

MASSACHUSETTS WATER RESOURCES AUTHORITY

# Board of Directors Report

on

## Key Indicators of MWRA Performance

for

Third Quarter FY2021

Q1	Q2	Q3	Q4



Frederick A. Laskey, Executive Director  
David Coppes, Chief Operating Officer  
May 26, 2021

# Board of Directors Report on Key Indicators of MWRA Performance

## 3rd Quarter FY21

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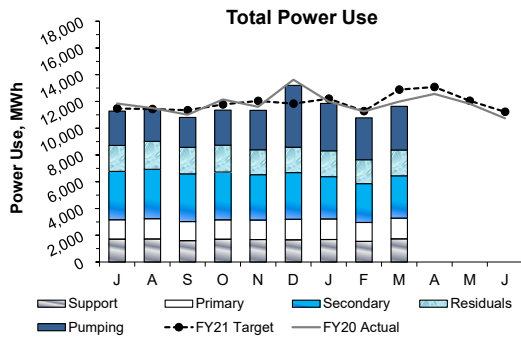
This quarterly report is prepared by MWRA staff to track a variety of MWRA performance measures for routine review by MWRA's board of directors. The content and format of this report is expected to develop as time passes. Information is reported on a preliminary basis as appropriate and available for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

Frederick A. Laskey, Executive Director  
David Coppes, Chief Operating Officer  
May 26, 2021

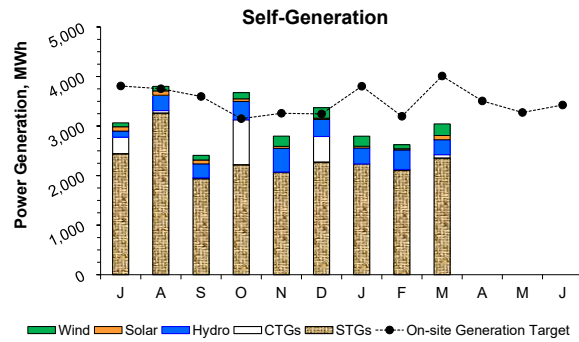
# OPERATIONS AND MAINTENANCE

# Deer Island Operations

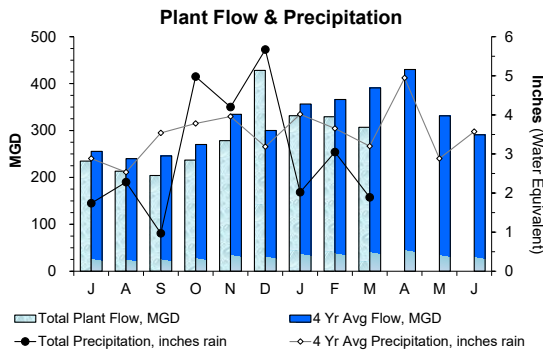
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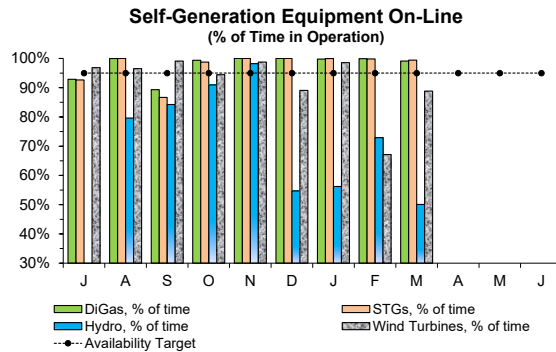
Total power usage in the 3rd Quarter was 5.8% below target as plant flow for this period was 13.1% below target with historical data (4 year average) used to generate the electricity model. While power usage was near or below target for most plant processes, power usage for raw wastewater pumping was 11.9% below target due to the lower-than-expected flows.



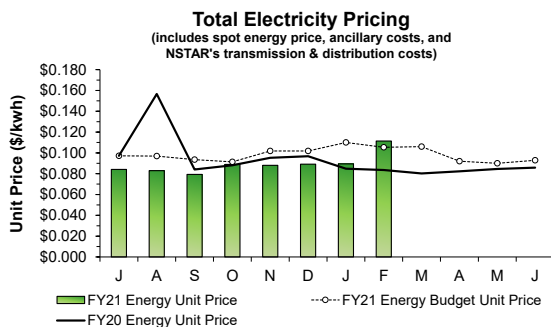
Power generated on-site during the 3rd Quarter was 23.1% below target. CTG generation was below target by 90.8% as it was not operated in January, and only briefly operated for maintenance and testing purposes and for compliance opacity audit during the other two (2) months. STGs generation was 13.1% below target as digester gas production was 6.1% lower-than-expected. Hydro Turbine generation was 29.5% below target due to several issues with Turbine #1, including a worn taper lock, and several issues with the speed increaser cap nut and oil sensor. Additionally, Turbine #2 remains offline pending repair of the runner blade assembly. Wind Turbine generation was 32.6% below target due mainly to various issues on Wind Turbine #1. Generation from the Solar Panels was 4.3% below target for the quarter.



Total Plant Flow for the 3rd Quarter was 13.1% below target with the budgeted 4 year average plant flow (322.6 MGD actual vs. 371.2 MGD expected) as precipitation was 36.0% below target (6.96 inches actual vs. 10.87 inches expected).

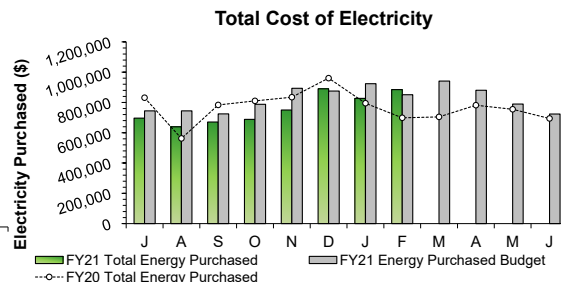


The availability of the DiGas system and STGs both met their 95% availability target, while Hydro Turbine and Wind Turbine availability fell below target during the 3rd Quarter. Hydro Turbine availability was 59.7% as Turbine #1 had several mechanical issues that caused the unit to trip during periods of high tide with low plant flows. This turbine has been operating without issue since repaired on March 26. Hydro Turbine #2 remains offline pending repair of the runner blade assembly. Wind Turbine availability fell to 84.8% due to mechanical issues with the hydraulics system on Turbine #1.



Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The actual Total Energy Unit Price in February (the most current invoice available) was 5.7% below target with budgetary estimates. The actual total energy unit prices in March are 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.



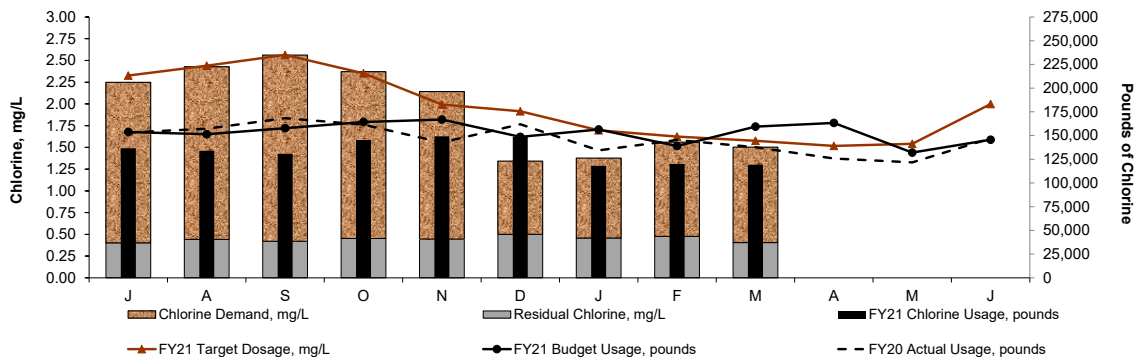
The Electricity cost data for Electricity Purchased in March are not yet available. Year-to-date Total Cost of Electricity is \$498,649 (7.6%) lower than budgeted through February as the Total Energy Unit Price was 10.8% lower than target while the Total Electricity Purchased was only 3.5% above target.

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

3rd Quarter - FY21

### Deer Island Sodium Hypochlorite Use



The disinfection dosing rate in the 3rd Quarter was 9.0% below target with budgetary estimates. Actual sodium hypochlorite usage in pounds of chlorine was 21.4% lower than expected as the 4 year average plant flow used for estimating the hypochlorite usage target was 13.1% lower-than-expected. DITP maintained an average disinfection chlorine residual of 0.45 mg/L this quarter with an average dosing rate of 1.48 mg/L (as chlorine demand was 1.03 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

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	2	1	1	99.9%	2.62
N	3	3	0	99.0%	13.63
D	3	3	0	97.4%	41.94
J	1	1	0	99.8%	4.62
F	0	0	0	100.0%	0.00
M	0	0	0	100.0%	0.00
A					
M					
J					
<b>Total</b>	<b>10</b>	<b>9</b>	<b>1</b>	<b>99.42%</b>	<b>63.98</b>

99.9% of all flows were treated at full secondary during the 3rd Quarter. There was one (1) secondary blending event on January 16 due to high plant flows from heavy rain combined with significant snowmelt. This blending event resulted in 4.62 hours of blending and 23.76 MGal of primary-only treated effluent with secondary effluent. The Maximum Secondary Capacity during the entire quarter was 700 MGD.

Secondary permit limits were met at all times during the 3rd Quarter of FY21.

## Deer Island Operations & Maintenance Report

### Environmental/Pumping:

The plant achieved an instantaneous peak flow rate of 970.6 MGD during the morning of January 16. This peak flow occurred during a storm event that brought 1.03 inches of precipitation to the metropolitan Boston area and significant snowmelt also contributed to the high plant flows during this storm event. Overall, Total Plant Flow in the 3rd Quarter was 13.1% below target with the 4 year average plant flow estimate for the quarter.

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 North Main Pump Station (NMPS). The contractor began the upgrade of WTF Pump #1 on January 25. The pump upgrade continued through March and the pump is anticipated to be available for performance testing in April. To date, work has been completed on five (5) of the six (6) pumps (#6, #2, #5, #4, and #3).

### Disinfection Treatment:

The West Disinfection Basin (Basin #2) was taken offline for 2.2 days, during dry weather/low plant flow conditions, from 2:30 p.m. on January 19 to 7:00 p.m. on January 21 to allow staff to repair a leak in the dewatering line that serves the sodium bisulfite storage tank containment area. This dewatering line is routed from the sodium bisulfite storage containment area to the outfall through Basin #2. This basin was taken out of service and drained to allow access to the dewatering line to affect the repairs. The target chlorine residual (prior to dechlorination) was increased during operation of the single disinfection basin (Basin #1) to compensate for the reduced chlorine contact time thus ensuring fecal coliform inactivation below effluent permit limits. Additionally, the sodium bisulfite feed was also increased to ensure sufficient dechlorination at these higher residual chlorine levels to meet effluent total chlorine residual permit limits. The DEP and EPA were provided with a courtesy notification in advance of this maintenance activity.

## Deer Island Operations

3rd Quarter - FY21

### Deer Island Operations & Maintenance Report (continued)

#### Odor Control Treatment:

The North Pumping Odor Control (NPOC) Facility, which is responsible for treating the process airflows from the North Main Pump Station and the Winthrop Terminal Headworks Facility, was taken offline for several hours on February 23 to allow staff and a contractor to troubleshoot the actuator for the suction damper that is in the ductwork common to both airflow fans in the odor control facility. Process airflow treatment in this facility was suspended more than once for a total shutdown of three (3) hours and 34 minutes. Stray process air was contained within the building during this work and no resident odor complaints were received during the shutdowns.

#### Residuals Treatment:

On January 26, staff isolated Digested Sludge and Gas Storage (Dystor) Tank #1 from the second Dystor tank to begin the process of draining the sludge from the tank to allow the contractor to remove the remaining settled material in the tank once the bulk of the sludge has been pumped out. The Gravity Thickener Rehabilitation contract includes a task to drain and clean Dystor Tank #1. In addition to material removal, piping and valves will be replaced as part of the project. The sludge was drained from the Dystor tank and the tank flushed multiple times from January 26 to February 6 to remove as much sludge as possible prior to turnover to the contractor. The final step prior to turnover included a nitrogen gas purge to isolate the Dystor tank from the gas system. This purge involved displacing approximately 40,000 cubic feet of residual digester gas in the headspace of the Dystor's gas storage system with nitrogen gas. Several turnovers of the gas in the headspace are necessary to effectively remove all of the residual digester gas. This nitrogen purge was performed on February 10 and was successfully completed as planned over the course of the entire day. The Dystor Tank 1 gas system was then placed in maintenance mode to keep the digester gas bag from deflating while the Dystor tank remains out of service. The task of emptying the tank continued through March.

Sludge flow to Module #2 Digester #4 was suspended at approximately 2:00 a.m. on February 23 to begin preparing the digester for a mixer replacement. The sludge in the digester was emptied and the mixer was replaced. The digester was returned to operation on March 23 by filling the empty digester with the sludge overflows from the other operating digesters. Sludge feed to Digester #4 was incrementally resumed starting March 26 closing out the month with eight (8) active digesters in operation.

#### Energy and Thermal Power Plant:

Overall, total power generated on-site accounted for 24.7% of Deer Island's total power use for the 3rd Quarter. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 24.4% of Deer Island's total electrical power use for the quarter.

The quarterly Continuous Emissions Monitoring System (CEMS) cylinder gas audits, along with the quarterly Continuous Opacity Monitoring System (COMS) audits for the two (2) boilers in the Thermal Power Plant were successfully completed by the contractor on February 11. The CEMS measures the nitrogen oxides (NOx) emissions, the oxygen, carbon monoxide, and sulfur dioxide concentrations in the boiler flue gas. The cylinder gas audit measures each gas analyzer in the CEMS against known cylinder gas concentrations. The opacity audits measure the performance of the COMS through a number of required testing protocols specified in the regulations. DITP received passing results on all the audit tests that were performed and a final report was submitted to the MaDEP. The next round of audit tests will take place in May or early June 2021.

Opacity testing for each CTG unit was successfully completed on March 16 as part of the annual regulatory requirements for emissions reporting on the CTGs and the results of this test demonstrated the units were in compliance. The test requires each CTG to be operated (one at a time) at full load for one (1) hour. During this time a certified "smoke reader" visually observes the condition of the stack exhaust and records the results.

### Clinton Operations & Maintenance Report

#### Dewatering Building

Maintenance staff greased belt filter press #1 and #2. Maintenance replaced doctor blades on belt filter press #2. They also worked on polymer system. Staff replaced upper and lower seals on belt filter press #2. Operations staff washed down gravity thickener #2. Staff also built temporary housing around gravity thickener #1 to de-ice collection arm. Maintenance staff checked all equipment for lubrication, proper operation and also completed PM's on air handler in press room.

#### Chemical Building

Maintenance staff replaced broken drive belt for soda ash auger. They cleaned and rotated auger shaft by hand to break up hard pieces of soda ash in hopper. Staff cleaned soda ash lines from upper mixing tank to lower mixing tank. Maintenance also checked soda ash filter bags and silo hatch, cleaned both and returned to service. They also disassembled RAS Pump #2 in preparation for installation of new pump. Maintenance and Operations staff went inside the distribution box to inspect the temporary wooden gate that was installed in April 2020.

#### Aeration Basins

Maintenance completed all PM's on aeration blowers replacing all belts and changing oils. Operations staff also cleaned PH and DO probes.

#### Phosphorus Building

Operations staff put PRF building on line for the season. Operations staff cleaned both CL17 chlorine analyzers. They also replaced plastic tubing for #1 and #2 polymer pumps. Facilities Specialist completed lab bench for operational tests in PRF building.

#### Headworks Building

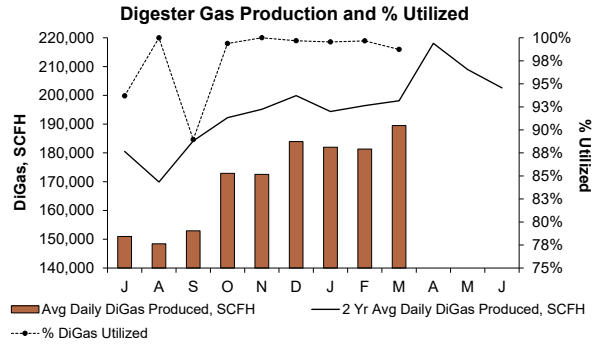
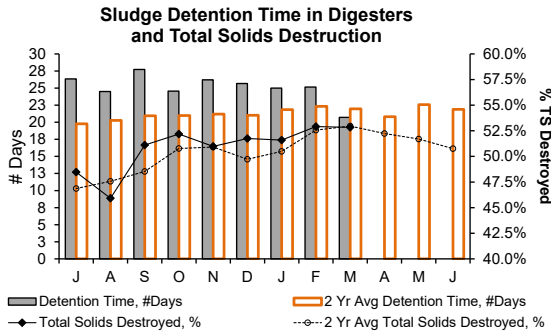
Maintenance staff cleaned off both influent mechanical and manual bar racks, greased upper and lower mechanical bar rack. They also greased grit conveyor. Maintenance continues to work on #1 bucket elevator system replacing the chain, sprocket and installing new buckets. Staff installed new ultrasonic sensor for influent lift pumps.

#### Digester Building

Maintenance staff checked all equipment for proper operation. Staff greased all pumps and mixer. They also washed down the digester's floating cover. Operation staff checked digester pumps, mixer and grinders for proper operation.

# Deer Island Operations and Residuals

3rd Quarter - FY21



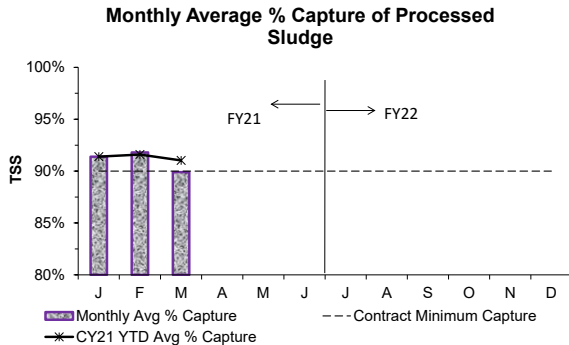
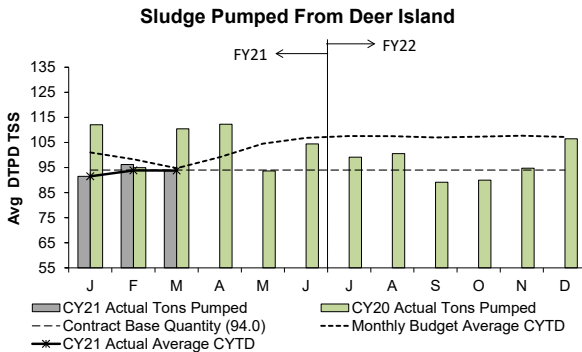
Total solids (TS) destruction following anaerobic sludge digestion averaged 52.4% during the 3rd Quarter, on target with the 2 year average of 52.0%. Sludge detention time in the digesters was 23.6 days, 7.1% above target, as DI operated with an average of 7.6 digesters.

The Avg Daily DiGas Production in the 3rd Quarter was 6.1% 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, and due to overall lower total sludge production. On average, 99.3% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant (TPP).

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

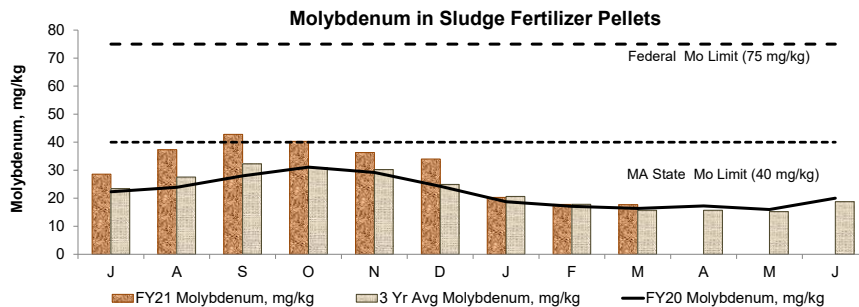
New England Fertilizer Company (NEFCO) operates the MWRA Biosolids Processing Facility (BPF) in Quincy under contract. MWRA pays a fixed monthly amount for the calendar year to process up to 94.0 DTPD/TSS as an annual average (for the extended contract period of January 1, 2021 through December 31, 2022). The monthly invoice is based on 94.0 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 94.0 DTPD/TSS each year (FY21's budget is 107.9 DTPD/TSS and FY22's budget is 106.2 DTPD/TSS).



The average quantity of sludge pumped to the Biosolids Processing Facility (BPF) in the 3rd Quarter was 93.8 TSS Dry Tons Per Day (DTPD) - on target (-1.0%) with the FY21 budget of 94.7 TSS DTPD for the same period.

The contract requires NEFCO to capture at least 90.0% of the solids delivered to the Biosolids Processing Facility. The average capture for the 3rd Quarter, and CY21 average capture, was 91.03%.

The CY21 average quantity of sludge pumped through March is 93.8 DTPD - 1.0% below target compared with the CY21 average budget of 94.7 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 3rd Quarter averaged 18.6 mg/kg, 3% above the 3 year average, 53% below the MA State Limit, and 75% below the Federal Limit.



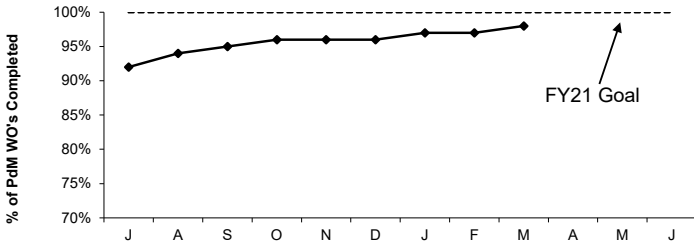
# Deer Island Maintenance

3rd Quarter - FY21

## Productivity Initiatives

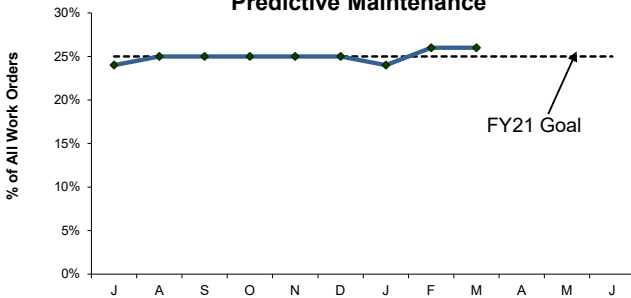
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in overall maintenance backlog.

### Predictive Maintenance Compliance

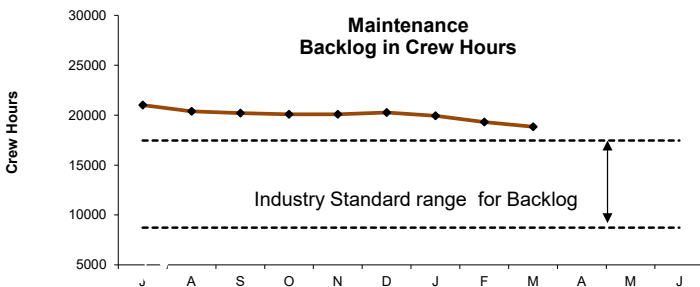


Deer Island's FY21 predictive maintenance goal is 100%. DITP completed 97% of all PdM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program. Due to COVID-19 and limited staffing prior to June 22, 2020, our percentage is below our goal of 100%, we anticipate meeting 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. 26% 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.

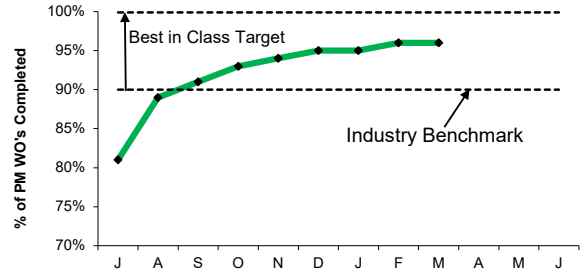


DITP's maintenance backlog at Deer Island is 18, 842 hours this quarter. DITP is at the upper end of the industry average for backlog. The industry Standard for maintenance backlog with 97 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog is affected by five vacancies; (1) HVAC Tech, (1) I&C Tech and (3) Electricians. 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

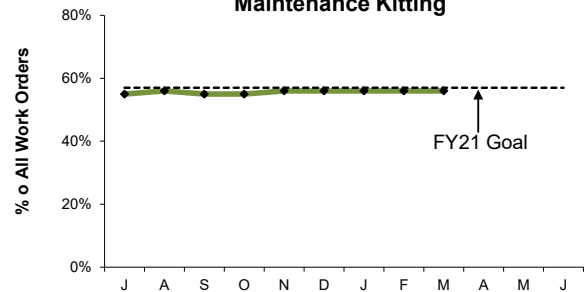
Proactive initiatives include completing 100% of all preventative maintenance tasks and increasing preventative maintenance kitting. These tasks should result in lower maintenance costs.

