MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report

on

Key Indicators of MWRA Performance

Second Quarter FY2024

Q1	Q2	Q3	Q4

Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
February 21, 2024

Board of Directors Report on Key Indicators of MWRA Performance

2nd Quarter – FY24

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This quarterly report is prepared by MWRA staff to track a variety of performance measures for routine review by the 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.

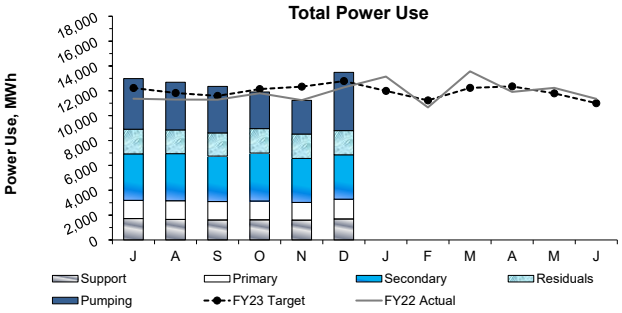
Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer

February 21, 2024

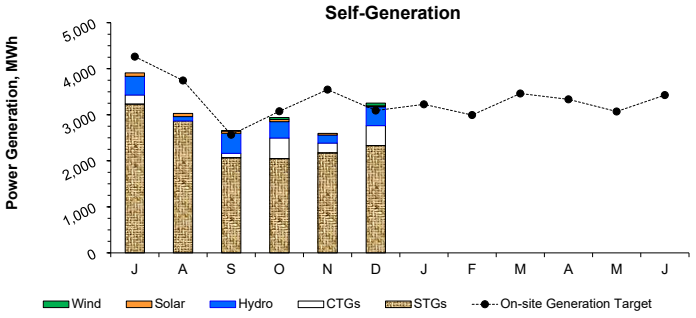
OPERATIONS AND MAINTENANCE

Deer Island Operations

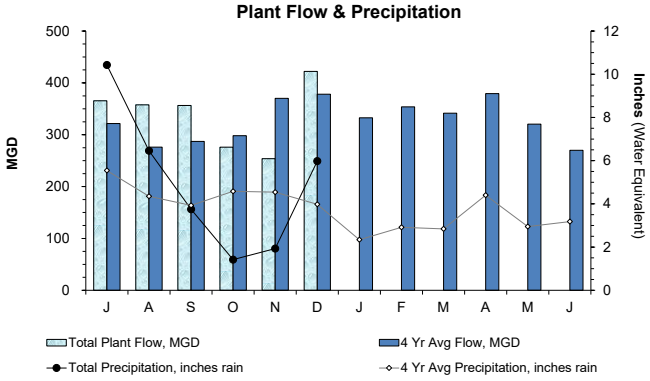
2nd Quarter - FY24



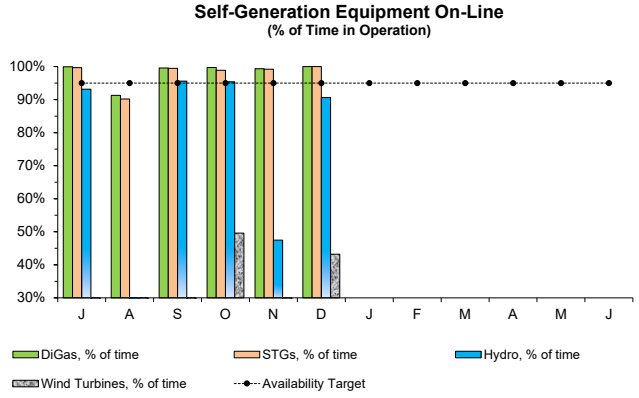
Total power usage in the 2nd Quarter was 1.7% below target as plant flow for this period was 9.0% below target with historical (4 year average) data used to generate the electricity model. Power used in most areas and major treatment processes was within 5% of target, except for power used for raw wastewater pumping which was 6.5% below target due to the lower plant flows.



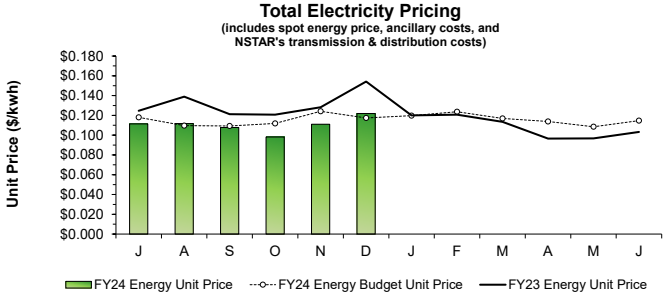
Power generated on-site during the 2nd Quarter was 9.5% below the target. CTGs generation was 41.2% above target as the CTGs were operated for multiple purposes this quarter including: a multi-day operation as backup power for precautionary reasons during and following a nor'easter storm with damaging winds that resulted in an extended period of very high plant flows; during a cross-harbor power cable outage to allow Eversource to perform maintenance; a 5 year emissions compliance test at various operating loads; an ISO-New England demand response event; and a demand response winter audit. STGs generation was 5.9% below target as digester gas production was 4.9% below target. Hydro Turbine generation was 27.8% below target, primarily because both turbines were out of service for 14 days in November pending maintenance repairs, and due to high plant flows in December, combined with high tides, which limited power generation. Solar Panel generation was 10.2% below target as the rooftop array on the Residuals Odor Control Facility remains out of service due to a failed inverter. Wind Turbine generation has been minimal this quarter as Turbine #1 remains out of service indefinitely and Turbine #2 was out of service November 1 through December 4 pending mechanical repairs.



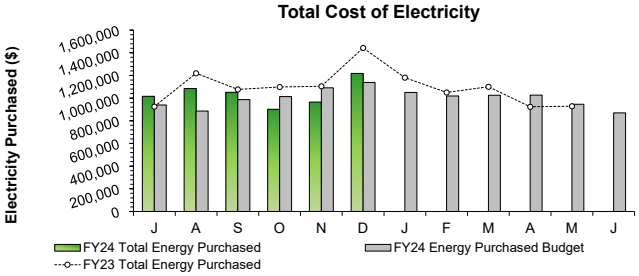
Total Plant Flow for the 2nd Quarter was 9.0% below target with the budgeted 4 year average plant flow (317.3 MGD actual vs 348.8 MGD expected) as precipitation was 28.8% below target this quarter (9.33 inches actual vs.13.10 inches expected).



The DiGas System and STGs availability exceeded the 95% availability target in the 2nd Quarter. Hydro Turbines availability was 77.8% as Turbine #2 was out of service for 14 days in November pending repairs to the wicket gate and a broken shear pin, while Turbine #1 remains offline pending a replacement gearbox and bearings. Wind Turbine availbility was well below target as Turbine #1 remains out of service indefinitely and Wind Turbine #2 was out of service November 1 through December 4 pending repairs to the traverse anti-rotation shaft system.



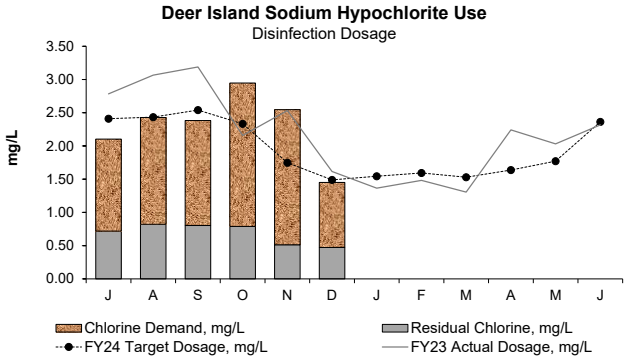
Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. Overall, the average unit price is 4.0% lower than the budgetary estimate through December. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges.

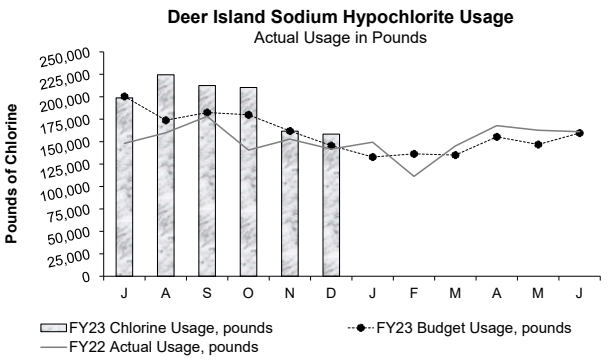


Year-to-date Total Cost of Electricity is $183,621 (3.0%) higher than budgeted through December. Even though the Total Energy Unit Price through December was 4.0% lower than budget, the total volume of Electricity Purchased was 7.3% above target due to higher-than-expected overall power usage as a result of higher-than-expected plant flows.

Deer Island Operations

2nd Quarter - FY24





The disinfection dosing rate in the 2nd Quarter was 25.0% above target with budgetary estimates and the sodium hypochlorite usage in pounds of chlorine was 8.8% above target even though plant flows were 9.0% below target. DITP staff increased the disinfection chlorine residual target to greater than or equal to 0.70 mg/L from July 22 through November 12. The total residual chlorine target was increased to develop operating strategies for the future more stringent seasonal NPDES permit limits for Enterococcus bacteria prior to the limits coming into effect. The new permit is not yet in effect and the more stringent seasonal limits in the new permit would also end starting November 1 for the winter period. Therefore, the residual chlorine target was returned to 0.30 mg/l on November 13 for dry day flow conditions and 0.50 mg/l during elevated wet weather flows to treat for fecal coliforms only. The disinfection dosing and chlorine residual targets will be increased again next spring to continue developing operating strategies for the new permit. Deer Island maintained an average disinfection chlorine residual of 0.59 mg/L in the 2nd Quarter with an average dosing rate of 2.31 mg/L as chlorine demand was 1.72 mg/L with the higher target.

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
July	8	8	0	98.4%	27.30
August	3	3	0	99.1%	13.32
September	2	2	0	99.4%	12.36
October	0	0	0	100.0%	0.00
November	0	0	0	100.0%	0.00
December	3	3	0	96.7%	53.67
January					
February					
March					
April					
May					
June					
Total	16	16	0	98.8%	106.65

98.5% of all flows were treated at full secondary during the 2nd Quarter. There were a total of three (3) secondary blending events, all during December, due to high plant flows from heavy precipitation. These blending events resulted in 53.67 hours of blending and a total of 429.34 MGal of primary-only treated effluent blended with secondary effluent. The Maximum Secondary Capacity during the entire quarter was 700 MGD.

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

Deer Island Operations & Maintenance Report

Environmental/Pumping:
The plant achieved an instantaneous peak flow rate of 1,301.6 MGD during the early evening of December 18. This peak flow occurred during a storm system that brought 2.05 inches of total precipitation to the metropolitan Boston area over the course of two (2) days. The Total Plant Flow was 9.0% below the 4 year average plant flow target for the quarter.

Disinfection:
DITP uses sodium hypochlorite to destroy pathogens in the plant effluent. To provide a proper pathogen inactivation, sodium hypochlorite, is added to meet a chlorine demand then regulated by maintaining a chlorine residual. The disinfection basin effluent total residual chlorine target was increased from 0.30 mg/L to greater than or equal to 0.50 mg/L from March 29 through July 21, then increased again to greater than or equal to 0.70 mg/L on July 22. The higher chlorine residual target was changed to develop operating strategies for the future more stringent seasonal NPDES permit limits for indicator bacteria prior to the limits coming into effect. As the more stringent seasonal limits in the new permit would end starting November 1 for the winter period, the residual chlorine target was returned to 0.30 mg/L on November 13 for dry day flow conditions and 0.50 mg/L during elevated wet weather flows to treat for fecal coliforms only. The disinfection dosing and chlorine residual targets will be increased again next spring to continue refining the operating strategies for the new permit.

Disinfection Basin 2 (West) was taken out of service from early October 24 to late October 25 to allow staff to repair a leak in the bisulfite dewatering line that runs through the West Basin. The basin was taken out of service and drained to make it safe for staff to perform this work. The total chlorine residuals levels in Disinfection Basin 1 was temporarily increased to compensate for the shorter contact time while operating a single basin. Additional equipment inspections that can only be done when the basin is drained were also completed.

Secondary Treatment:
Annual turnaround maintenance on Train #1 in the Cryogenic Oxygen Facility began on October 16 and was completed on October 27. This two (2) week turnaround maintenance is performed on roughly half of the components and systems in the Cryogenic Oxygen Facility. During this turnaround maintenance, the contractor calibrated all the instrumentation on Train #1, as well as a number of other components in the oxygen plant. The same turnaround maintenance was completed on Train #2 in the spring (May).

Deer Island Operations & Maintenance Report (continued)

Odor Control Treatment:
The Gravity Thickener (GT) airflow treatment portion of the Residuals Odor Control (ROC) Facility was taken offline on October 23 for a total shutdown of 57 minutes to allow staff to replace an expansion band on the GT airflow discharge ductwork to the stack. The Centrifuge Thickener (CT) odor control treatment portion of the ROC facility was not impacted and continued to operate and treat the air from the centrifuge thickeners. Process air was contained within the facility and there were no resident odor complaints received during this shutdown.

Carbon adsorber (CAD) units #1, #2, and #3 in the North Pumping Odor Control (NPOC) Facility, units #1 and #3 in the East Odor Control (EOC) Facility, and units #2 and #3 in the Residuals Odor Control (ROC) Facility were emptied and refilled with new regenerated activated carbon media this quarter as part of routine maintenance to replace spent activated carbon.

Energy and Thermal Power Plant:
Overall, total power generated on-site accounted for 24.0% of Deer Island's total power use in Quarter 2. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 21.0% of Deer Island's total electrical power use for the quarter.

The emissions compliance Annual Relative Accuracy Test Audit (RATA) was sucessfully completed by the contractor on October 25 for Boiler 201. A RATA is required to confirm that data from the boiler's Continuous Emissions Monitoring System is in agreement with corresponding EPA Reference Method test results. The RATA test for Boiler 101 was successfully complete on September 19 but was delayed for Boiler 201 due to a small steam leak on the main steam header on the boiler. The leak needed to be repaired before the boiler could be safely operated and the RATA test performed.

DITP's Title V Air permit dictates emissions testing must be conducted every 5-years to document CTG emissions during operation. This testing was successfully conducted from October 16 through October 18 with both CTGs operating at various output levels (30% baseload, 50%, 75% and 100%) one CTG at a time to develop a CTG emissions operating curve. This information is later used to document emissions when the CTGs are operated in lieu of a continuous emissions monitoring system.

The CTGs were operated continuously for a total of 20.5 hours on November 1 while DITP was disconnected from utility power. The cross-harbor power cable was de-energized during this time to allow Eversource to perform scheduled maintenance at their Station 385 (South Boston switchyard). The CTGs operated during this Eversource cable outage to provide the majority of the power needs for DITP. Additionally, The CTGs were operated continuously for a total of 28 hours as backup power during a Nor'easter storm that resulted in high winds and an extended period of high plant flows.

DITP experienced an unanticipated momentary plant-wide power drop at 12:39 AM on November 2 while staff were attempting to return to normal electrical configuration following an Eversource power cable outage. Electrical and additional Operations staff, as well as senior management, were onsite to support this Eversource outage. The additional staff were critical in getting power restored quickly to all impacted areas of the plant and returning equipment to operation following the power drop. An estimated 1,000 gallons of foamy sludge was inadvertently released from the top of a digester when the foam within the digester expanded after the mixer was restarted. The released digested sludge was contained within the footprint of the digester and did not make it to nearby storm drains thus preventing the further release into Boston Harbor or Massachusetts Bay. Upon discovery, containment and response began by covering the storm drains with gel mats and using a vactor truck to pick up and remove the foamy sludge material. All released material was properly removed and cleaned through the course of the day and into the evening. As required, this inadvertent release was reported to the regulators as a sanitary sewer overflow (SSO).

In December, staff from several departments in the MWRA collaborated to successfully complete the project to install a new fiber communications system between the Ward Street Headworks Facility and DITP. The installation of this new fiber communications system replaced the T1 copper line communications system and was necessary as the copper circuits in the T1 copper line system are in the process of being decommissioned by Verizon. The cutover to the fiber communications system took place before the end of December and was fully completed on January 4 after staff addressed several final issues after the initial system cutover. The new fiber and the backup radio communications systems are both fully functional.

Clinton Operations & Maintenance Report

Dewatering Building
Maintenance staff installed a new wash box seal on #2 sludge press. Operations and Facilities Specialist removed blockage from #1 gravity thickener scum box. Contractor replaced motor on #1 EO air handler unit in sludge press room. M&O's rebuilt #2 polymer pump that goes to the belt filter press. Deer Island B&G staff completed the fall cleanup in the dewatering building.

Chemical Building
Maintenance staff took apart the soda ash machine piping to remove a blockage of soda ash that was obstructing the flow of product. They also jetted both A and B soda ash lines. Staff then removed a leaking valve assembly and installed a new feed pipe for the soda ash system. Maintenance completed rebuilding the #1 Penn Valley soda ash pump. Maintenance staff completed a work order to replace the o-rings on the hypochlorite tank #1 suction valve. Operations staff completed several monthly equipment PM's. A contractor installed a new Hydro ranger and sensor in lower soda ash tank for redundancy.

Aeration Basins
Operations staff cleaned the pH and DO probes. The Facilities Specialist is in the process of repairing concrete and expansion joints. M&O staff, the HEO and the Facilities Specialist completed the removal and installation of the #2 intermediate screw pump motor.

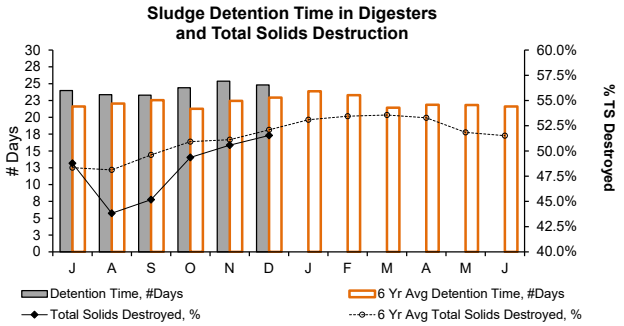
Phosphorus Reduction Facility (PRF)
Maintenance staff acid washed all three (3) disk filters, cleaned the troughs, and inspected all the nozzles. The contractor installed a new CL17 chlorine meter. Operations staff cleaned both CL17 chlorine analyzers. They also cleaned and repaired the polymer pumps for the disc filters. All tanks and filters in the PRF building have been washed down and are now offline and winterized for the season.

