28 draft change orders.

Materials Management

1st Quarter - FY21



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 8,474 (99.3%) of the 8,532 items requested in Q1 from the inventory locations for a total dollar value of \$1,752,018.

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 FY21 goal is to reduce consumable inventory from the July '20 base level (\$8.8 million) by 2.0% (approximately \$176,369), to \$8.6 million by June 30, 2021 (see chart below).

Items added to inventory this quarter include:

- Deer Island – remote transmitters, solenoid valves, and heat shrink tubing kits for I&C; compressor, air dryer, flow switch and air handler pan pads for HVAC; hand sanitizer for Pandemic and relay phase monitor for Electrical.
- Chelsea – Gaskets for Pipeline; clips and connectors for Electrical; face masks for Pandemic; sump pump and gaskets for Plumbing; sensors for Metering and fuel and air filters, pressure switches and wire connectors for Fleet Services.
- Southboro – face masks, disinfectant wipes and partition panels for Pandemic; Teflon tubing for Human Resources Training and harness climbing vests for Valve Maintenance.

Property Pass Program:

- Eight audits were conducted during Q1.
- Scrap revenue received for Q1 amounted to \$11,491. Year to date revenue received amounted to \$11,491.
- Revenue received from online auctions held during Q1 amounted to \$79,046. Year to date revenue received amounted to \$79,046.

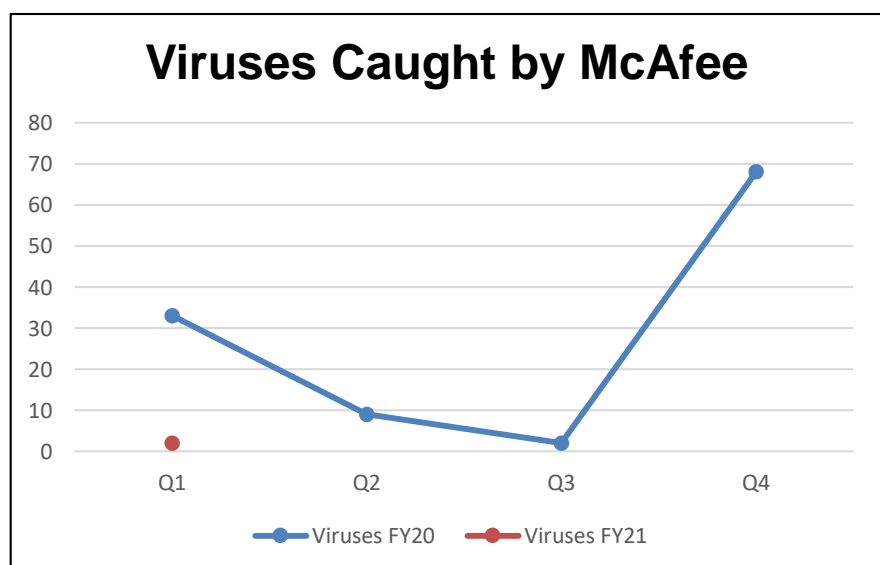
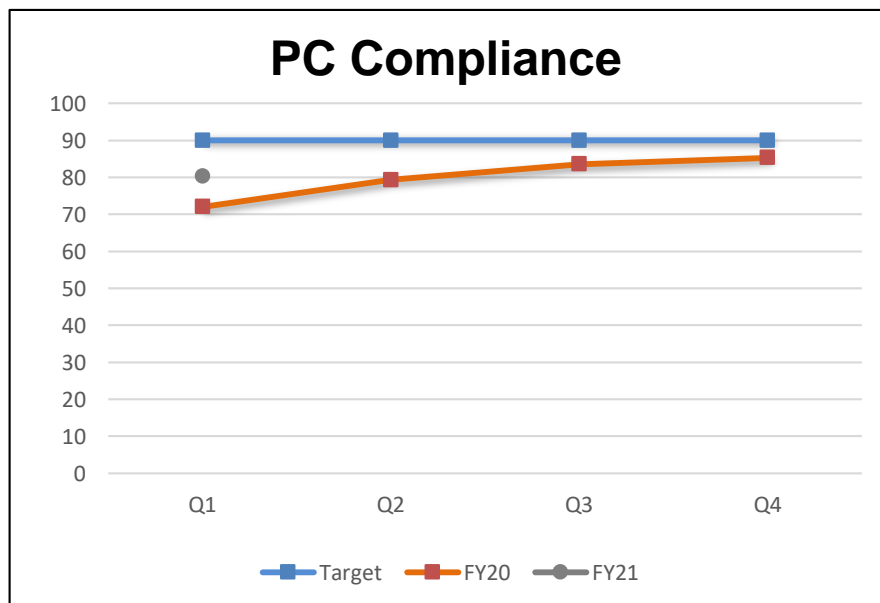
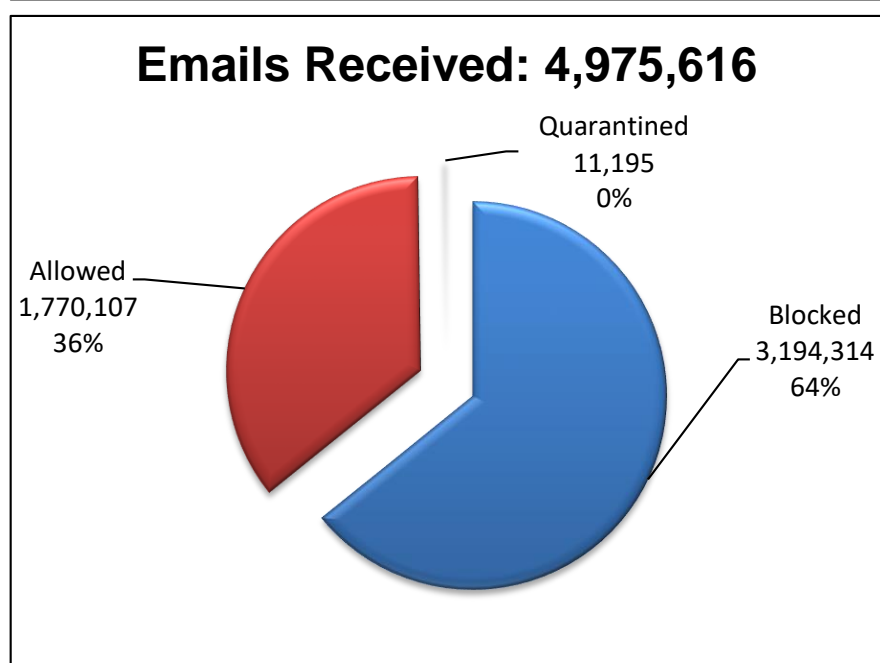
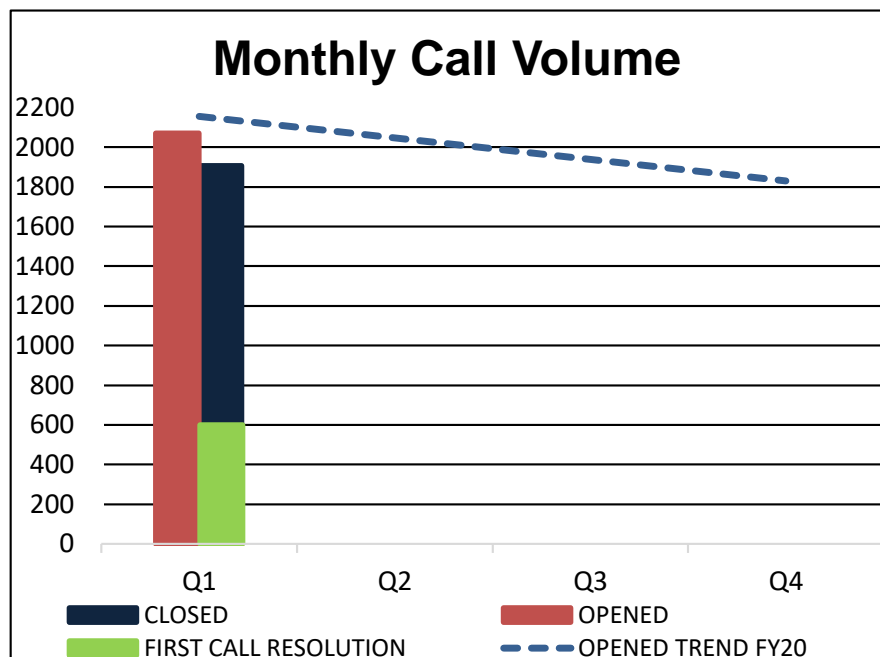
Items	Base Value July-20	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	8,818,459	8,936,746	118,287
Spare Parts Inventory Value	8,797,946	9,162,137	364,191
Total Inventory Value	17,616,405	18,098,883	482,478