### Preventive Maintenance Compliance



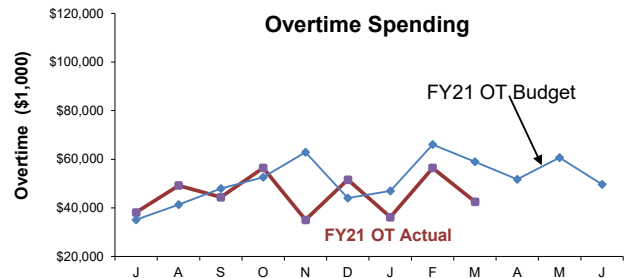
Deer Island's FY21 preventative maintenance goal is 100% completion of all work orders from Operations and Maintenance. DITP completed 96% of all PM work orders this quarter. Due to COVID-19 and limited staffing prior to June 22, 2020, our percentage is below our goal of 100%, we anticipate reaching 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. 56% of all work orders were kitted this quarter. Kitting is staging of parts or material necessary to complete maintenance work. This has resulted in more wrench time and increased productivity.

### Overtime Spending



Maintenance overtime was under budget by \$36K this quarter and \$46k under 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 High Flow Coverage, Grinder and Pump Clogging Issues, Replacing Clarifier Head Shafts/Drive Sprockets, Residuals AHU-8 Coil Replacement.





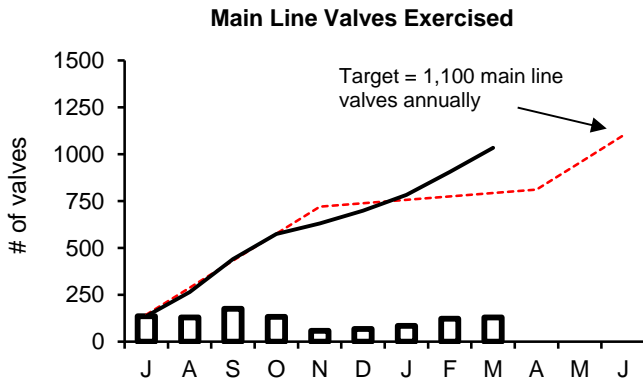
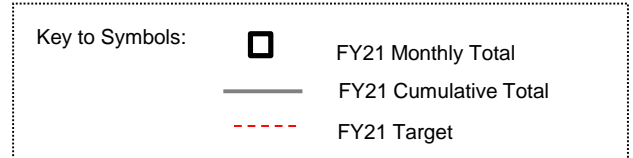
# Water Distribution System Valves

3rd Quarter - FY21

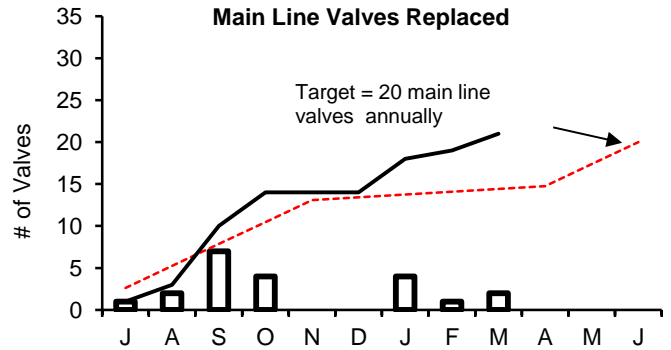
## Background

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.

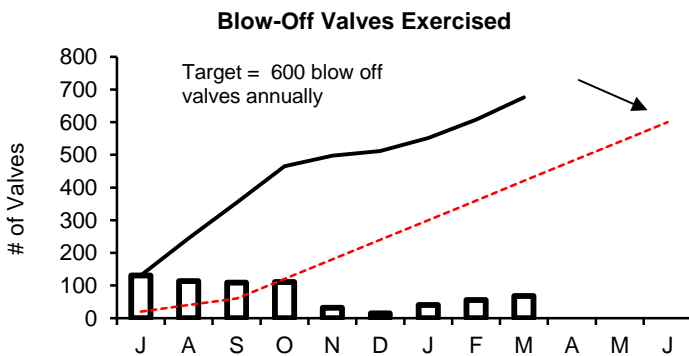
Type of Valve	Inventory #	Operable Percentage	
		FY21 to Date	FY21 Targets
Main Line Valves	2,159	97.0%	95%
Blow-Off Valves	1,317	98.5%	95%
Air Release Valves	1,380	95.2%	95%
Control Valves	49	100.0%	95%



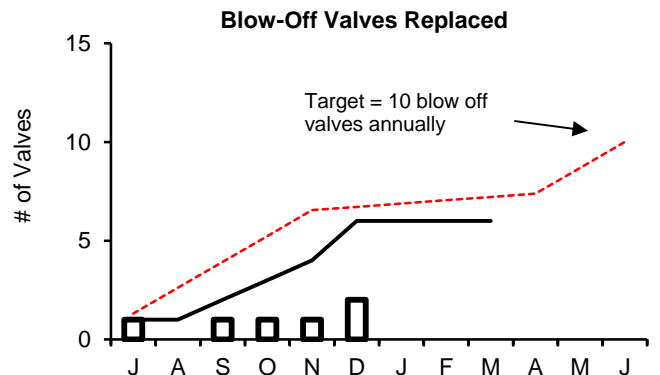
During the 3rd Quarter of FY21, 336 main line valves were exercised. The total exercised for the fiscal year to date is 1,034.



During the 3rd Quarter of FY21, there were seven main line valves replaced. The total replaced for the fiscal year to date is 21.



During the 3rd Quarter of FY21, 164 blow off valves were exercised. The total exercised for the fiscal year to date is 676.



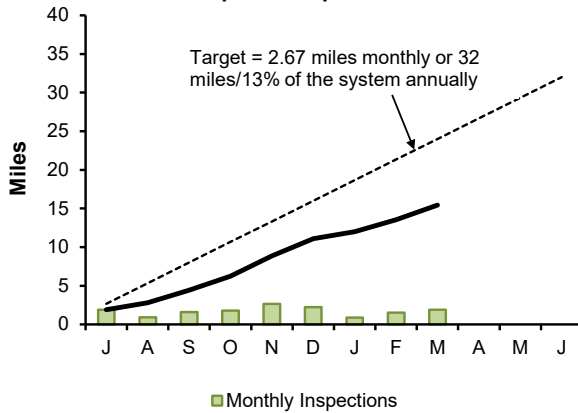
During the 3rd Quarter of FY21, there were no blow off valves replaced. The total replaced for the fiscal year to date is six.

# Wastewater Pipeline and Structure Inspections and Maintenance

3rd Quarter - FY21

## Inspections

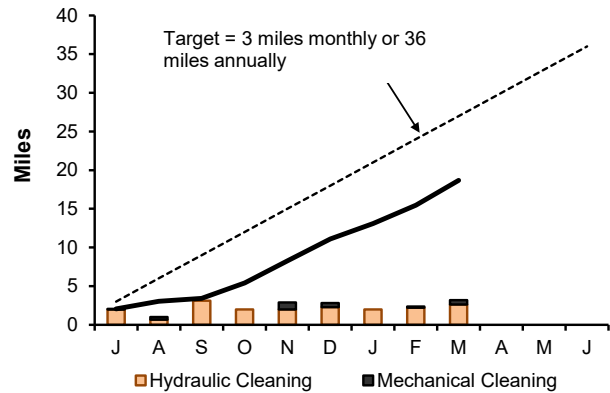
### Pipeline Inspections



Staff internally inspected 4.33 miles of MWRA sewer pipe during this quarter. The year to date total is 15.44 miles. No Community Assistance was provided. Shortcomings for the quarter were a direct result of staffing availability, and equipment issues.

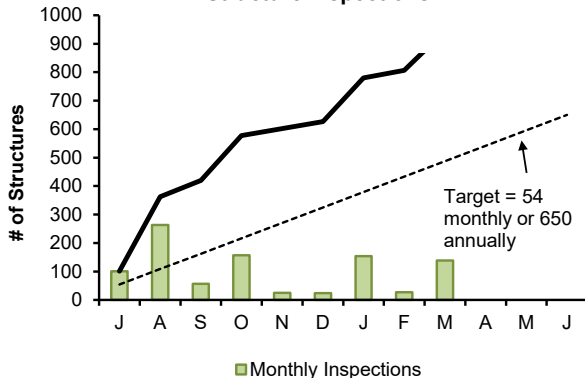
## Maintenance

### Pipeline Cleaning



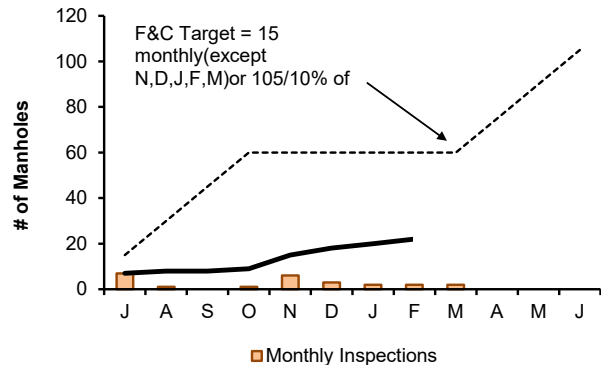
Staff cleaned 7.57 miles of MWRA sewer pipe, and removed 26 yards of grit. The year to date total is 18.68 miles. No Community Assistance was provided. Shortcomings for the quarter were a direct result of staffing availability.

## Structure Inspections



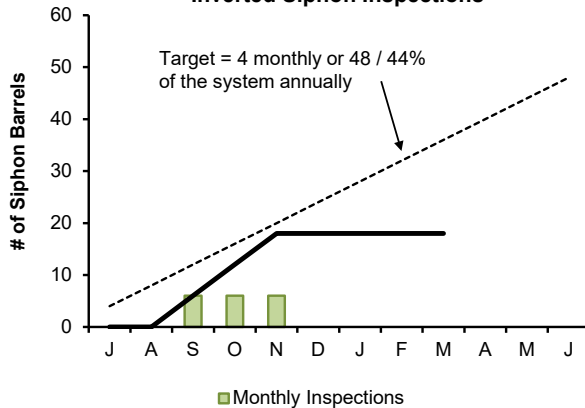
Staff inspected the 36 CSO structures and performed 283 other additional manhole/structure inspections during this quarter. The year to date total is 945 inspections.

## Manhole Rehabilitation



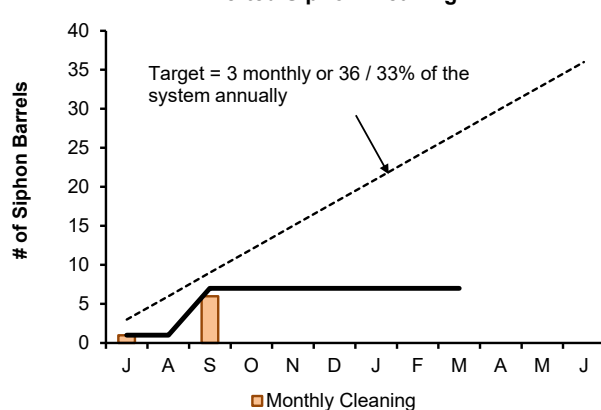
Staff replaced 7 frame and cover replacement this quarter. The year to date total is 25. Shortcomings for the quarter were a direct results of staffing availability.

## Inverted Siphon Inspections



Staff did not perform any siphon barrel inspections this quarter. The year total is 18 inspections. Shortcomings for the quarter were a direct result of staffing availability, and equipment issues.

## Inverted Siphon Cleaning

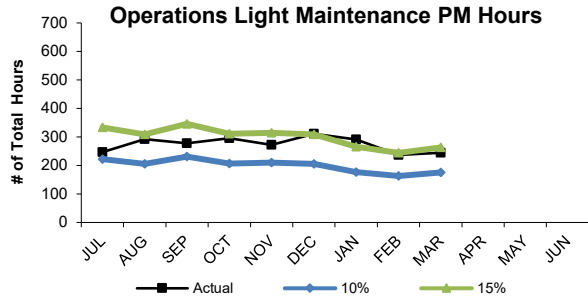


Staff did not clean any siphon barrel this quarter. Shortcomings for the quarter were a direct results of staffing availability.

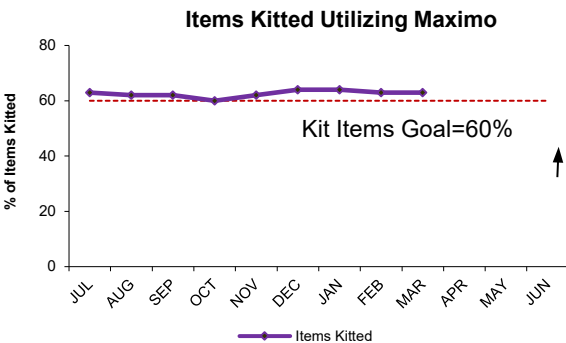
# Field Operations' Metropolitan Equipment & Facility Maintenance

3rd Quarter - FY21

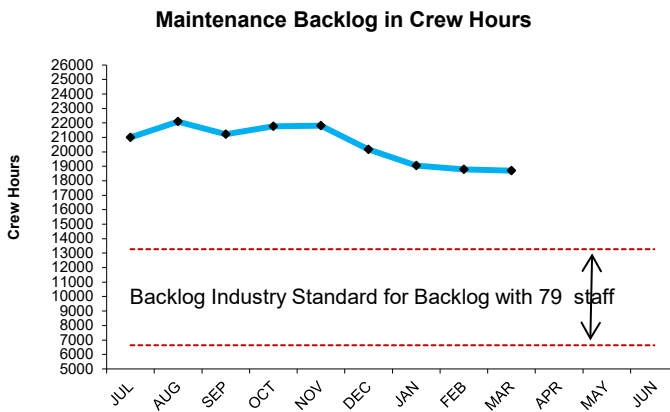
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus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



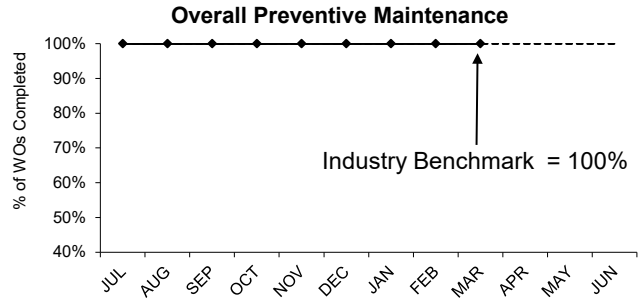
Operations staff averaged 257 hours per month of preventive maintenance during the 3rd Quarter, an average of 15% of the total PM hours for the 3rd Quarter, which is within the industry benchmark of 10% to 15%.



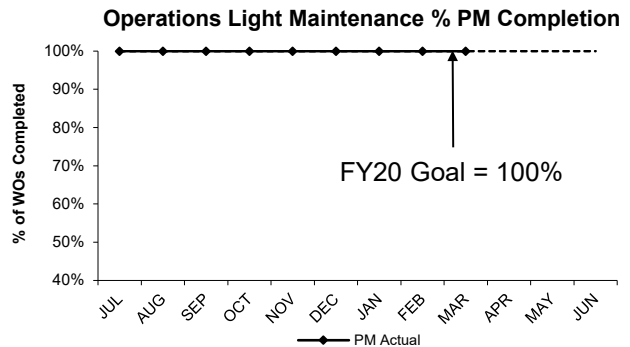
Operations' FY21 maintenance kitting goal has been set at 60% of all work orders to be kitted. Kitting is the staging of parts or material necessary to complete maintenance work. In the 3rd Quarter, 63% of all applicable work orders were kitted. This resulted in more wrench time and increased productivity.



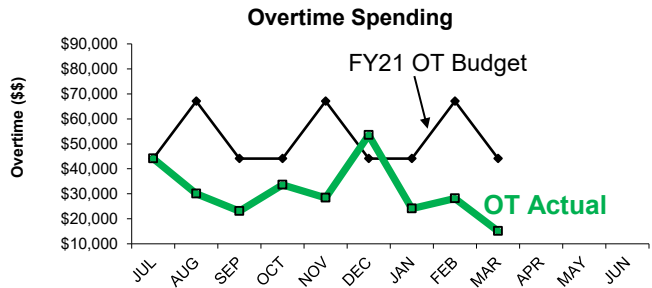
The 3rd Quarter backlog average is 18,849 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6,636 to 13,275 hours. The increase is due to the previous reduction staffing levels due to COVID19.



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 3rd Quarter.



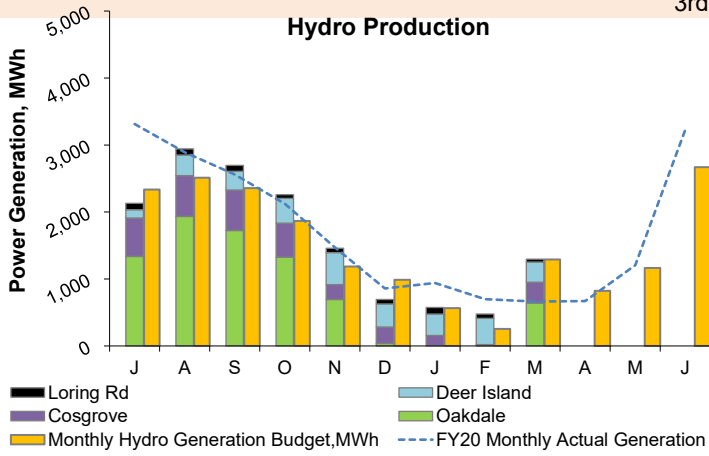
Wastewater Operations complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY21 PM goal is completion of 100% of all PM work orders assigned. Operations completed 100% of PM work orders in the 3rd Quarter.



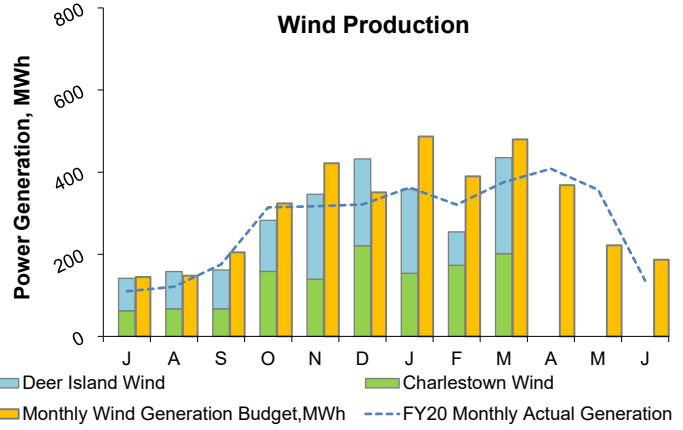
Maintenance overtime was \$29k under budget on average, per month, for the 3rd Quarter. Overtime was used for critical maintenance repairs and wet weather events. The overtime budget for FY21 is \$466k and is \$186k under budget for the fiscal year.

# Renewable Electricity Generation: Savings and Revenue

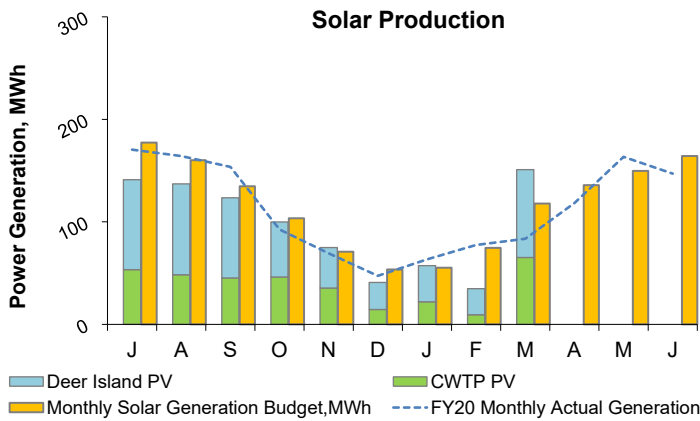
3rd Quarter - FY21



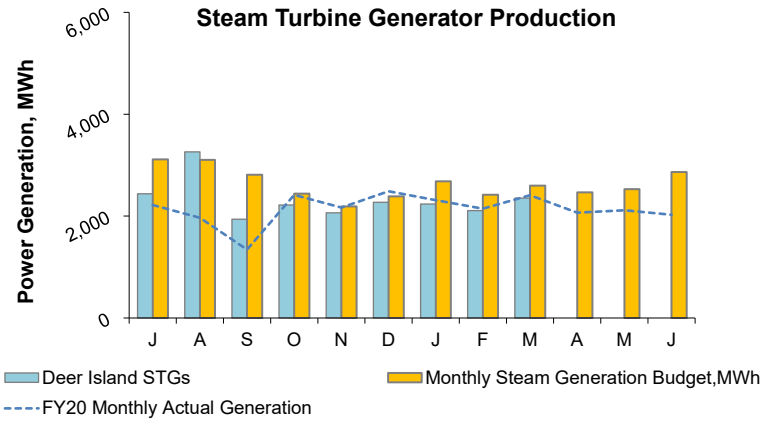
In Quarter 3 of FY21, the renewable energy produced from all hydro turbines totaled 2,448 MWh; 16% above budget<sup>3</sup>. The total savings and revenue<sup>2</sup> to date in FY21 (actuals through February<sup>1</sup>) is \$461,115 ; 3% above budget<sup>3</sup>. The savings and revenue value does not include RPS REC revenue (see next page).



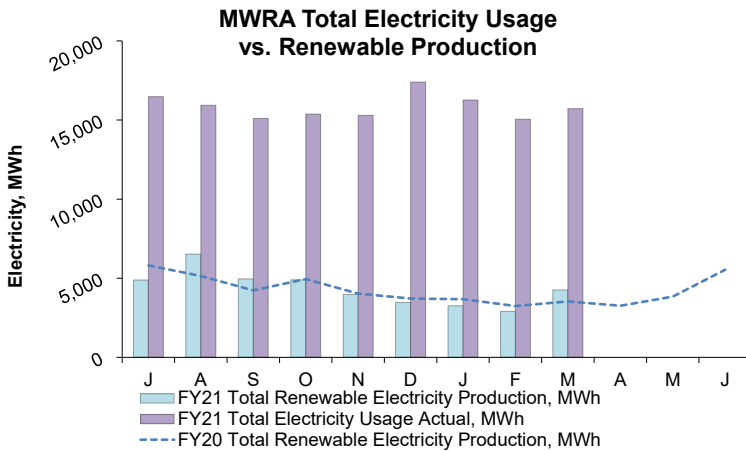
In Quarter 3 of FY21, the renewable energy produced from all wind turbines totaled 1,048 MWh; 23% below budget<sup>3</sup>. The total savings and revenue<sup>2</sup> to date in FY21 (actuals through February<sup>1</sup>) is \$303,940 , 17% below budget<sup>3</sup>. The savings and revenue value does not include RPS REC revenue (see next page).



In Quarter 3 of FY21, the renewable energy produced from all solar PV systems totaled 243 MWh; 2% below budget<sup>3</sup>. The total savings and revenue<sup>2</sup> to date in FY21 (actuals through February<sup>1</sup>) is \$86,039 , 20% below budget<sup>3</sup>. The savings and revenue value does not include RPS REC revenue (see next page).

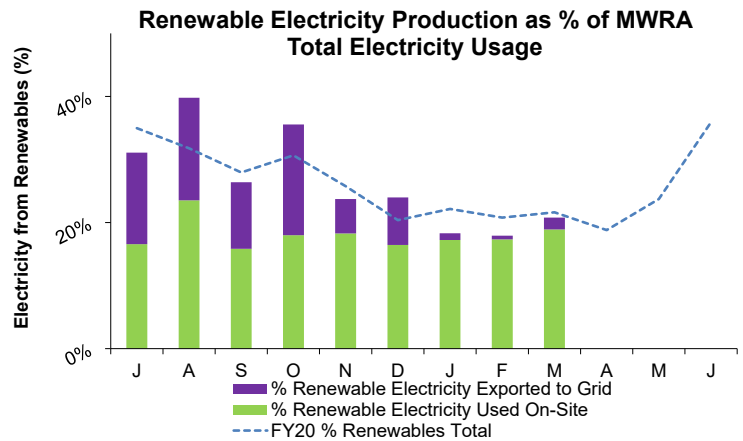


In Quarter 3 of FY21, the renewable energy produced from all steam turbine generators totaled 6,697 MWh; 13% below budget<sup>3</sup>. The total savings and revenue<sup>2</sup> to date in FY21 (actuals through February<sup>1</sup>) is \$1,645,670 , 22% below budget<sup>3</sup>. The savings and revenue value does not include RPS REC revenue (see next page).