Headworks Building
M&O staff completedthe removal of a worn out compressor in the Headworks Building boiler room. The Facilities Specialist completed the installation of aluminum stairs in the influent wet well area. Maintenance staff cleaned the influent and mechanical bar rack and greased the upper and lower pin rack.

Digester Building
Maintenance staff and the Facilities Specialist rebuilt one of the 4 foot gas regulators for the flares. They also rebuilt the #2 recirculation pump. M&O staff installed a ¾ vent line for the gas regulators on the digester gas system and a level sensor guard on top of the secondary floating digester cover. Maintenance staff checked all equipment for proper operation. They also greased the Ovivo mixer on the floating cover. The contractor installed new wires and timers for the waste gas flares.

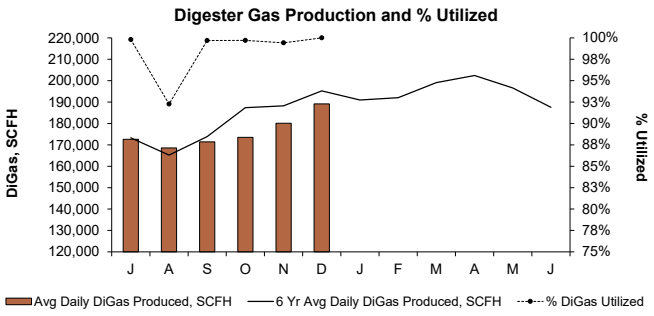
Deer Island Operations

2nd Quarter - FY24



Total solids (TS) destruction following anaerobic sludge digestion averaged 50.5% during the 2nd Quarter, within 1.7% of target with the 6 year average of 51.4%. Sludge detention time in the digesters was 24.9 days, 19.7% above the 22.2 days detention time target with 8 digesters in operation, just over the projected target of 7.8 digesters.

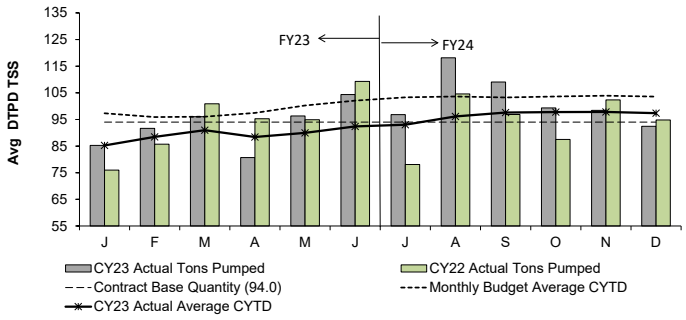
Total solids (TS) destruction is dependent on sludge detention time which is determined by primary and secondary solids production, plant flow, and the number of active digesters in operation. Solids destruction is also significantly impacted by changes in the number of digesters and the resulting shifting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



The Avg Daily DiGas Production in the 2nd Quarter was 4.9% below target with the 6 Year Avg Daily DiGas Production and 99.7% of the Digas produced was utilized at the Thermal Power Plant. The lower Digas production was due to the overall lower plant flows during the 2nd Quarter.

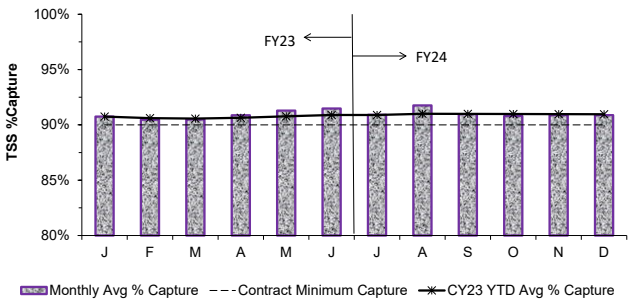
Residuals Pellet Plant

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, 2023). 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 (FY23's budget is 103.3 DTPD/TSS and FY24's budget is 103.2 DTPD/TSS).

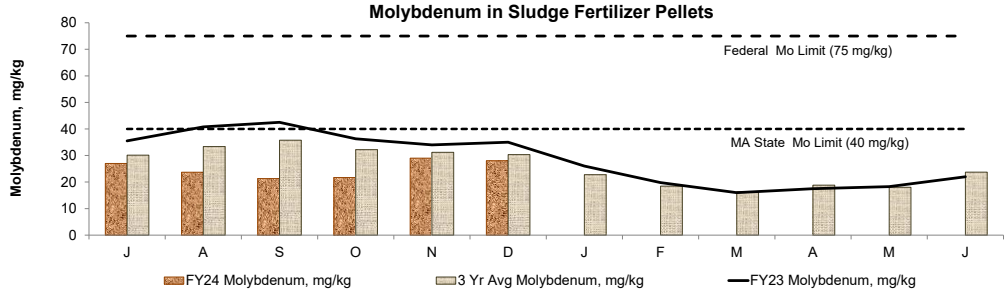


The average quantity of sludge pumped to the Biosolids Processing Facility (BPF) in the 2nd Quarter was 96.7 TSS Dry Tons Per Day (DTPD), 7.6% below target with the FY24 budget of 104.6 TSS DTPD for the same period, due to lower-than-expected primary sludge production as a result of the lower-than-expected plant flows.

The CY23 average quantity of sludge pumped is 97.4 DTPD, 6.0% below target compared to the CY23 average budget of 103.6 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 2nd Quarter was 90.85% and was 90.96% for CY23.



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. The Massachusetts Type I biosolids standard for molybdenum was changed from 25 mg/kg to 40 mg/kg in 2016, allowing 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.

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 2nd Quarter averaged 26.2 mg/kg, 16% below the 3 year average, 34% below target with the MA State Limit, and 65% below the Federal Limit.

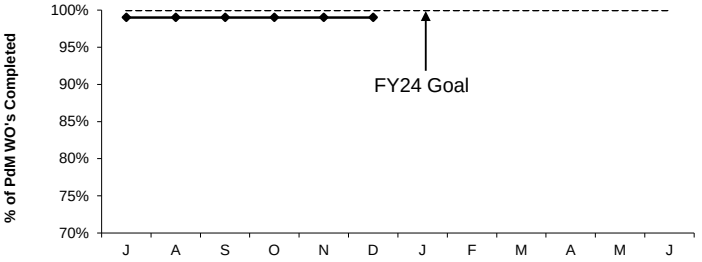
Deer Island Maintenance

2nd Quarter - FY24

Productivity Initiatives

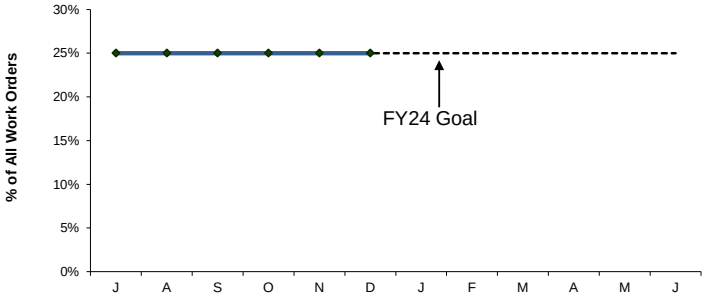
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in overall maintenance backlog.

Predictive Maintenance Compliance



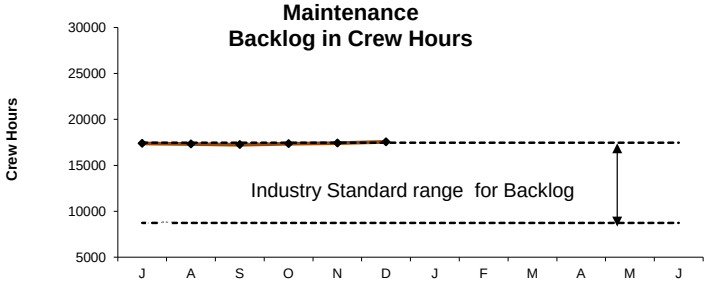
Deer Island's FY24 predictive maintenance goal is 100%. DITP completed 99% of all PdM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program. Deer Island is slightly below our goal this quarter.

Predictive Maintenance



Deer Island's increased FY24 predictive maintenance goal is for 25% of all work orders to be predictive. 25% of all work orders were predictive maintenance this quarter. The industry is moving toward increasing predictive maintenance work to reduce downtime and better predict when repairs are needed.

Maintenance Backlog in Crew Hours

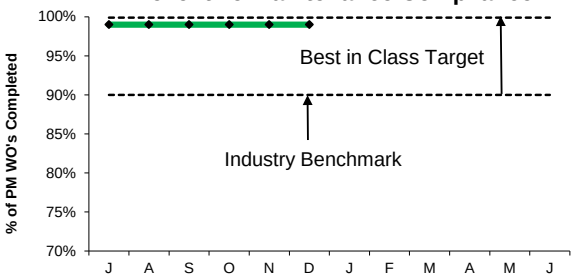


DITP's maintenance backlog at Deer Island is 17,550 hours this quarter. DITP is slightly above the industry average for backlog. The industry Standard for maintenance backlog with 97 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog is affected by (6) Vacancies; (1) Electrician, (1) Plumber, (1) HVAC Technician and (3) I&C Techicians. Management continues to monitor backlog and to ensure all critical systems and equipment are available.

Proactive Initiatives

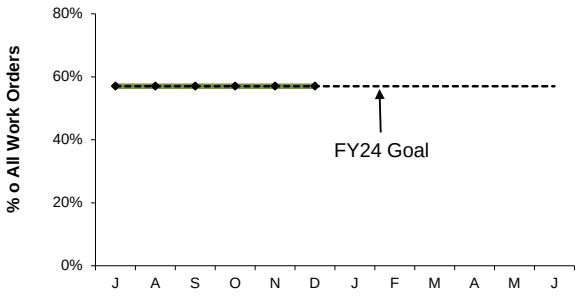
Proactive initiatives include completing 100% of all preventative maintenance tasks and increasing preventative maintenance kitting. These tasks should result in lower maintenance costs.

Preventive Maintenance Compliance



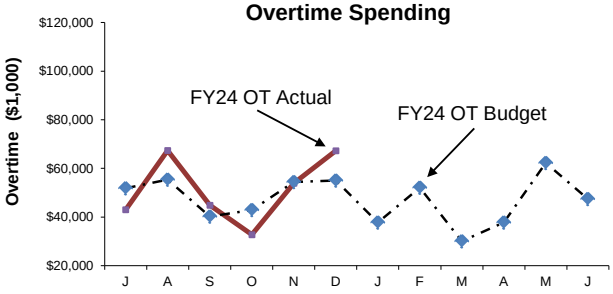
Deer Island's FY24 preventative maintenance goal is 100% completion of all work orders from Operations and Maintenance. DITP completed 99% of all PM work orders this quarter. Deer Island was slightly below our goal, but within Best in Class Target.

Maintenance Kitting



Deer Island's increased FY24 maintenance kitting goal is 57% of all work orders to be kitted. 57% of all work orders were kitted this quarter. Kitting is staging of parts or material necessary to complete maintenance work. This has resulted in more wrench time and increased productivity.

Overtime Spending

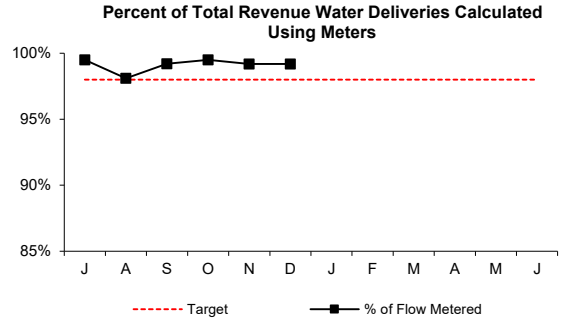


Maintenance overtime was over budget by $12K this quarter and $10k over for the year. Management continues to monitor backlog and to ensure all critical equipment and systems are available. This quarter's overtime was predominately used for Storm Coverage/High Flows, Pump Clogging Issues, Upgraded Wiring for Hypochlorite Containment Area, Centrifuge #11 Relining, Clarifier Cross Collector Repairs and Miscellaneous Instrumentation Work.

Operations Division Metering & Reliability

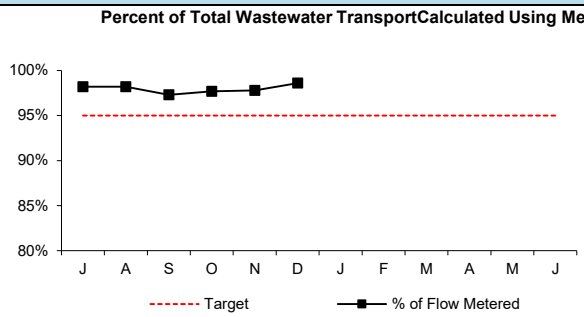
2nd Quarter - FY24

WATER METERS



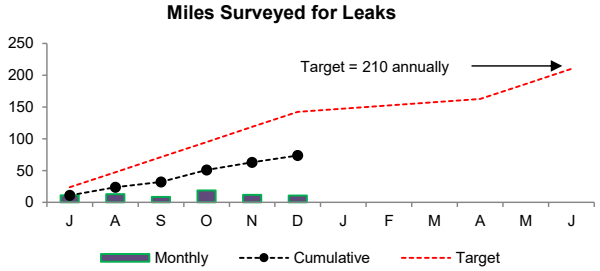
The target for revenue water deliveries calculated using meters is 98%. Estimates are generated for meters that are out of service due to instrumentation problems or in-house and capital construction projects. During Q2 FY24, 0.7% of the billed water flow was estimated. 99.3% was based on meter actuals. A total of 4.0% of the total flow was measured using annubar or inserted pitot rod meters

WASTEWATER METERS



The wastewater metering system is now operating in a typical mode following closeout of the replacement project. The target for revenue collection meters is a 95% capture rate which has been achieved consistently since the new meters have been online. During Q2 FY24, 1.9% of the data required estimates, while 98.1% was metered.

WATER DISTRIBUTION SYSTEM PIPELINES



During the 2nd Quarter - FY24, 41.44 miles of water mains were inspected. The total inspected for the fiscal year to date is 73.67.

Leak Backlog Summary													
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Totals
Leaks Detected	1	1	0	0	0	1							3
Leaks Repaired	1	1	0	0	0	0							2
Backlog	0	0	0	0	0	1							n/a

During the 2nd Quarter - FY24 one leak was detected, and none were repaired. Refer to FY24 Leak Report below for details. Also, community service ranging from individual leak location to surveys were conducted for Lynn, Malden, Medford, Newton and Revere.

2nd Quarter - FY24

Date Detected	Location of Leaks	Repaired
07/12/23	853 Lynnway, Lynn	07/14/23
08/11/23	Morton St @ Westv Main St., Mattapan	08/11/23

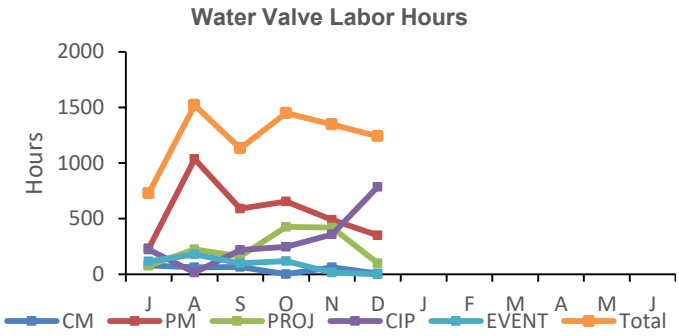
Date Detected	Location of Leaks/Unrepaired
12/29/23	136 Quinobequin Road, Newton

Water Distribution System Valves

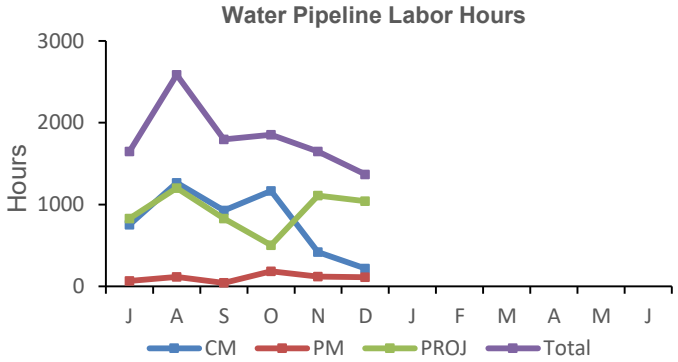
2nd Quarter - FY24

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.