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

First Quarter – FY21

Numbers & Statistics



Project Updates

Infrastructure & Security

Telework: Continued to support a diversely located workforce.

AWIA Risk and Resiliency Assessment: Continued to meet bi-weekly to maintain project momentum. Made the changes to the following applications per AWIA recommendations:

- Lawson Supplier Portal (configuration change)
- PIMS (updated settings and made configuration changes)
- GIS (Began drafting SOW to address security concerns with ESRI)

Audio Visual Upgrades: Completed all upgrades except for one overhead projector, which is on backorder, for Deer Island EOC.

Nut Island: Completed the Verizon wide-area-network upgrade.

Chelsea Environmental Controls Monitoring System: Installation complete.

Infrastructure Upgrades: Upgraded Aruba ClearPass to latest version and migrated physical appliance to VM. Continued Proofpoint Security Awareness and Email Gateway configuration and administration. Troubleshoot Commvault Content Store Email Viewer on .pst file. Installed security updates on all key infrastructure components as needed.

Maximo & Lawson

Infor Lawson Upgrade: Conditionally awarded contract to Infor Lawson pending discussion with Infor's senior management team on disagreements on various items within the contract.

Maximo-PI Interface: Developed code using Maximo Core Function to correct defects relating to "Percent Type" meters.

Other Software & Custom Applications

ECM/Electronic Document Management: Final vendor demo was conducted on the last day of the month. Selection Committee meeting scoring is scheduled for October.

Visitor Management Application: MWRA engaged JollyTrac to discuss the architecture and implementation plan for their LobbyTrac Visitor Management Software. Began drafting formal requirements in anticipation of the PO and requested a server build from the MIS SysAdmin team.

Learning Management System (LMS): Overview and Charter completed and signed. Added LMS schedule to new TeamGantt project management tool. Procurement documents routing.

Maximo 1080 Form Automation: Completed final knowledge transfer session with developers. Developed 34 minute training video for testers. Completed UAT and user documentation and started User Acceptance Testing.

Library, Record Center, & Training

Library: undertook 18 research requests, supplied 23 books for circulation, provided 16 articles, and 74 standards. The MWRA Library Portal supported 450 end-user searches. Research topics included: historic coal ash disposal; historic gypsy moth treatment; flora, fauna, architectural and construction research of land and facilities along Aqueduct Trails.

Record Center (RC): added 226 new boxes and handled 258 total boxes, increased due to the decluttering effort per upper management. Shredded 12-65 gallons bins of confidential information on site. Significant move preparation underway for the relocation of the Records Center to Walpole.

Training: In Q1, 3 staff attended 1 class. 3 new job aids were developed for WebEx and Outlook. WebEx Training software was procured and configured. A new online cyber security training program, through ProofPoint, was installed and configuration is underway. An initiative to bring LinkedIn Learning in as the MWRA's online training partner for all MWRA employees is currently in Procurement.

Legal Matters

1st Quarter FY 2021

PROJECT ASSISTANCE

Real Estate, Contract, Environmental and Other Support:

- **8(m) Permits:** Reviewed seventy-three (73) 8(m) permits. Reviewed Newton Public Access 8(m) for a portion of Sudbury Aqueduct.
- **Sewer Connections:** Reviewed and finalized Direct Connect Permit 20-01-183DC for 466 River Street, Boston.
- **Real Property:** Reviewed final draft, readied document for execution and coordinated return to 23 & 27 Production Road, LLC of MWRA's executed lease agreement for its new records center building located at 153 Production Road, Walpole, MA 02081. Confirmed with developer's attorney for the proposed Montvale project in Woburn, no further pursuit of release of hammerhead sewer easements as the developer seeks to relocate its buildings and avoid conflict with existing MWRA sewer easements. Recorded extension permit for Order of Conditions 141-0509 for Southern Extra High Water Pipeline Section 111 - MWRA Contract 7505. Drafted document for the release of certain easements burdening MWRA's Spot Pond covered storage parcel of property in Stoneham and prepared document for MWRA's release of easements burdening an adjacent parcel of land owned by Alta Langwood, LLC. Reviewed proposed land acquisitions for MWRA Contract 7540/7541 – Water Sections 57 & 50 Rehabilitation and Sewer Sections 19/20/21 Rehabilitation – Medford, MA. Drafted legislation relative to the release of an access easement by MWRA at 777 Dedham Street in Canton. Reviewed MWRA's property rights for its Wachusett Aqueduct near Bartlett Street in Northborough and MWRA's property rights related to a water main on a pipe bridge, which runs along the side of the Walnut Hill Bridge in Somerville.
- **Environmental:** Reviewed and advised on community solar agreement relative to Deer Island Wastewater Treatment Plant; reviewed and advised on draft DITP NPDES permit correspondence relative to combined sewer overflow; reviewed draft 2019 Outfall Monitoring Report; reviewed an Activity and Use Limitation Notice related to Cottage Farm CSO facility parcel of land; and reviewed TRAC municipal permit terms.
- **Legislation:** Reviewed House Bill 1732 regarding the transfer of parcel of land in Chelsea from DCAMM to the City of Chelsea with respect to MWRA's existing water and sewer property interests and infrastructure in the parcel.
- **Wireless Agreements:** Reviewed wireless cell permit agreement with New Cingular Wireless for the use of MWRA Fells Reservoir Tower in Stoneham, MA.
- **Miscellaneous:** Reviewed and advised on orders and guidance related to COVID-19 pandemic.
- **Public Records Requests:** During the first quarter of FY 2021, MWRA received and responded to one hundred forty five (145) public records requests.