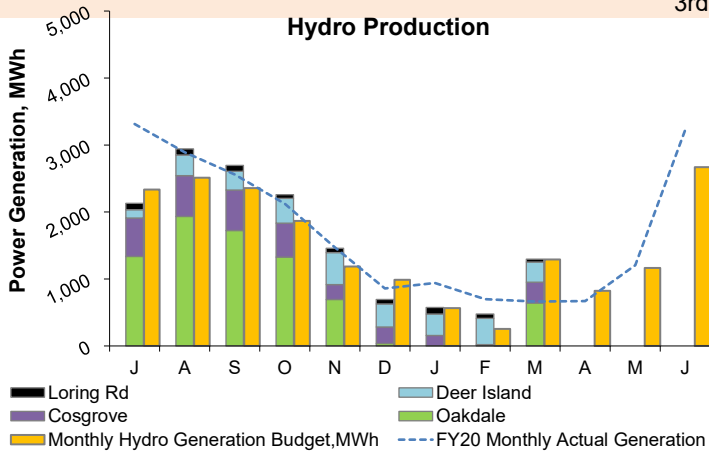
In Quarter 3 of FY 21, MWRA's electricity generation by renewable resources totaled 10,436 MWh. MWRA's total electricity usage was approximately 37,082 MWh. The MWRA total electricity usage is the sum of all electricity purchased for Deer Island and FOD plus electricity produced and used on-site at these facilities. Approximately 99% of FOD electrical accounts are accounted for by actual billing statements; minor accounts that are not tracked on a monthly basis such as meters and cathodic protection systems are estimated based on this year's budget. 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.

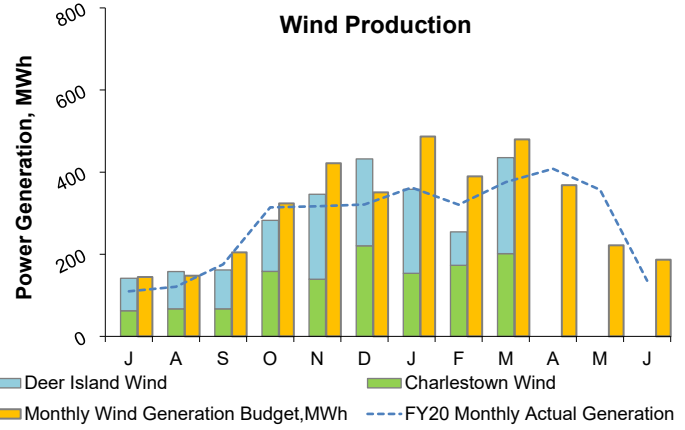


# Renewable Electricity Generation: Savings and Revenue

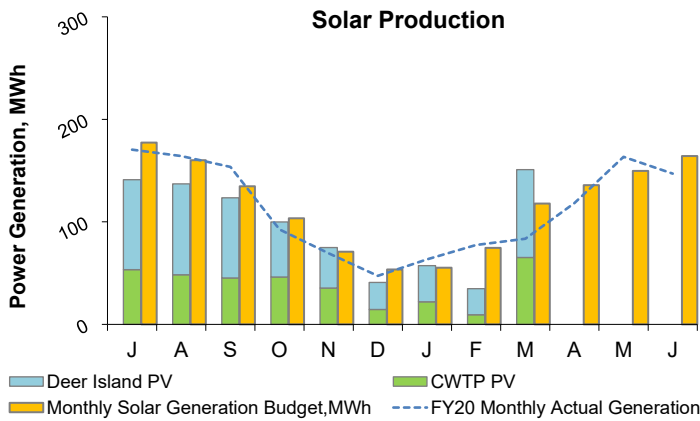
3rd Quarter - FY21



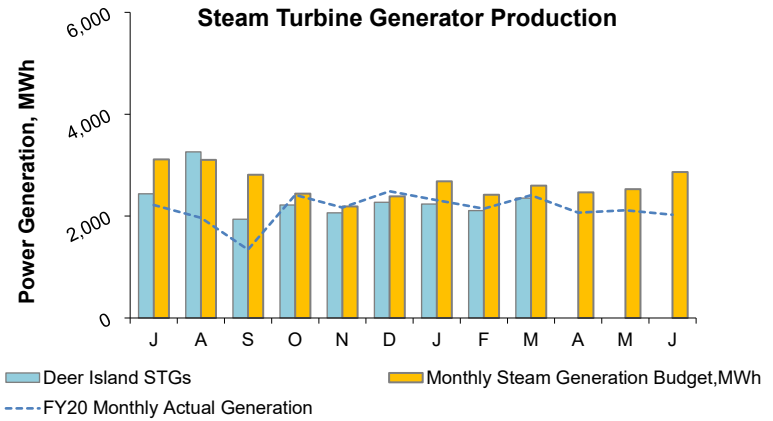
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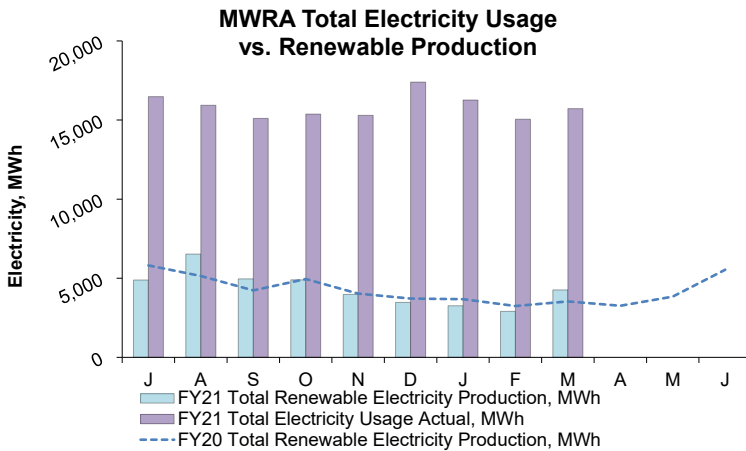
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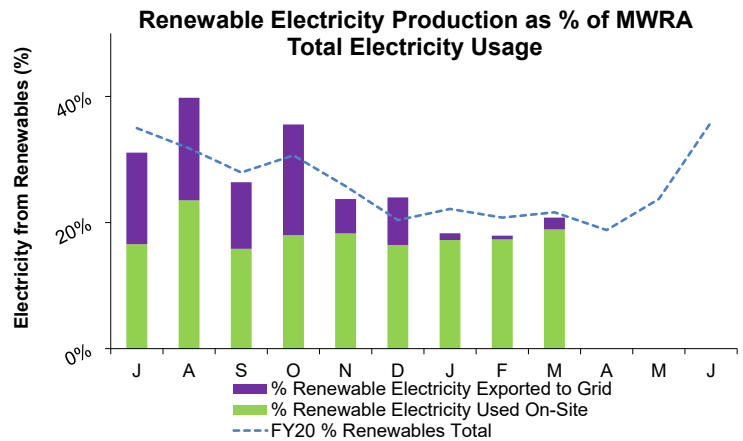
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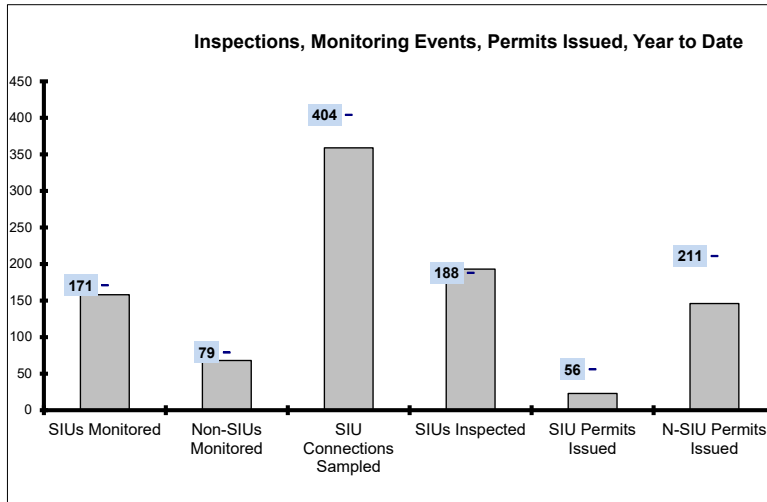
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# Toxic Reduction and Control

3rd Quarter - FY21



EPA Required SIU Monitoring Events for FY21: 171  
YTD : **158**

Required Non-SIU Monitoring Events for FY21: 79  
YTD : **68**

SIU Connections to be Sampled For FY21: 404  
YTD: **359**

EPA Required SIU Inspections for FY21: 188  
YTD: **193**

SIU Permits due to Expire In FY21: 56  
YTD: **23**

Non-SIU Permits due to Expire for FY21: 211  
YTD: **146**

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
	SIU	Non-SIU	SIU	Non-SIU	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	2	15	0	1	0	2	2	18
Nov	2	17	0	1	0	1	2	19
Dec	3	9	0	0	0	1	3	10
Jan	5	12	1	2	0	1	6	15
Feb	0	11	1	1	0	0	1	12
Mar	5	15	0	2	0	3	5	20
Apr							0	0
May							0	0
Jun							0	0
% YTD	91%	81%	9%	10%	0%	9%	23	146

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.

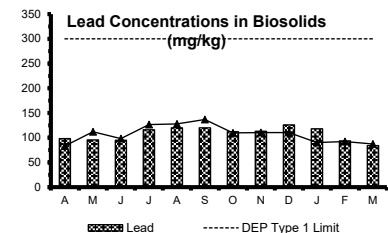
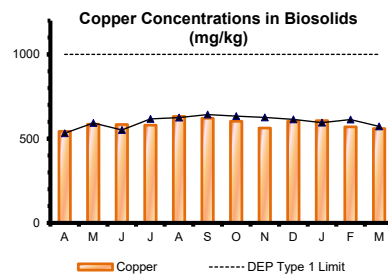
So far, in this fiscal year, 23 SIU permits have been issued with a 91% rate of issuances within 120 days.

In the third quarter of FY21, 59 permits were issued, 12 of which were SIUs. Ten of the 12 SIU permits were issued within the 120-day timeframe - the other two were issued late, but within the 180-day timeframe.

Of the 47 non-SIU permits issued in the quarter, nine were issued late.

Among the reasons for late issuances included: obtaining critical data for permit processing; project delays and/or COVID related delays in hotel operations, new start-ups, septage hauling and construction dewatering. Some of these translated to late payment of the relevant permit charges and hence, permits issued late.

For the Clinton Sewer Service area, no SIU permit was issued in the third quarter of the fiscal year. None have been issued for the 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 discussion.



# Field Operations Highlights

## 3rd Quarter – FY21

### Western Water Operations and Maintenance

Carroll Water Treatment: Staff completed annual maintenance on side A, including replacement of the sodium hypochlorite piping inside the tanks, and continued work on the lead pipe study project.

Wachusett Dam Crest Gate: Contractor support completed the rebuild and reinstallation of the hydraulic cylinders to restore the gate to operation on 1/13. The gate was used to release water to reach the target reservoir elevation for the winter. Maintenance installed new diverters on gate to extend the cascade of water over the gate to minimize the impact on the hydraulic lines.

Oakdale Power Station: After the ice breakup on Wachusett Reservoir, a transfer from the Quabbin Reservoir was initiated to return Wachusett Reservoir to its normal operating band.

### Metro Water Operations and Maintenance

Valve Program: Valve operations to support in-house work included providing isolations at the Lynnfield Pumping Station, the IPS, the Columbus Park Headworks, the Spot Pond Pumping Station and Section 44. Staff also supported CIP Contractors by isolating a portion of Section 77, Section 113, and the Comm Avenue West Pump Station, and LOTO of WASM 16. Other work included supporting internal leak detection on Section 22 under the Neponset River. Staff also isolated a portion of Section 30 for a BWSC sewer repair, and activated an emergency connection for a Norwood leak repair.

Water Pipeline Program: Staff completed the replacement of three new valve at the IPS in Weymouth and a valve supplying the Lynnfield Pump Station. Staff repaired five leaks during the quarter, two on Section 70, two on Section 44 and a service line at Columbus Park Headworks. To support the repairs on Section 44, Pipe and Valve staff deployed and operated a Mobile Pumping Unit. Additional work included a seepage repair project at Chestnut Hill Dam.

### Operations Engineering

Staff provided community assistance for: Norwood pipe repair on University Ave; troubleshooting Revere water main breaks; Brookline water main breaks; and Medford discolored water complaints.

Staff developed the scope for carbon replacement at NIHW and Union Park CSO Facility and procured carbon replacement for Chelsea Screen House. Staff procured inspections for 14 water storage tanks; and finalized scope for inspection services for NIHW outfalls. Staff coordinated the repair of Section 44 leaks requiring Mobile Pump Unit operation, and on-going contract development for the cleaning of Norumbega Storage Facility.

### Wastewater Operations & Maintenance

Remote Headworks Upgrades: Operations staff continued to work with Engineering & Construction staff and the contractor on the

Chelsea Creek project. All channels are now in service and the contractor has replaced the chain in all channels.

- Hayes PS Rehabilitation: Operations continued to work with engineering staff on the conceptual design for rehabilitation, including the bypass pumping system required for construction.

Nut Island Headworks Odor Control & HVAC Improvements: There were three temporary shutdowns in January to allow the contractor to tie in new ductwork. The contractor continued to perform work on the odor control system and the replacement of the four emergency spillway gates.

IPS: Three new isolation valves were installed on the water system by the MWRA Valve crew so that the water line could be controlled at the parking lot of the facility instead of at the Pellet Plant.

Ward Street and Columbus Park Headworks Upgrade: A kickoff meeting was held with Operations, Engineering, Public Affairs, and Affirmative Action to discuss the schedule, responsibilities, reporting and Covid safety practices.

Training: Management is currently working with Training staff to make sure staff receive the training hours needed to renew their licenses in December 2021 even with coronavirus disruptions. Operations staff attended virtual training for the new odor control fans at the Chelsea Creek headworks in February. Operations and Process Control staff met to examine the possibility of Operations staff reviewing previous activations to learn/train for CSO facility wet weather operations.

### Metro Equipment and Facility Maintenance

MWRA plumbers re-piped the recirculation piping for the #1 Odor Control pump at the Ward Street Headworks. MWRA electricians working with machinists, mechanics and grounds crews removed the existing Variable Frequency Drive for Pump #3 and replaced it with a new modern version at the Framingham Pump Station. MWRA HVAC Technicians replaced the motor for #6 Odor Control Fan at the DeLauri Pump Station. Odor Control fan #3 was tripping off line periodically at the Intermediate Pump Station. MWRA electricians and HVAC Technicians found a short deep in the Motor Control Center: a new one was purchased and installed. The Spring Street Pump Station cooling water line to the #1 Diesel drive pump corroded in sections and needed repair. MWRA plumbers/ welder replaced the bad sections with new. Columbus Park Headworks Channel #3 was worn and in need of a complete overhaul. MWRA mechanics, welders and machinists worked together replacing rails, chain, flytes, sprockets and shoes.

### Metering

Pandemic Response: Meter Data began tracking how the COVID response has affected demand. In general, most residential communities saw demand increases as the stay at home order was in effect, with some communities seeing a 20+% increase over the summer. Each community experienced an overall increase or very slight decrease in demand in 2020 with the exception of Boston

# Field Operations Highlights

## 3rd Quarter – FY21

which saw significantly lower demand. Other communities that saw decreases had a large transient college campus populations. Boston continues to experience a greater effect of the shifts in COVID usage trends compared to more residential communities.

Staff reached out to the following communities to alert them to observed flow changes compared to their historical usage; Nahant, Rutland-Holden Sewer district, and Somerville.

Staff assisted the Rutland-Holden sewer district and DCR with an assessment of the Station D sewer flow monitoring station, performing several temporary metering assessments. Further analysis will include an inspection and potential CFD analysis of the flow nozzle.

Metering Staff assisted Saugus with an assessment of their water meters, coordinating with MWRA valve crews to systematically shut off all seven Saugus meters while measuring flow through the other six meters to observe any changes in flow. To date, no anomalies have been found. This assessment will conclude in April.

Wastewater upgrade project: Installations began in April of 2021 and the current project Substantial Completion Date is October 2021.

### TRAC

Compliance and Enforcement: TRAC issued one Notice of Noncompliance, 74 Notices of Violation, one Ruling, and one Return to Permit Letter. TRAC issued just over 700 Dental Discharges Permit invoices in March, off-cycle from all of TRAC's other industrial permits

Inspections and Permitting: TRAC issued 76 8(m) Permits allowing companies to work within MWRA easements or other property. Permits issued this quarter were issued in an average of 102 days.

TRAC monitored the septage receiving sites 30 times, and conducted inspection at 29 new and 177 existing gasoline/oil separators. TRAC staff conducted 41 Annual SIU Inspections and 348 other inspections. Other inspections include inspections for enforcement, permit renewal, NSIU, follow-up, temporary construction dewatering sites, group/combined permit audits, out-of-business facility reviews, and surveys.

Monitoring: TRAC completed 405 SIU monitoring events, including 52 first time events; 64 NSIU monitoring events, including 28 first time events; and 141 other events including Clinton NPDES sampling, Clinton Local Limits sampling, Metropolitan Local Limits sampling, Cosgrove and Oakdale NPDES sampling, and CSO Hypochlorite Tank chemical sampling.

### Environmental Quality-Water

As part of CWTP half-plant reactivation processes, staff conducted potability sampling at the CWTP Tank A overflow weir and Shaft 4 (following flush of the Upper Hultman

Aqueduct). All results met compliance requirements and the tank and aqueduct were subsequently reactivated.

Training & Regulatory Assistance: Staff trained drinking water samplers from Wellesley, Bedford, Lynnfield, and Peabody, and five new MWRA staff on proper coliform sampling and chlorine residual measurement. Staff held two meetings with a community to discuss issues associated with their DEP sanitary survey.

Sampling Projects: Staff provided sampling support to Framingham for clearance sampling associated with the cleaning of two of their storage tanks. Staff provided support to Watertown and Revere to help determine if water leaking was finished water or ground water. Supported BWSC with a special Optimal Water Quality Parameter sampling in January. Results, determined to be typical, were communicated to DEP. Staff commenced sampling of a pipe loop project at CWTP to study lead levels in tap water using community lead service lines with various corrosion control treatments.

Environmental/Chemical Contract Management: Staff continued to provide weekly updates on bulk chemical supply conditions and the pandemic. All chemical inventories continue to be at acceptable levels and vendors are not experiencing issues with manufacture, distribution or transport.

Facilitated removal and appropriate disposal of 600 gallons of sediment-laden sodium bisulfite from the heel of tank 1 at CWTP to prevent potential chemical feed pump strainer blockages.

### Environmental Quality-Wastewater

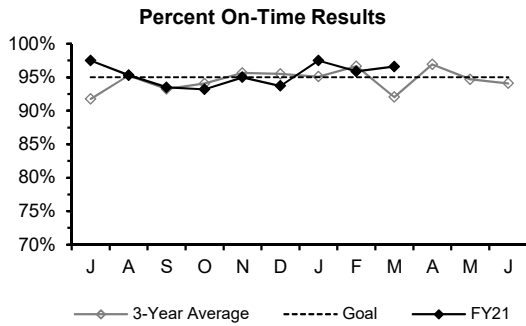
Ambient Monitoring: Consultants conducted the first two surveys of the 2021 field season, with modifications imposed by COVID-19 safety protocols. Completed sample analysis from 2020 monitoring and analyzed data for an annual monitoring workshop in March. MWRA's proposed changes to the Ambient Monitoring Plan were approved by EPA. Completed four reports on required Ambient Monitoring in 2019 and 2020, and one on validation of the permit-required Massachusetts Bay eutrophication model.

Harbor/CSO Receiving Water Monitoring: Biweekly harborwide monitoring continued, under COVID-19 safety protocols. 2021 CSO receiving water sampling began in late March.

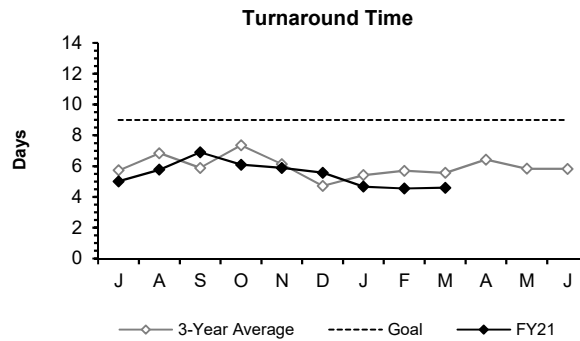
Coordination with other MWRA Departments: Staff continued to work with Engineering & Construction and the DCOO on the receiving water quality analysis portion of the CSO Post-Construction Monitoring & Performance Assessment project: participated in community CSO coordination meetings with Cambridge, Somerville, and BWSC. With MIS, trained wastewater operations field staff on use of SSO data collection application.

# Laboratory Services

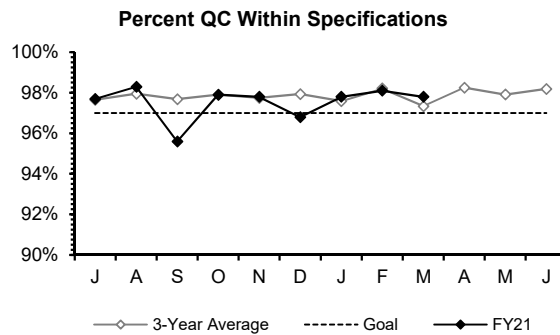
## 3rd Quarter - FY21



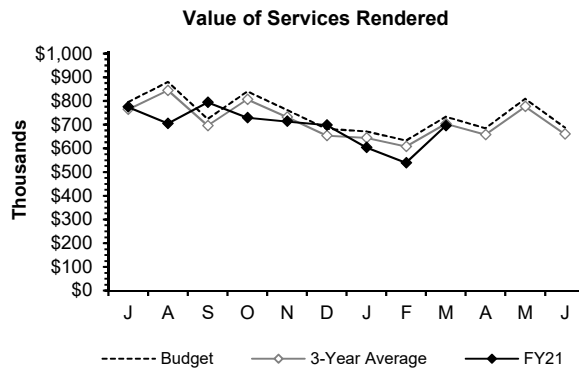
The Percent On-Time measurement met the 95% goal.



Turnaround Time meets the 9-day goal.



Percent of QC tests meeting specifications meets the 97% goal YTD.



Value of Services Rendered is running slightly below the annual budget projection YTD.

### Highlights:

**Performance:** Year to date average Turnaround Time, Percent on time and Percent QC within Specification all met targets. Value of Services Rendered is running slightly below the three year average.

**School Lead Program:** During the 3rd quarter of FY21, MWRA's lab completed 84 lead and copper tests from 16 schools and childcare facilities in 6 communities. Since 2016, MWRA's Laboratory has conducted over 38,500 tests from 511 schools and daycares in 44 communities.

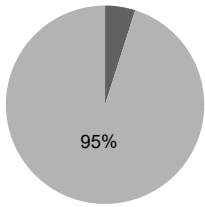
**COVID-19 Testing:** The wastewater pilot project continued throughout the 3rd quarter. Sample results are posted on MWRA.com as they are received.

# CONSTRUCTION PROGRAMS

# Projects In Construction

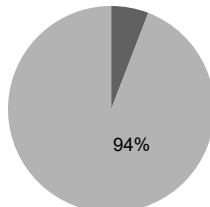
## 3<sup>rd</sup> Quarter – FY21

### Money



- Amount Remaining
- Billed to Date

### Time



- Days Remaining
- Days Expended

### Southern Extra High Pipeline Section 111

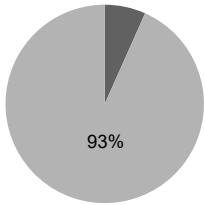
**Project Summary:** This project consists of 6,800 linear feet of 36-inch water main in Dedham and Westwood and includes pipe jacking at the Dedham Corporate MBTA Station and at the MassDOT Route 95 East Street Rotary.

**Contract Amount:** \$21,051,717.80    **Contract Duration:** 1,025 Days

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

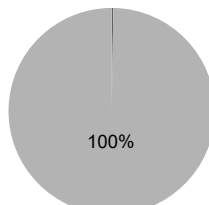
**Status and Issues:** During March, the Contractor raised castings and graded and installed the base coat for the permanent patch at Meter 330, they paved sidewalks, installed berm and loamed and seeded the grass plot in Harvard Street, Dedham.

### Money



- Amount Remaining
- Billed to Date

### Time



- Days Remaining
- Days Expended

### Chelsea Creek Headworks Upgrade

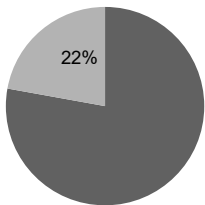
**Project Summary:** This project involves a major upgrade to the entire facility including: automation of screening collection & solids conveyance, replacement of the odor control, HVAC and electrical systems.