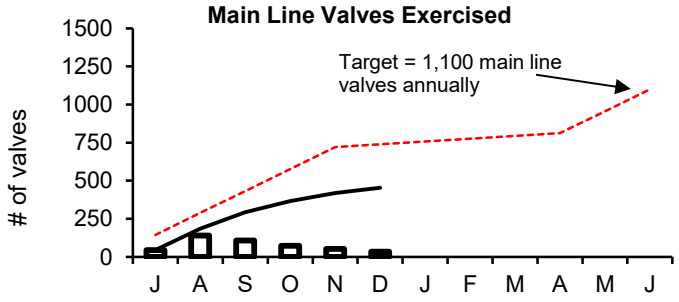
During 2nd Quarter of FY24 there was a total of 4,038 hours worked. Percentage breakdown; Corrective Maintenance 2%, Preventative Maintenance 37%, Project 23%, Capital Improvement Project 34%, Event - Wtr Fountain 3%



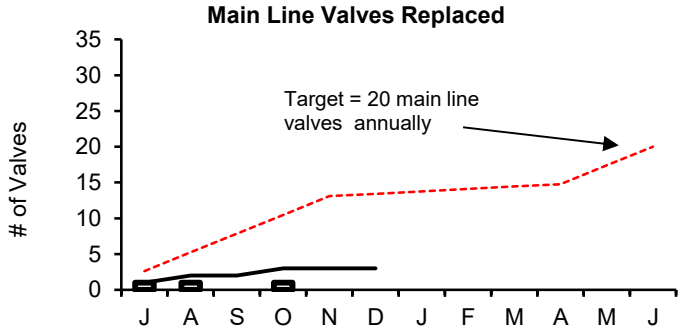
During 2nd Quarter of FY24 there was a total of 4,873 hours worked. Percentage breakdown; Corrective Maintenance 37%, Preventative Maintenance *8%*, Project 54%

Type of Valve	Inventory #	Operable Percentage	
		FY24 to Date	FY24 Targets
Main Line Valves	2,159	97.2%	95%
Blow-Off Valves	1,682	98.9%	95%
Air Release Valves	1,519	96.5%	95%
Control Valves	49	100.0%	95%

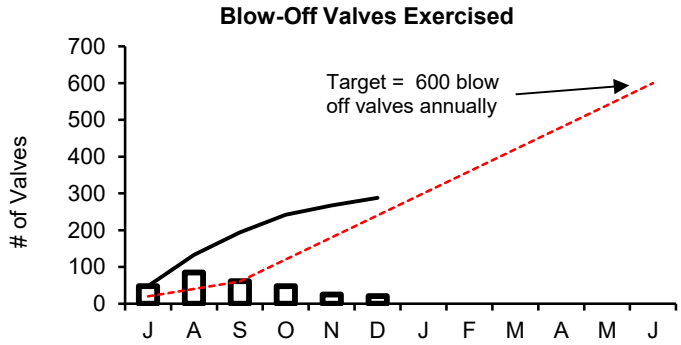
Key to Symbols:
- FY24 Monthly Total
- FY24 Cumulative Total
- FY24 Target



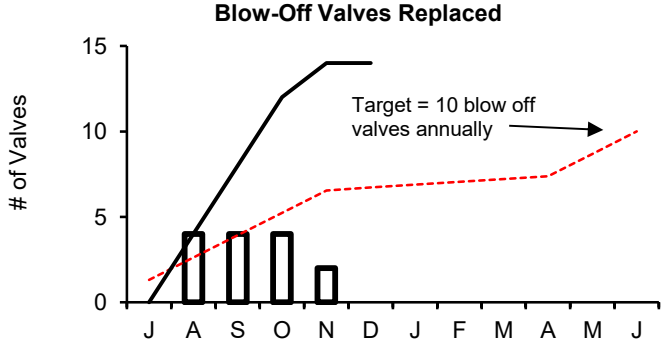
During 2nd Quarter of FY24, 161 main line valves were exercised. The total exercised for the fiscal year to date is 454.



During 2nd Quarter of FY24, there was one main line valve replaced. The total replaced for the fiscal year to date is three.



During 2nd Quarter of FY24, 94 blow off valves were exercised. The total exercised for the fiscal year to date is 288.



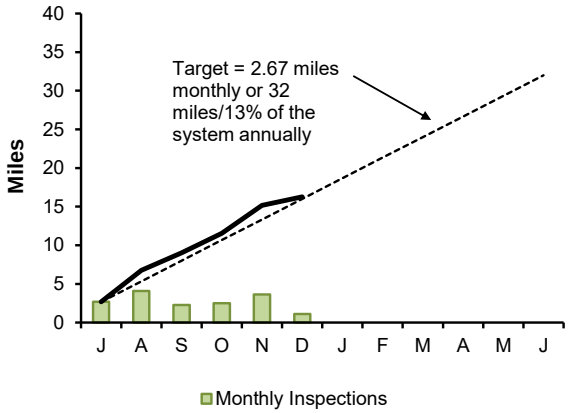
During 2nd Quarter of FY24, there were six blow off valves replaced. The total replaced for the fiscal year to date is fourteen.

Wastewater Pipeline and Structure Inspections and Maintenance

2nd Quarter - FY24

Inspections

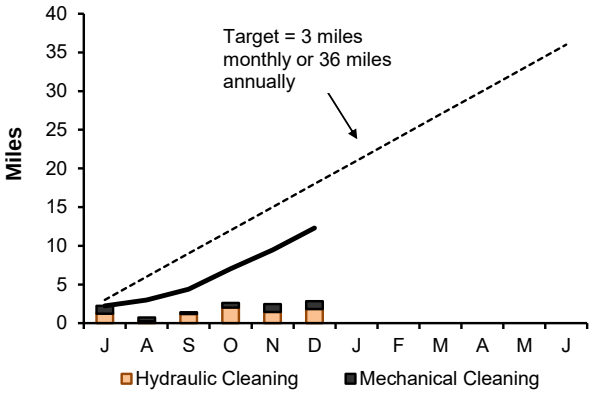
Pipeline Inspections



Staff internally inspected 7.25 miles of MWRA sewer pipe during this quarter.The year to date total is 16.27 miles. No Community Assistance was provided.

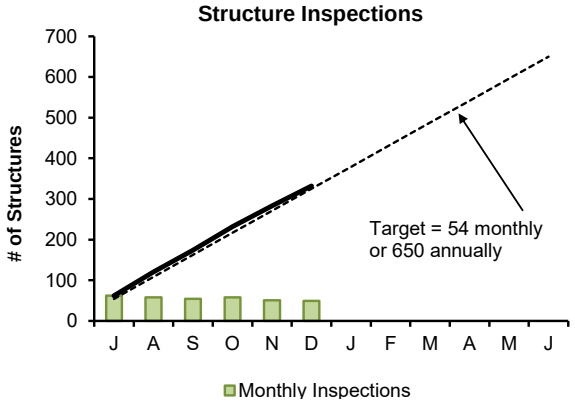
Maintenance

Pipeline Cleaning



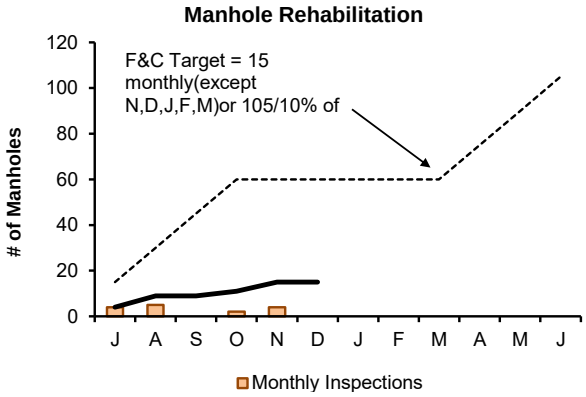
Staff cleaned 6.61 miles of MWRA sewer pipe, and removed 24 yards of grit. The year to date total is 12.30 miles. No Community Assistance was provided.

Structure Inspections



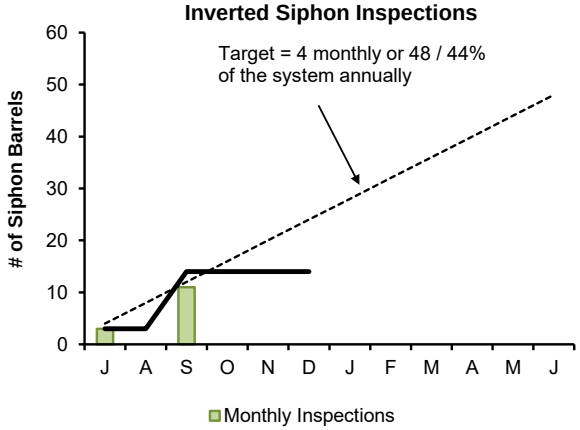
Staff inspected the 36 CSO structures and performed 149 other additional manhole/structure inspections during this quarter. The year to date total is 332 inspections.

Manhole Rehabilitation



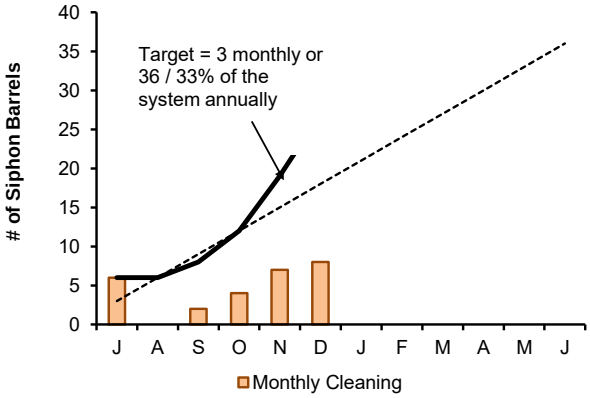
Staff replaced 6 frame and cover replacements this quarter.The year to date total is 15.

Inverted Siphon Inspections



Staff did not inspect any siphon barrels this quarter. The year total is 14 inspections.

Inverted Siphon Cleaning

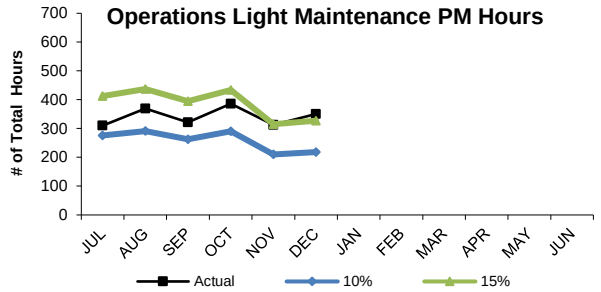


Staff cleaned 19 siphon barrels this quarter.

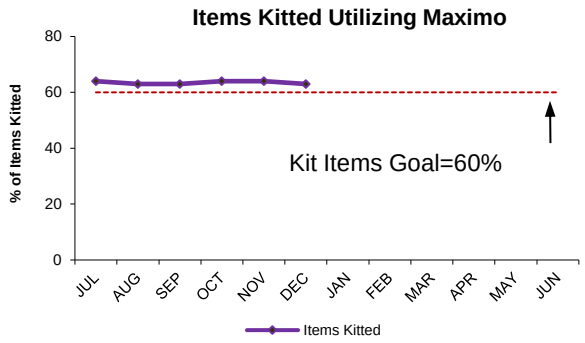
Field Operations' Metropolitan Equipment & Facility Maintenance

2nd Quarter - FY24

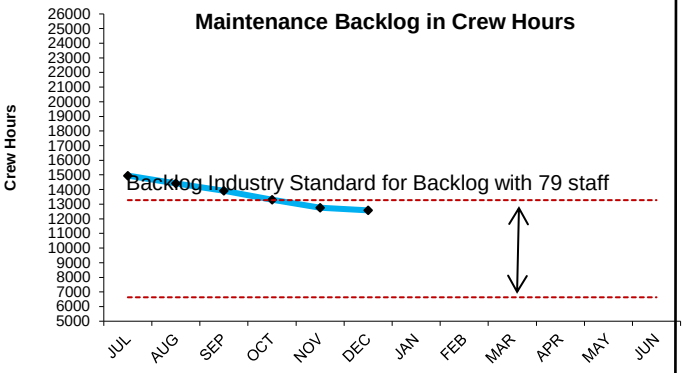
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion is 100%. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus reducing maintenance spending. Backlog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



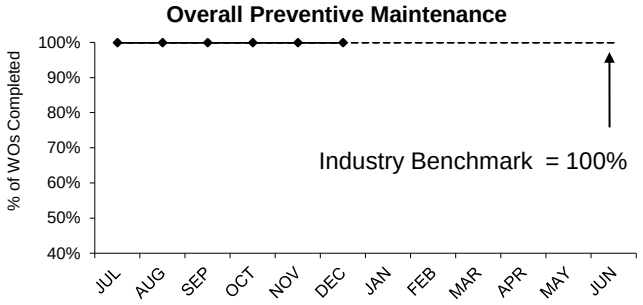
Operations staff averaged 349 hours per month of preventive maintenance during the 2nd Quarter of FY24, an average of 15% of the total PM hours for the 2nd Quarter, which is within the industry benchmark of 10% to 15%.



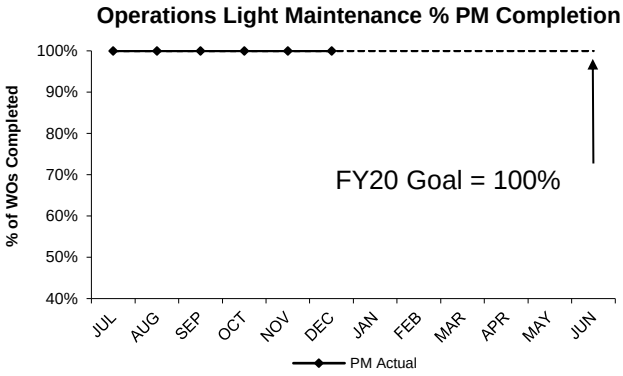
Operations' FY24 maintenance kitting goal has been set at 60% of all work orders to be kitted. Kitting is the staging of parts or material neccesary to complete maintenance work. In the 2nd Quarter of FY24, 64% of all applicable work orders were kitted. This resulted in more wrench time and increased productivity.



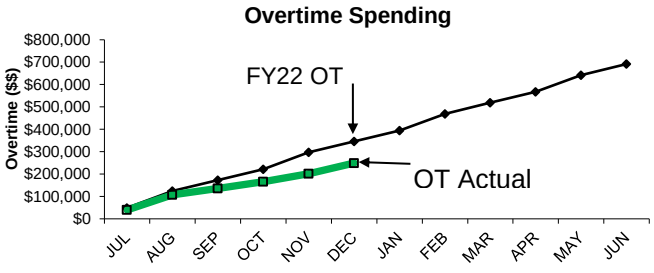
The 2nd Quarter of FY24 backlog average is 12,876 hours, which is within the industry benchmark of 6,636 to 13,275 hours and an improvement over the previous two quarters. The current backlog is due to vacancies and several large maintenance projects.



The Field Operations Department (FOD) preventive maintenance goal for FY24 is 100% of all PM work orders. Staff completed 100% of all PM work orders in the 2nd Quarter of FY24.



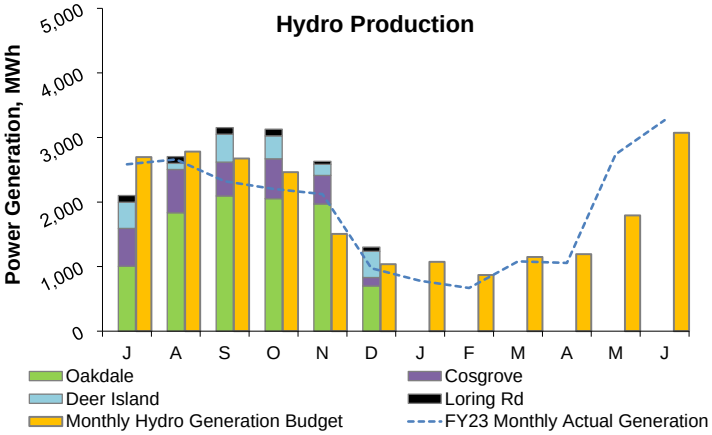
Wastewater Operations complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY24 PM goal is completion of 100% of all PM work orders assigned. Operations completed 100% of PM work orders in the 2nd Quarter of FY24.



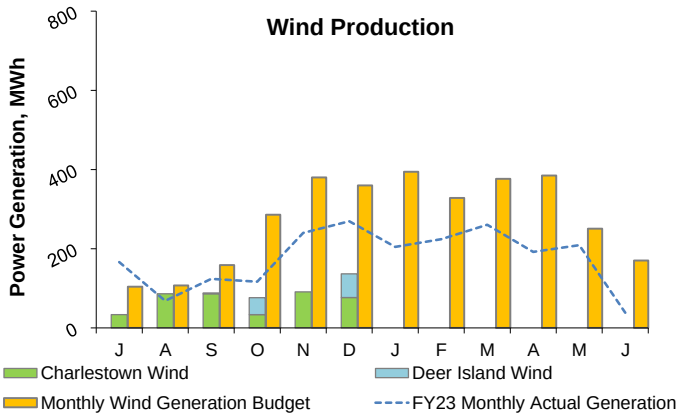
Maintenance overtime was $19,586 under budget on average, per month, for the 2nd Quarter of FY24. Overtime is used for critical maintenance repairs and wet weather events. The overtime budget through the 2nd Quarter of FY24 is $345,856. Overtime spending was $249,272 which is $96,584 under budget for the fiscal year.

Renewable Electricity Generation: Savings and Revenue

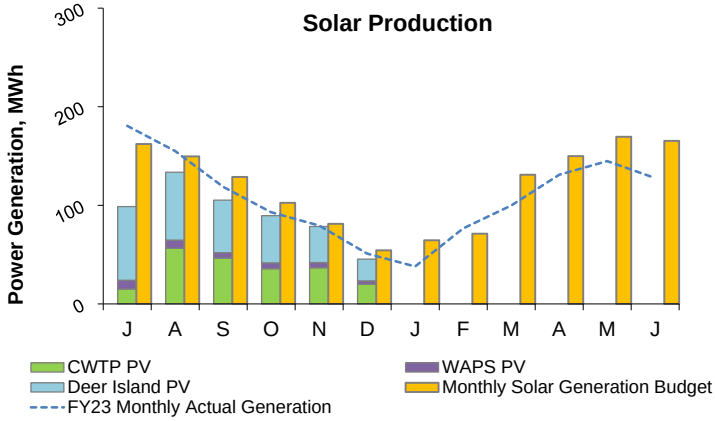
2nd Quarter - FY24



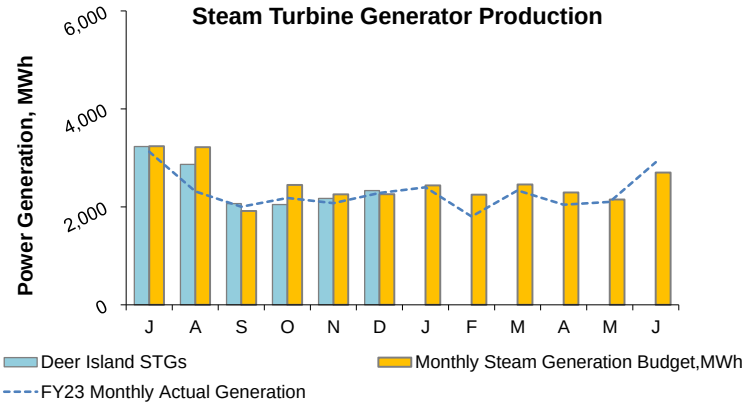
In Quarter 2, the renewable energy produced from all hydro turbines totaled 7,173 MWh; 43% above budget[1].