LABOR, EMPLOYMENT AND ADMINISTRATIVE

New Matters

Five demands for arbitration were filed.

A union filed a charge of prohibited practice at the Massachusetts Department of Labor Relations alleging the MWRA violated Chapter 150E when it unilaterally began deductions for paid medical and family leave under Chapter 175M without bargaining to impasse.

Matters Concluded

Received an arbitrator's decision in favor of the MWRA following a hearing regarding a grievance alleging that it violated a collective bargaining agreement when other employees started their jobs at a higher step rate than the grievant.

LITIGATION/CLAIMS

New lawsuits/claims: There are no new lawsuits or claims to report.

Significant Developments

MWRA v. NEL Corp., Dewberry, et al., C.A. No. 18-CV 01156-BLS1:

The parties continue to take the depositions of various witnesses involved in the dispute.

Former employee) v. MWRA, C.A. No. 19-CV- 01847

A hearing on plaintiff's Motion to Compel and MWRA's Motion for a Protective Order was held on September 15, 2020.

J. D'Amico, Inc. v. MWRA v. Green International Assoc. Inc., C.A. No. 17-CV-04097

The parties executed a final Settlement Agreement. A Stipulation of Dismissal is expected to be filed with the court in November 2020.

MWRA v. Bharat Bhushan, et al., C.A. 19-CV-03586

The court endorsed Plaintiff's Motion for Enlargement of time to respond to Complaint.

Closed Cases: Bennett v. MWRA, C.A. No. 1984-CV-02670.

This matter was reported closed in June. A Stipulation of Dismissal was filed with the court on July 23, 2020.

Closed Claims: There are no closed claims to report.

Subpoenas During the 1st Quarter of FY 2021, no subpoenas were received and no subpoenas were pending at the end of the First Quarter FY 2020.

Wage

Garnishments

There are currently fifteen Trustee Process matters, only two of which are considered active and monitored by Law Division.

SUMMARY OF PENDING LITIGATION MATTERS

TYPE OF CASE/MATTER	As of Sept 2020	As of June 2020	As of March 2020
Construction/Contract/Bid Protest (other than BHP)	2	2	2
Tort/Labor/Employment	3	3	4
Environmental/Regulatory/Other	2	2	2
Eminent Domain/Real Estate	0	0	0
Total	7	7	8
Other Litigation matters (restraining orders, etc.)	2	2	1
Total – all pending lawsuits	9	9	10
Claims not in suit:	0	0	0
Bankruptcy	1	1	0
Wage Garnishment	2	2	2
TRAC/Adjudicatory Appeals	0	0	0
Subpoenas	0	0	0
TOTAL – ALL LITIGATION MATTERS	12	12	12

TRAC/MISC.

New Appeals: There are no new appeals in the 1st Quarter FY 2021.

**Settlement by Agreement
Of Parties** There are no Settlement by Agreement of Parties in the 1st Quarter
FY 2021.

**Stipulation of
Dismissal** No Joint Stipulation of Dismissals filed.

**Notice of Dismissal
Fine paid in full** No Notices of Dismissal, Fine Paid in Full.

**Tentative
Decision** There are no Tentative Decisions issued in the 1st Quarter FY 2021.

**Final
Decisions** There are no Final Decisions issued in the 1st Quarter FY 2021.

INTERNAL AUDIT AND CONTRACT AUDIT ACTIVITIES
1st Quarter FY21

Highlights

During the 1st quarter FY21, Internal Audit (IA) completed audits of the Chelsea lease with reductions recommended to the insurance escrow account and the Charlestown Navy Yard lease with reductions to the costs claimed. IA continues to provide support to staff in ensuring the reopening of offices complies with guidelines issued by the CDC, OSHA, Commonwealth of Massachusetts, City of Boston and industry best practices. Review continues on the HEEC cable costs and the proposed tariff filing with the Massachusetts Department of Public Utilities. Interim reports have been issued on safety training with recommendations to improve the management and timeliness of the training.

IA completed an incurred cost audit of Hazen & Sawyer, a preliminary review of the Tunnel Redundancy contract 7159 and a labor burden review of the Dorchester Interceptor Sewer construction contract. IA also issued 13 indirect cost rate letters to consultants following a review of their consultant disclosure statements.

Status of Recommendations

During FY21, five recommendations were closed.

IA follows-up on open recommendations on a continuous basis. All open recommendations have target dates for implementation. When a recommendation has not been implemented within 36 months, the appropriateness of the recommendation is re-evaluated.

All Open Recommendations Pending Implementation – Aging Between 0 and 36 Months

Report Title (issue date)	Audit Recommendations		
	Open	Closed	Total
Fleet Services Process Review (6/30/18)	1	4	5
Fuel Use & Mileage Tracking (12/31/18)	3	5	8
Asset Tracking – Fleet Data Verification (8/21/19)	5	11	16
Fleet Services Non-Plated Equipment Inspections (3/30/20)	9	6	15
Total Recommendations	18	26	44

Cost Savings

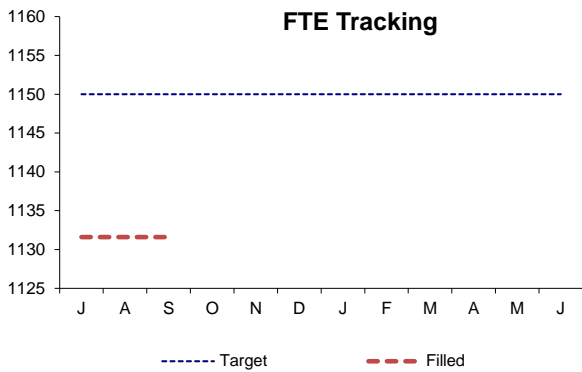
IA's target is to achieve at least \$1,000,000 in cost savings each year. Cost savings vary each year based upon many factors. In some cases, cost savings for one year may be the result of prior years' audits.