**Contract Amount:** \$84,833,539.06    **Contract Duration:** 1,594 Days

**Notice to Proceed:** 22-Nov-2016    **Contract Completion:** 4-Apr-2021

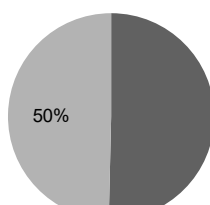
**Status and Issues:** As of March, the Contractor Worked on security, lighting, communications, and fire systems throughout the headworks. They continued demolishing the existing conduits on the Operating and Mezzanine levels. They successfully tested the new FACP with Chelsea Fire in attendance. Modernization of the freight elevator continued with the installation of a new motor and new buffer springs in the elevator shaft pit.

### Money



- Amount Remaining
- Billed to Date

### Time



- Days Remaining
- Days Expended

### Dorchester Interceptor Sewer

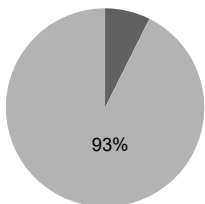
**Project Summary:** MWRA's Dorchester Interceptor conveys flows to MWRA's Columbus Park Connection and Headworks in South Boston

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

**Notice to Proceed:** 6-Jul-2020    **Contract Completion:** 29-Dec-2021

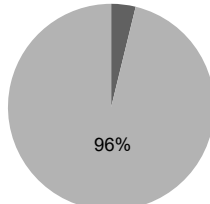
**Status and Issues:** As of March, the Contractor removed the tops of the existing SMH's and replaced them with precast concrete riser sections to allow liner access. They also vacuum excavated two test pits at the unknown pipe penetrations through the sewer on Butler Street and fused the HDPE bypass pipe along the DCR path adjacent to Granite 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:** \$7,899,655.10    **Contract Duration:** 760 Days

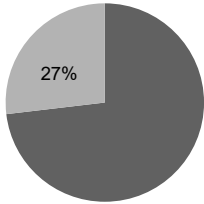
**Notice to Proceed:** 28-Feb-2019    **Contract Completion:** 29-Mar-2021

**Status and Issues:** Substantial Completion for this contract was achieved on March 29<sup>th</sup>. The Contractor has continued working on punchlist items. Milestones include the 30-day acceptance test for the west building SCADA. In addition, they demobilized the remaining temporary fence panels and removed the remaining stored material from the site.

# Projects In Construction

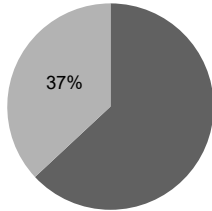
## 3<sup>rd</sup> Quarter – FY21

### Money



■ Amount Remaining  
■ Billed to Date

### Time



■ Days Remaining  
■ Days Expended

### Nut Island Odor Control and HVAC

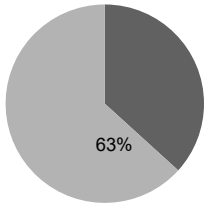
**Project Summary:** This project will provide upgrades to the odor control system, heating, ventilation and air conditioning system and other equipment.

**Contract Amount:** \$58,115,295.10    **Contract Duration:** 1,034 Days

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

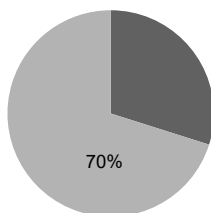
**Status and Issues:** As of March, the Contractor set the new sodium hydroxide storage tanks on their equipment pads and set the new sodium hydroxide chemical feed pumps on their equipment pads. They began forming the new sodium hypochlorite containment wall in the Odor Control Room as well as the installation of the new double containment chemical fill pipe.

### Money



■ Amount Remaining  
■ Billed to Date

### Time



■ Days Remaining  
■ Days Expended

### Chemical Tank Relining & Pipe Replacement

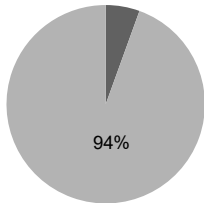
**Project Summary:** This project involves replacing the chlorobutyl rubber linings in 3 sodium hypochlorite and 2 sodium bisulfite storage tanks and assorted gravity thickener overflow piping at Deer Island.

**Contract Amount:** \$8,680,743    **Contract Duration:** 850 Days

**Notice to Proceed:** 13-Aug-19    **Contract Completion:** 10-Dec-21

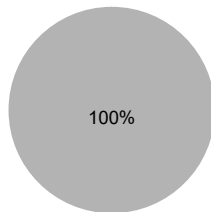
**Status and Issues:** During March the Contractor remobilized after the Winter shutdown. They commenced hydro blasting the Sodium Hypochlorite Tank 2 rubber liner in order to remove it.

### Money



■ Amount Remaining  
■ Billed to Date

### Time



■ Days Remaining  
■ Days Expended

### Winthrop Terminal VFD and Motor

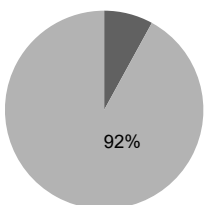
**Project Summary:** This project involves the replacement of 6, 600-HP motors, VFDs and associated electrical components in the Winthrop Terminal Facility.

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

**Notice to Proceed:** 16-Jun-2016    **Contract Completion:** 12-Sep-20

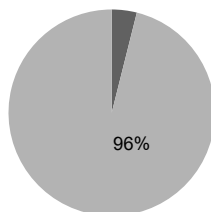
**Status and Issues:** As of March, the VFD/Motor No 1 installation is on-going.

### 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:** \$20,052,650.20    **Contract Duration:** 1,098 Days

**Notice to Proceed:** 11-May-2018    **Contract Completion:** 13-May-2021

**Status and Issues:** As of March, the Contractor completed coating work on GT-5, they installed approximately 80% of the GT-5 mechanism, and the FRP roof installation. They removed approximately 250,000 gallons of the 308,000 gallons of sludge from DiStor 1 tank.

**CSO CONTROL PROGRAM**  
3rd 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 \$6.1 million remain to be spent**, as described below.

Project/Item	Status as of March 31, 2021
BWSC Dorchester Interceptor Inflow Removal	<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 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 has awarded and issued Notice to Proceed with one construction contract for inflow removal in Dorchester in the amount of \$1.58 million, and expects the contract to be complete by June 30, 2021 when the Dorchester agreement ends. <b>BWSC has requested that the remaining \$2.18 million in the Dorchester agreement be transferred into a proposed new agreement by which BWSC would construct sewer separation and other CSO improvements in East Boston. On April 14, 2021, the MWRA Board of Directors authorized the proposed East Boston agreement in the amount of \$2.18 million for a term of two years, from July 1, 2021 through June 30, 2023.</b></p>
City of Cambridge Memorandum of Understanding and Financial Assistance Agreement	<p>The City of Cambridge attained substantial completion of its last MWRA CSO plan project in December 2015 in compliance with Schedule Seven. The \$100.2 million MOU/FAA by which MWRA funded the eligible costs of the Cambridge-implemented CSO projects ended on June 30, 2018. <b>MWRA recently completed final eligibility review of the Cambridge construction contracts and expects to issue a final eligibility certification this spring.</b></p>
City of Somerville Financial Assistance Agreement	<p>By this agreement, MWRA will provide up to \$1.4 million upon construction award of City of 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 the fall of 2021.</p>
MWRA CSO Performance Assessment – Contract 7572	<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 LTCP goals are attained. The current contract amount is \$5.28 million of which approximately \$4.3 million has been spent.</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 certain 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. In compliance with the CSO variances, 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. MWRA also reports estimated discharge volumes on its CSO notification web page. Cambridge and Somerville, also parties to the variances, have implemented notification systems for their own outfalls.</p> <ul style="list-style-type: none"> <li>• AECOM continues to make progress with Amendment 2 work that includes CSO variance-required project evaluations and other site-specific investigations to mitigate CSO discharges at locations where LTCP goals are not yet attained. In these efforts, MWRA is maintaining close coordination with the CSO communities. CSO mitigation implemented in late 2020/early 2021 included: BWSC completed its East Boston sewer separation Contract 1, Chelsea raised the overflow weir at Outfall CHE004, Cambridge removed heavy sediments in the Outfall CAM401A system, and MWRA is designing a replacement for the interceptor connection at Outfall CHE008 - all expected to bring associated outfalls into attainment with LTCP discharge goals. In addition, Cambridge completed the partial sewer separation improvements that have reduced discharges from the Cottage Farm facility. MWRA is designing replacement of the leaky tide gate on the Somerville-Marginal CSO Facility outfall and has modified the operational protocol for closing the facility’s influent gates at the end of each storm. <b>More recent work includes BWSC’s ongoing construction of East Boston sewer separation Contract 2 and its completion of design of Contract 3.</b></li> <li>• AECOM recently updated the MWRA hydraulic model to Q1-2021 system conditions in part to produce an updated Typical Year CSO performance assessment relative to the LTCP activation and volume goals. The updated assessment shows attainment of the goals at 70 of 86 discharge locations active in the late 1980’s when MWRA assumed responsibility for system-wide CSO control, including outfalls that have been closed. MWRA forecasts attainment at an additional six outfalls with scheduled completion after 2021 of recently recommended MWRA and community CSO improvements. At 10 discharge locations, MWRA and the CSO communities continue to identify and evaluate alternatives to further reduce discharges.</li> <li>• Utilizing receiving water quality models of the Lower Charles River and the Alewife Brook/Upper Mystic River AECOM completed and calibrated last fall, it performed water quality assessments of current river conditions and the impacts of remaining CSO and non-CSO (dry weather and stormwater) pollution sources. MWRA has distributed a draft Water Quality Assessment Report to EPA, DEP, the CSO communities, Charles River Watershed Association, and Mystic River Watershed Association for review and comment.</li> </ul>



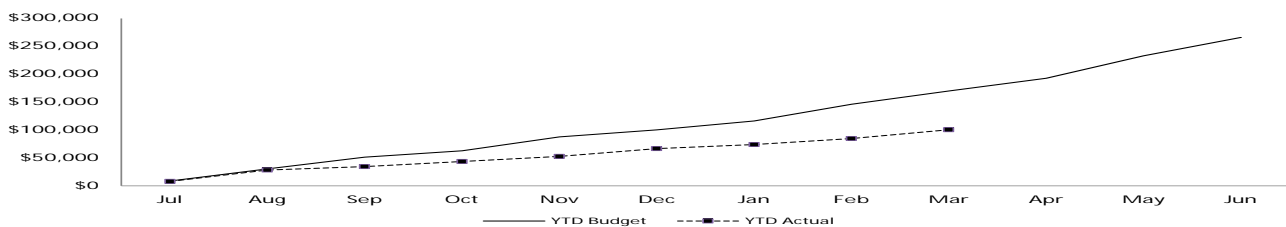
## CIP Expenditures 3<sup>rd</sup> Quarter – FY21

FY21 Capital Improvement Program Expenditure Variances through March by Program (\$ in thousands)				
Program	FY21 Budget Through March	FY21 Actual Through March	Variance Amount	Variance Percent
Wastewater	\$98,784	\$70,917	(\$27,867)	-28%
Waterworks	\$58,603	\$27,412	(\$31,191)	-53%
Business and Operations Support	\$12,501	\$2,140	(\$10,361)	-83%
<b>Total</b>	<b>\$169,888</b>	<b>\$100,469</b>	<b>(\$69,419)</b>	<b>-41%</b>

Project underspending within Wastewater was due to Channel 4 work being delayed, Covid-19 delays and time extension for the Chelsea Creek Headworks Upgrades, delay in construction award for the Prison Point CSO Rehabilitation and DI Primary & Secondary Clarifier Rehab contracts, updated schedule for Dorchester I/I Removal work, delays in equipment delivery and Covid-19 shutdown for Nut Island Odor Control & HVAC Construction, work anticipated in FY21 that was completed in FY20 for the Pellet Pipe Relocation and the Residuals Mechanical/Electrical/Dryer Drum Replacements, delay in award and software training for the Wastewater Metering contract, and start-up and snow delays as well as winter moratorium for the Dorchester Interceptor Sewer, and timing of community repayments due to less than anticipated communities deferring their loan repayments. This underspending was partially offset by contractor progress for the Winthrop Terminal Facility (WTF) VFD Replacement, Gas Protection System Replacement Phase 1, and DI Gravity Thickener Rehabilitation contracts. Project underspending in Waterworks was due to timing of community repayments due to less than anticipated communities deferring their loan repayments, updated schedules for CP-3 Sections 23, 24, and 47 Rehab, and Section 89 & 29 Replacement, delay in award and repair clamps issue for CP-1 Shafts 6, 8, and 9A, timing of consultant work for the Tunnel Preliminary Design & MEPA Review, and delay in slide gate fabrication and updated schedule for Weston Aqueduct Sluice Gate. This underspending was partially offset by contractor progress for WASM 3 CP-1, SEH Section 111 Construction 2, Commonwealth Avenue Pumping Station Rehabilitation, and consultant progress for Section 56 Replacement/Saugus River Design/CA.

### 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 3/27/21	\$247.4 million
Unused capacity under the debt cap:	\$1.63 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

3rd 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.

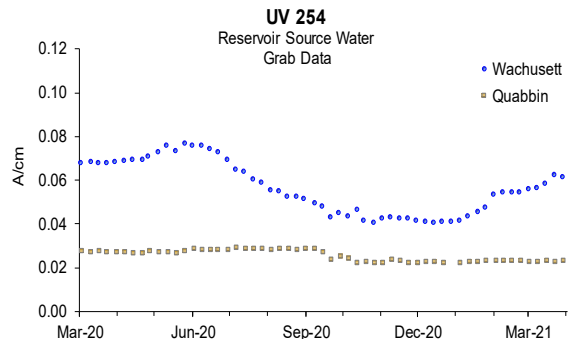
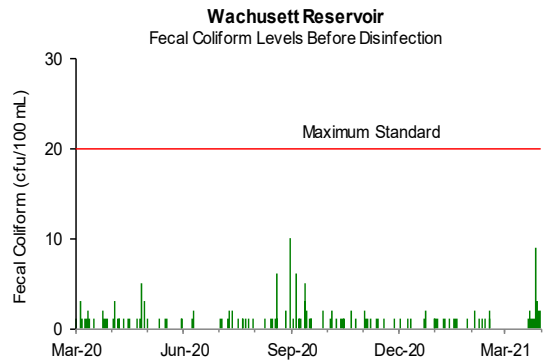
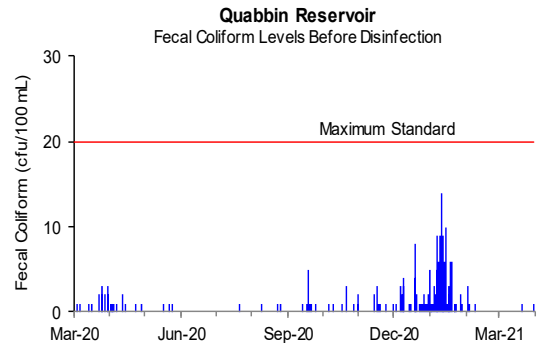
All samples collected during the 3rd Quarter were below 20 cfu/100mL. **For the current six-month period, 0.0% of the samples exceeded a count of 20 cfu/100mL.**

### 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 0.023 A/cm for the quarter.

Wachusett Reservoir UV-254 levels averaged 0.053 A/cm for the quarter.



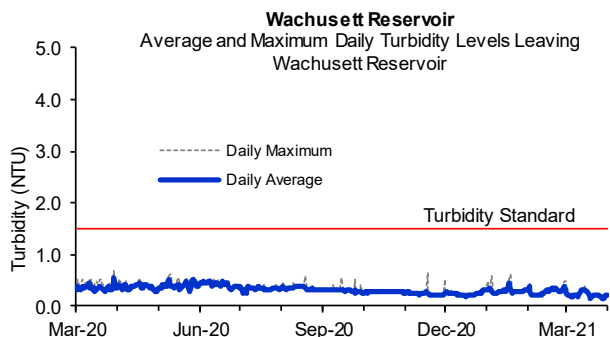
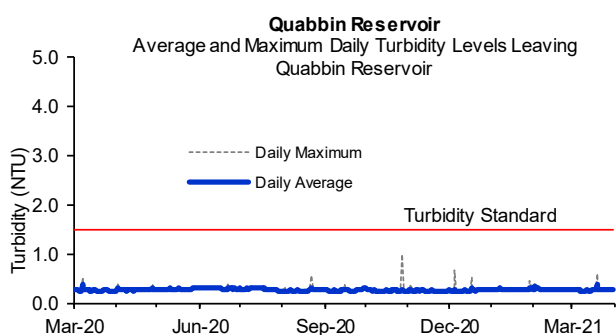
## Source Water – Turbidity

3rd 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.

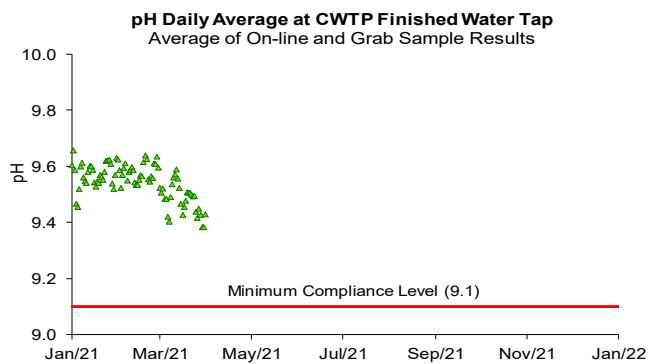
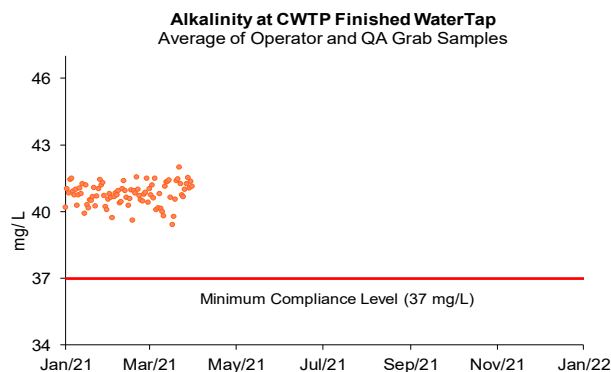


## Treated Water – pH and Alkalinity Compliance

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](http://www.mwra.com/water/html/awqr.htm).

Quarterly distribution system samples were collected over a course of three weeks during February and March. Distribution system sample pH ranged from 9.4 to 9.7 and alkalinity ranged from 39 to 42 mg/L. No sample results were below DEP limits for this quarter.



## Treated Water – Disinfection Effectiveness

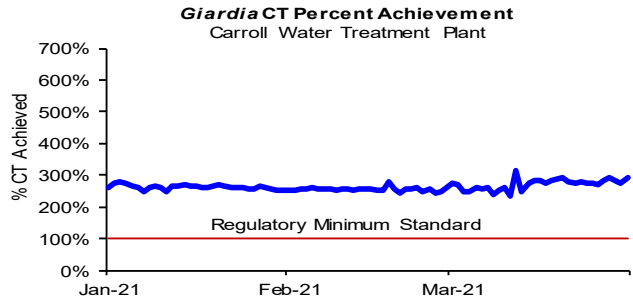
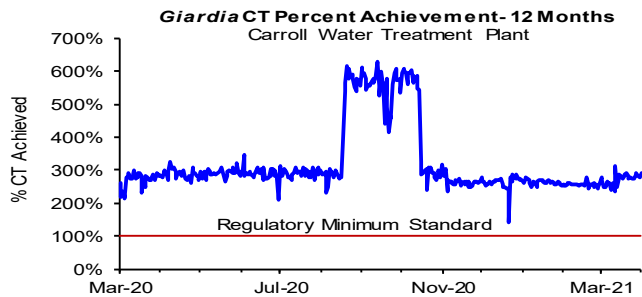
3rd Quarter – FY21

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.

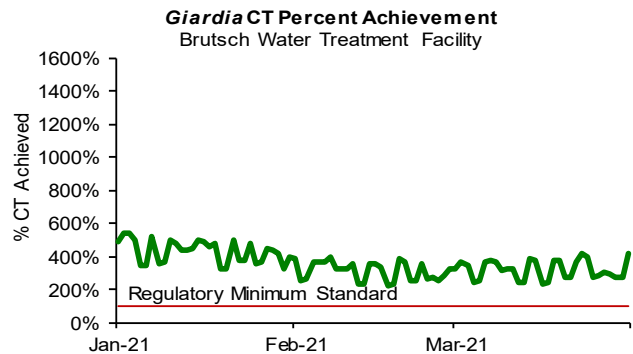
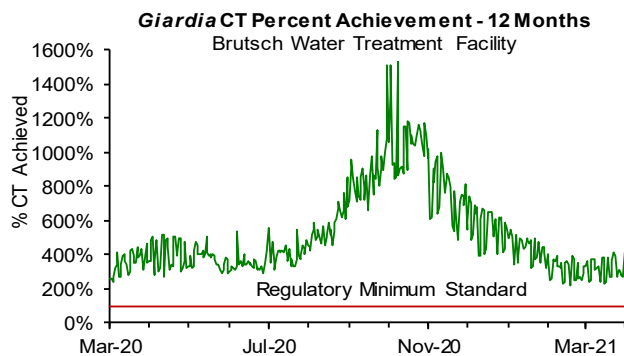
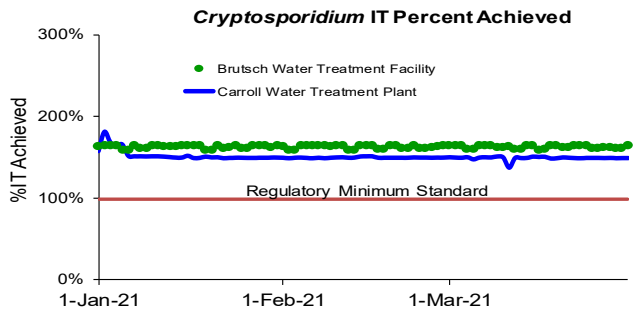
### Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 1.3 to 1.9 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% for the quarter. Off-spec water was less than 5%.
- The ozone dose was proactively raised in 2020 from mid August to mid October in response to elevated reservoir total coliform levels. This is visible in the top left graph.
- The slight dip in *Giardia* CT Achievement on December 21, 2020 was due to Train B returning to service after undergoing winter maintenance. *Giardia* CT Achievement was met this day. 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 1.2 to 1.3 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% for the quarter. Off-spec water was less than 5%.



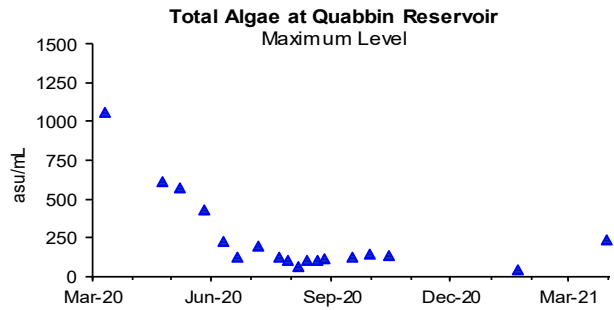
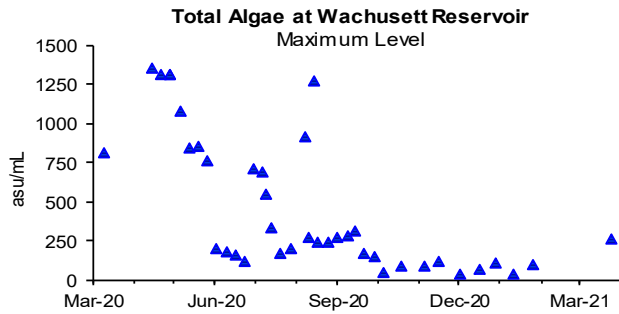
## Source Water - Algae

### 3rd 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 3rd quarter, no taste and odor complaints which may be related to algae were reported from the local water departments. There were no samples collected during February as significant ice cover on the reservoir prevented safe algae sampling.

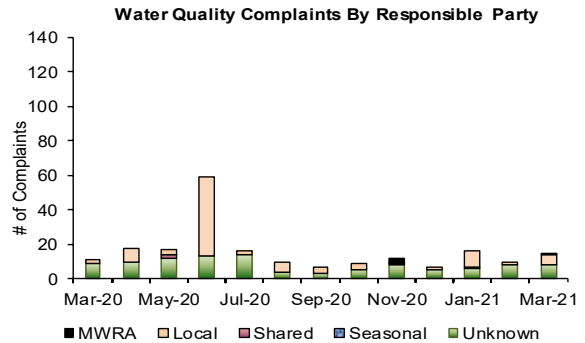
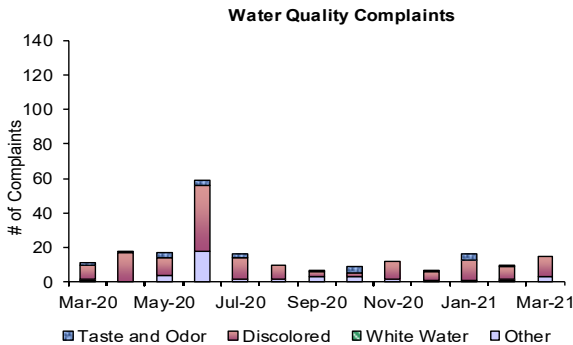


## Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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 41 complaints during the quarter compared to 48 complaints from 3rd Quarter of FY20. Of these complaints, 31 were for "discolored water", 4 were for "taste and odor", 1 was for 'white water', and 5 were for "other". Of these complaints, 17 were local community issues, 1 was MWRA related, 1 was a shared MWRA/community issue, 1 was seasonal in nature, and 22 were unknown in origin.