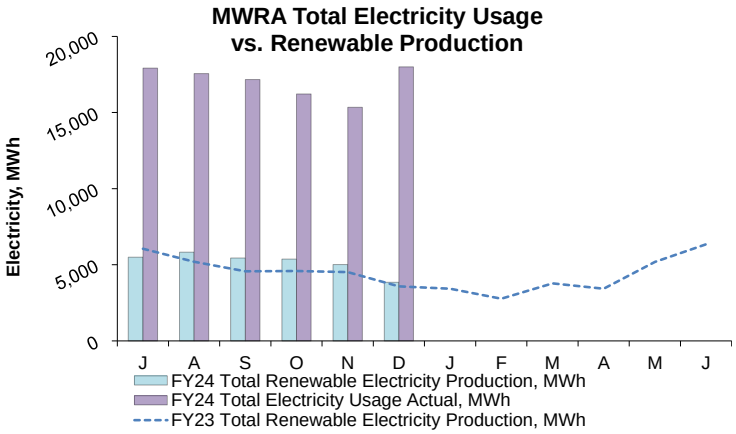
In Quarter 2, the renewable energy produced from all wind turbines totaled 304 MWh; 70% below budget[1]. Deer Island Turbine #2 was out of service for all of November to perform necessary maintenance. Deer Island Turbine #1 has been out of service since April 2022, and was heavily damaged following a braking failure on May 29, 2023.

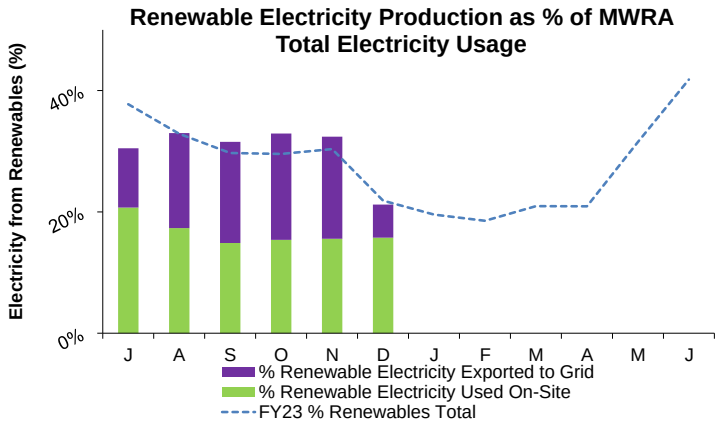


In Quarter 2, the renewable energy produced from all solar PV systems totaled 214 MWh; 10% below budget[1]. The Deer Island Residuals Odor Control roof mounted array has been offline since September 11, 2022 while awaiting replacement parts.



In Quarter 2, the renewable energy produced from all steam turbine generators totaled 6,549 MWh; 6% below budget[1].

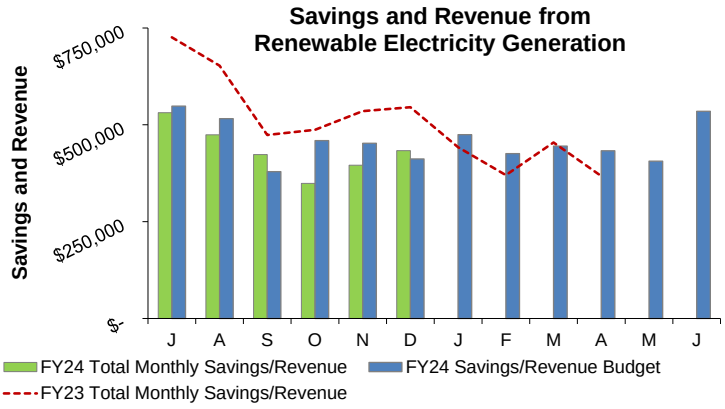


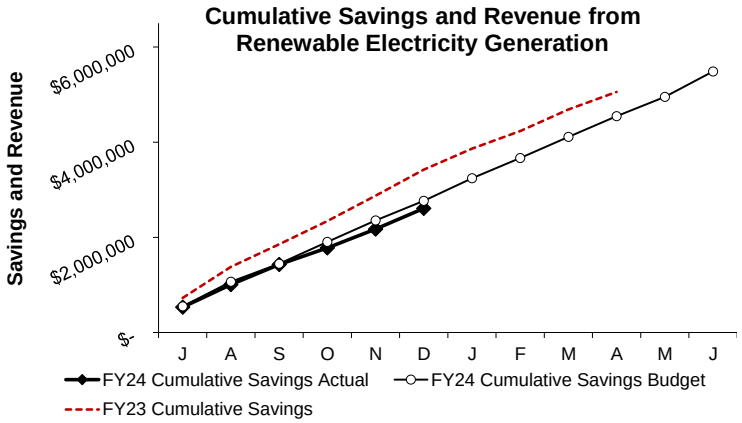


In Quarter 2, MWRA's electricity generation by renewable resources totaled 14,240 MWh, 8% above budget. MWRA's total electricity usage was approximately 49,565 MWh. Renewable resources were 31% of total usage. The MWRA total electricity usage is the sum of all electricity purchased for Deer Island and 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. Budget values are based on historical averages for each facility and include operational impacts due to maintenance work.

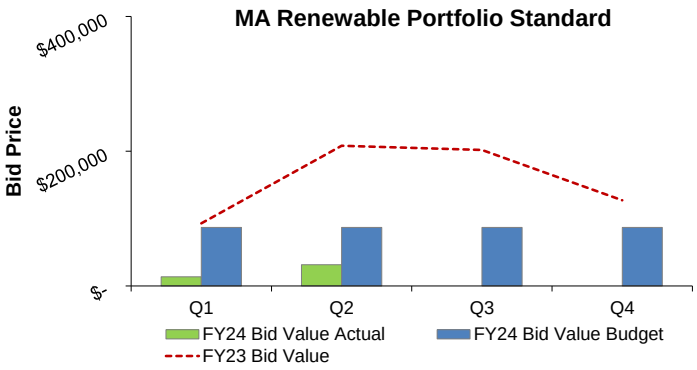
Renewable Electricity Generation: Savings and Revenue
2nd Quarter - FY24

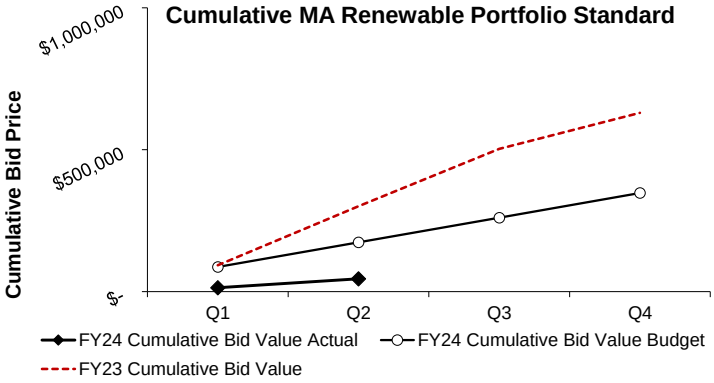




Savings and revenue from renewable energy sources totaled $1,178,357 in Quarter 2, 11% below budget.[3] Cumulative Savings and Revenue is 6% below budget for the fiscal year. Savings and revenue invoices for Oakdale Hydro have not yet been received for May and June of FY23.

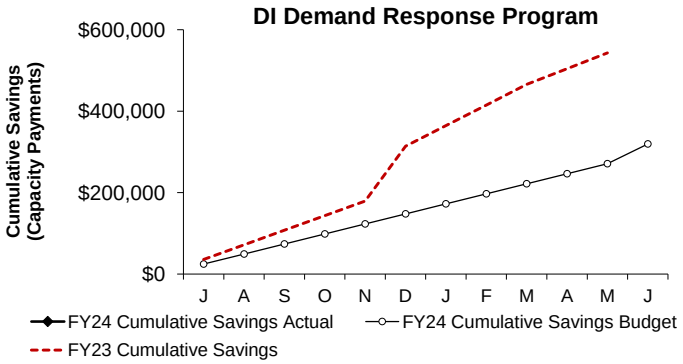
Savings and revenue[1] from all renewable energy sources include wind turbines, hydroelectric generators, solar panels, and steam turbines (DI). This includes savings and revenue due to electricity generation (does not include avoided fuel costs and RPS RECs).
The use of DITP digester gas as a fuel source provides the benefit of both electricity generation from the steam turbine generators, and provides thermal value for heating the plant, equivalent to approximately 5 million gallons of fuel oil per year (not included in charts above).

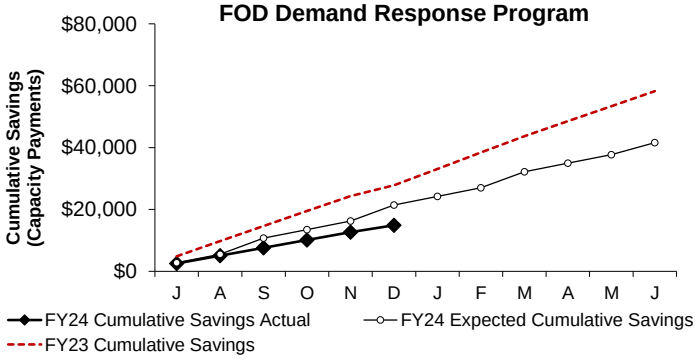




Bids were awarded during the 2nd Quarter[2] from MWRA's renewable energy assets; 909 Q1 FY24 Class I Renewable Energy Certificates (RECs) and **zero** Q1 FY24 Class 2 RECs were sold for a total value of $31,506 RPS revenue, which is 64% below budget[3] for the Quarter. Multiple factors contributed to this shortfall. The quantity of RECs MWRA is obligated to provide electricity suppliers has increased per state regulations and contract structures, reducing the number of RECs available for sale. There were also fewer RECs produced due to reduced wind power production at Deer Island, which will likely persist through the fiscal year (see previous page). REC values reflect the bid value on the date that bids are accepted. Cumulative bid values reflects the total value of bids received to date.

*Only Class I are reported for Q1,Class II RECs are reserved for future sale. SRECs have transitioned to the Class 1 REC category starting in FY23.



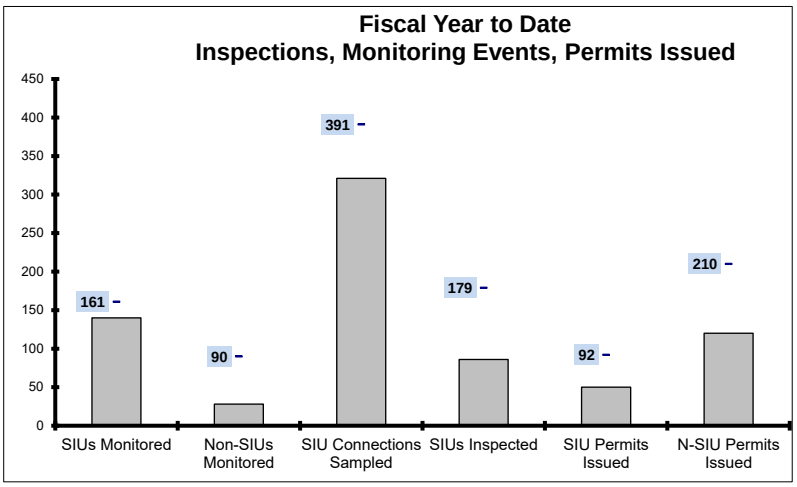


Currently Deer Island, Loring Rd, Brutsch Hydro, and JCWTP participate in the ISO-New England Demand Response Programs. By agreeing to reduce demand and operate the facility generators to help reduce the ISO New England grid demand during periods of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates the generators during an ISO-NE called event, MWRA also receives energy payments from ISO-NE. No Capacity Payments have been recieved for Deer Island yet in FY24, and payments for FOD total $14,883 through December.

Notes:
1. 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.
2. Only the actual energy prices are being reported. Therefore, some of the data lags up to 3 months due to timing of invoice receipt.
3. Budget values are based on historical averages for each facility and include operational impacts due to maintenance work.

Toxic Reduction and Control

2nd Quarter - FY24



EPA Required SIU Monitoring Events
for FY24: 161
YTD : **140**

Required Non-SIU Monitoring Events
for FY24: 90
YTD : **28**

SIU Connections to be Sampled
For FY24: 391
YTD: **321**

EPA Required SIU Inspections
for FY24: 179
YTD: **86**

SIU Permits due to Expire
In FY24: 92
YTD: **50**

Non-SIU Permits due to Expire
in FY24: 210
YTD: **120**

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.

EPA requires MWRA to issue or renew 90 percent of SIU permits within 120 days of receipt of the application or the permit exp iration date - whichever is later. EPA also requires the remaining 10 percent of SIU permits to be issued within 180 days.

Number of Days to Issue a Permit								
	0 to 120		121 to 180		181 or more		Permits Issued	
	SIU	Non-SIU	SIU	Non-SIU	SIU	Non-SIU	SIU	Non-SIU
Jul	1	3	0	1	0	0	1	4
Aug	5	7	0	1	0	1	5	9
Sep	14	28	0	3	0	0	14	31
Oct	11	34	0	1	0	1	11	36
Nov	15	24	1	2	0	2	16	28
Dec	3	10	0	2	0	0	3	12
Jan								
Feb								
Mar								
Apr								
May								
Jun								
% YTD	98%	88%	2%	8%	0%	3%	50	120

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.

In addition to the Annual SIU inspections required under TRAC's EPA approved Industrial Pretreatment Program, other inspections are usually undertaken, including for enforcement, permit renewal, follow up, temporary construction dewatering sites, group/combined permit audits, spot, sampling locations, visit only and out of business facility.

Monitoring of SIUs and Non-SIUs is dynamic for several reasons, including: newly permitted facilities; sample site changes requiring a permit change; changes in operations necessitating a change in SIU designation; 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 sometimes increased/decreased inspections lead to permit category changes requiring additional monitoring events

This is the second quarter of the MWRA fiscal year, FY24.

In this quarter, 106 permits issued.
There were 30 SIUs, of which 29 were issued on time.
There were 76 non-SIUs of which 68 were issued on time, with 3 late beyond 180 days.

Reasons for late issuances continued to include:
a) staffing due to turnover and vacancies
b) waiting for critical data needed for permit processing
c) delays relating to new start-up operations and
d) the late payment of the relevant permit charges.

Permit Categories, as defined in CMR 10.101(2):

DEW - Category 12 Temporary Construction Site Dewatering Permit

LFLP - Category 10 Non-Significant Industrial User with Low Flow and Low Pollutant

02 N-SIU - Category 2 Non-Significant Industrial User

Dental - Category D1 Dental Group Permit

G2 - Category G2 Group Permit for Food Processing

In FY24, there have been 43 completely new permits issued: 5-DEW, 19-LFLP, 15-02 N-SIUs, 1-Dental, 2-G2s, 1-One Time discharge

For the Clinton Sewer Service area, there was 1 SIU permits issued during the FY24 fiscal year.

Field Operations Highlights

2nd Quarter – FY24

Metro Water Operations and Maintenance

- Valve Program: Valve operations to support in-house work including providing isolations on: Section 49 (Blow Off Replacement), Section 73 (Blow off Replacement), Section 49A (Main Line Valve Installation). CIP Contractors were supported by isolation and dewatering of portions of Section 29 and 89 (Contract 7117), Section 63 (Contract 6522), Section 23, 24 & 47 (Contract 6392) and WASM 4 and WASM 16 (Contract 7563). Other work included the set-up of the MPU in Lynnfield and Boston College and mainline valve exercising of 16 water main sections.

- Water Pipeline Program: Staff completed Blow-Off replacements in Malden (Section 49) and Mattapan (Sections 94 and 73). A main line valve was installed in Malden (Section 49A). Test pits were completed at Shaft 7C to determine pipe diameters for future valve replacements. Other work included the set-up of the MPU in Lynnfield and Boston College. Leak detection was performed on over 41 miles of MWRA water main and assistance was provided to five customer communities.

Operations Engineering

- Staff continued to provide technical support for Design and Construction Contracts including; Low System PRV Upgrades, Columbus Park and Ward St Headworks, Upgrades, Nut Island Odor Control Improvements, Hayes Pump Station Upgrades, NEH improvements, Section 101, Storage Tank Improvements Shaft Improvements, IHS Improvements CP1 and 2, Hydraulic Model upgrades, and BWRPS Upgrades.

- Staff continued to provide management and coordination with Arcadis to support the construction phase on the Carroll Water Treatment Plant System Upgrades PLC.

- Hydraulic Model Upgrades: Staff continued to provide an in-depth review of the draft model and review of calibrations and developed options for refined calibrations for WASM3 and NIH systems.

- Staff provided support for system expansion to the north and south and to the Metro communities.

- Provide daily facility flow data to support Biobot Study.

- Staff continued to support the lead loop study at CWTP

- Staff managed the dewatering of Norumbega cell 3 for the cleaning and the disinfection and reactivation of the cell.

- Staff assisted in several wet weather storm events, compiled and finalized storm reports, monitored and reported on CSO activation durations and volumes and provided follow up on operational and SCADA issues.

SCADA

- Water System: Continued technical support for JCWTP PLC replacement project; configured and hardened SCADA Operating system; continued work on network management improvements in the JCWTP water system; Continued support for the Wachusett Lower Gate House; supported Soda Ash Dry Feed Upgrade project; Worked with Verizon to update communication lines at various facilities; replaced PLCs at Newton Covered Reservoir, Arlington Covered Reservoir, and Lexington St. Pump Station; replaced PLC components at JCWTP.

- Wastewater System: Configured and hardened SCADA Operating system; continued work on network management improvements; continued work on Ward/Columbus, Hayes P.S. Improvements, Braintree/Weymouth Pump Station Improvements Project, and Fuel Tank Replacement Project; Worked with Verizon to update communication lines at various facilities; replaced PLC components at Somerville Marginal and IPS; replaced network components at Prison Point; repaired UPS connections at Columbus Park.

TRAC

Compliance and Enforcement

- Annual Permitting and Monitoring Charge invoices were issued for all permits except the Dental Discharge permits, which will be issued in March. The invoices totaled $2,695,666.00.

- TRAC Issued 40 Notices of Violation, 10 Notices of Noncompliance, 3 Penalty Assessment Notices, 2 Administrative Orders, and 2 Extension Letters.

Inspections and Permitting

- TRAC issued a total of 88 MWRA 8(m) Permits allowing companies to work within an easement or other property interest held by the Authority. The total number includes 50 permits issued for work within water infrastructure easements and 38 permits

issued for work within sewer infrastructure easements. Permits issued this quarter were issued in an average of 69 days from the date the application for 8(m) permit was received by the MWRA.

- TRAC monitored the septage receiving sites a total of 21 times. Staff conducted inspection at 40 new construction gasoline/oil separators and 58 existing gasoline/oil separators.

- TRAC staff conducted 48 Annual SIU Inspections and 234 other inspections.