Cost Savings	FY17	FY18	FY19	FY20	FY21 Q1	TOTALS
Consultants	\$272,431	\$118,782	\$262,384	\$643,845	\$167,303	\$1,464,745
Contractors & Vendors	\$3,037,712	\$1,323,156	\$3,152,884	\$2,097,729	\$757,261	\$10,368,742
Internal Audits	\$224,178	\$204,202	\$210,063	\$212,517	\$54,287	\$905,247
Total	\$3,534,321	\$1,646,140	\$3,625,331	\$2,954,091	\$978,851	\$12,738,734

OTHER MANAGEMENT

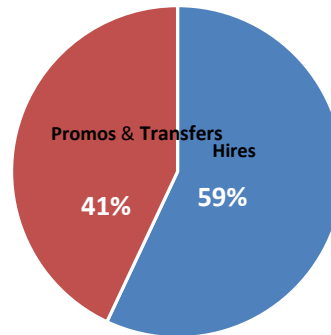
Workforce Management

1st Quarter - FY21



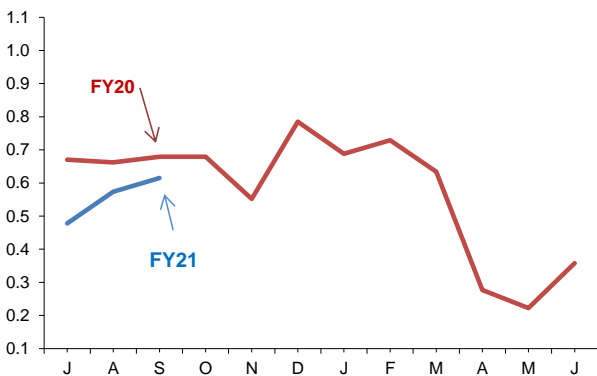
FY21 Target for FTE's = 1150
 FTE's as of September 2020 = 1131.6
 Tunnel Redundancy as of Sept 2020 = 7.0

Position Filled by Hires/Promos & Transfer for YTD



	Pr/Trns	Hires	Total
FY19	112 (60%)	76 (40%)	188
FY20	84 (59%)	58 (41%)	142
FY21	14 (41%)	20 (59%)	34

Average Monthly Sick Leave Usage Per Employee

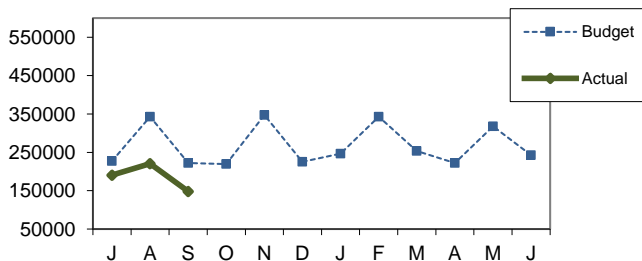


Average monthly sick leave for the 1st Quarter of FY21 has a decrease as compared to the 1st Quarter of FY20 (0.55 to 0.67)

	Number of Employees	YTD (usage to date)	Annualized Total	Annual FMLA %	FY20
Admin	136	1.02	4.06	21.3%	6.48
Aff. Action	6	1.10	4.40	0.0%	6.42
Executive	4	0.05	0.19	0.0%	1.81
Finance	33	0.83	3.30	0.0%	4.09
Int. Audit	6	0.18	0.71	0.0%	5.08
Law	13	2.02	8.08	3.8%	6.71
OEP	4	0.00	0.00	0.0%	1.00
Operations	929	1.84	7.36	25.2%	7.27
Tunnel Red	7	0.69	2.74	0.0%	4.93
Pub. Affs.	11	0.09	0.34	0.0%	7.96
MWRA Avg	1149	2.22	6.67	24.1%	6.94

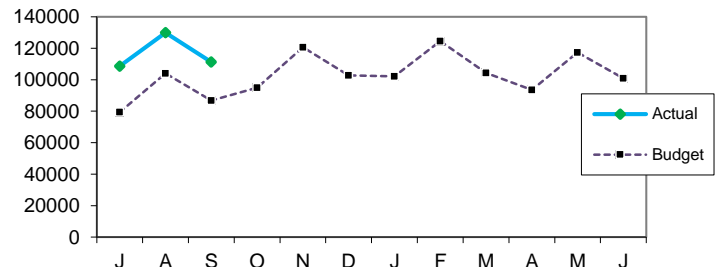
Percent of sick leave usage for FY21, attributable to Family and Medical Leave Act (FMLA) is 24.1% .

Field Operations Current Month Overtime \$



Total Overtime for Field Operations for the first quarter of FY21 was \$559k which is (\$233k) under budget. Emergency overtime was \$250k, which is (\$150k) under budget. Rain events totaled \$208k and Emergency Maintenance was \$29k. Coverage overtime was \$190k which is \$5k over budget, reflecting the month's shift coverage requirements. Planned overtime was \$102k or (\$94k) under budget with combined spending of \$65k for Maintenance, \$14k for Planned Ops and \$11k for Telecommunications Oversight.