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

3rd 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.

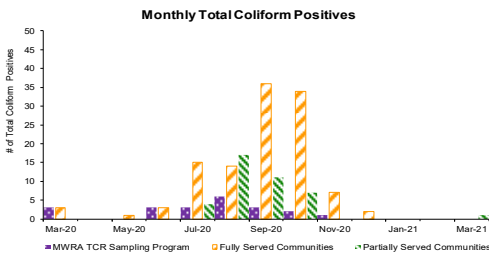
A disinfectant residual is intended to maintain the sanitary integrity of the water; MWRA considers a residual of 0.2 mg/L a minimum target level at all points in the distribution system.

## Highlights

In the 3rd Quarter, one of the 6,2301 samples (0.02% system-wide) submitted to MWRA labs for analysis tested positive (Woburn - March). None of the 1863 MWRA locations or Community/MWRA Shared samples (0.0%) tested positive for total coliform. No samples tested positive for *E.coli*. Only 0.1% 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.



		Total Coliform		E.coli Positive	# Assessment Required	
		# Samples (b)	# (%) Positive			
MWRA	a	MWRA Locations	330	0 (0%)	0	
	Shared Community/MWRA sites	1533	0 (0%)	0		
		<b>Total: MWRA</b>	<b>1863</b>	<b>0 (0%)</b>	<b>0</b>	
Fully Served		ARLINGTON	155	0 (0%)	0	
	BELMONT	104	0 (0%)	0		
	BOSTON	765	0 (0%)	0		
	BROOKLINE	224	0 (0%)	0		
	CHELSEA	156	0 (0%)	0		
	DEER ISLAND	52	0 (0%)	0		
	EVERETT	169	0 (0%)	0		
	FRAMINGHAM	234	0 (0%)	0		
	LEXINGTON	117	0 (0%)	0		
	LYNNFIELD	18	0 (0%)	0		
	MALDEN	234	0 (0%)	0		
	MARBLEHEAD	72	0 (0%)	0		
	MARLBOROUGH	126	0 (0%)	0		
	MEDFORD	192	0 (0%)	0		
	MELROSE	117	0 (0%)	0		
	MILTON	102	0 (0%)	0		
	NAHANT	30	0 (0%)	0		
	NEWTON	276	0 (0%)	0		
	NORTHBOROUGH	48	0 (0%)	0		
	NORWOOD	99	0 (0%)	0		
	QUINCY	338	0 (0%)	0		
	READING	120	0 (0%)	0		
	REVERE	180	0 (0%)	0		
	SAUGUS	104	0 (0%)	0		
	SOMERVILLE	252	0 (0%)	0		
	SOUTHBOROUGH	30	0 (0%)	0		
	STONEHAM	84	0 (0%)	0		
	SWAMPSCOTT	57	0 (0%)	0		
	WALTHAM	216	0 (0%)	0		
	WATERTOWN	130	0 (0%)	0		
WESTON	45	0 (0%)	0			
WINTHROP	72	0 (0%)	0			
		<b>Total: Fully Served</b>	<b>4918</b>	<b>0 (0.0%)</b>		
Partially Served		BEDFORD	57	0 (0%)	0	
	CANTON	90	0 (0%)	0		
	NEEDHAM	123	0 (0%)	0		
	PEABODY	207	0 (0%)	0		
	WAKEFIELD	128	0 (0%)	0		
	WELLESLEY	114	0 (0%)	0		
	WILMINGTON	84	0 (0%)	0		
	WINCHESTER	91	0 (0%)	0		
			WOBURN	198	1 (0.51%)	0
			CHICOPEE	186	0 (0%)	0
CVA		SOUTH HADLEY FD1	60	0 (0%)	0	
		WILBRAHAM	45	0 (0%)	0	
		<b>Total: CVA &amp; Partially Served</b>	<b>1383</b>	<b>1 (0.07%)</b>		
		<b>Total: Community Samples</b>	<b>6301</b>	<b>1 (0.02%)</b>		

## Chlorine Residuals in Fully Served Communities

	2020											2021		
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
% <0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.3	0.2	0.3	0.1	0.0	0.0	0.0	
% <0.2	0.2	0.2	0.3	0.4	0.5	0.4	1.0	1.1	1.4	0.4	0.2	0.1	0.0	
% <0.5	1.1	1.6	1.3	1.5	2.2	2.9	4.1	5.1	3.7	2.5	1.9	0.8	0.2	
% <1.0	3.5	4.6	4.0	4.3	6.5	8.4	10.7	12.2	9.3	5.3	3.6	2.5	1.5	
% ≥1.0	96.5	95.4	96.0	95.7	93.6	91.6	89.4	87.8	90.7	94.7	96.5	97.6	98.5	



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

### 3rd 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.

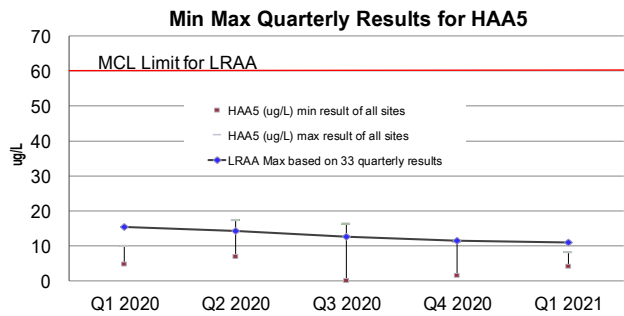
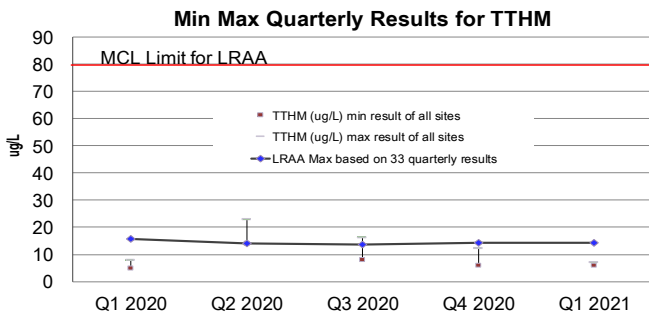
The locational running annual average calculated quarterly at each individual sampling location must be below the Total HAA5 or Total TTHM MCL standard. The charts below show the highest and lowest single values for all sites, and the LRAA of the highest location each quarter.

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.

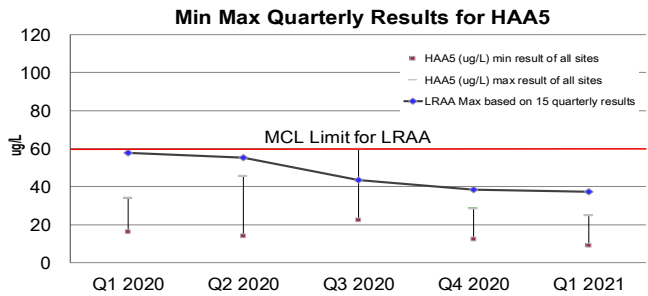
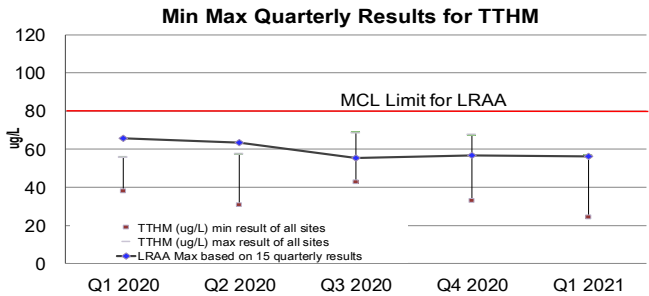
Bromate is tested monthly as required for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA’s RAA MCL standard for bromate is 10 µg/L.

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 = 14.2 µg/L; HAA5s = 10.9 µg/L. The current RAA for Bromate = 0.0 µg/L. No LRAA exceedances or violations occurred this quarter for MetroBoston and 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

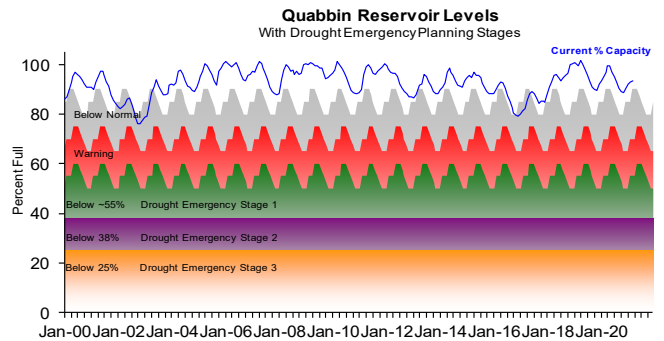
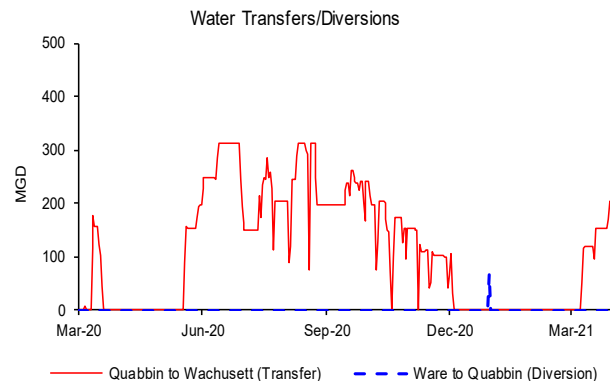
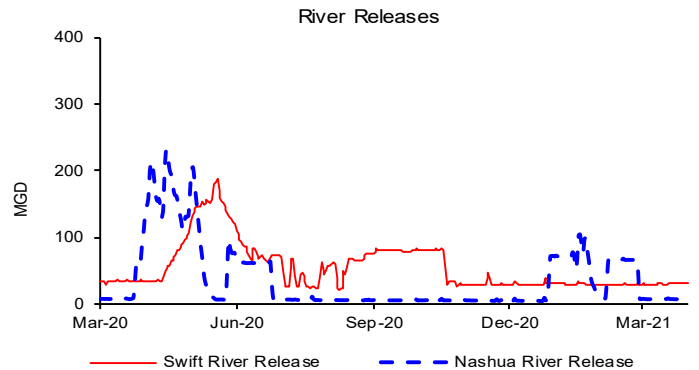
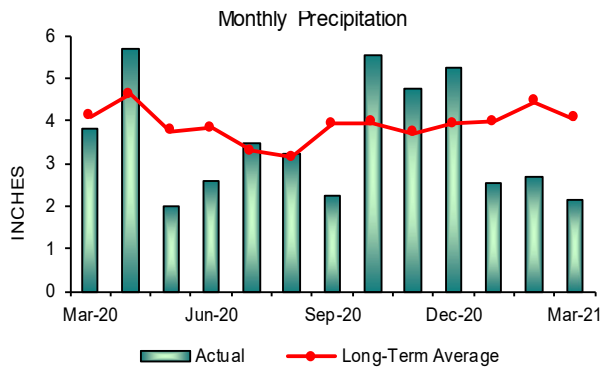
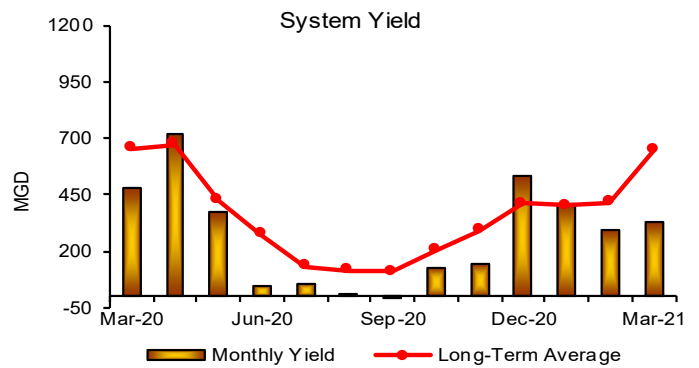
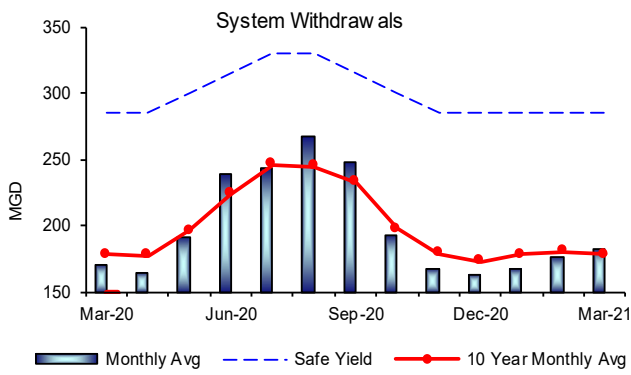
3rd Quarter – FY21

## 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 93.3% as of March 31, 2021; a 2.60 % increase for the quarter, which represents a gain of more than 11 billion gallons of storage and an increase in elevation of 1.47'. System Withdrawal, Yield and Precipitation were below their respective long term quarterly averages. Quabbin is in Normal Operating Range for this time of year.



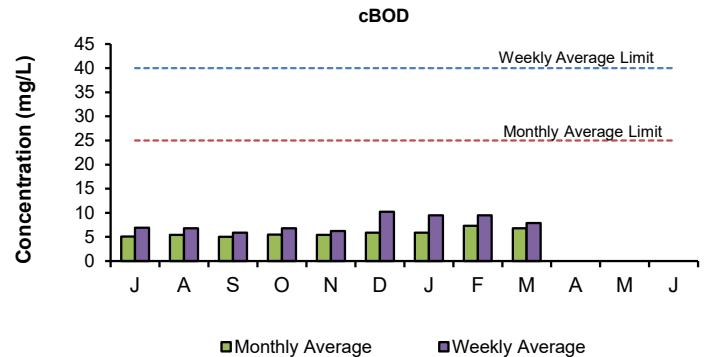
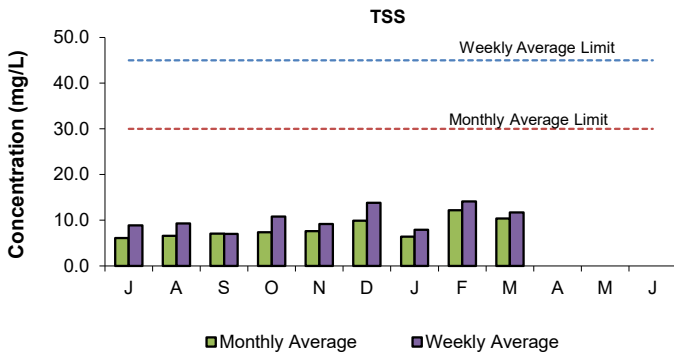
# WASTEWATER QUALITY

## NPDES Permit Compliance: Deer Island Treatment Plant 3rd Quarter - FY21

### NPDES Permit Limits

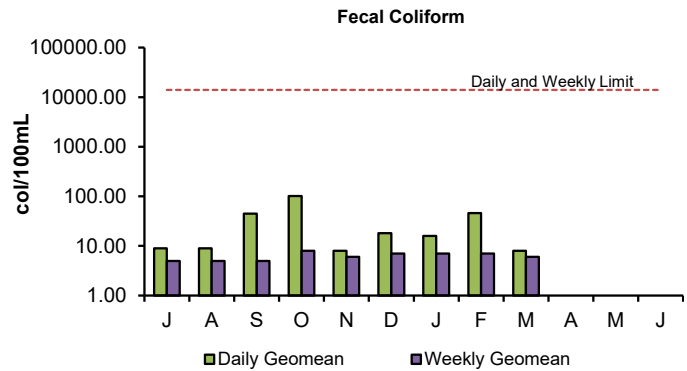
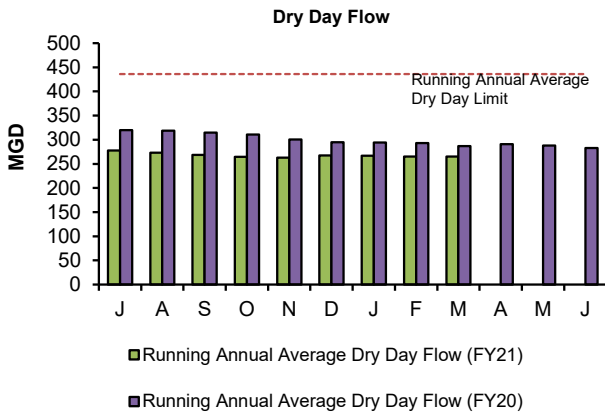
Effluent Characteristics		Units	Limits	January	February	March	3rd Quarter Violations	FY21 YTD Violations
Dry Day Flow (365 Day Average):		mgd	436	266.7	265.0	265.0	0	0
cBOD:	Monthly Average	mg/L	25	5.9	7.3	6.8	0	0
	Weekly Average	mg/L	40	9.5	9.5	7.9	0	0
TSS:	Monthly Average	mg/L	30	6.4	12.2	10.4	0	0
	Weekly Average	mg/L	45	7.9	14.1	11.7	0	0
TCR:	Monthly Average	ug/L	456	0.5	0.0	0.0	0	0
	Daily Maximum	ug/L	631	16.7	0.0	0.0	0	0
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	16.0	46.0	8.0	0	0
	Weekly Geometric Mean	col/100mL	14000	7.0	7.0	6.0	0	0
	% of Samples >14000	%	10	0.0	0.0	0.0	0	0
	Consecutive Samples >14000	#	3	0	0	0	0	0
pH:		SU	6.0-9.0	6.4-6.9	6.5-7.0	6.3-6.8	0	0
PCB, Aroclors:	Monthly Average	ug/L	0.000045	UNDETECTED			0	0
Acute Toxicity:	Mysid Shrimp	%	≥50	>100	>100	>100	0	0
	Inland Silverside	%	≥50	>100	>100	>100	0	0
Chronic Toxicity:	Sea Urchin	%	≥1.5	100	50	100	0	0
	Inland Silverside	%	≥1.5	100	100	100	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 3rd 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 3rd 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 3rd 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 3rd Quarter, all permit conditions for fecal coliform were met.

**NPDES Permit Compliance: Clinton Wastewater Treatment Plant**  
3rd Quarter - FY21

**NPDES Permit Limits**

Effluent Characteristics		Units	Limits	January	February	March	3rd Quarter Violations	FY21 YTD Violations
Flow:	12-month Rolling Average:	mgd	3.01	2.36	2.36	2.36	0	0
BOD:	Monthly Average:	mg/L	20	2.00	2.30	1.20	0	0
	Weekly Average:	mg/L	20	4.40	2.60	1.90	0	0
TSS:	Monthly Average:	mg/L	20	3.80	4.20	2.60	0	0
	Weekly Average:	mg/L	20	6.50	4.70	3.50	0	0
pH:		SU	6.5-8.3	7.3-7.6	7.3-7.5	7.2-7.6	0	0
Dissolved Oxygen:	Daily Average Minimum:	mg/L	6	10.10	10.50	10.20	0	0
E. Coli:	Monthly Geometric Mean:	cfu/100mL	126	5	5	5	0	0
	Daily Geometric Mean:	cfu/100mL	409	7	5	7	0	0
TCR:	Monthly Average:	ug/L	17.6	0.00	0.00	0.00	0	0
	Daily Maximum:	ug/L	30.4	0.00	0.00	0.00	0	0
Copper:	Monthly Average:	ug/L	11.6	8.56	8.50	8.42	0	0
	Daily Maximum:	ug/L	14.0	8.56	8.50	8.98	0	0
Total Ammonia Nitrogen: November 1st - March 31st	Monthly Average:	mg/L	10.0	0.10	0.00	0.02	0	0
	Daily Maximum:	mg/L	35.2	0.23	0.00	0.05	0	0
Total Phosphorus: November 1st - March 31st	Monthly Average:	ug/L	1000	159	310	113	0	0
	Daily Maximum:	ug/L	RPT	205	432	240	0	0
Acute Toxicity*:	Daily Minimum:	%	≥100	N/A	N/A	>100	0	0
Chronic Toxicity*:	Daily Minimum:	%	≥62.5	N/A	N/A	100	0	1

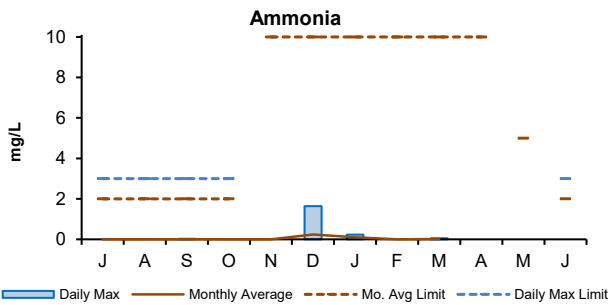
There has been one permit violation in FY21 at the Clinton Treatment Plant.

**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%.

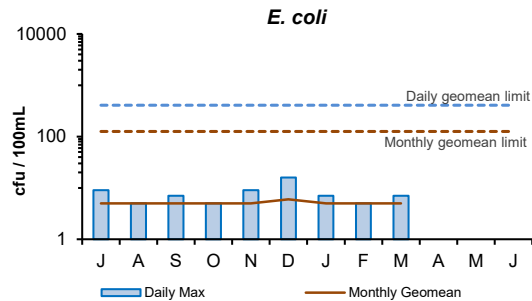
**2nd Quarter:** There were no permit violations in the 2nd Quarter.

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

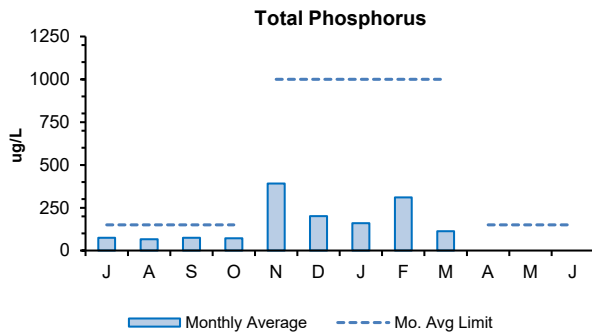
+ Toxicity testing at the Clinton Treatment Plant is conducted on a quarterly basis.



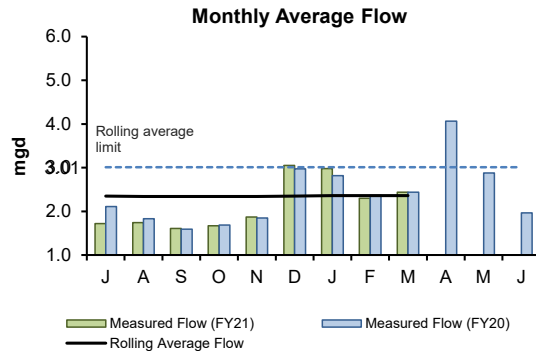
The 3rd Quarter's monthly average and daily maximum concentrations of ammonia were below the permit limits. The monthly average and daily maximum limits for the 3rd Quarter are 2.0 and 3.0 mg/L respectively. The permit limits are most stringent from June to October when warm weather conditions are most conducive to potential eutrophication.



*E. coli* is an indicator for the possible presence of pathogens. There were no violations of permit limits in the 3rd Quarter. The monthly and daily limits are 126 cfu/100 mL and 409 cfu/100 mL respectively.