- 106 MWRA Sewer Use Discharge Permits (Permits) were issued and/or renewed to its sewer users. One permit was issued and/or renewed in the Clinton Service Area.

Environmental Quality-Water

Algae**:** MWRA's algae monitoring season ended in October. DCR staff continued to collect algae samples routinely at both reservoirs. All nuisance algae were below levels of concern.

- Regulatory: Staff collected samples for EPA's Unregulated Contaminant Monitoring Rule 5 in October, for DEP-required Disinfection Byproducts Rule in November, and for the Optimum Water Quality Parameters program in December. Staff collected samples each week for the Wachusett Aqueduct Pump Station Geothermal NPDES permit.

  Non-Regulatory: As part of the future EPA Lead & Copper Rule revisions, MWRA is collecting samples at locations near residences that have results over the lead action level. In October, staff collected pH & alkalinity samples from seven communities. All samples met water quality targets.

- Community Support: On October 6, staff performed virtual coliform sampler training for 13 participants from two Boston and Chelsea. On November 1 and 24, staff assisted Wakefield and Boston with discolored water complaints. On November 9, staff assisted Brookline with sampling at their Single Tree Tank and on December 6, staff visited their tank to review operation of their online chlorine analyzer. On December 6, staff assisted Boston with investigatory sampling at a routine coliform monitoring site.

- Projects: Staff continued Legionella sampling as part of a Water Research Foundation research project. As part of the new EPA Legionella sampling project commencing in 2024 with the Georgia Institute of Technology, staff collected samples at CWTP and Newton. The CWTP lead pipe-rig study sampling continued. Staff assisted with clearance sampling at Norumbega Covered Storage Tank Cell 3.

- Data Management: Staff submitted monthly DEP and DPH reports on schedule and fulfilled ten data requests.

Environmental Quality-Wastewater

- Ambient Monitoring: Massachusetts Bay water column surveys completed each month through October. Review/synthesis of 2022 data continues. The permit required Outfall Monitoring Overview on 2022 ambient monitoring data was submitted to EPA and DEP on November 15.

- Harbor/CSO Receiving Water Monitoring: Biweekly harbor monitoring continues, along with seasonal CSO receiving water sampling through the end of November.

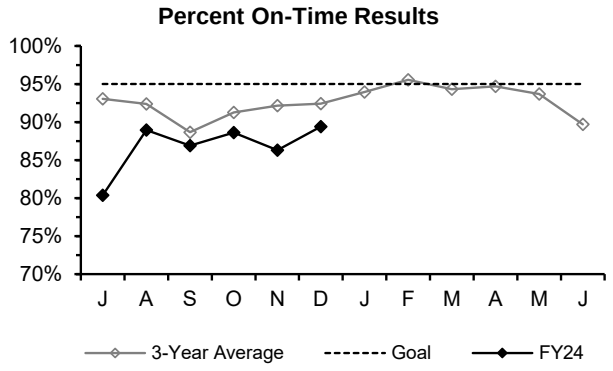
- Permitting and Compliance Reporting: Submitted monthly and quarterly discharge monitoring reports, and as-needed notifications of CSOs, SSOs, and blending, and provided prior notice of essential maintenance. Prepared and submitted extensive comments to EPA on draft permit for Deer Island Treatment Plant and CSOs. Submitted annual O&M report and status sheets for Deer Island and collection system. The NPDES Steering Committee met in October and December. Reported Contingency Plan exceedances for Stellwagen Basin bottom water dissolved oxygen to EPA, DEP, OMSAP, and others. These were observed on July and September Massachusetts Bay monitoring surveys. Also reported a Contingency Plan exceedance for summer average chlorophyll, resulting from a large Gulf of Maine wide algae bloom in late spring/early summer.

- Cooperation with other agencies: Continued follow up communication with metro Boston CSO permittees and with Boards of Health about the new sewage notification regulation. Coordinated with Mass. DMF and with other wastewater agencies, NACWA, Cape Cod Center for Coastal Studies, Wastewater Advisory Committee, and with metro Boston CSO communities about relevant issues in the NPDES draft permit. Discussed data sharing opportunities with NERACOOS for studies of zooplankton in the Gulf of Maine and the extraordinary algae bloom in the region this summer.

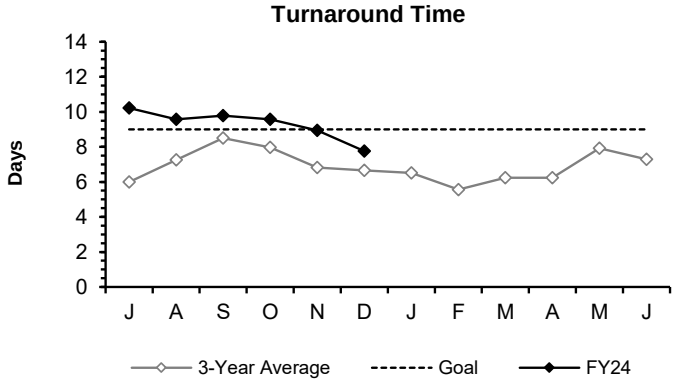
Laboratory Services

2nd Quarter - FY24

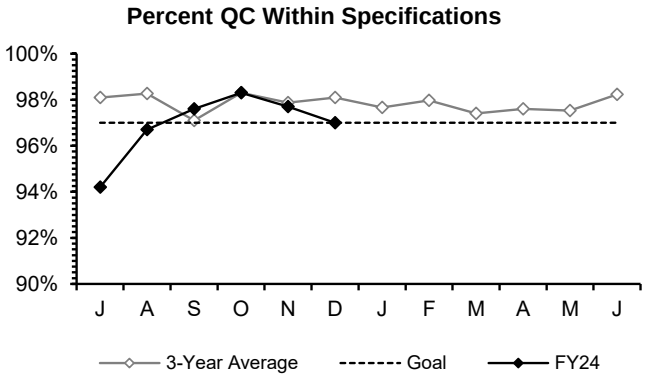
Laboratory Services supports the laboratory sampling, testing, and consulting needs of various client groups primarily in the Operations Division. This includes drinking water transmission and treatment, wastewater collection and treatment, wastewater residuals management, industrial-pretreatment monitoring, and environmental quality.



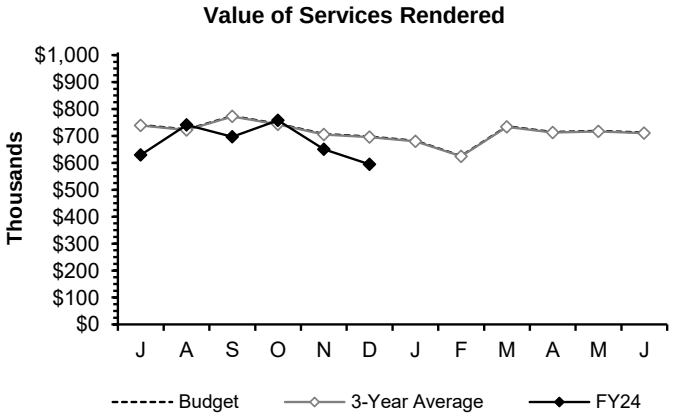
The Percent On-Time measurement assesses performance against internal client due dates. These due dates are shorter than the compliance reporting requirements to allow for internal review of the data.



Turnaround Time measures the average time from sample receipt to sample completion.



Percent QC Within Specifications measures the fraction of Quality Control tests that met required limits during the month.



Value of Services Rendered models the true cost of the lab work performed, including fringe benefits that are not a part of the Laboratory Services budget.

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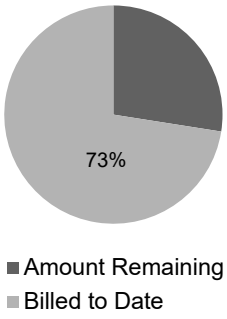
Performance Summary: Percent of QC Within Specifications and Turnaround Time met the monthly goals. Department staffing was improved to ~90% of budgeted level, but we are still training new staff, which impacts productivity. All regulatory timelines were met during the 2nd Quarter of FY24.

School Lead Program: During the 2nd quarter of FY24, MWRA's lab completed 146 tests from 23 schools and childcare facilities in 12 communities. Since 2016, MWRA's Laboratory has conducted over 40,000 tests from 576 schools and daycares in 44 communities. We have also completed 931 home lead tests under the DPH sampling program since 2017.

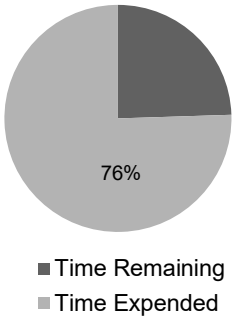
CONSTRUCTION PROGRAMS

Engineering & Construction
Projects In Construction
2nd Quarter – FY24

Cost



Time



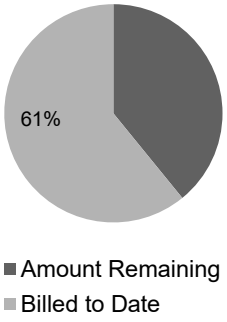
Carroll Water Treatment Plant SCADA Improvements

Project Summary: The current SCADA control equipment has reached the end of its useful life, and future vendor support for the installed PLC base is no longer guaranteed. This contract includes the supply and installation of replacement instrumentation panels, PLC's, UPS backup power, fiber-optic communication network, wiring between the existing panels, and new equipment and refurbishment of the operator control room. In addition, a new server room equipped with HVAC and fire suppression is being constructed to house redundant computer hardware supporting active and backup SCADA systems.

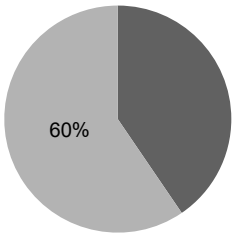
Contract Amount: $13,210,180.33 *Contract Duration:* 1,127 Days

Notice to Proceed: 1-Sep-21 *Contract Completion:* 2-Oct-24

Cost



Time



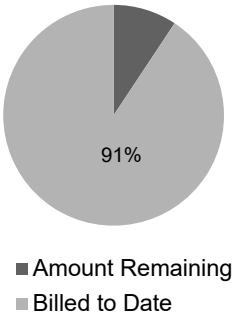
Section 89 Replacement Pipeline

Project Summary: This project will include replacement of a 10,500-foot portion of PCCP with class IV reinforcing wire, line valves and appurtenances, and abandonment of the 118-year old, 24-inch diameter cast iron Section 29 pipeline.

Contract Amount: $33,309,138.83 *Contract Duration:* 1,475 Days

Notice to Proceed: 5-Aug-21 *Contract Completion:* 19-Aug-25

Cost



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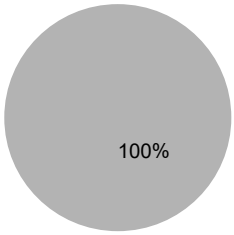


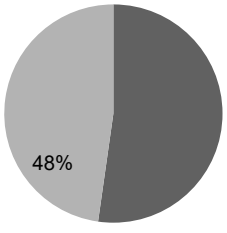
Low Service PRV Improvements

Project Summary: This project will demolish the existing Nonantum Road and Mystic Valley Parkway PRV vault structures, including four 24-inch PRVs and appurtenances, and construct new, larger cast-in-place vaults. At Mystic Valley Parkway, two 42-inch PRVs and at Nonantum Road two 30-inch PRVs, isolation valves, piping, and other appurtenances will be installed. Additionally, a new master meter will be constructed at the Mystic Valley Parkway pressure reducing valves and the existing master meter located near the Nonantum Road pressure reducing valves will be upgraded to accommodate the increased flow.

Contract Amount: $12,205,837.64 *Contract Duration:* 900 Days

Notice to Proceed: 14-Jul-21 *Contract Completion:* 31-Dec-23

Cost



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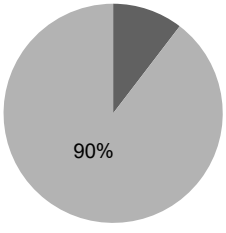


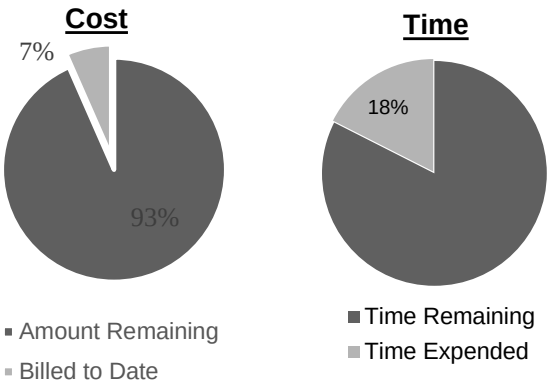
Construction of Water Mains – Section 101

Project Summary: This construction contract consists of a new 36-inch diameter water main and appurtenances extending from MWRA's Meter 182 at the Waltham/Lexington town line down Lexington Street to Totten Pond Road, where it will connect to Waltham's water system. This new water main will provide sufficient capacity to maintain water service to Waltham during the anticipated shutdown of MWRA's WASM 3 pipeline and the Lexington Street Pumping Station for future rehabilitation.

Contract Amount: $32,400,000 *Contract* Duration: 635 Days

Notice to Proceed: 12-Jul-22 *Contract Completion:* 7-Apr-24

Engineering & Construction
Projects In Construction
2nd Quarter – FY24

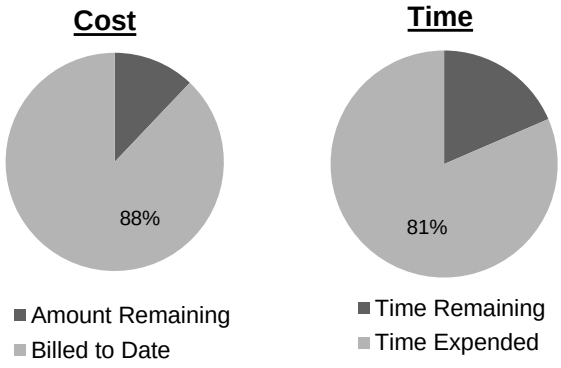


7395 - Clarifier Rehabilitation Phase 2

Project Summary: This project involves the replacement of the original remaining scum and sludge equipment, as follows: over 400 Primary Clarifier influent, effluent, and dewatering gates; 384 primary effluent cross channel gate actuators; approximately 450 secondary scum influent gates and actuators; wear strip rails,768 head shaft and idler sprockets; over 3000 linear feet of influent channel aerations piping systems; 360 head shafts collector drives and chains; return sludge line vent piping; approximately 400 concrete and aluminum hatches and associated electrical and control systems.

Contract Amount: $289,359,690 *Contract Duration:* 1620 Days

Notice to Proceed: 10-Mar-23 *Contract Completion:* 16-Aug-27



7134 - Radio Repeater System Upgrade 2

Project Summary: This project involves the replacement of the original Radiax Radio Repeater system Antenna Cable: The Radiax cable consists of thirty-seven (37) individual cable runs totaling over 15,000 linear feet. The Radiax cable is present in the following DITP areas: Primary, Reactor, Secondary, Disinfection and Residual Galleries, Primary Operations, North Main Pump station, south System Pump Station, Centrifuge Thickener building, Operations Center and the Hydropower Plant. Under this contract, all existing Radiax cable runs will be replaced in kind with new Radiax cable. In addition, new addressable fire alarm modules will be installed and programmed at each of the existing bi-directional amplifier radio rooms in order to supervise the operational status of the Radiax cable amplification equipment.

Contract Amount: $2,499,500 *Contract Duration:* 540 Days

Notice to Proceed: 17-Oct-22 *ContractCompletion:*9-Apr-24

CSO CONTROL PROGRAM

2nd Quarter – FY24

Overview

In compliance with milestones in the Federal District Court Order, all 35 projects in the CSO Long-Term Control Plan (LTCP) were complete as of December 2015. Subsequently, MWRA completed a multi-year CSO post-construction monitoring program and performance assessment, filing the Final CSO Post Construction Monitoring Program and Performance Assessment Report with the Court and submitted copies to EPA and DEP in December 2021. April 2023 Annual report shows an 88% reduction in CSO in a typical year, from 3.3 billion gallons to 396 million gallons, with 72 of 86 outfalls meet or materially meet the LTCP goals (5 of the 72 materially meet) for CSO activation frequency and volume. MWRA and its member CSO communities are moving forward with plans to bring 8 of the 16 CSOs in line with the LTCP goals. With respect to the remaining 6 challenging CSO outfalls, MWRA and its CSO Consultant (AECOM) continue to investigate alternative to move closer to LTCP goals.

MWRA CSO Performance Assessment

- In November 2017, MWRA signed a contract for CSO Post-Construction Monitoring and Performance Assessment with AECOM Technical Services, Inc. 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 MassDEP in December 2021 verifying whether the LTCP goals are attained.

- AECOM continues to support efforts to advance project identified to meet performance goals at 8 of the 16 CSOs that didn't meet LTCP goals, evaluate alternatives for the remaining 6 challenging sites, and predict and report on annual CSO discharges. Two of those 16 outfalls are now meeting LTCP goals (BOS014 and BOS003) and the post construction performance of CHE008 will be evaluated at the end of the year.

Court Ordered Levels of CSO Control

Progress on the work to comply with the court ordered levels of CSO control is discussed with the EPA/MassDEP at progress meetings held quarterly. **Meeting scheduled for 12/28/23 to be rescheduled for January 2024 and the next meeting will be in March**.

Ongoing Projects as of December 31, 2023

- *East Boston CSO Control*: As part of the East Boston CSO a FAA/MOU was executed in June 2021 for $2.1M, BWSC design and construction. Work at BOS014, BOS003 is complete and are now meeting LTCP goals. Sewer separations is expected to be completed in spring of 2024. Plans for Phase 4 sewer separation with five new contracts starting summer 2024 (through 2030) will result in most of East Boston being separated.
  Somerville Marginal New Pipe Connection came out of the variance optimization study that recommended adding a new pipe from the facility's CSO influent conduit to the interceptor with an added control gate. The $1.2M (est.) construction project is expected to be completed by December 2024.
- *Fort Point Channel and Mystic Confluence* – BOS013, BOS062, BOS065, BOS070 DBC and BOS017: **The FAA/MOU was amended on December 13, 2023 to include BOS013. On December 14, 2023 the Commission awarded the contract to P. Gioioso & Sons in the amount $10.4 million over the engineer's estimate of $7.3 million.** Anticipate completion of construction by December 2024.
- *CAM005 weir raising and lengthening* for reducing CSO activation and frequency volume. Cost estimate $250,000. Anticipated completion of construction by December 2024.