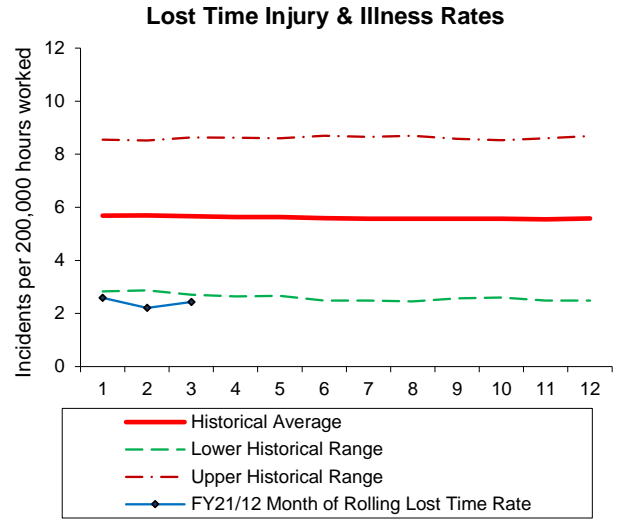
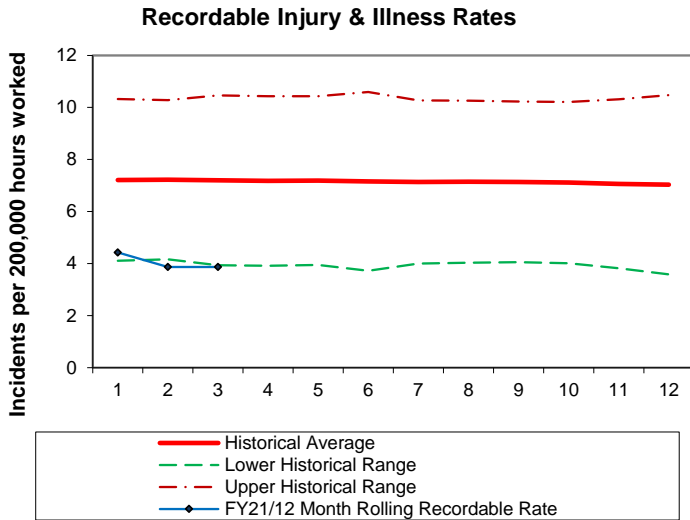
Deer Island Treatment Plant Current Month Overtime \$



Deer Island's total overtime expenditure first quarter was \$350K, which was \$80K or 29.5% over budget. In the first quarter, Deer Island experienced higher than anticipated shift coverage of \$70K and planned/unplanned overtime of \$13K. This is offset by lower storm coverage of (\$3k).

Workplace Safety

1st Quarter - FY21



- 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. Each month this rate is calculated using the previous 12 months of injury data.
- 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. Each month this rate is calculated using the previous 12 months of injury data.
- 3 The "Historical Average" is computed using the actual MWRA monthly incident rates for FY99 through FY21. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively.
- 4 With Changes in state law, in February 1, 2019, MWRA began record keeping and reporting according to Federal OSHA standards for injury and illness record keeping. Strictly adhering to the federal OSHA reporting regulation has caused an increase in recorded injuries and illnesses. This increase is causing both the Recordable injury and illness Rate and the Lost Time Injury and Illness rate to trend higher than in past years but does not necessarily mean there is an increase in injuries or illnesses. OSHA injuries and illnesses, and lost time are recorded differently than the Massachusetts Workers' Compensation standards and could result in an increase in the OSHA rate while the Workers' Compensation claims are decreasing. Over time, the rise on the charts should stabilize as new data replaces the older data..

WORKERS COMPENSATION HIGHLIGHTS

	1st Quarter Information		Open Claims
	New	Closed	
Lost Time	3	13	45
Medical Only	12	15	13
Report Only	15	15	
	QYTD		FYTD
Regular Duty Returns	4		4
Light Duty Returns	0		0
Indemnity payments as of September 30 2020 included in open claims list			18

COMMENTS:

Regular Duty Returns

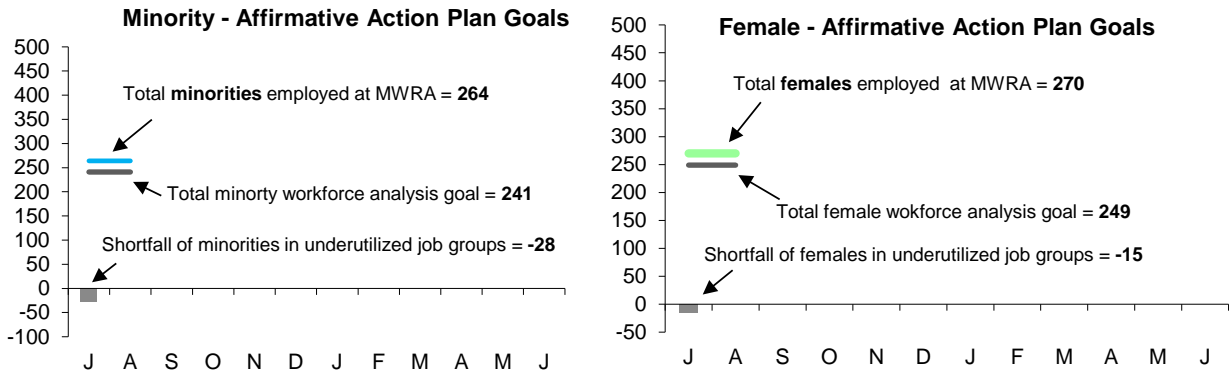
JULY 1 Employees returned to full duty/no restrictions
AUG 2 Employees returned to full duty/no restrictions
SEPT 1 Employees returned to full duty/no restrictions

Light Duty Returns

JULY N/A
AUG N/A
SEPT N/A

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 1st Quarter - FY21



Highlights:

At the end of Q1 FY21, 5 job groups or a total of 28 positions are underutilized by minorities as compared to 6 job groups for a total of 32 positions at the end of Q1 FY20; for females 7 job groups or a total of 15 positions are underutilized by females as compared to 7 job groups or a total of 24 positions at the end of Q1 FY20. During Q1, 1 minority and 4 females were hired. During this same period, minorities and 0 female were terminated.

Underutilized Job Groups - Workforce Representation

Job Group	Employees as of 9/30/2020	Minorities as of 9/30/2020	Achievement Level	Minority Over or Under Underutilized	Females As of 9/30/2020	Achievement Level	Female Over or Under Underutilized
Administrator A	23	3	3	0	12	6	6
Administrator B	23	0	6	-6	6	6	0
Clerical A	29	11	5	6	26	21	5
Clerical B	25	9	7	2	5	7	-2
Engineer A	79	24	18	6	19	17	2
Engineer B	62	20	16	4	14	10	4
Craft A	112	14	23	-9	0	4	-4
Craft B	145	22	24	-2	3	5	-2
Laborer	70	21	16	5	5	3	2
Management A	94	23	23	0	33	33	0
Management B	43	10	6	4	9	10	-1
Operator A	65	5	14	-9	2	4	-2
Operator B	70	20	11	9	3	1	2
Professional A	29	3	5	-2	19	13	6
Professional B	166	48	41	7	82	74	8
Para Professional	50	15	12	3	25	28	-3
Technical A	58	14	10	4	7	6	1
Technical B	6	2	1	1	0	1	-1
Total	1149	264	241	51/-28	270	249	36/-15