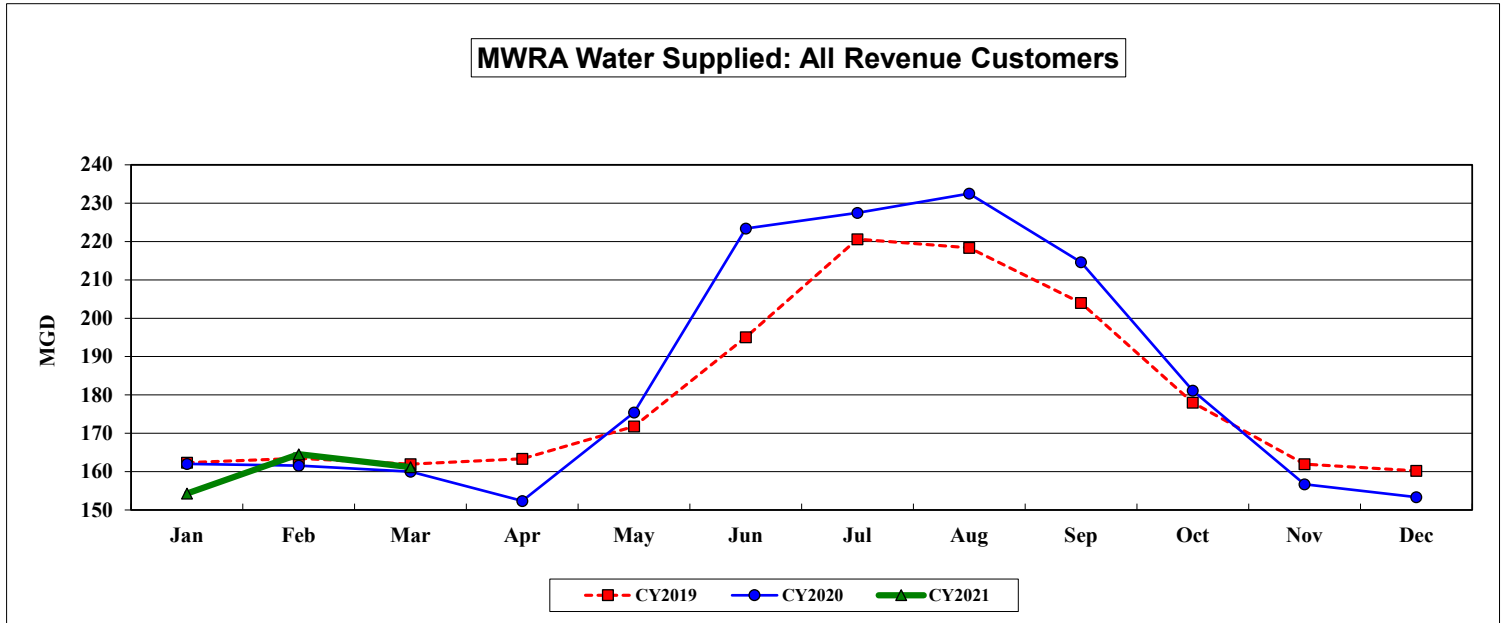
Total phosphorus limits are most stringent during the growing season from April to October. The 3rd Quarter's monthly average concentrations for total phosphorus were below permit limits.



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 3rd Quarter were below the permit limit.

# COMMUNITY FLOWS AND PROGRAMS

## Customer Water Use 3rd Quarter - FY21



MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Annual Average
<b>CY2019</b>	162.367	163.492	161.984	163.350	171.773	195.025	220.621	218.376	203.996	177.998	161.941	160.207	248.011	180.220
<b>CY2020</b>	162.016	161.551	160.018	152.368	175.435	223.405	227.454	232.496	214.617	181.110	156.727	153.367	161.187	183.462
<b>CY2021</b>	154.285	164.543	161.154	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	159.842	159.842

The March 2021 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 2021 water use will be used to allocate the FY2023 water utility rate revenue requirement.

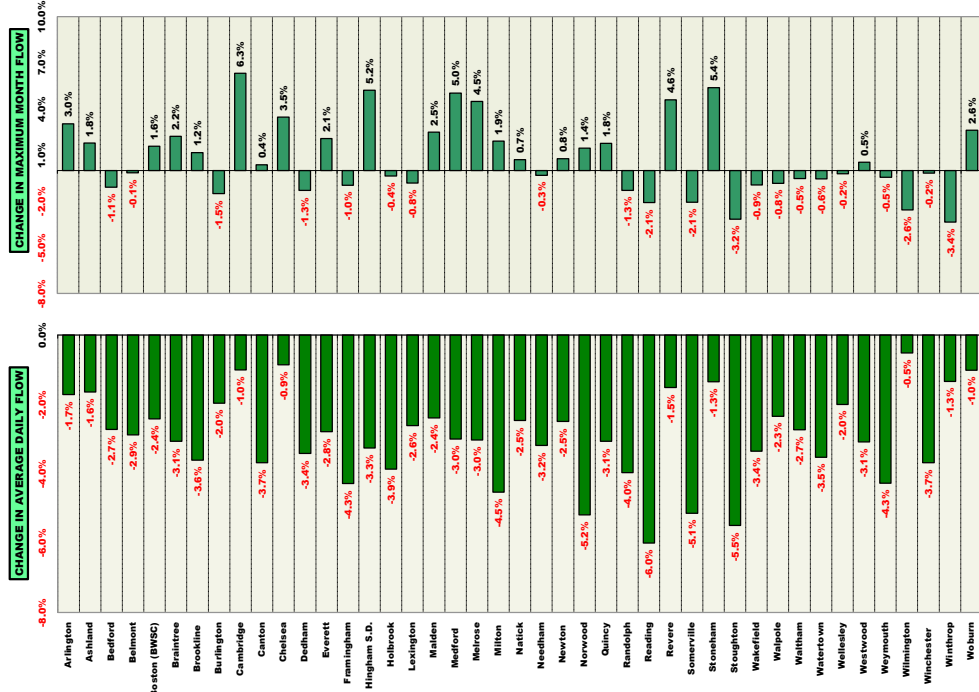
MWRA customers used an average of 159.8 mgd in the 3rd quarter (Jan-Mar 2021) of FY2021. This is a decrease of 1.3 mgd or 0.01% compared to the 3rd quarter of FY2020.

# Community Wastewater Flows

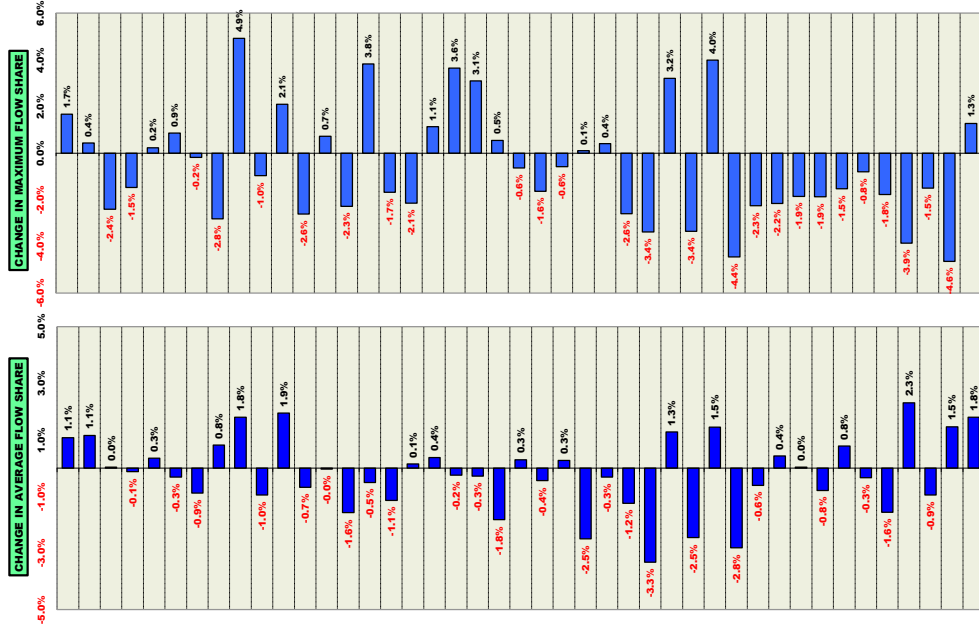
## 3rd Quarter - FY21

### How CY2019-21 Community Wastewater Flows Could Effect FY2023 Sewer Assessments

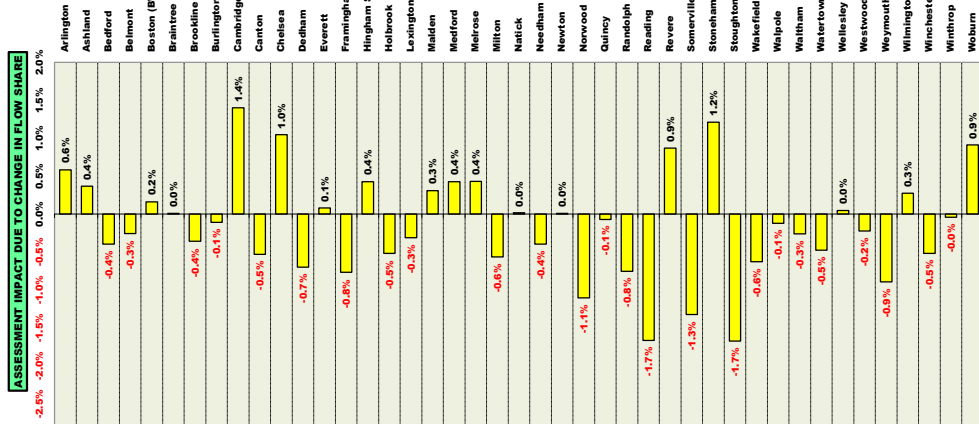
The flow components of FY2023 sewer assessments will be calculated using a 3-year average of CY2019 to CY2021 wastewater flows compared to FY2022 assessments that will use a 3-year average of CY2018 to CY2020 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2019 to CY2021 flow share compared to CY2018 to CY2020 flow share, compared to all other communities in the system.



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



<sup>1</sup> MWRA uses a 3-year flow average to calculate sewer assessments. Three-year averaging smooths the impact of year-to-year changes in community flow share, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.  
<sup>2</sup> Based on actual flows for 2018 and 2019, and January to March, and June to December 2020.  
<sup>3</sup> Flow data is preliminary and subject to change pending additional MWRA and community review.  
<sup>4</sup> Represents ONLY the impact on the total BASE assessment resulting from the changes in average and maximum wastewater FLOW SHARES.



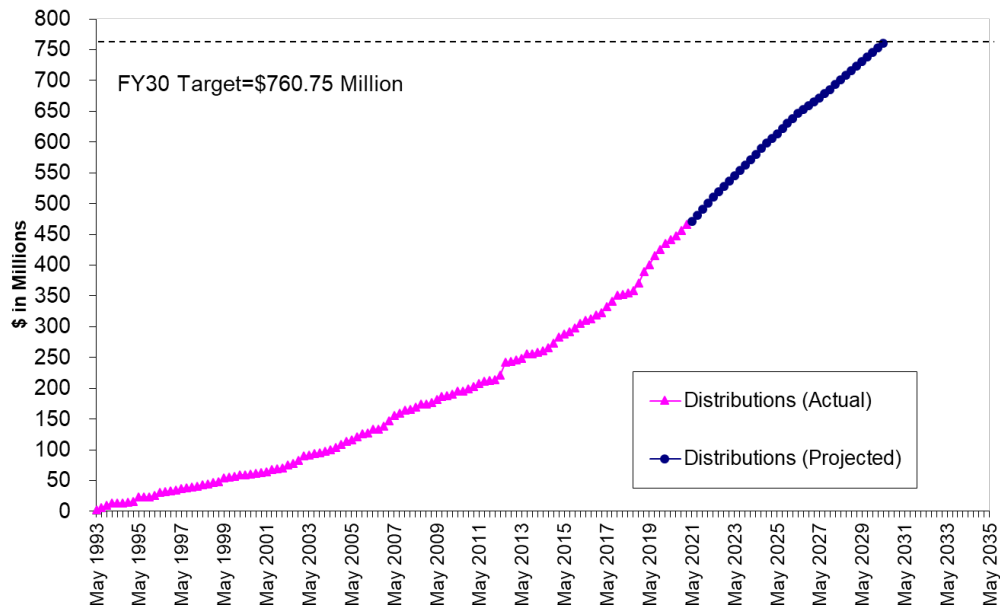
# Community Support Programs

3<sup>rd</sup> Quarter – FY21

## Infiltration/Inflow Local Financial Assistance Program

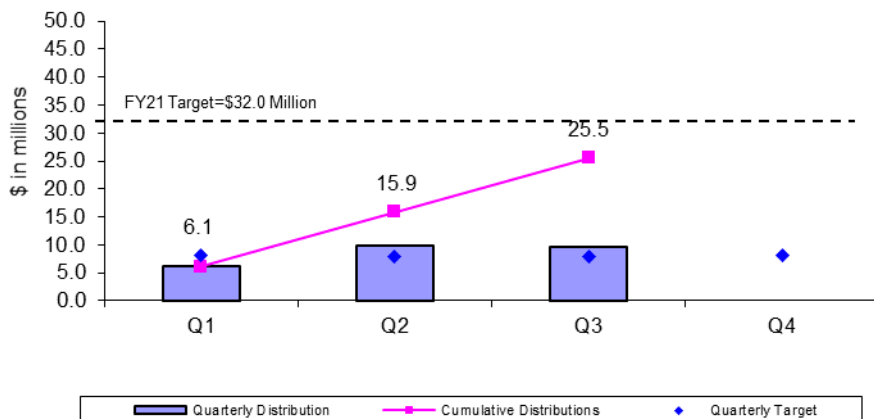
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$760.75 million in grants and interest-free loans (average of about \$20 million per year from FY93 through FY30) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned 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 ten-year loan-only funds.

### I/I Local Financial Assistance Program Distribution FY93-FY30



During the 3<sup>rd</sup> Quarter of FY21, \$9.6 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Ashland, Braintree, Canton, Dedham, Everett, Reading, Stoughton, Waltham and Winthrop. Total grant/loan distribution for FY21 is \$25.5 million. From FY93 through the 3<sup>rd</sup> Quarter of FY21, all 43 member sewer communities have participated in the program and \$467 million has been distributed to fund 625 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



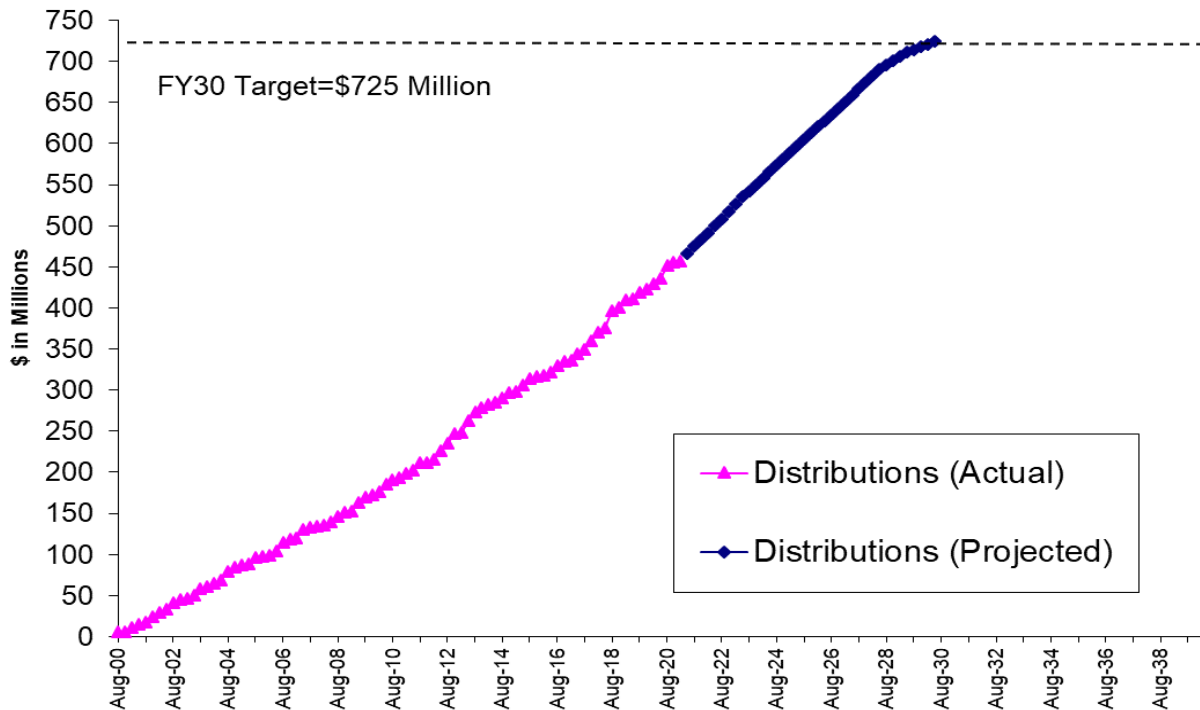
# Community Support Programs

3<sup>rd</sup> Quarter – FY21

## Local Water System Assistance Program

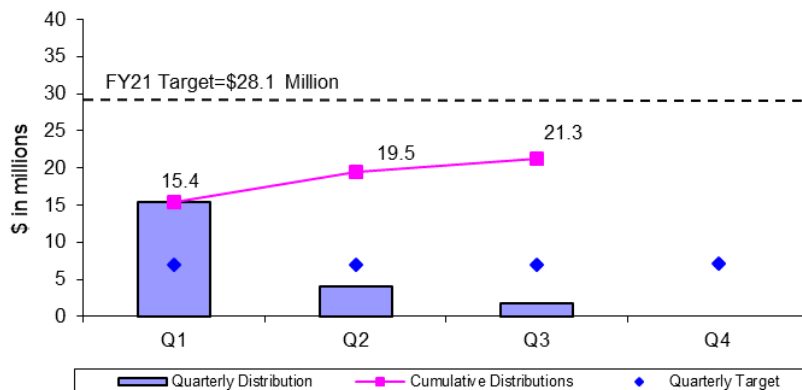
MWRA's Local Water System Assistance Programs (LWSAP) provides \$725 million in interest-free loans (an average of about \$24 million per year from FY01 through FY30) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. There have been 3 phases: Phase 1 at \$222 Million, Phase 2 at \$210 Million, and Phase 3 at \$293 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 3<sup>rd</sup> Quarter of FY21, \$1.8 million in interest-free loans was distributed to fund local water projects in Everett and Weston. Total loan distribution for FY21 is \$21.3 million. From FY01 through the 3<sup>rd</sup> Quarter of FY21, \$458 million has been distributed to fund 480 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

3<sup>rd</sup> 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.

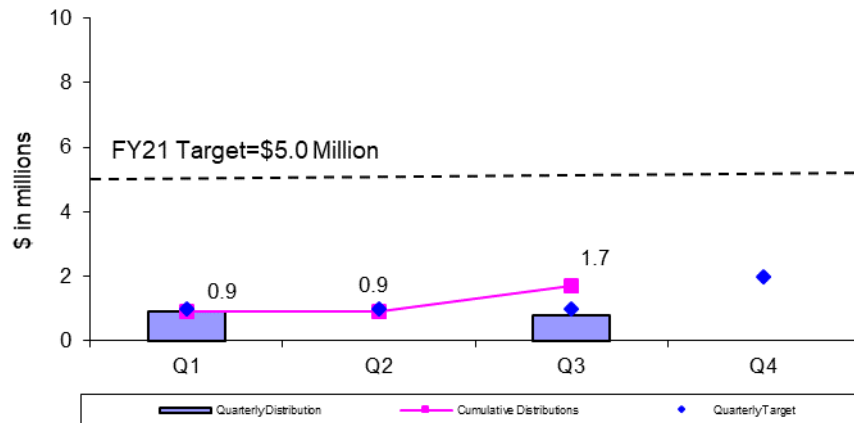
FY20 was the fourth year of the Lead Loan Program - MWRA made eight Lead Loans.

FY21 is the fifth year of the Lead Loan Program – MWRA made one Lead Loan on the 3<sup>rd</sup> quarter of FY21.

Summary of Lead Loans:

Winthrop in FY21	\$0.8 Million
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
<b>TOTAL</b>	<b>\$18.4 Million</b>

### FY21 Quarterly Distributions of Lead Service Line Replacement Loans

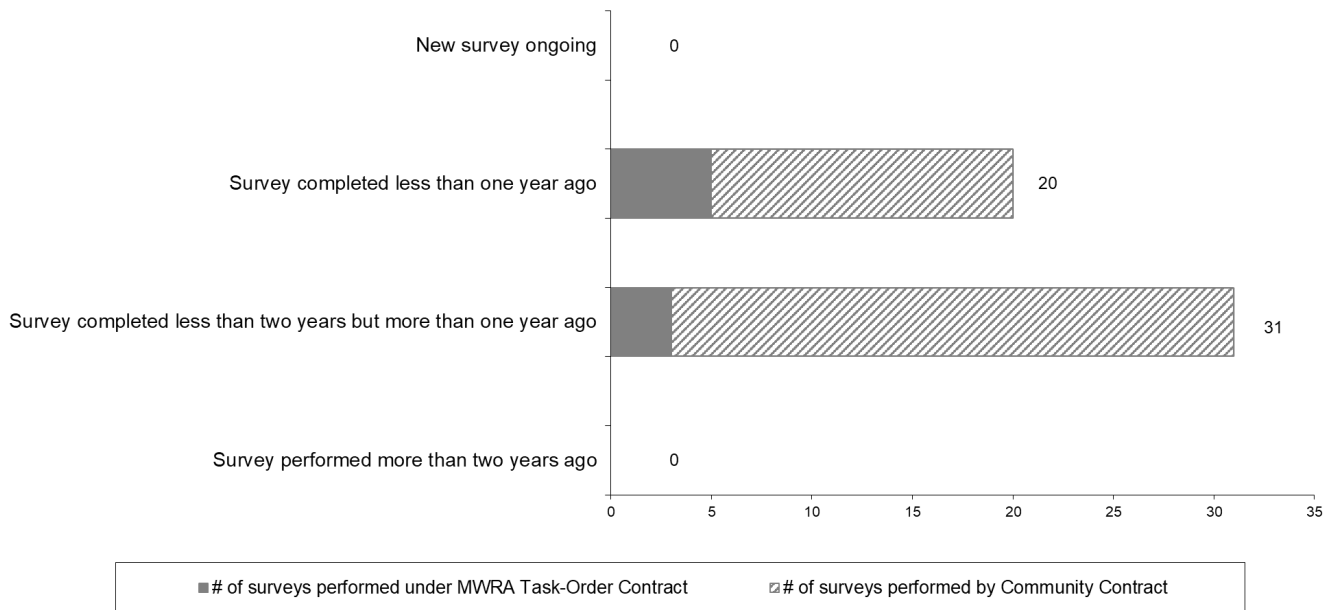


## Community Support Programs

3<sup>rd</sup> 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 3<sup>rd</sup> 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 less than 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	50,616	18,526	24,061		93,203
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	416	576	831		1,823
Toilet Leak Detection Dye Tablets	_____	864	279	573		1,716

## BUSINESS SERVICES

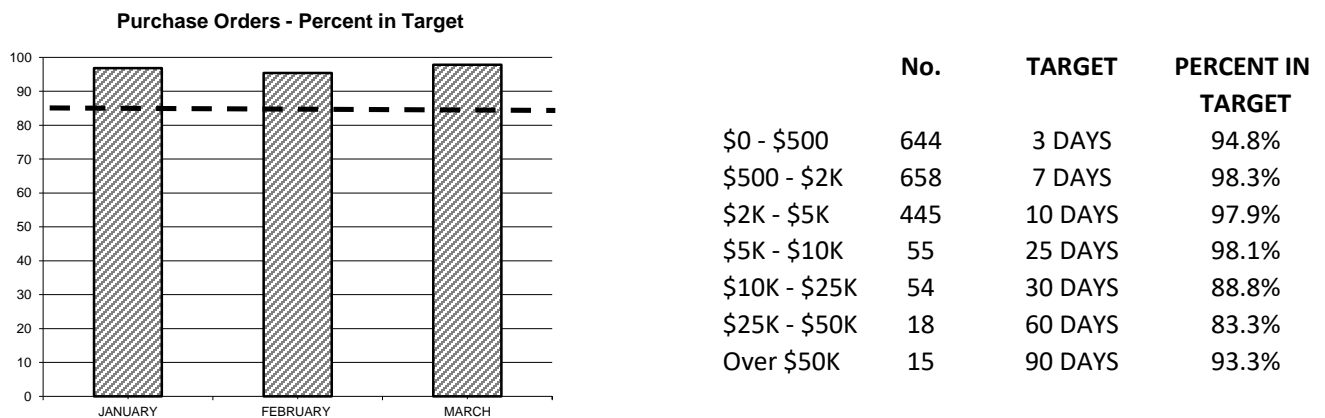
# Procurement: Purchasing and Contracts

## 3rd Quarter - FY21

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

**Outcome:** Processed 97% of purchase orders within target; Average Processing Time was 3.77 days vs 4.32 days in Quarter 3 of FY20. Processed 47% (8 of 17) of contracts within target timeframes; Average Processing Time was 204 days vs. 198 days in Qtr 3 of FY20.

### Purchasing



The Purchasing Unit processed 1889 purchase orders, 129 less than the 2018 processed in Qtr 3 of FY20 for a total value of \$6,056,680 versus a dollar value of \$10,904,790 in Qtr 3 of FY20.

The purchase order processing target was not met for the \$25K - \$50K category due to staff summary requirements.