CSO variances

As part of MWRA's CSO Control Program, MassDEP has issued a series of multi-year CSO variances that allow MWRA, Cambridge, and Somerville to continue to have limited CSO discharges to Alewife Brook and the Upper Mystic River, as well as the Charles River lower basin. The most recent variances, issued in 2019, require the development of Updated LTCPs for the CSO outfalls that each entity owns and operates that may discharge to the corresponding waterbody. The Updated LTCPs must include a description of the existing level of CSO control, an evaluation of the costs and the performance and water quality improvements achieved by additional CSO control alternatives, a public participation plan, and an affordability analysis.

- MassDEP and EPA conditionally approved MWRA's Updated CSO Control Plan Scope of Work on 5/11/2022.
- Schedule Extension Request for Deliverables Associated with Updated CSO Control Plan was submitted 9/22/22. In May 2023, EPA/MassDEP advised that MWRA, Cambridge and Somerville proceed according to our revised extended schedule.
  - As identified in the variance the progress is reported at monthly meetings with EPA/MassDEP. The last meeting was on **1/10/2024** and the next meeting is scheduled for **2/14/2024**. Key elements of the Updated CSO Control Plan are discussed including the development of Alternatives to be evaluated using the Unified Hydraulic Model.
- The 3rd of 8 planned meetings was held on 11/15/2023. **The next Public Meeting is scheduled for late summer of 2024.**
- Development and Submittal of Studies as required under variance included the following:
  - Alewife PS Optimization Evaluation was submitted on 4/27/2021
  - Somerville Marginal CSO Reduction, Study and Preliminary Design was submitted on 12/27/2021
  - Alewife Brook and Charles River System Optimization Evaluation was submitted on 12/28/2022
  - MWRA CSO Variances Additional System Optimization Measures Report was submitted on 1/31/2023.
- **Bi-annual meeting with CLF/Watershed groups held on 12/20/2023** providing an update on the 16 sites not currently meeting the LTCP.
- Watershed Association meeting held on 10/24/2023 providing on update on the Updated CSO Control Plan development.

CIP Expenditures
2nd Quarter – FY24

FY24 Capital Improvement Program Expenditure Variances through December by Program - ($ in thousands)				
Program	FY24 Budget Through December	FY24 Actual Through December	Variance Amount	Variance Percent
Wastewater	$40,650	$34,032	($6,618)	-16%
Waterworks	$63,091	$62,121	($970)	-1%
Business and Operations Support	$8,075	$3,665	($4,410)	-54%
Total	$111,816	$99,819	($11,997)	-10%

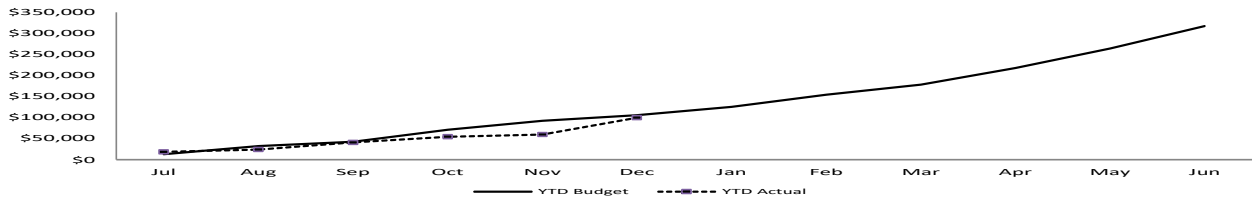
Wastewater:

- Spending was less than planned in Wastewater due to timing of community loans and distributions for the I/I Local Financial Assistance program, timing of work, long lead time for equipment and delay in fabrication of structural steel for Braintree/Weymouth Improvements – Construction, work scheduled for FY24 that was completed in FY23 for Chelsea 008 Pipe Replacement construction, delay in performing shaft inspections and issuing NTP for Final Design for Ward Street & Columbus Park Headworks Upgrades - Design/CA, and lower than projected task order work for Deer Island As-Needed Design.
- This less than planned spending was partially offset by equipment received ahead of schedule for Clarifier Rehabilitation Phase 2 – Construction.

Water:

- Spending was less than planned in Waterworks due to timing of contractor work for Section 89/29 Replacement and CP-1 NEH Improvements, timing of consultant work for Metropolitan Tunnel Redundancy Preliminary Design & Massachusetts Environmental Policy Act Review, timing of consultant services for Geotechnical Support Services, lower than projected task order work for CWTP Technical Assistance, work scheduled for FY24 performed in FY23 for WASM 3 Rehabilitation CP-1, timing of consultant work for WASM 3 MEPA/Design/CA/RI, and longer lead time on some larger items and a change in design for the multi-orifice valve for Wachusett Lower Gatehouse Pipe & Boiler Replacement – Construction.
- This less than planned spending was partially offset by timing of community distributions for the Water Loan program, work scheduled for FY23 that was completed in FY24 for Waltham Water Pipeline and CWTP Chemical Feed System Improvements, and contractor progress for CP-2 Sections 24 & 25 Construction.

Budget vs. Actual CIP Expenditures ($ in thousands)
Total FY24 CIP Budget of $302,200



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 12/23/23	$123.3 million
Unused capacity under the debt cap:	$2.31 billion
Estimated date for exhausting construction fund without new borrowing:	March 2024
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper/Revolving loan outstanding: Commercial paper capacity / Revolving Loan	$130 million $120 million
Budgeted FY24 Cash Flow Expectancy*:	$246 million

* Cash based spending is discounted for construction retainage.

DRINKING WATER QUALITY AND SUPPLY

Source Water – Microbial Results and UV Absorbance

2nd Quarter – FY24

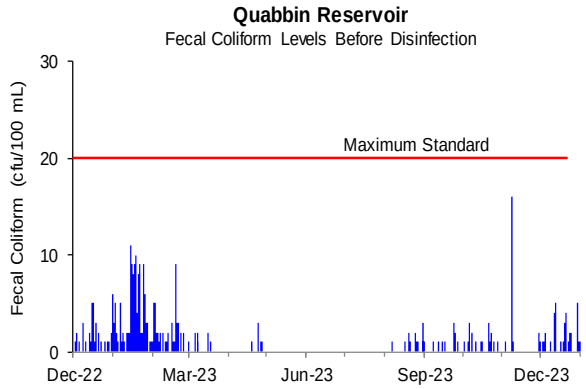
Source Water – Microbial Results

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 coliforms, 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 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.**

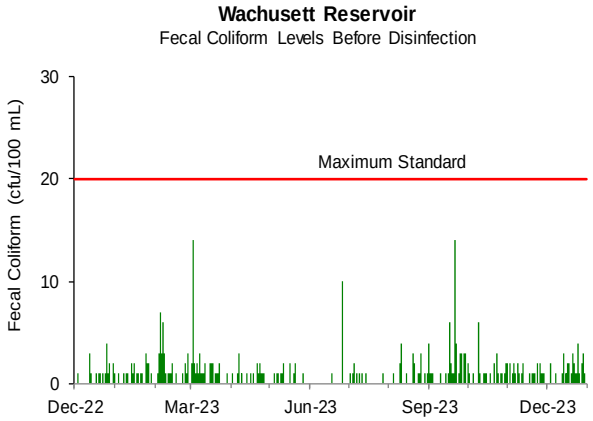


Sample Site: Wachusett Reservoir

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

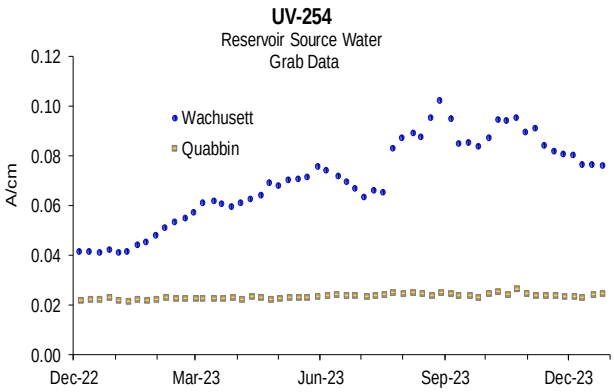


Source Water – UV Absorbance

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

Quabbin Reservoir UV-254 levels averaged 0.024 A/cm for the quarter.

Wachusett Reservoir UV-254 levels averaged 0.085 A/cm for the quarter.



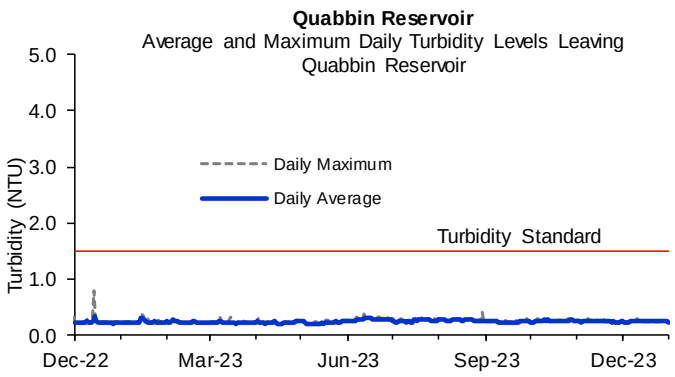
Source Water – Turbidity

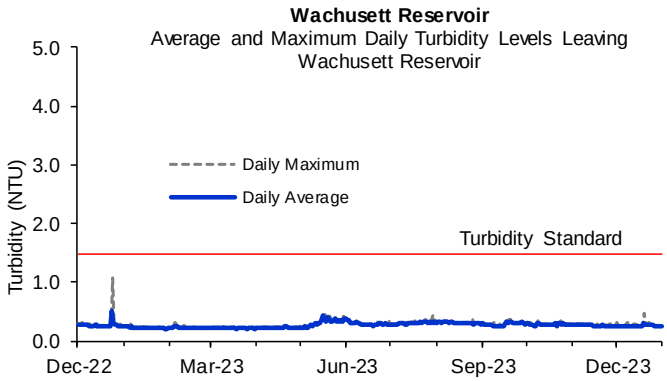
2nd Quarter – FY24

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.



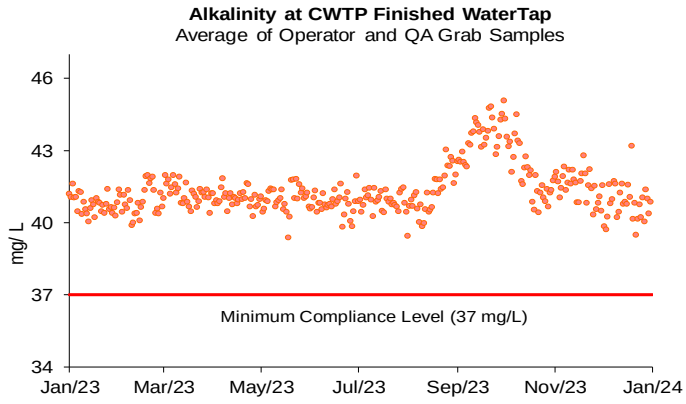


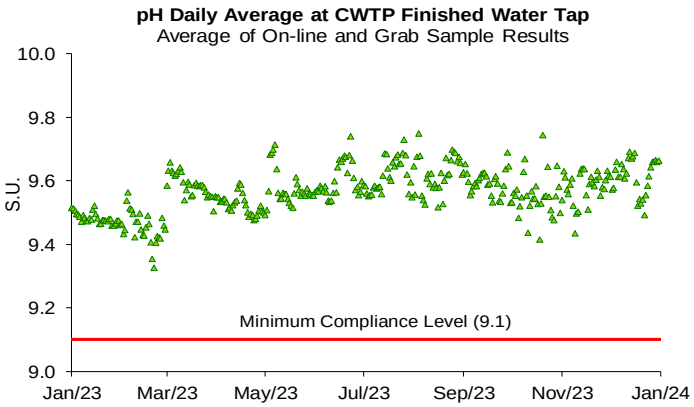
Treated Water – pH and Alkalinity Compliance

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: https://www.mwra.com/annual/waterreport/2022results/PDFS/CVA.pdf.

Quarterly distribution system samples were collected over a course of two weeks in December. Distribution system sample pH ranged from 9.3 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

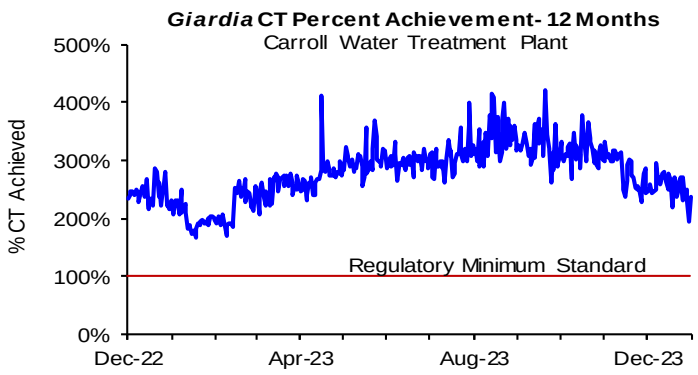
2nd Quarter – FY24

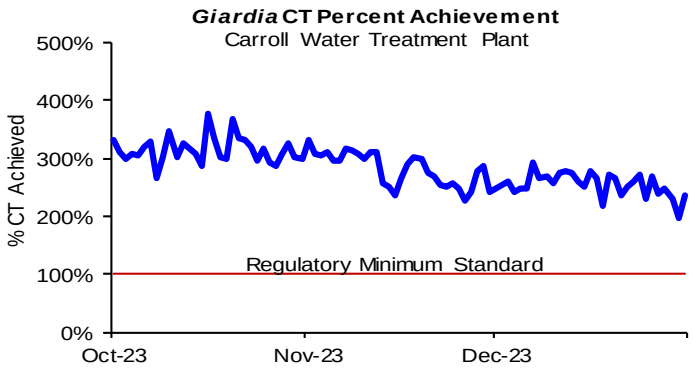
At the Carroll Water Treatment Plant (CWTP), MWRA meets the required 99.9% (3-log) inactivation of *Giardia* using ozone (reported as CT: concentration of disinfectant x contact time) and the required 99% (2-log) inactivation of *Cryptosporidium* using UV (reported as IT: intensity of UV x time). MWRA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

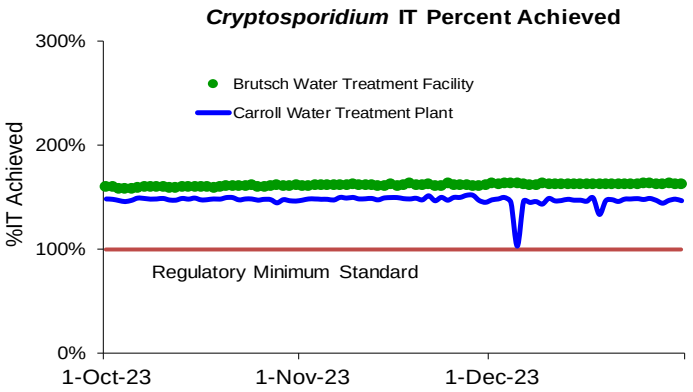
- The chlorine dose at the CWTP varied between 3.2 and 4.4 mg/L for the quarter.
- Ozone dose at the CWTP varied between 2.1 to 3.2 mg/L for the quarter.
- *Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system this quarter, as well as every day for the last fiscal year.
- *Cryptosporidium* IT was maintained above 100% for the quarter. Off-spec water was less than 5%.
- On December 7, 2023, CWTP had a brief shut down due to high oxygen supply pressure. There was a temporary reduction in UV inactivation levels. All regulatory targets were met.

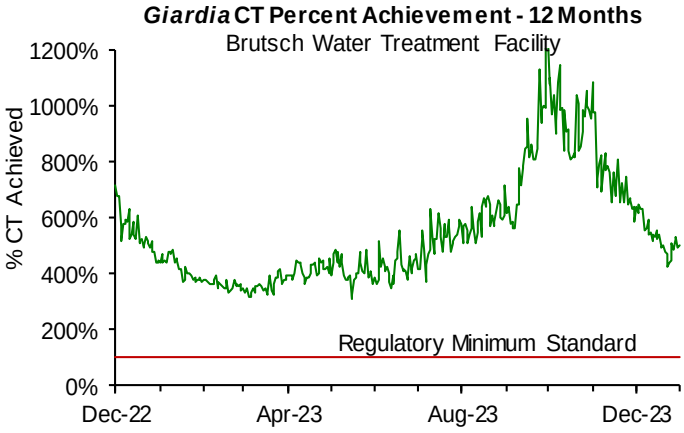


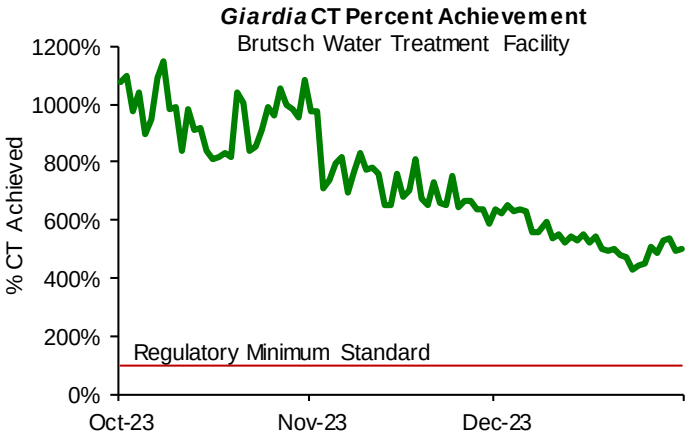


Quabbin Reservoir (CVA Supply) at: Brutsch Water Treatment Facility

- 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 1.35 to 1.64 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%.