AACU Candidate Referrals for Underutilized Positions

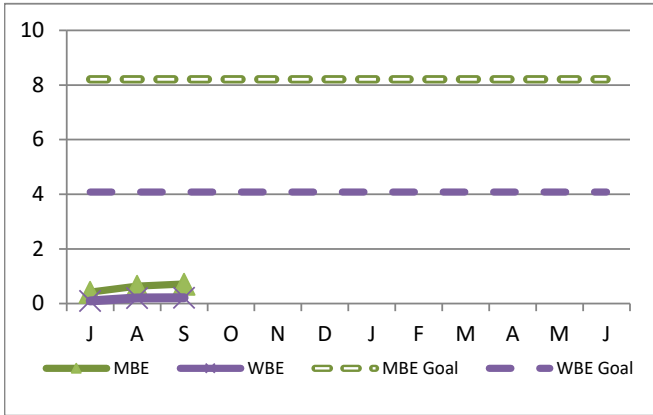
Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions / Transfers	AACU Ref. External	Position Status
Administrative B	Superintendent, Clinton	1	Ext.	1	0	Promo = WM
Craft A	Unit Supervisor	1	Int.	1	0	Promo = WM
Craft B	Facilities Specialist	2	Int/Ext	1	0	NH = WM Promo = WM
Craft B	Electrician	2	Ext.	0	0	NH = 2WM
Craft B	Jr. Instrument Technician	1	Int.	1	0	Promo = HM
Para Professional	Planning/Scheduling Coordinator	1	Int.	1	1	Promo = BF

MBE/WBE Expenditures 1st Quarter– FY21

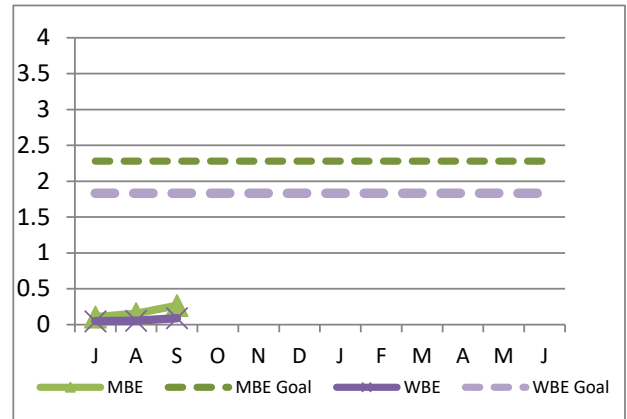
MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. The goals for FY21 are based on 85% of the total construction and 75% of the total professional projected spending for the year. Certain projects have been excluded from the goals as they 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 September.

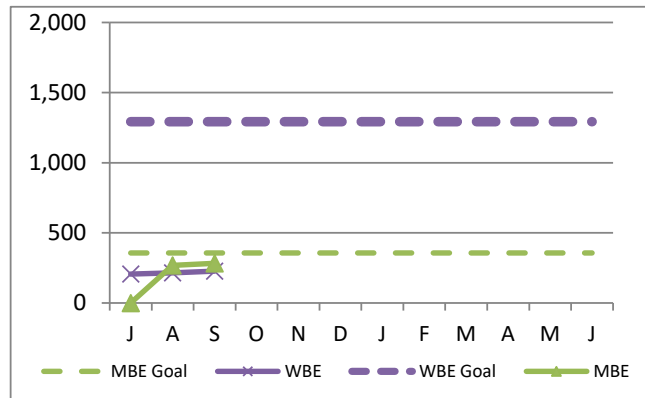
Construction



Professional Services



Goods/Services



FY21 spending and percentage of goals achieved, as well as FY20 performance are as follows:

MBE					WBE				
FY21 YTD		FY20			FY21 YTD		FY20		
Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent	
715,850	8.7%	3,641,145	45.6%	Construction	212,041	5.2%	2,446,388	61.7%	
266,521	11.7%	2,322,007	111.9%	Prof Svcs	89,718	4.9%	942,850	56.6%	
282,799	79.3%	340,656	94.1%	Goods/Svcs	226,970	17.6%	993,375	81.3%	
1,265,170	11.7%	6,303,808	60.5%	Totals	528,729	7.3%	4,382,613	63.9%	

FY21 MBE/WBE dollar totals do not include MBE and WBE payments to prime contractors and consultants.

MWRA FY21 CEB Expenses 1st Quarter – FY21

As of September 2020, total expenses are \$181.8 million, \$6.8 million or 3.6% lower than budget, and total revenue is \$197.2 million, \$75k over budget, for a net variance of \$6.9 million.

Expenses –

Direct Expenses are \$57.0 million, \$2.9 million or 4.8% under budget.

- **Wages & Salaries** are under budget by \$1.0 million or 3.9%. Regular pay is also \$1.0 million under budget, due to lower head count, and timing of backfilling positions. YTD through September, the average Full Time Equivalent (FTE) positions was 1,139, twenty-four fewer than the 1,163 FTE's budgeted.
- **Other Services** expenses are \$570k under budget or 8.7%, primarily due to under spending for Sludge Pelletization of \$340k, Telecommunication expenses of \$73k, Membership/Dues of \$73k, Grit Screen Removal of \$62k, and Police Details of \$48k.
- **Professional Services** expenses are \$565k under budget or 24.5%, primarily due to under spending for Computer System Consultants of \$263k and Engineering services of \$225k, partially offset by overspending on Lab Testing and Analysis of \$171k due to the Biobot engagement.
- **Utilities** expenses are \$378k under budget or 7.4%, primarily due to under spending for Electricity of \$344k of which \$209k is Deer Island and \$101k is from Water Operations both reflect favorable pricing. Lower flows at Deer Island, 11.7% below budget also contributed to lower electricity demand. Water Operations is under budget primarily due to lower rates and quantity. Water Operations flows were 1.3% above budget.
- **Workers Compensation** expenses are \$435k under budget or 70.3%, primarily due to under spending for Compensation Payments of \$282k and Medical Payments of \$113k.
- **Overtime** expenses are \$205k under budget or 17.1%, primarily due to fewer unplanned events.
- **Ongoing Maintenance** expense \$545k over budget or 6.7%, due to overspending on Plant & Machine Services and Computer Software of \$458k and \$314k, respectively. Maintenance variance reflects the actual timing of projects.

Indirect Expenses are \$16.8 million, \$1.7 million or 9.4% under budget driven by Pension Expense of \$10.0 million and Watershed Reimbursement of \$3.2 million, under budget by \$1.0 million and \$826k, respectfully. A revised pension contribution requirement from the Public Employee Administration Commission reduced pension expense by \$1.0 million. Watershed operating expenses were under budget primarily due to lower fringe benefits (\$348k) due to timing difference, maintenance (\$194k), and equipment purchases (\$130k).