### Contracts, Change Orders and Amendments

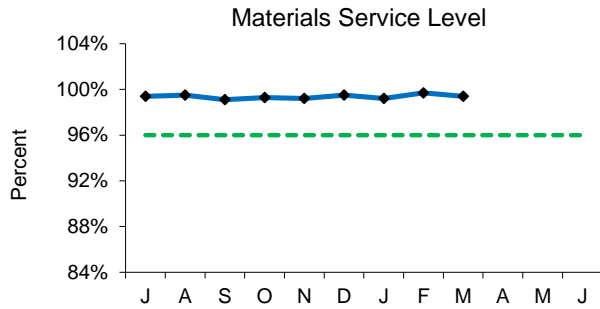
Procurement processed seventeen contracts with a value of \$50,041,329 and thirteen amendments with a value of \$966,302. Twenty one change orders were executed during the period. The dollar value of all non-credit change orders during Q3 FY21 was \$2,402,847 and the value of credit change orders was (\$621,016).

Nine contracts were not processed within the target timeframes. One contract was not processed within the target timeframe due to delays associated with the verification of the contractor's references. Several contracts were delayed due to changes to the specifications to address the newly developed COVID-19 health and safety standards. A fourth contract was delayed due to required scope revisions necessitated by the newly developed COVID-19 health and safety standards in addition to the need to revise drawings. A fifth contract was not processed within the target timeframe due to the extended time required to approve the lengthy scope of work in addition to delays in vendor selection due to COVID-19 circumstances. A sixth contract was delayed due to delays by the consultant providing the necessary contract documents from its sub-consultants. Another contract was delayed due to delays in receiving signed E-tables from the consultant. An eighth contract was delayed due to the decision to put the project on hold due to COVID-19 circumstances. In addition, the scope was revised which contributed to further delays. The final contract was not processed within the target timeframe due to delays associated with scope revisions along with a time extension due to COVID-19 circumstances.

Staff reviewed 32 proposed change orders and 25 draft change orders.

## Materials Management

3rd Quarter - FY21



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 7,998 (99.5%) of the 8,039 items requested in Q3 from the inventory locations for a total dollar value of \$1,602,554.

### 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 – gaskets, level switches, scanner cables, scanner flames, circuit breakers, alarm modules, USB cables and bushing drives for I&C; overload heater, circuit breakers, thermostats, interface modules and seals for Maintenance; toner cartridges for Lab; headsets webcams and disinfectant spray for entire plant.
- Chelsea – toners for MIS; hydraulic filters, diesel injectors and fuel filters for Fleet Service; degreasers, LED lamps and chopper pump for Work Coordination; blades and filters for FOD.
- Southboro – toner cartridges for Administration; chainsaw chain for Grounds Maintenance.

Property Pass Program:

- Ten audits were conducted during Q3.
- Scrap revenue received for Q3 amounted to \$13,139. Year to date revenue received amounted to \$43,386.
- Revenue received from online auctions held during Q3 amounted to \$96,984. Year to date revenue received amounted to \$242,447.

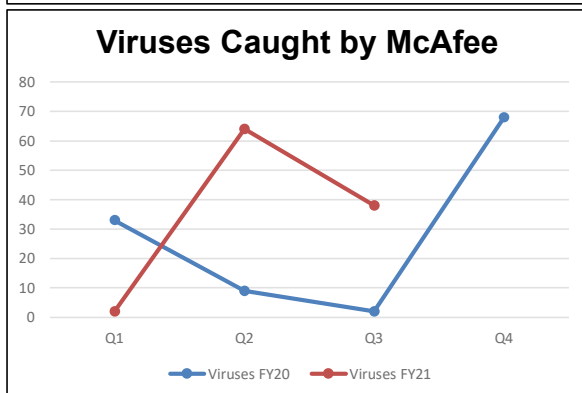
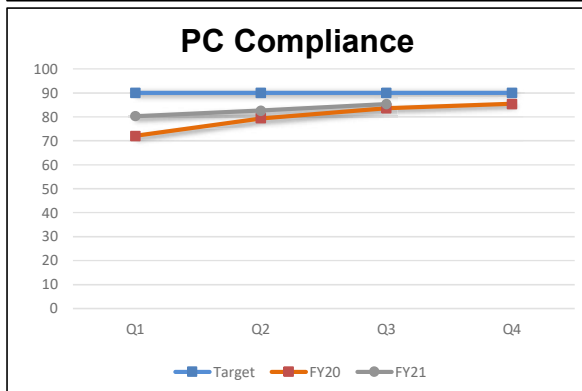
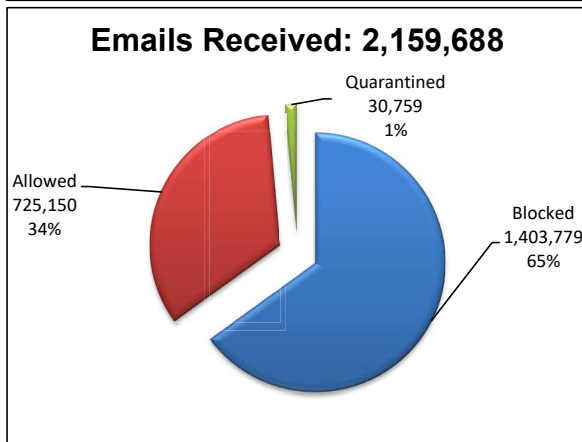
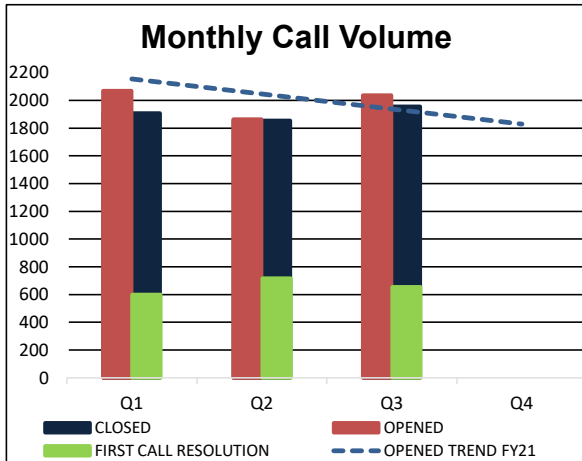
Items	Base Value July-20	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	8,818,459	8,717,246	-101,213
Spare Parts Inventory Value	8,797,946	9,093,642	295,696
<b>Total Inventory Value</b>	<b>17,616,405</b>	<b>17,810,888</b>	<b>194,483</b>

**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

## Third Quarter – FY21

### Numbers & Statistics



### Project Updates

#### Infrastructure & Security

**AWIA Risk and Resiliency Assessment:** Remediation work continued this quarter to resolve any identified vulnerabilities from the AWIA RRA; at the end of the quarter, 64% of the identified tasks were “Completed”; 3% were “In Progress”; and 33% were identified as longer term projects.

**WiFi Expansion:** The wireless expansion project is complete. Wireless access for MWRA mobile devices is now available in Chelsea, Charlestown Navy Yard and Southboro.

**PBX (Telephone System) Upgrade:** Bid was posted; identification and installation of replacement cabling for new VoIP phone system started.

**Digital Signage:** Installed proof of concept in the Chelsea Maintenance building. Refinement of scope and required products ongoing.

**Cyber Security:** The following was completed in Q2:

- Password security improvements were completed and job aid developed.
- Rollout of multi-factor authentication (MFA) to teleworkers completed.
- Cyber Security training continues. At the end of the quarter 95% of 900+ employees had started or completed their assignments. An additional 260 non-computer using employees will be trained in Q4.
- Updates to security infrastructure were installed with a focus on Microsoft Exchange

#### Other Software & Custom Applications

**ECM/Electronic Document Management:** Contract signed. Began collecting hardware and software installation requirements. Started Legacy Records’ Management data migration analysis. Scheduled preliminary MIS Team kickoff meeting.

**Legacy Contract Management:** The remaining Contract types in the unsupported custom legacy Contracts Management system have been implemented in the Infor Lawson Contracts Management and Strategic Sourcing systems. These contracts were the smaller or rarer, lower-priority contract types (i.e. Railroad and Leak Detection).

**Visitor Management:** Multiple vendor installation and configuration meetings held. Database connection and email functions working. Basic configurations complete and a user demo has been scheduled in April to facilitate final business decisions.

**Learning Management System:** Project kickoff meeting was held with both HR and MIS training staff and MIS Application Support staff. Training sessions for the project team began in late March and will finish in early April.

**COVID Self-Certification:** Final testing and user documentation completed for both the web screen and the telephone call-in systems. Go-Live is planned for early April.

**Discoverer to SAP-BO:** Proof of Concept was completed successfully. Scope being drafted for migration of all remaining relevant Discoverer Workbooks.

#### Library, Record Center, & Training

**Library:** undertook 15 research requests, supplied 18 books for circulation, provided 15 articles, and 119 standards. The MWRA Library Portal supported 432 end-user searches. Research topics included NPDES Permit –fecal coliform colonies, historic value of fens gatehouse, crane/hoist manufacturing and installation research, and history of Mystic/Tufts University Reservoir.

**Record Center (RC):** The Record Center added 165 new boxes, handled 230 total boxes, and shredded eleven-65 gallon bins of confidential documentation on-site. Scanning paper analysis for building consolidation underway. The RC manager attended 3 RCB virtual meetings. Requested searches included city tunnel extensions and business related items dealing with agreements between city Marlboro and the MDC.

**Training:** In Q3, 49 online IT lessons were taken (66 YTD), by 10 employees (22 YTD), spanning 59 hours (92 YTD). The Intranet IT Training pages were updated to identify new LinkedIn Learning recommended IT classes and announce Learning Management System is coming soon.



# Legal Matters

3rd Quarter - FY21

## PROJECT ASSISTANCE

### Real Estate, Contract, Environmental and Other Support:

- **8(m) Permits:** Reviewed one hundred and four (104) 8(m) permits. Reviewed Direct Connect Permit 20 09 186DC - Fens Gatehouse.
- **Real Property:** Reviewed Chelsea Lease relative to option to purchase 2 Griffin Way property in Chelsea and reviewed property rights chain of title documents and title certification for the 2 Griffin Way property. Reviewed survey for Sudbury Aqueduct in area of 251 Grant Avenue and 693 Beacon Street in Newton. Recorded Order of Conditions DEP 059-1486 (Quincy) related to Braintree-Weymouth Pump Station Improvements – MWRA Contract 7435 at the Norfolk County Registry of Deeds. Recorded release of easements by MWRA related to certain easements burdening Alta Langwood, LLC's property in Stoneham and release of easements by Alta Langwood, LLC for certain easements burdening MWRA's Spot Pond Covered Storage property in Stoneham at Middlesex South Registry of Deeds. Reviewed existing water preservation restriction language related to a parcel of land in Hubbardston, MA (W-001230). Reviewed MBTA license (MBTA 16712) for MWRA's Walnut Hill project in Somerville (MWRA Contract 7483 – Walnut St. Bridge Pipe Restraint Replacement). Reviewed and signed certificate as to title for project site required as part of application for state financial assistance offered through drinking water state revolving fund (DWSRF) - 6691 - related to MWRA's Northern Intermediate High Water Pipeline Section 89 Replacement Project – MWRA Contract No. 7117. Reviewed MWRA's property rights for Chelsea Headworks. MWRA's property rights in the location of Poplar Street in Somerville relative to work being performed by the City of Somerville, and MWRA's property rights in the area of its Carroll Water Treatment Plant in Marlborough relative to the City of Marlborough's proposed installation of emergency water pumps at its Cedar Hill Pump Station. Reviewed title report for 251 Grant Avenue and 693 Beacon Street in the City of Newton relative to the Sudbury Aqueduct property rights in that location. Reviewed MWRA's property rights related to storm drains in Moakley Park and Pleasure Bay area in South Boston, MWRA's property rights for Commercial Point site in Dorchester, property rights for the Hultman Aqueduct in Weston related to proposed development, property rights in the area of MWRA's Southborough facilities, and property rights in the area of MWRA's shaft 7 relative to work being performed by Boston College, and MWRA's Deer Island property interests in the area of the fishing pier parking lot. Reviewed property rights, title documents and processes for acquisition of property interests to support MWRA's Tunnel Redundancy Program.
- **NPDES:** Reviewed co-permittee language in POTW NPDES permits and comments and dilution requirements relative to DITP's NPDES permit.
- **Boston Harbor Case:** Reviewed Court requirements relative to reservation of space for Secondary Battery D.
- **Water Supply Agreements:** Reviewed water supply agreement between MWRA and the Town of Burlington.
- **Legislation:** Reviewed Governor's amendments in Senate Bill 30 to Senate Bill 9 (An Act creating a next-generation roadmap for Massachusetts Climate Policy) relative to sections 56-60.
- **Public Records Requests:** During the months of January, February and March MWRA received and responded to one hundred eighty-nine (189) public records requests.

## LABOR, EMPLOYMENT AND ADMINISTRATIVE

### New Matters

Four demands for arbitration were filed.

### Significant Developments

The state Department of Labor Relations reversed a hearing officer's decision previously dismissing as untimely a prohibited practice charge filed by MOSES regarding MWRA's implementation of the employee contribution toward the Paid Family and Medical Leave state program. The case has been placed in abeyance pending resolution of another case regarding the Commonwealth's implementation of the contribution.

### Matters Concluded

Received a dismissal from the MCAD affirming lack of probable cause of a charge of discrimination on the basis of age after review of a written appeal.

## LITIGATION/CLAIMS

**New lawsuits/claims:** Claim: A motor vehicle accident claim and demand from Ziola Granados, and her two minor children, was received in March 2021.

Janet DiGregorio et al. v. Griffin Way, LLC, Suffolk Superior Court C.A. 20-02429-K: On March 30, 2021, defendant Griffin Way, LLC served a Motion For Leave to File a Third Party Complaint against MWRA in a personal injury lawsuit.

### **Significant Developments**

(Former employee) v. MWRA, C.A. No.19-CV- 01847 Plaintiff's counsel conducted depositions of MWRA staff during the last week of February and in March, and the parties attended mediation at the end of March.

MWRA v. NEL Corp., Dewberry, et al., Suffolk Superior Court C.A. No. 18-CV 01156-BLS1: After attending mediation during the months of January and February, and subject to Board approval, the parties reached a settlement in the above litigation, which arose out of the Section 4 Webster Avenue Pipe and Utility Bridge Replacement Project. The settlement was approved by MWRA's Board of Directors at its March 17, 2021 meeting. It is expected that the parties will executed a formal Settlement Agreement and file a Stipulation of Dismissal with the court within the next 60 days.

**Closed Cases:** There are no closed cases to report.  
**Closed Claims:** There are no closed claims to report.

**Subpoenas** During the Third Quarter of FY 2021, no subpoenas were received and no subpoenas were pending at the end of the Third Quarter FY 2021.

**Wage Garnishments** There are two wage garnishment matters that are active and monitored by Law Division.

**SUMMARY OF PENDING LITIGATION MATTERS**

<b>TYPE OF CASE/MATTER</b>	<b>As of March 2021</b>	<b>As of Dec 2020</b>	<b>As of Sept 2020</b>
Construction/Contract/Bid Protest (other than BHP)	1	1	2
Tort/Labor/Employment	4	3	3
Environmental/Regulatory/Other	2	2	2
Eminent Domain/Real Estate	0	0	0
<b>Total</b>	<b>7</b>	<b>6</b>	<b>7</b>
Other Litigation matters (restraining orders, etc.)	2	2	2
<b>Total – all pending lawsuits</b>	<b>9</b>	<b>8</b>	<b>9</b>
<b>Claims not in suit:</b>	1	0	0
1. Granados MVA Claim			
Bankruptcy	1	1	1
Wage Garnishment	2	2	2
TRAC/Adjudicatory Appeals	0	0	0
Subpoenas	0	0	0
<b>TOTAL – ALL LITIGATION MATTERS</b>	<b>13</b>	<b>11</b>	<b>12</b>

**TRAC/MISC.**

**New Appeals:** There are no new appeals in the 3<sup>rd</sup> Quarter FY 2021.

**Settlement by Agreement of Parties** There are no Settlement by Agreement of Parties in the 3<sup>rd</sup> Quarter FY21.

**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 3<sup>rd</sup> Quarter FY 2021.

**Final Decisions** There are no Final Decisions issued in the 3<sup>rd</sup> Quarter FY 2021.

## INTERNAL AUDIT AND CONTRACT AUDIT ACTIVITIES 3<sup>rd</sup> Quarter - FY21

### Highlights

During the 3rd quarter FY21, Internal Audit (IA) completed a review of Overhead Crane Inspections to determine if the MWRA is complying with OSHA and industry standards inspection requirements. IA noted certain cranes were overdue for their annual inspection. IA has provided several recommendations relating to crane asset management, crane inspection management and safety compliance. Support to staff continues on the Return to Work Guidance and an internal review of safety training is progressing.

In addition, IA completed preliminary reviews of 3 professional service contracts, a review of costs incurred on the new HEEC cable as the project nears preparation of the tariff filing. IA issued 35 indirect cost rate letters to professional service consultants while a review of incurred costs for two of them is in process. Management advisory services included support on the MWRA's leases and an ongoing investigation related to the cost of office supplies relative to the state contract.

### Status of Recommendations

During FY21, 8 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)	2	14	16
Fleet Services Non-Plated Equipment Inspections (3/30/20)	9	6	15
<b>Total Recommendations</b>	<b>15</b>	<b>29</b>	<b>44</b>

### Cost Savings

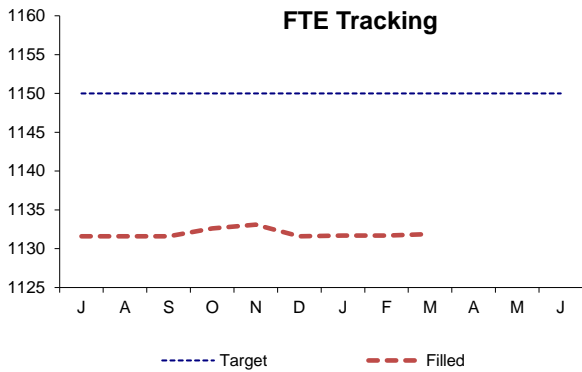
IA's target is to achieve at least \$1,000,000 in cost savings each year. Cost savings vary each year based upon many factors. In some cases, cost savings for one year may be the result of prior years' audits.

Cost Savings	FY17	FY18	FY19	FY20	FY21 Q3	TOTALS
Consultants	\$272,431	\$118,782	\$262,384	\$643,845	<b>\$516,829</b>	\$1,814,271
Contractors & Vendors	\$3,037,712	\$1,323,156	\$3,152,884	\$2,097,729	<b>\$1,467,023</b>	\$11,078,505
Internal Audits	\$224,178	\$204,202	\$210,063	\$212,517	<b>\$160,171</b>	\$1,011,131
<b>Total</b>	<b>\$3,534,321</b>	<b>\$1,646,140</b>	<b>\$3,625,331</b>	<b>\$2,954,091</b>	<b>\$2,144,023</b>	<b>\$13,903,907</b>

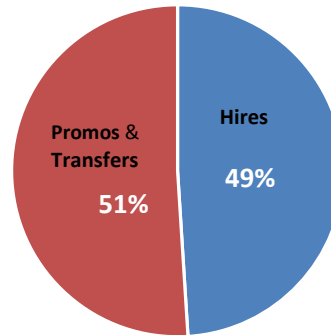
## OTHER MANAGEMENT

# Workforce Management

## 3rd Quarter - FY21

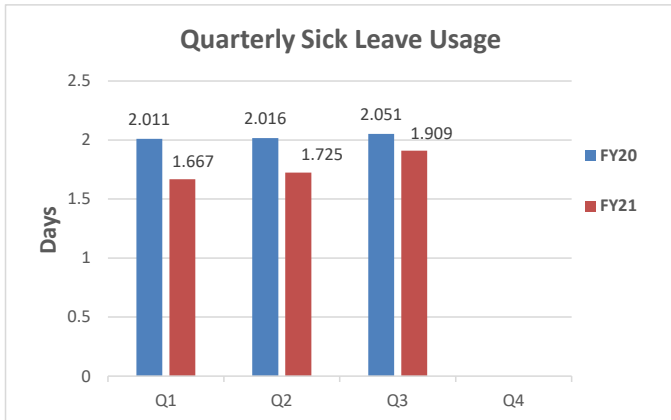


**Position Filled by Hires/Promos & Transfer for YTD**



FY21 Target for FTE's = 1150  
 FTE's as of March 2020 = 1131.9  
 Tunnel Redundancy as of March 2020 = 9.0

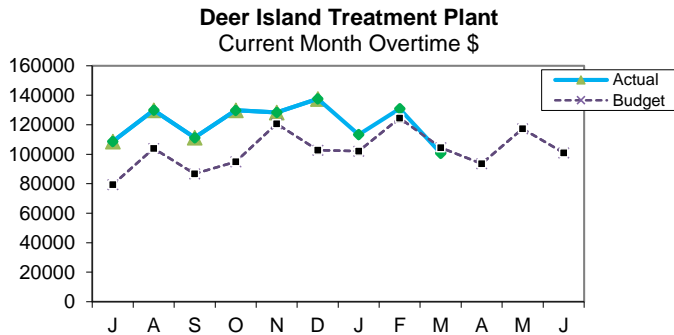
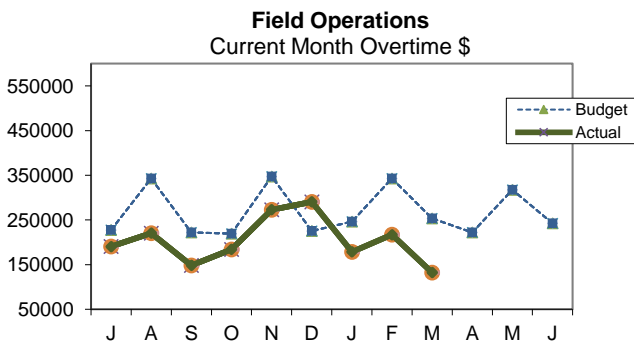
	Pr/Trns	Hires	Total
FY19	112 (60%)	76 (40%)	188
FY20	84 (59%)	58 (41%)	142
FY21	54 (51%)	52 (49%)	106



	Number of Employees	YTD (usage to date)	Annualized Total	Annual FMLA %	FY20
Admin	139	4.08	5.44	14.5%	6.48
Aff. Action	7	2.56	3.42	0.0%	6.42
Executive	4	2.62	3.42	0.0%	1.81
Finance	35	2.56	3.02	0.0%	4.09
Internal Audit	7	0.76	1.95	0.0%	5.08
Law	13	4.27	1.77	12.0%	6.71
OEP	4	0.83	1.48	0.0%	1.00
Operations	923	5.77	0.79	20.8%	7.27
Tunnel Redundancy	9	1.12	0.42	9.0%	4.93
Public Affairs	11	0.80	0.31	0.0%	7.96
<b>MWRA Avg</b>	<b>1152</b>	<b>3.53</b>	<b>7.07</b>	<b>19.7%</b>	<b>6.94</b>

Sick leave usage in 3rd Quarter of FY21 is lower than usage in the 3rd Quarter of FY20.

Percent of sick leave usage for FY21 attributable to Family and Medical Leave Act (FMLA) is 19.7%

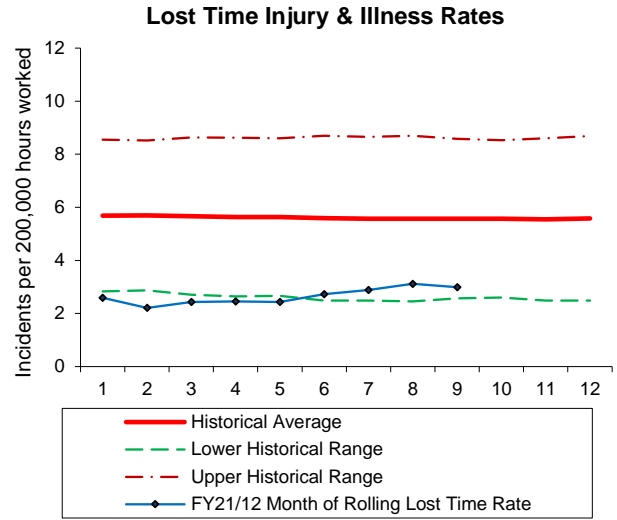
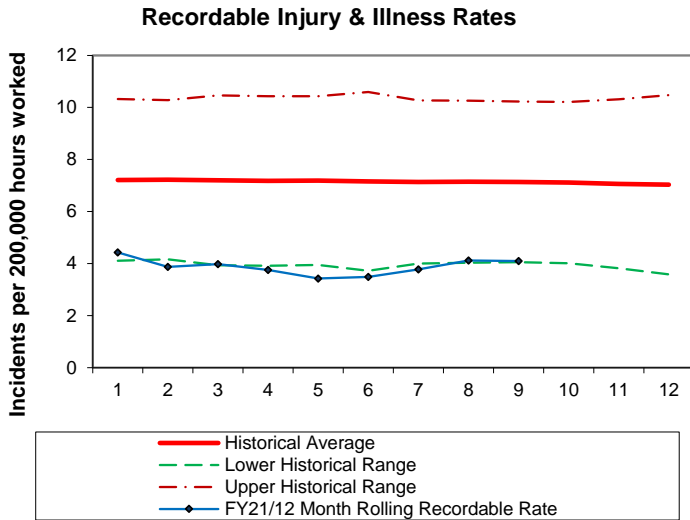


Total Overtime for Field Operations for the third quarter of FY21 was \$528k which is (\$313k) under budget. Emergency overtime was \$227k, which is (\$221k) under budget. Snow Removal totaled \$92k, Rain Events totaled \$88k and Emergency Maintenance was \$32k. Coverage overtime was \$170k which is \$18k over budget, reflecting the quarter's shift coverage requirements. Planned overtime was \$131k, which is (\$107k) under budget with combined spending of \$36k for all Maintenance, \$12k for Telecom Oversight & \$54k for Half Plant.