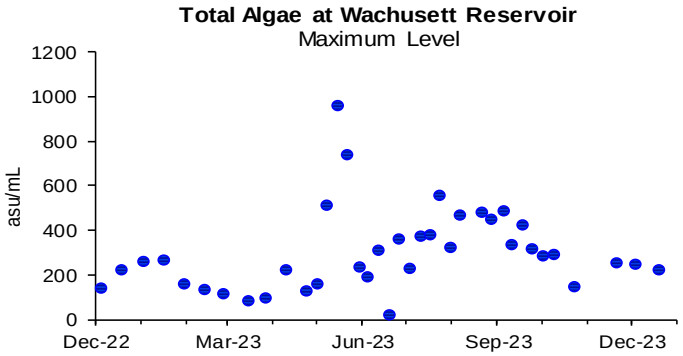
Source Water - Algae

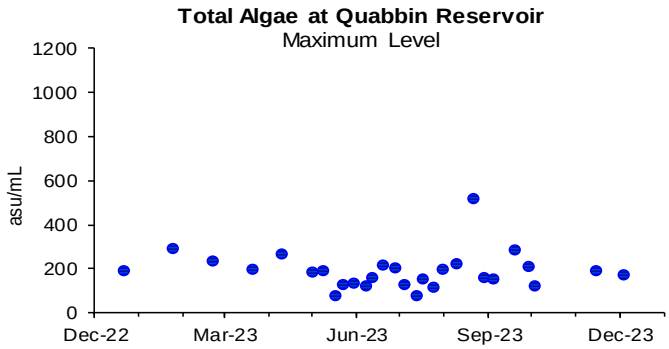
2nd Quarter – FY24

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 2nd quarter, there were no complaints which may be related to algae reported from the local water departments.



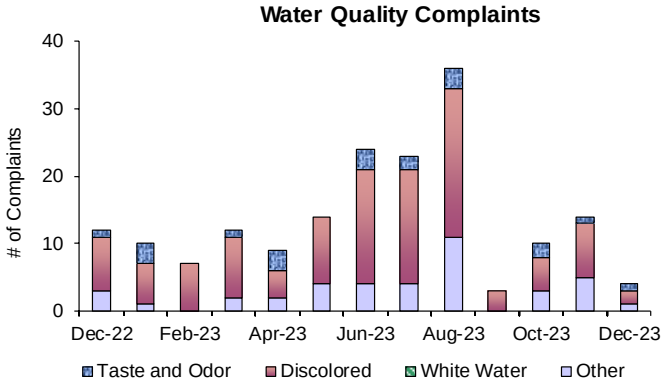


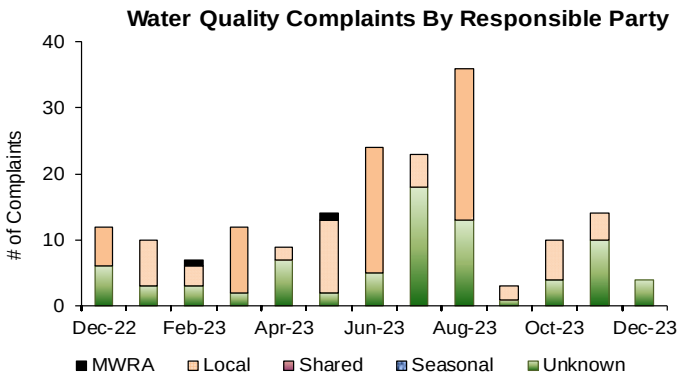
Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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

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

Communities reported 28 complaints during the quarter compared to 48 complaints from 2nd Quarter of FY23. Of these complaints, 15 were for “discolored water”, 4 were for “taste and odor”, and 9 were for “other”. Of these complaints, 10 were local community issues and 18 were unknown in origin.
Communities with discolored water (DW) complaints due to hydrant flushing performed during the quarter:
(October – Arlington (2) and Somerville (1); November – Arlington (1) and Waltham (1).





Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

2nd Quarter – FY24

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 144 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 second quarter, 116 of the 6426 fully and partially served samples (1.8%) submitted to MWRA labs for analysis tested positive for total coliform. 4 of the 1863 Shared Community/MWRA samples (0.2%) tested positive for total coliform. None of the 396 CVA/MWRA community samples (0.0%) tested positive for total coliform.

These communities needed to perform Level Assessments for the quarter, breakdown by month: in October, Bedford, Everett, Lynnfield, Wakefield, Winthrop; in November, Everett, Wakefield, Winthrop; in December, Bedford, Revere, Winthrop. No samples confirmed for *E.coli*.

1.1% of the Fully Served community quarterly samples had chlorine residuals lower than 0.2 mg/L.

NOTES:

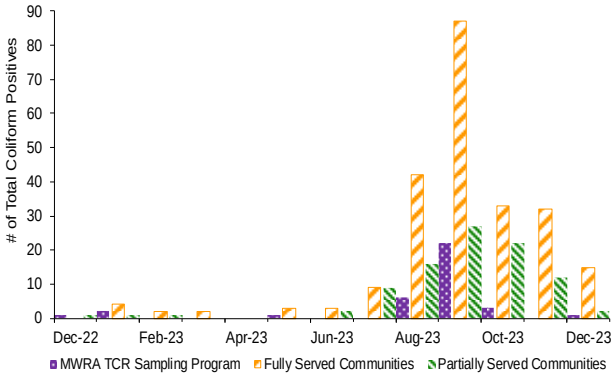
a) MWRA total coliform and chlorine residual results include data from community locations. In most cases these community results are indicative of MWRA water as it enters the community system; however, some are strongly influenced by local pipe conditions. Residuals in the MWRA system are typically between 1.0 and 2.8 mg/L.

b) The number of samples collected depends on the population served and the number of repeat samples required.

c) These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.

d) Part of the Chicopee Valley Aqueduct System. Free chlorine system.

Monthly Total Coliform Positives



			Total Coliform # Samples (b)	Total Coliform # (%) Positive	*E.coli* # Positive	Assessment Required
MWRA	a	MWRA Locations	362	2 (0.6%)	0	
		Shared Community/MWRA sites	1501	2 (0.1%)	0	
		Total: MWRA	1863	4 (0.2%)	0	No
Fully Served		ARLINGTON	156	0 (0%)	0	
		BELMONT	107	1 (0.9%)	0	No
		BOSTON	792	6 (0.8%)	0	No
		BROOKLINE	237	0 (0%)	0	
		CHELSEA	169	0 (0%)	0	
		DEER ISLAND	52	0 (0%)	0	
		EVERETT	184	8 (4.4%)	0	Yes
		FRAMINGHAM	237	0 (0%)	0	
		LEXINGTON	122	1 (0.8%)	0	No
		LYNNFIELD	24	3 (12.5%)	0	Yes
		MALDEN	234	0 (0%)	0	
		MARBLEHEAD	72	0 (0%)	0	
		MARLBOROUGH	126	0 (0%)	0	
		MEDFORD	222	2 (0.9%)	0	No
		MELROSE	117	0 (0%)	0	
		MILTON	102	0 (0%)	0	
		NAHANT	30	0 (0%)	0	
		NEWTON	303	8 (2.6%)	0	Yes
		NORTHBOROUGH	48	0 (0%)	0	
		NORWOOD	99	0 (0%)	0	
		QUINCY	318	0 (0%)	0	
		READING	136	2 (1.5%)	0	No
		REVERE	193	8 (4.2%)	0	Yes
		SAUGUS	104	0 (0%)	0	
		SOMERVILLE	252	0 (0%)	0	
		SOUTHBOROUGH	30	0 (0%)	0	
		STONEHAM	91	0 (0%)	0	
		SWAMPSCOTT	57	0 (0%)	0	
		WALTHAM	222	2 (0.9%)	0	No
		WATERTOWN	143	0 (0%)	0	
		WESTON	45	0 (0%)	0	
		WINTHROP	102	39 (38.2%)	0	Yes
		Total: Fully Served	*5126*	*80 (1.6%)*		
Partially Served	c	BEDFORD	76	14 (18.4%)	0	Yes
		BURLINGTON	129	1 (0.8%)	0	No
		CANTON	90	0 (0%)	0	
		NEEDHAM	126	1 (0.8%)	0	No
		PEABODY	217	0 (0%)	0	
		WAKEFIELD	155	17 (11.0%)	0	Yes
		WELLESLEY	113	0 (0%)	0	
		WILMINGTON	87	0 (0%)	0	
		WINCHESTER	94	0 (0%)	0	
		WOBURN	213	3 (1.4%)	0	No
		Total: Partially Served	*1300*	*36 (2.8%)*		
		Total: Community Samples No CVA	*6426*	*116 (1.8%)*		
CVA	d	MWRA CVA Locations	105	0 (0%)	0	
		CHICOPEE	186	0 (0%)	0	
		SOUTH HADLEY FD1	60	0 (0%)	0	
		WILBRAHAM	45	0 (0%)	0	
		Total: CVA	*396*	*0 (0.0%)*		

Chlorine Residuals in Fully Served Communities

	2022	2023											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
% <0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.2	0.3
% <0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.3	1.8	1.0	1.2	1.0
% <0.5	1.5	1.2	0.7	0.5	0.3	0.3	1.0	1.2	3.1	6.2	5.2	5.7	3.2
% <1.0	3.9	2.4	1.8	1.3	1.4	1.9	3.4	4.8	12.5	16.0	13.2	14.4	8.4
% ≥1.0	96.2	97.7	98.2	98.7	98.6	98.1	96.6	95.2	87.5	84.0	86.8	85.6	91.6

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

2nd Quarter – FY24

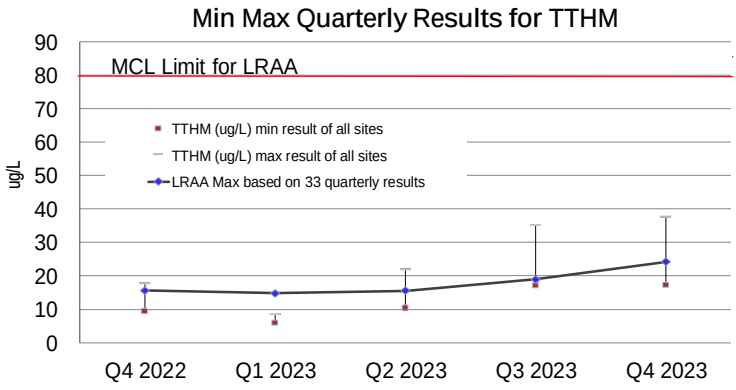
Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5s) are by-products of disinfection treatment with chlorine. They are of concern due to their potential adverse health effects at high levels. EPA's locational running annual average (LRAA) standard, using the most recent four quarterly results, is 80 µg/L for TTHMs and 60 µg/L for HAA5s. The locational running annual average at each individual sampling location must be below the standard.

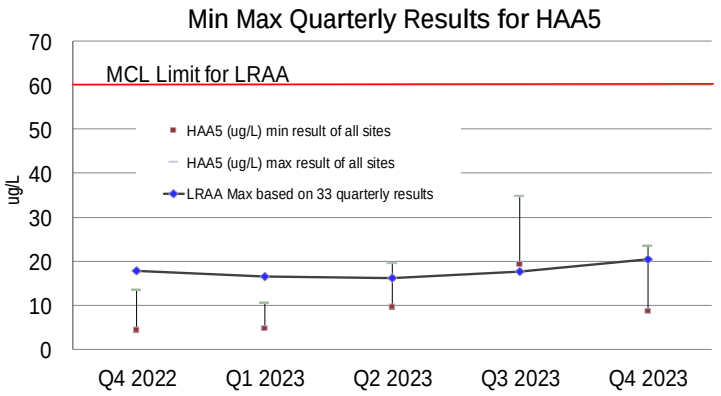
Bromate is tested monthly as required for water systems, like CWTP, that treat with ozone. EPA's RAA Maximum Contaminant Level (MCL) standard for bromate is 10 µg/L. The current RAA for Bromate at the CWTP finished water tap is 0.0 µg/L.

MWRA's TTHM and HAA5 sampling program includes sampling at 33 MetroWest and Metro Boston communities sites. Partially served and CVA communities are responsible for their own compliance monitoring and are regulated individually.

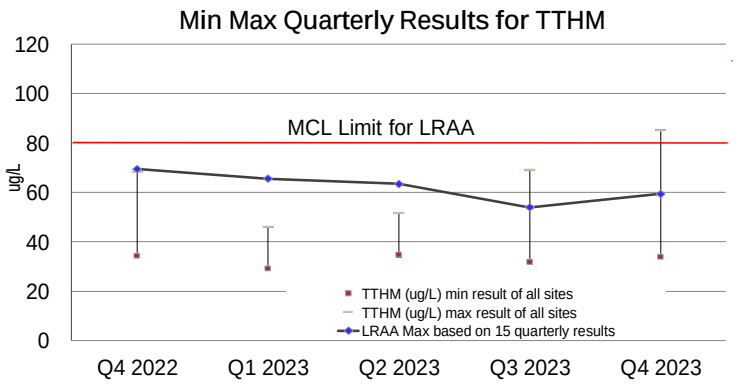
The LRAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remains below current standards. The Max LRAA in the quarter for TTHMs = 24.2 µg/L; HAA5s = 20.5 µg/L. No LRAA exceedances or violations occurred this quarter for MetroBoston and for any of the CVA communities.

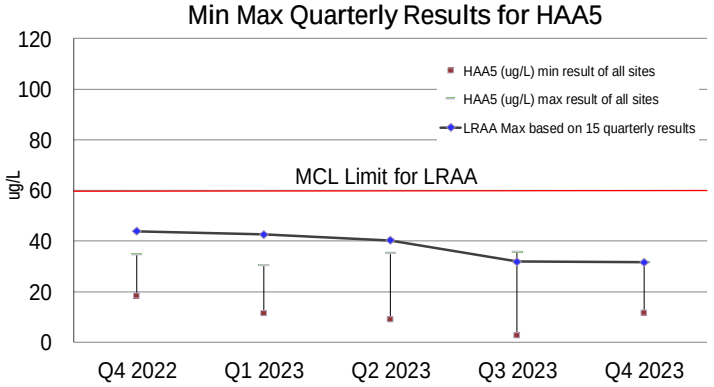
MetroBoston Disinfection By-Products





CVA Disinfection By-Products (Combined Results Chicopee, Wilbraham, & South Hadley FD1)





Water Supply and Source Water Management

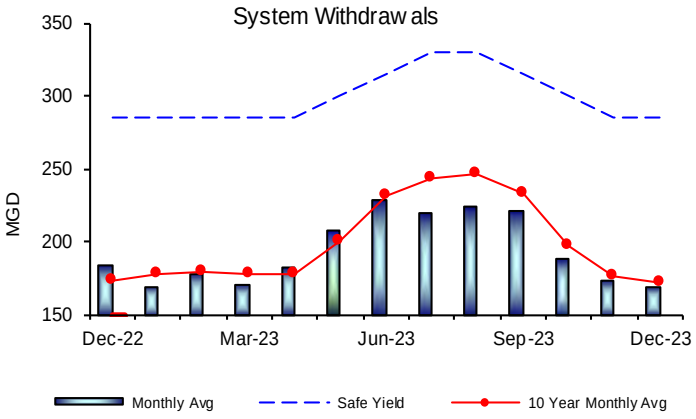
2nd Quarter – FY24

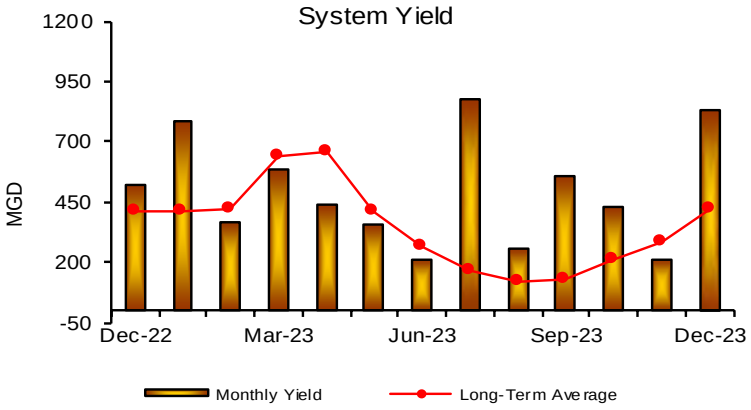
Background

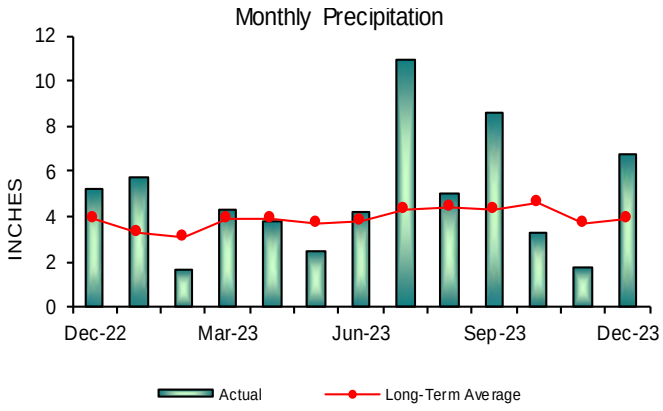
A reliable supply of water in MWRA's reservoirs depends on adequate precipitation during the year and seasonal hydrologic inputs from watersheds that surround the reservoirs. Demand for water typically increases with higher summer temperatures and then decreases as temperatures decline. Quabbin Reservoir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

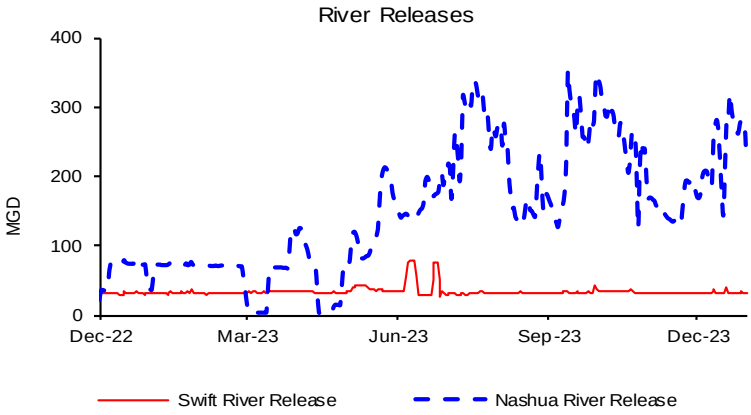
Outcome

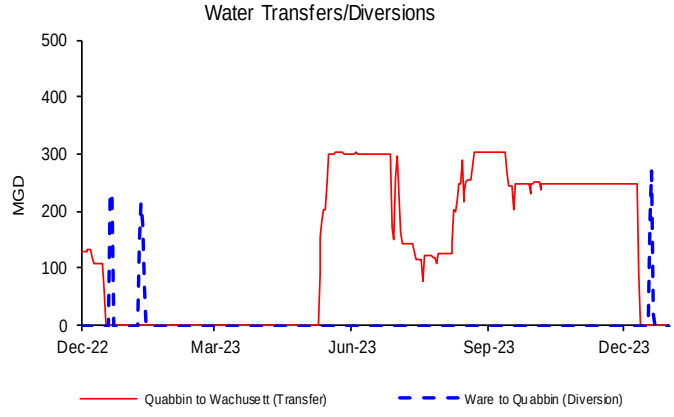
The volume of the Quabbin Reservoir was at 95.7% as of December 31, 2023; a 0.8 % increase for the quarter, which represents a gain of more than 3.1 billion gallons of storage and an increase in elevation of 0.41'. System withdrawal was below its long term quarterly average. Precipitation and Yield quarterly averages were above their respective long term quarterly averages. Quabbin is in Normal Operating Range for this time of year.