Debt Service Expenses totaled \$108.0 million, \$2.2 million under budget, reflecting lower than budgeted variable interest expense of \$2.2 million.

Revenue and Income –

Total Revenue and Income is \$197.2 million, or \$75k over budget. Other Revenue totaled \$1.1 million, \$239k over budget primarily due to favorable variances of \$68k and \$61k for an unplanned operating grant and Disposal of Equipment, respectively. Other User Charges of \$2.4 million were over budget by \$42,000 due to the entrance fee payment from the Rivers School in Weston. The positive variance is partially offset by lower investment income, \$205k under budget due to lower than budgeted interest rates.

	Sep 2020 Year-to-Date			
	Period 3 YTD Budget	Period 3 YTD Actual	Period 3 YTD Variance	%
EXPENSES				
WAGES AND SALARIES	\$ 25,567,106	\$ 24,568,794	\$ (998,312)	-3.9%
OVERTIME	1,201,269	996,272	(204,997)	-17.1%
FRINGE BENEFITS	5,494,586	5,387,951	(106,635)	-1.9%
WORKERS' COMPENSATION	619,164	183,921	(435,243)	-70.3%
CHEMICALS	3,586,113	3,430,040	(156,073)	-4.4%
ENERGY AND UTILITIES	5,107,561	4,729,257	(378,304)	-7.4%
MAINTENANCE	8,166,061	8,710,717	544,656	6.7%
TRAINING AND MEETINGS	80,471	12,774	(67,697)	-84.1%
PROFESSIONAL SERVICES	2,305,838	1,740,782	(565,056)	-24.5%
OTHER MATERIALS	1,209,102	1,274,616	65,514	5.4%
OTHER SERVICES	6,551,640	5,981,424	(570,216)	-8.7%
TOTAL DIRECT EXPENSES	\$ 59,888,911	\$ 57,016,548	\$ (2,872,363)	-4.8%
INSURANCE	\$ 764,805	\$ 761,421	\$ (3,384)	-0.4%
WATERSHED/PILOT	4,068,777	3,242,609	(826,168)	-20.3%
HEEC PAYMENT	1,803,800	1,904,227	100,427	5.6%
MITIGATION	423,086	413,015	(10,071)	-2.4%
ADDITIONS TO RESERVES	453,769	453,769	-	0.0%
RETIREMENT FUND	11,000,000	10,000,000	(1,000,000)	-9.1%
POST EMPLOYEE BENEFITS	-	-	-	---
TOTAL INDIRECT EXPENSES	\$ 18,514,237	\$ 16,775,041	\$ (1,739,196)	-9.4%
STATE REVOLVING FUND	\$ 21,796,040	\$ 21,796,040	\$ -	0.0%
SENIOR DEBT	61,587,821	61,587,821	-	0.0%
DEBT SERVICE ASSISTANCE	-	-	-	---
CURRENT REVENUE/CAPITAL	-	-	-	---
SUBORDINATE MWRA DEBT	25,961,753	25,961,753	-	0.0%
LOCAL WATER PIPELINE CP	-	-	-	---
CAPITAL LEASE	804,265	804,265	-	0.0%
VARIABLE DEBT	-	(2,184,514)	(2,184,514)	---
DEFESANCE ACCOUNT	-	-	-	---
DEBT PREPAYMENT	-	-	-	---
TOTAL DEBT SERVICE	\$ 110,149,879	\$ 107,965,365	\$ (2,184,514)	-2.0%
TOTAL EXPENSES	\$ 188,553,027	\$ 181,756,954	\$ (6,796,073)	-3.6%
REVENUE & INCOME				
RATE REVENUE	\$ 192,346,250	\$ 192,346,250	\$ -	0.0%
OTHER USER CHARGES	2,332,549	2,374,244	41,695	1.8%
OTHER REVENUE	813,653	1,052,241	238,588	29.3%
RATE STABILIZATION	375,000	375,000	-	0.0%
INVESTMENT INCOME	1,211,972	1,007,155	(204,817)	-16.9%
TOTAL REVENUE & INCOME	\$ 197,079,424	\$ 197,154,890	\$ 75,467	0.0%

Cost of Debt

1st Quarter– FY21

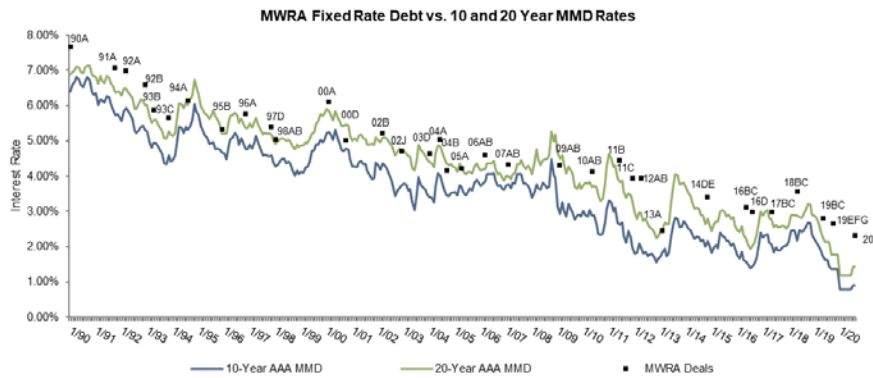
MWRA borrowing costs are a function of the fixed and variable tax exempt interest rate environment, the level of MWRA's variable interest rate exposure and the perceived creditworthiness of MWRA. Each of these factors has contributed to decreased MWRA borrowing costs since 1990.

Average Cost of MWRA Debt FYTD

Fixed Debt (\$3.46 billion)	3.39%
Variable Debt (\$330.7million)	0.53%
SRF Debt (\$852.2 million)	1.57%
Weighted Average Debt Cost (\$4.65 billion)	2.85%