Deer Island's total overtime expenditure for the third quarter was \$345k, which was \$14k or 4.2% over budget. In the third quarter, Deer Island experienced higher than anticipated shift coverage of \$66k. This was offset by lower than anticipated planned/unplanned overtime of (\$43k) and storm coverage of (\$9k). YTD Deer Island's overtime spending is \$1.1M, which is \$171k or 18.6% over budget due to higher than anticipated shift coverage of \$158k; and storm coverage of \$19k. This is offset by lower planned/unplanned overtime of (\$6k). During October, Eversource conducted 4 days of annual maintenance on the HEEC cable which accounted for \$27k of the overspending for the year. COVID-19 related OT has accounted for \$70k of the overspending for the fiscal year.

# Workplace Safety

## 3rd 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

	3rd Quarter Information		Open Claims
	New	Closed	
Lost Time	2	14	52
Medical Only	17	12	25
Report Only	14	14	
	<b>QYTD</b>		<b>FYTD</b>
Regular Duty Returns	3		10
Light Duty Returns	0		0
Indemnity payments as of March 31 2021 included in open claims listed			23

#### **COMMENTS:**

##### Regular Duty Returns

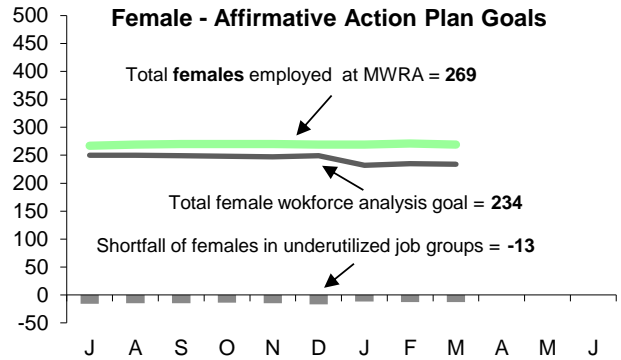
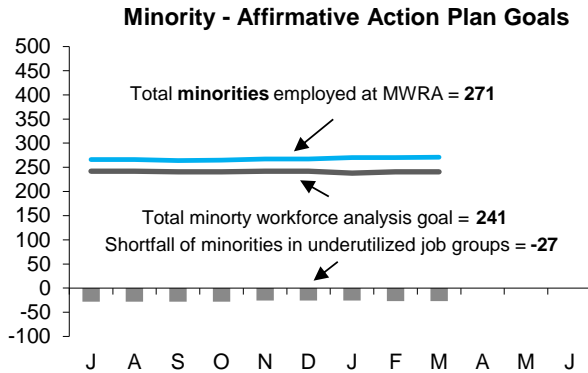
**Jan**            3    Employees returned to full duty/no restrictions  
**Feb**            0    Employees returned to full duty/no restrictions  
**March**        0    Employees returned to full duty/no restrictions

##### Light Duty Returns

**Jan** N/A  
**Feb** N/A  
**March** 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 3rd Quarter - FY21



### Highlights:

At the end of Q3 FY21, 5 job groups or a total of 27 positions are underutilized by minorities as compared to 5 job groups for a total of 28 positions at the end of Q3 FY20; for females 4 job groups or a total of 13 positions are underutilized by females as compared to 8 job groups or a total of 19 positions at the end of Q3 FY20. During Q2, 5 minorities and 4 females were hired. During this same period 1 minority and 2 females were terminated.

### Underutilized Job Groups - Workforce Representation

Job Group	Employees as of 3/31/2021	Minorities as of 3/31/2021	Achievement Level	Minority Over or Under Underutilized	Females As of 3/31/2021	Achievement Level	Female Over or Under Underutilized
Administrator A	23	3	1	2	12	6	6
Administrator B	24	0	7	-7	6	5	1
Clerical A	30	10	6	4	27	23	4
Clerical B	24	8	7	1	4	7	-3
Engineer A	84	25	19	6	21	20	1
Engineer B	60	20	16	4	13	9	4
Craft A	112	16	21	-5	0	4	-4
Craft B	141	22	19	3	3	3	0
Laborer	73	22	17	5	5	3	2
Management A	93	22	29	-7	33	19	14
Management B	43	11	9	2	9	10	-1
Operator A	65	4	9	-5	2	2	0
Operator B	69	21	9	12	3	2	1
Professional A	29	4	7	-3	19	13	6
Professional B	172	51	41	10	82	73	9
Para Professional	49	15	10	5	22	22	0
Technical A	55	15	13	2	7	12	-5
Technical B	6	2	1	1	1	1	0
<b>Total</b>	<b>1152</b>	<b>271</b>	<b>241</b>	<b>57/-27</b>	<b>269</b>	<b>234</b>	<b>48/-13</b>

### AACU Candidate Referrals for Underutilized Positions

Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions / Transfers	AACU Ref. External	Position Status
Administrative B	Dep Dir Design&Constr Tunnel	1	Int./Ext.	0	0	NH = WM
Administrative B	Deputy Director, MIS	1	Int./Ext.	0	0	NH = WM
Craft A	Fencing Foreman	1	Int.	1	0	Promo = WM
Craft A	Trades Foreman (Licensed)	1	Int.	1	0	Promo = BM
Craft A	Foreman Shaft 8 Lower Garage	1	Int.	1	0	Promo = WM
Craft A	Unit Supervisor - HVAC	1	Int.	1	0	Promo = WM
Management A	MGR, Human Resources Operations	1	Int.	1	0	Promo = WF
Management A	Manager, Emergency Planning	1	Int./Ext.	0	0	NH = WM
Management B	Area Manager, Secondary	1	Int.	1	0	Promo = BM
Management B	Project Manager	1	Int./Ext.	1	0	Promo = WM
Operators A	Area Supervisor - Water	1	Int./Ext.		0	NH = WM
Operators A	Area Supervisor - Wastewater	1	Int./Ext.	1	0	Promo = WM
Technical A	Communication & Control Tech	1	Int./Ext.	1	0	Promo = AM



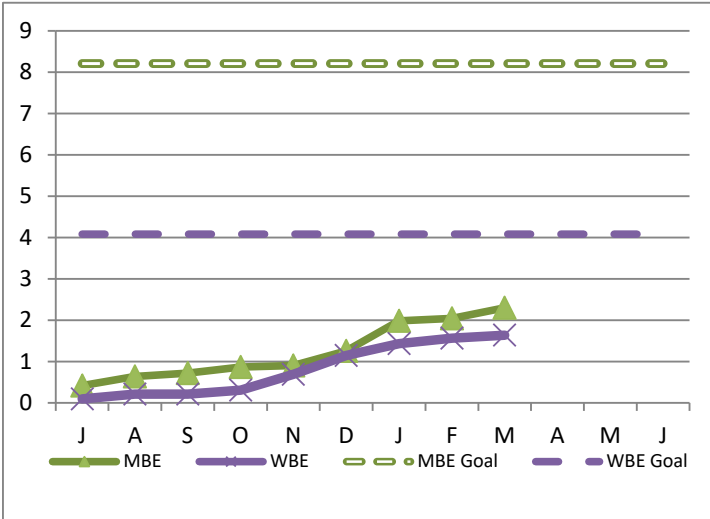
## MBE/WBE Expenditures

3rd Quarter - FY21

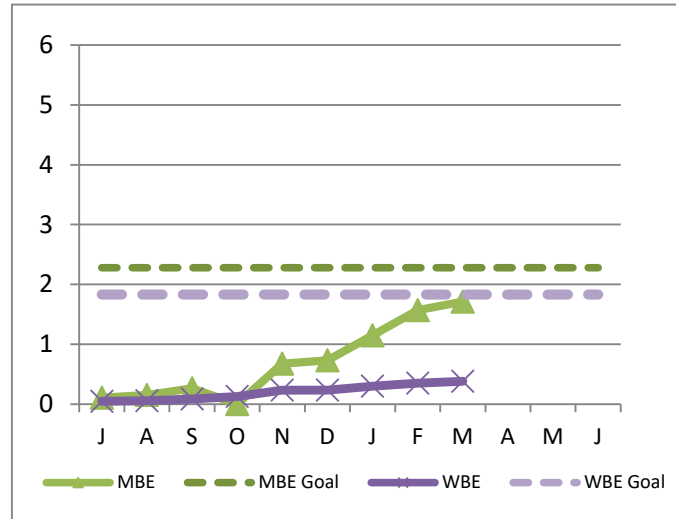
MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. The goals for FY21 are based on 85% of the total construction and 75% of the total professional projected spending for the year. Certain projects have been excluded from the goals as they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

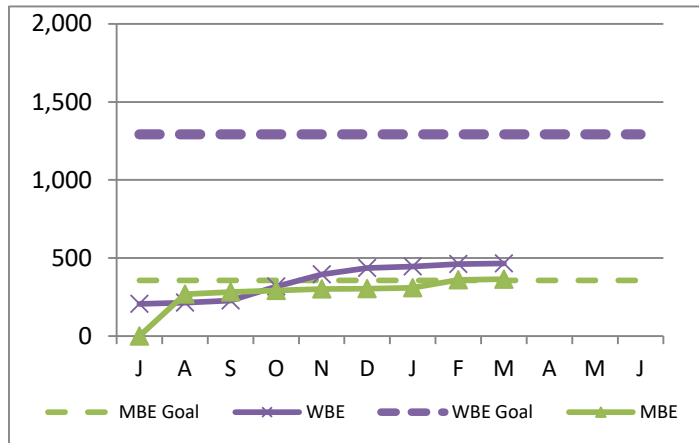
### Construction



### Professional Services



### Goods/Services



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

MBE			
FY21 YTD		FY20	
Amount	Percent	Amount	Percent
2,299,780	28.0%	3,641,145	45.6%
1,713,498	75.2%	2,322,007	111.9%
364,505	102.2%	340,656	94.1%
<b>4,377,783</b>	<b>40.4%</b>	<b>6,303,808</b>	<b>60.5%</b>

WBE			
FY21 YTD		FY20	
Amount	Percent	Amount	Percent
1,636,467	40.1%	2,446,388	61.7%
382,869	20.9%	942,850	56.6%
465,353	36.0%	993,375	81.3%
<b>2,484,689</b>	<b>34.5%</b>	<b>4,382,613</b>	<b>63.9%</b>

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

## MWRA FY21 CEB Expenses 3<sup>rd</sup> Quarter - FY21

As of March 2021, total expenses are \$554.7 million, \$8.3 million or 1.5% lower than budget, and total revenue is \$594.3 million, \$541k over budget, for a net variance of \$8.8 million.

### Expenses –

**Direct Expenses** are \$174.2 million, \$8.9 million or 4.9% under budget.

- **Wages & Salaries** are under budget by \$4.1 million or 5.0%. Regular pay is also \$4.1 million under budget, due to lower head count, and timing of backfilling positions. YTD through March, the average Full Time Equivalent (FTE) positions was 1,139, twenty-four fewer than the 1,163 FTE's budgeted.
- **Utilities** expenses are \$1.0 million under budget or 6.0%, primarily due to under spending for Electricity of \$966k of which \$625k is from Deer Island and \$240k is from Water Operations, both due to favorable pricing and lower demand. Lower flows at Deer Island (7.1% under budget) contributed to lower electricity demand and as a result, purchased power at Deer Island was 2.2% under budget. Water Operations is under budget primarily due to lower rates and quantity.
- **Professional Services** expenses are \$883k under budget or 13.8%, primarily due to under spending for Computer Systems Consultants of \$957k due to timing of several MIS projects, Engineering services of \$389k, and Legal expenses of \$151k, partially offset by overspending on Lab Testing and Analysis of \$543k due to the Biobot engagement.
- **Other Services** expenses are \$884k under budget or 4.8%, primarily due to under spending for Sludge Pelletization of \$796k due to lower YTD quantities, Grit Screen Removal of \$111k also due to lower YTD quantities, and Telecommunications of \$93k, partially offset by higher spending of \$251k for Other Services.
- **Maintenance** expenses are \$840k under budget or 3.5%, primarily due to the timing of projects.
- **Overtime** expenses are \$565k under budget or 14.9%, primarily due to reduced need for emergency and planned overtime for maintenance in Field Operations, partially offset by higher spending on DI for shift coverage including Covid-19 coverage and unplanned maintenance including HEEC maintenance.

**Indirect Expenses** are \$43.9 million, \$632k over budget or 1.5%. The HEEC cable costs totaled \$8.5 million through March, \$3.1 million above budget as revised costs for the new HEEC Cable associated with FY20 were recognized in November. Watershed Reimbursements were \$1.6 million under budget reflecting lower operating costs and combined with Pension Expense which was \$1.0 million below budget partially offset HEEC overspending. The pension contribution requirement was revised in response to the most recent actuarial valuation report's funding schedule which reduced pension expense by \$1.0 million for FY21.

**Debt Service Expenses** totaled \$336.6 million, matching budget after the transfer of \$11.3 million to the defeasance account. The transfer was funded by lower than budget variable interest expense of \$7.4 million due to lower interest rates combined with lower SRF spending of \$3.6 million due to bond issue timing.

### Revenue and Income –

**Total Revenue and Income** is \$594.3 million, or \$541k over budget. Other Revenue of \$6.3 million was over budget by \$1.1 million, reflecting higher energy revenue of \$463k, income from the disposal of equipment of \$281k, and miscellaneous revenue of \$163k. This revenue gain was reduced by lower investment income. Investment income totaled \$3.1 million, \$635k under budget due to lower than budgeted interest rates (0.49% vs 0.71%) partially offset by higher than budgeted average balances.

	Mar 2021 Year-to-Date			
	Period 9 YTD Budget	Period 9 YTD Actual	Period 9 YTD Variance	%
<b>EXPENSES</b>				
WAGES AND SALARIES	\$ 81,406,459	\$ 77,332,636	\$ (4,073,823)	-5.0%
OVERTIME	3,796,046	3,231,462	(564,584)	-14.9%
FRINGE BENEFITS	16,500,240	16,163,709	(336,531)	-2.0%
WORKERS' COMPENSATION	1,857,491	1,490,888	(366,603)	-19.7%
CHEMICALS	9,068,455	8,704,539	(363,916)	-4.0%
ENERGY AND UTILITIES	17,594,028	16,544,396	(1,049,632)	-6.0%
MAINTENANCE	24,057,122	23,217,402	(839,720)	-3.5%
TRAINING AND MEETINGS	289,029	128,295	(160,734)	-55.6%
PROFESSIONAL SERVICES	6,402,671	5,520,164	(882,507)	-13.8%
OTHER MATERIALS	3,732,166	4,317,889	585,723	15.7%
OTHER SERVICES	18,458,374	17,574,521	(883,853)	-4.8%
<b>TOTAL DIRECT EXPENSES</b>	<b>\$ 183,162,081</b>	<b>\$ 174,225,901</b>	<b>\$ (8,936,174)</b>	<b>-4.9%</b>
INSURANCE	\$ 2,294,414	\$ 2,453,793	\$ 159,379	6.9%
WATERSHED/PILOT	21,897,253	20,330,023	(1,567,230)	-7.2%
HEEC PAYMENT	5,411,400	8,483,942	3,072,542	56.8%
MITIGATION	1,269,258	1,237,044	(32,214)	-2.5%
ADDITIONS TO RESERVES	1,361,308	1,361,308	-	0.0%
RETIREMENT FUND	11,000,000	10,000,000	(1,000,000)	-9.1%
POST EMPLOYEE BENEFITS	-	-	-	---
<b>TOTAL INDIRECT EXPENSES</b>	<b>\$ 43,233,633</b>	<b>\$ 43,866,110</b>	<b>\$ 632,477</b>	<b>1.5%</b>
STATE REVOLVING FUND	\$ 70,331,239	\$ 66,771,953	\$ (3,559,286)	-5.1%
SENIOR DEBT	191,128,587	190,774,371	(354,216)	-0.2%
DEBT SERVICE ASSISTANCE	-	-	-	---
CURRENT REVENUE/CAPITAL	-	-	-	---
SUBORDINATE MWRA DEBT	72,746,900	72,746,900	-	0.0%
LOCAL WATER PIPELINE CP	-	-	-	---
CAPITAL LEASE	2,412,795	2,412,795	-	0.0%
VARIABLE DEBT	-	(7,374,605)	(7,374,605)	---
DEFEASANCE ACCOUNT	-	11,288,106	11,288,106	---
DEBT PREPAYMENT	-	-	-	---
<b>TOTAL DEBT SERVICE</b>	<b>\$ 336,619,521</b>	<b>\$ 336,619,521</b>	<b>\$ -</b>	<b>0.0%</b>
<b>TOTAL EXPENSES</b>	<b>\$ 563,015,235</b>	<b>\$ 554,711,532</b>	<b>\$ (8,303,697)</b>	<b>-1.5%</b>
<b>REVENUE &amp; INCOME</b>				
RATE REVENUE	\$ 577,038,750	\$ 577,038,750	\$ -	0.0%
OTHER USER CHARGES	6,678,180	6,782,813	104,633	1.6%
OTHER REVENUE	5,187,243	6,259,033	1,071,790	20.7%
RATE STABILIZATION	1,125,000	1,125,000	-	0.0%
INVESTMENT INCOME	3,753,820	3,118,666	(635,154)	-16.9%
<b>TOTAL REVENUE &amp; INCOME</b>	<b>\$ 593,782,993</b>	<b>\$ 594,324,262</b>	<b>\$ 541,268</b>	<b>0.1%</b>

## Cost of Debt 3rd 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 (\$3.44 billion)	3.38%
Variable Debt (\$330.7million)	0.50%
SRF Debt (\$843.7 million)	1.57%
 Weighted Average Debt Cost (\$4.62 billion)	 2.84%

### Most Recent Senior Fixed Debt Issue August 2020

2020 Series B (\$160.0 million)	2.33 %
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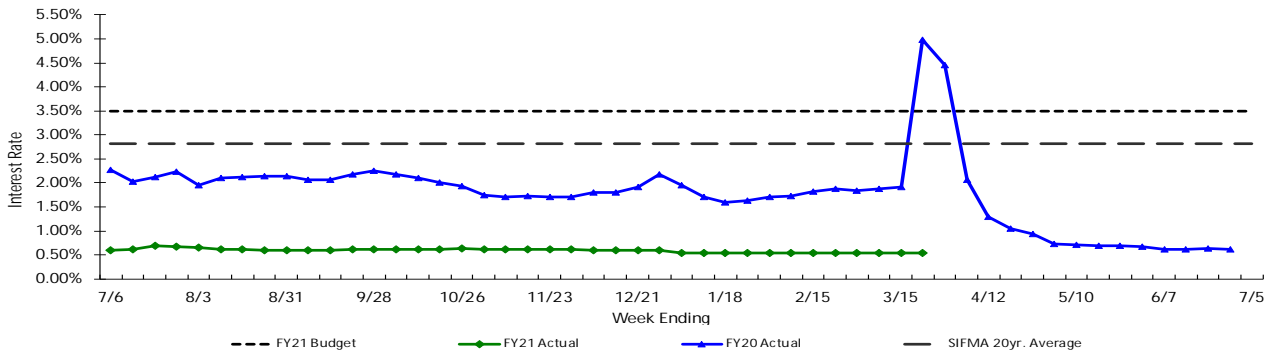


Bond Deal	1995B	1996A	1997D	1998AB	2000A	2000D	2002B	2002J	2003D	2004A	2004B	2005A	2006AB	2007AB
Rate	5.34%	5.78%	5.40%	5.04%	6.11%	5.03%	5.23%	4.71%	4.64%	5.05%	4.17%	4.22%	4.61%	4.34%
Avg Life	20.5 yrs	19.5 yrs	21.6 yrs	24.4 yrs	26.3 yrs	9.8 yrs	19.9 yrs	19.6 yrs	18.4 yrs	19.6 yrs	13.5 yrs	18.4 yrs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

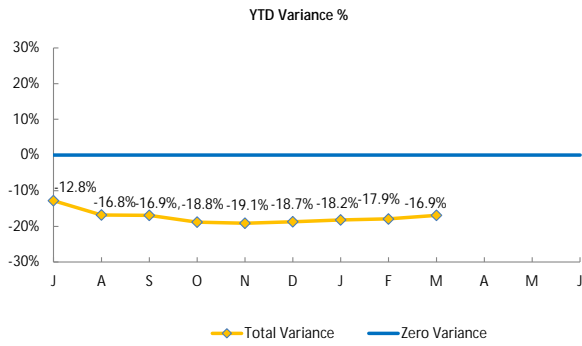
MWRA currently has ten variable rate debt issues with \$596.6 million outstanding, excluding commercial paper. Of the ten outstanding series, four have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In March, the SIFMA rate ranged from 0.05% to 0.03% 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

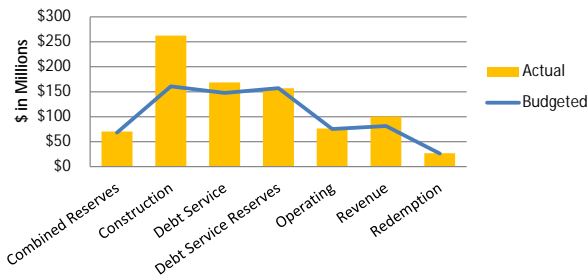
3<sup>rd</sup> Quarter – FY21

Year To Date



	YTD BUDGET VARIANCE			
	BALANCES IMPACT	RATES	IMPACT	TOTAL
Combined Reserves	\$20		(\$265)	(244)
Construction	\$188		(\$90)	98
Debt Service	\$39		(\$35)	4
Debt Service Reserves	(\$2)		(\$362)	(364)
Operating	\$5		\$2	7
Revenue	\$53		(\$66)	(14)
Redemption	\$6		(\$129)	(123)
<b>Total Variance</b>	<b>\$309</b>		<b>(\$945)</b>	<b>(\$635)</b>
				<b>-16.9%</b>

YTD Average Balances Budgeted vs. Actual

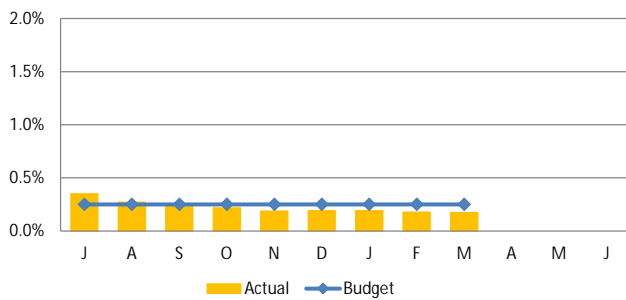


YTD Average Interest Rate Budgeted vs. Actual

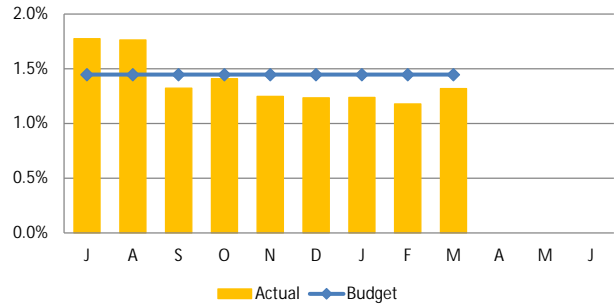


## Monthly

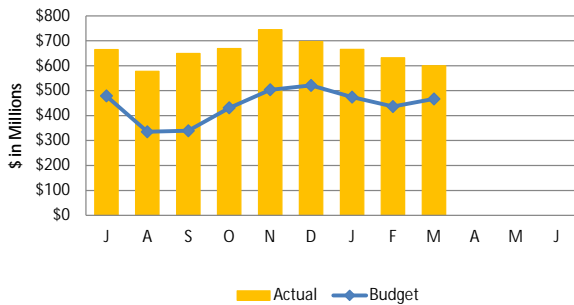
Short -Term Interest Rates



Long -Term Interest Rates



Short-Term Average Balances



Long-Term Average Balances