Most Recent Senior Fixed Debt Issue August 2020

2020 Series B (\$160.0 million) 2.33 %

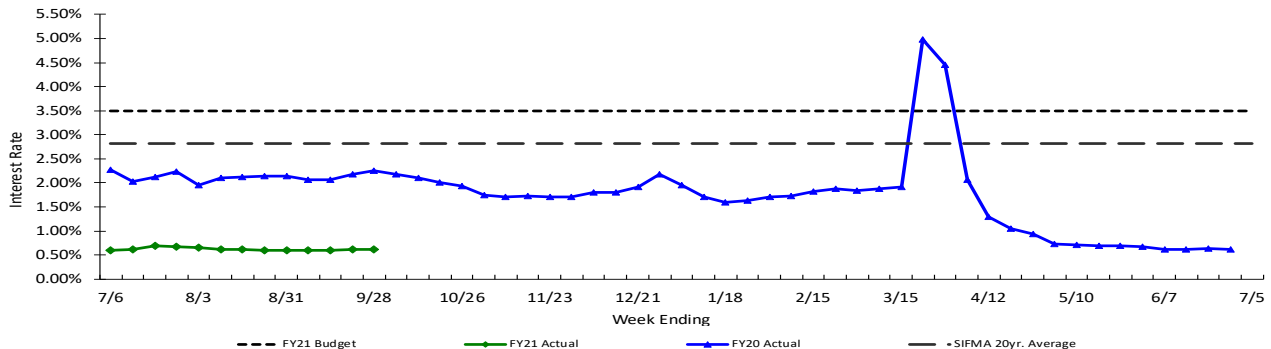


Bond Deal	1995B	1996A	1997D	1998AB	2000A	2000D	2002B	2002J	2003D	2004A	2004B	2005A	2006AB	2007AB
Rate	5.34%	5.78%	5.40%	5.04%	6.11%	5.03%	5.23%	4.71%	4.64%	5.05%	4.17%	4.22%	4.61%	4.34%
Avg Life	20.5 yrs	19.5 yrs	21.6 yrs	24.4 yrs	26.3 yrs	9.8 yrs	19.9 yrs	19.6 yrs	18.4 yrs	19.6 yrs	13.5 yrs	18.4 yrs	25.9 yrs	24.4 yrs

Bond Deal	2009AB	2010AB	2011B	2011C	2012AB	2013A	2014D-F	2016BC	2016D	2017BC	2018BC	2019BC	2019EFG	2020B
Rate	4.32%	4.14%	4.45%	3.95%	3.93%	2.45%	3.41%	3.12%	2.99%	2.98%	3.56%	2.82%	2.66%	2.33%
Avg Life	15.4 yrs	16.4 yrs	18.8 yrs	16.5 yrs	17.9 yrs	9.9 yrs	15.1 yrs	17.4 yrs	18.8yrs	11.2 yrs	11.7yrs	11.9yrs	9.73 yrs.	15.6 yrs

Weekly Average Variable Interest Rates vs. Budget

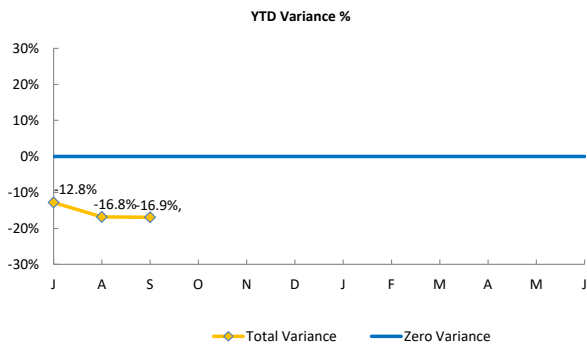
MWRA currently has ten variable rate debt issues with \$613.9 million outstanding, excluding commercial paper. Of the ten outstanding series, four have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In September, SIFMA rates ranged from a high of 0.12% to a low of 0.08% 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

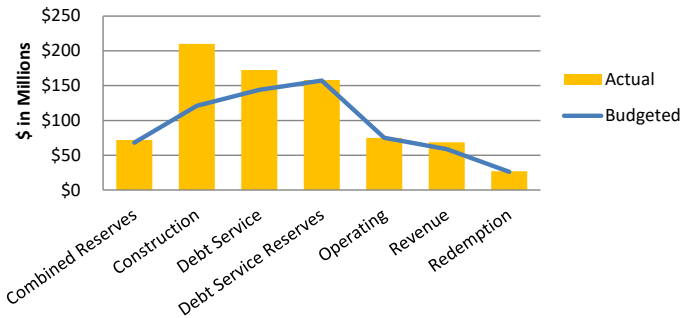
1st Quarter- FY21

Year To Date



	YTD BUDGET VARIANCE			
	(\$000)			
	BALANCES IMPACT	RATES IMPACT	TOTAL	%
Combined Reserves	\$11	(\$125)	(114)	-56.9%
Construction	\$54	\$18	72	98.9%
Debt Service	\$17	\$32	49	56.0%
Debt Service Reserves	\$3	(\$143)	(140)	-22.9%
Operating	(\$0)	(\$28)	(28)	-32.6%
Revenue	\$10	(\$6)	3	6.0%
Redemption	\$3	(\$49)	(46)	-48.9%
Total Variance	\$97	(\$302)	(\$205)	-16.9%

YTD Average Balances Budgeted vs. Actual

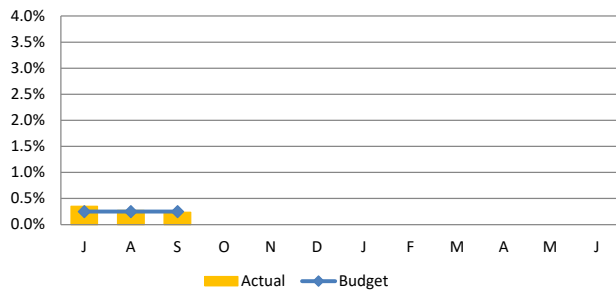


YTD Average Interest Rate Budgeted vs. Actual

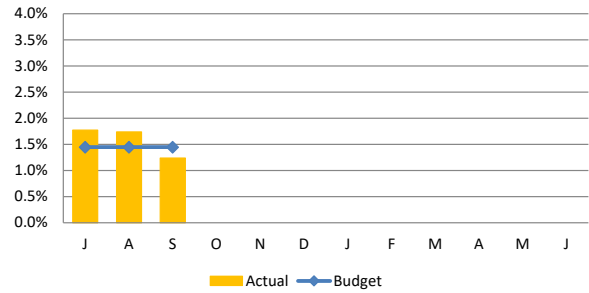


Monthly

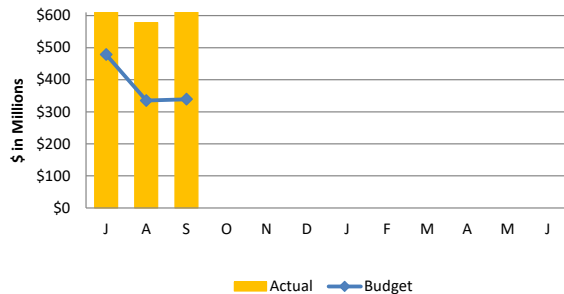
Short -Term Interest Rates



Long -Term Interest Rates



Short-Term Average Balances



Long-Term Average Balances