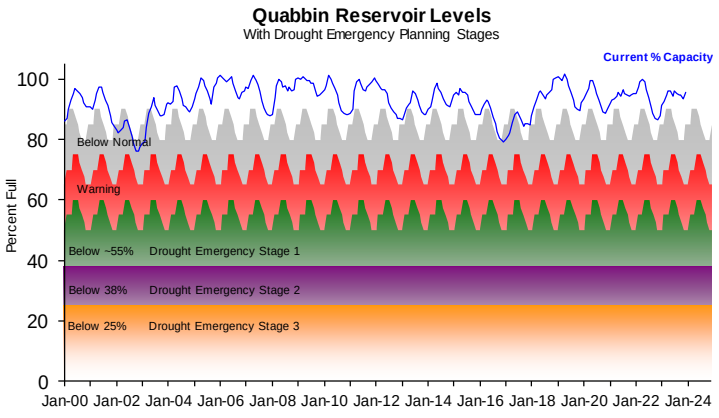












WASTEWATER QUALITY

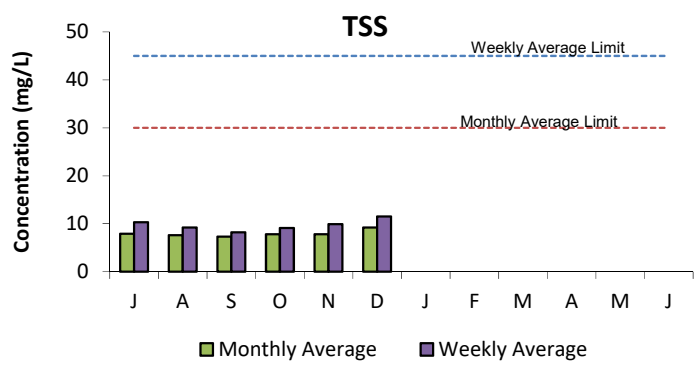
NPDES Permit Compliance: Deer Island Treatment Plant

2nd Quarter - FY24

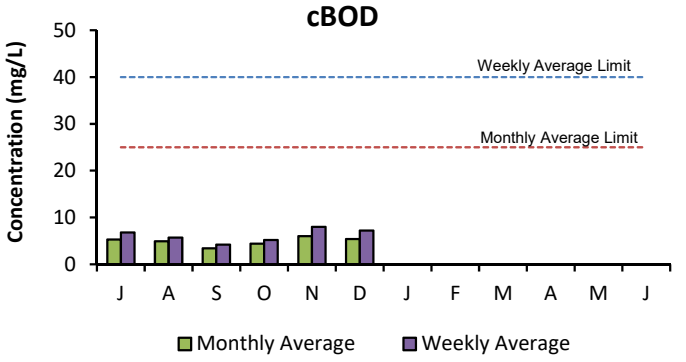
NPDES Permit Limits

Effluent Characteristics		*Units*	*Limits*	*October*	*November*	*December*	*2nd Quarter Violations*	*FY24 YTD Violations*
Dry Day Flow (365 Day Average):		mgd	436	291.3	293.4	297.7	0	0
cBOD:	Monthly Average	mg/L	25	4.4	6.0	5.4	0	0
	Weekly Average	mg/L	40	5.2	8.0	7.2	0	0
TSS:	Monthly Average	mg/L	30	7.8	7.8	9.2	0	0
	Weekly Average	mg/L	45	9.1	9.9	11.5	0	0
TCR:	Monthly Average	ug/L	456	0.0	0.0	0.4	0	0
	Daily Maximum	ug/L	631	0.0	0.0	13.3	0	0
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	18	54	117	0	0
	Weekly Geometric Mean	col/100mL	14000	7	8	19	0	0
	% of Samples >14000	%	10	0	0	0	0	0
	Consecutive Samples >14000	#	3	0	0	0	0	0
pH:		SU	6.0-9.0	6.4-6.8	6.5-6.9	6.4-6.9	0	0
PCB, Aroclors:	Monthly Average	ug/L	0.000045	UNDETECTED			0	0
Acute Toxicity:	Inland Silverside	%	≥50	>100	>100	>100	0	0
	Mysid Shrimp	%	≥50	>100	>100	>100	0	0
Chronic Toxicity:	Inland Silverside	%	≥1.5	25	50	50	0	0
	Sea Urchin	%	≥1.5	100	100	100	0	0

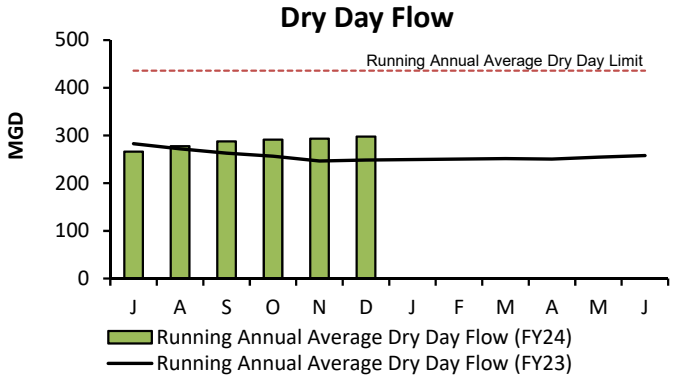
There have been no permit violations in FY24 to date at the Deer Island Treatment Plant (DITP).



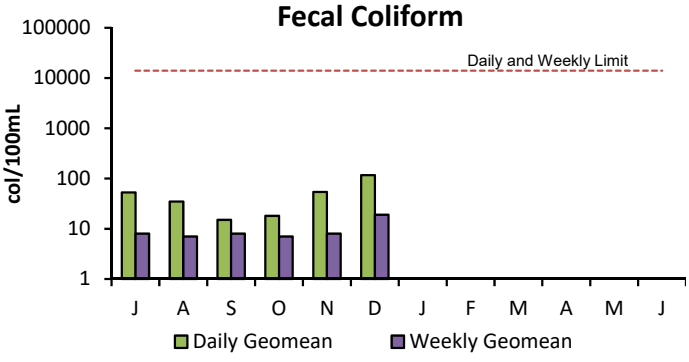
Total Suspended Solids (TSS) in the effluent is a measure of the amount of solids that remain suspended after treatment. All TSS measurements for the 2nd Quarter were within permit limits.



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 2nd 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 2nd 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 2nd Quarter, all permit conditions for fecal coliform were met.

NPDES Permit Compliance: Clinton Wastewater Treatment Plant

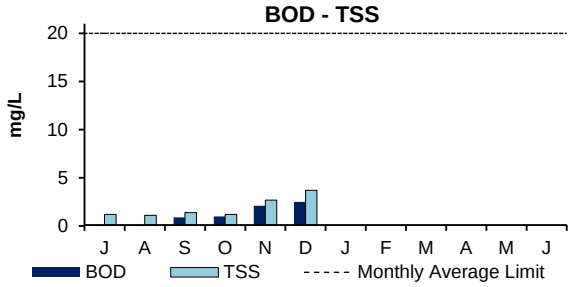
2nd Quarter - FY24

NPDES Permit Limits

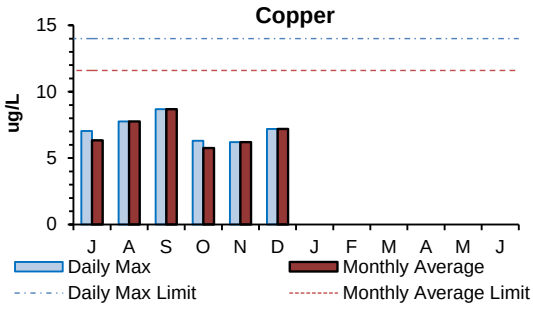
Effluent Characteristics		*Units*	*Limits*	*October*	*November*	*December*	*2nd Quarter Violations*	*FY24 YTD Violations*
Flow:	12-month Rolling Average:	mgd	3.01	3.17	3.23	3.35	3	3
BOD:	Monthly Average:	mg/L	20	1.0	2.1	2.5	0	0
	Weekly Average:	mg/L	20	1.4	3.8	3.0	0	0
TSS:	Monthly Average:	mg/L	20	1.2	2.7	3.7	0	0
	Weekly Average:	mg/L	20	1.8	4.3	5.1	0	0
pH:		SU	6.5-8.3	7.3-7.7	7.4-7.9	7-7.6	0	0
Dissolved Oxygen:	Daily Average Minimum:	mg/L	6	8.8	9.3	9.9	0	0
E. Coli:	Monthly Geometric Mean:	cfu/100mL	126	7	5	10	0	0
	Daily Geometric Mean:	cfu/100mL	409	27	7	56	0	0
TCR:	Monthly Average:	ug/L	20	0.05	<20	0.13	0	0
	Daily Maximum:	ug/L	30.4	1.67	<20	4.00	0	0
Copper:	Monthly Average:	ug/L	11.6	5.76	6.20	7.19	0	0
	Daily Maximum:	ug/L	14.0	6.30	6.20	7.19	0	0
Total Ammonia Nitrogen: November 1st - March 31st	Monthly Average:	mg/L	6.6	0.01	<0.1	<0.1	0	0
	Daily Maximum:	mg/L	35.0	0.03	<0.1	<0.1	0	0
Total Phosphorus: November 1st - March 31st	Monthly Average:	mg/L	1.00	0.06	0.15	0.14	0	0
	Daily Maximum:	mg/L	RPT	0.16	0.18	0.16	0	0
Acute Toxicity+:	Daily Minimum:	%	≥100	>100	N/A	N/A	0	0
Chronic Toxicity+:	Daily Minimum:	%	≥62.5	100.0	N/A	N/A	0	0

There have been three permit violations in FY24 at the Clinton Treatment Plant.
1st Quarter: There were no permit violations in the first quarter.
2nd Quarter: There were three permit violations in the second quarter, each for 12 month rolling-average flow.

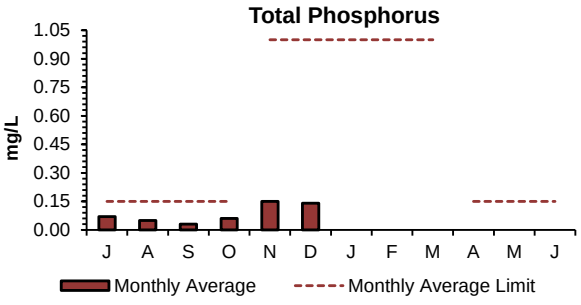
+ Toxicity testing at the Clinton Treatment Plant is conducted on a quarterly basis.



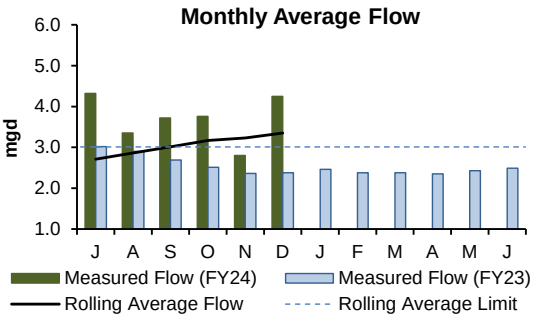
Monthly average concentrations of BOD and TSS were below permit limits in the 2nd Quarter. The permit monthly limit for both parameters is 20 mg/L.



Daily maximum and monthly average concentrations of copper were below permit limits in the 2nd Quarter. Permit daily and monthly limits are 14.0 ug/L and 11.6 ug/L respectively.



Total phosphorus limits are most stringent during the growing season from April to October.
The 2nd Quarter's monthly average concentrations for total phosphorus were below permit limits.

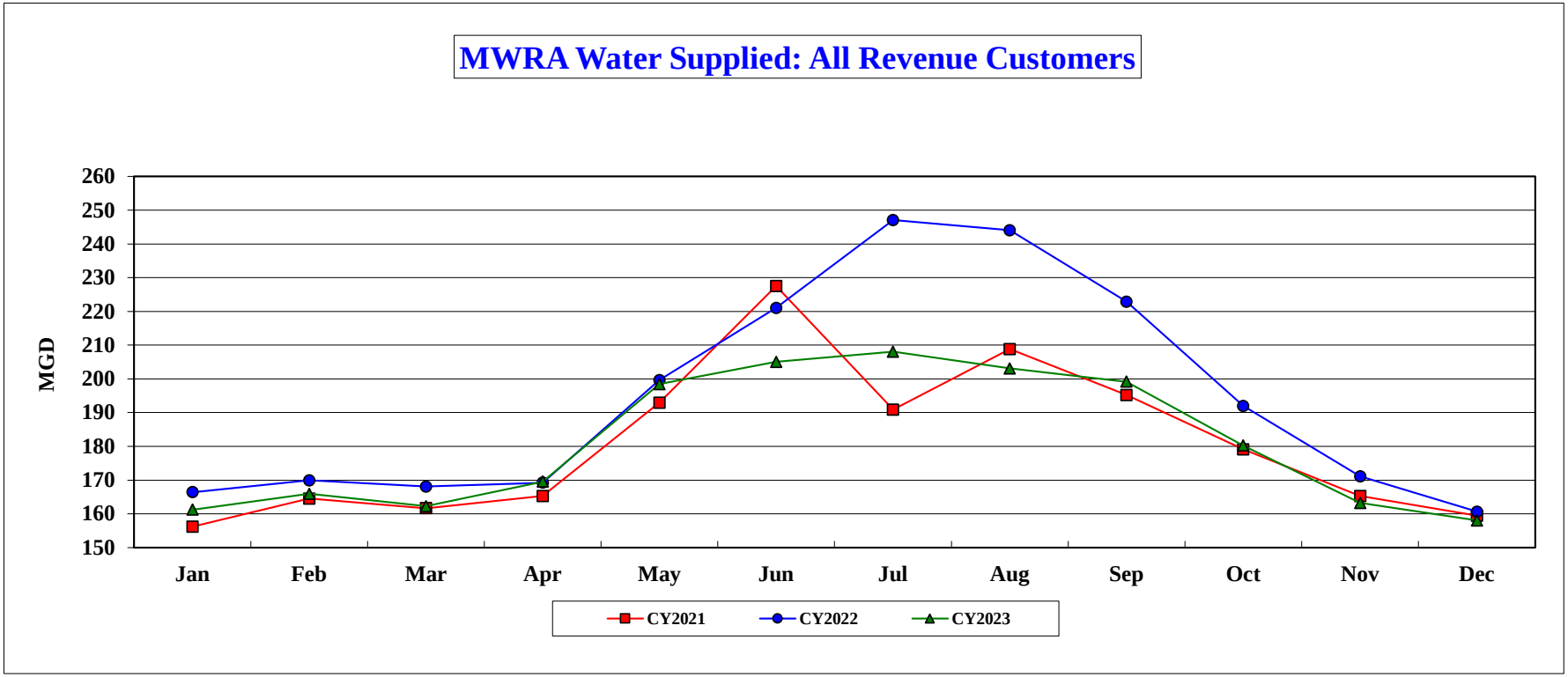


The graph depicts the rolling annual average monthly flow, measured in million gallons per day, exiting the plant.
The 12-month rolling average flows during the 2nd Quarter were above the permit limit.

COMMUNITY FLOWS AND PROGRAMS

Customer Water Use

2nd Quarter - FY24



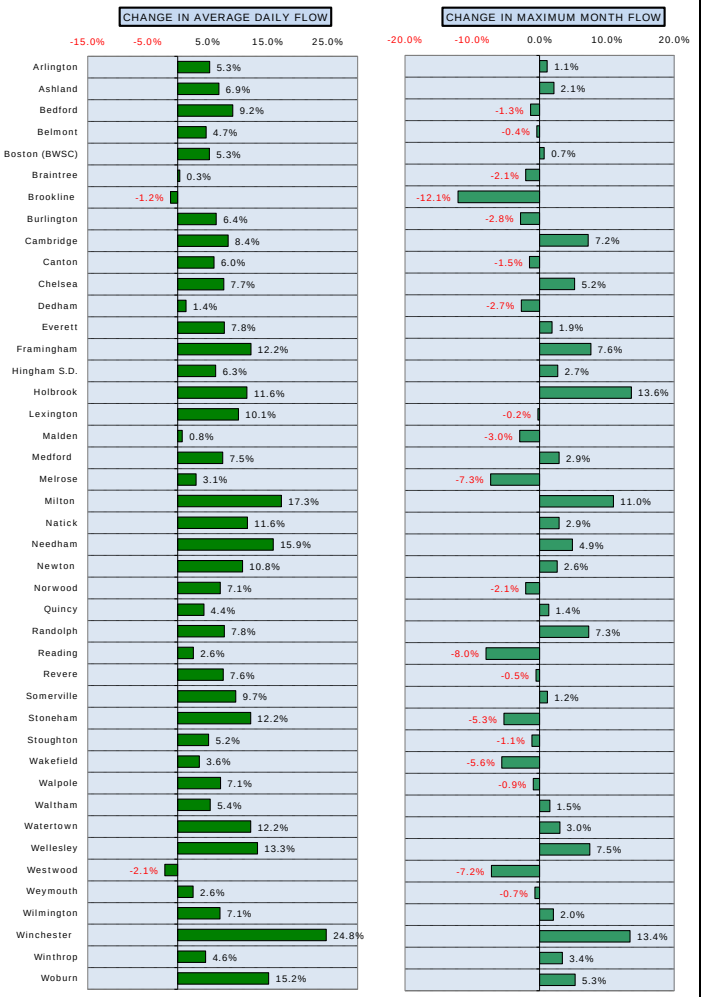
	Water Use (million gallons per day)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Annual Average
CY2021	156.213	164.567	161.697	165.284	192.998	227.522	190.945	208.810	195.229	179.116	165.302	159.442	180.641	180.641
CY2022	166.445	169.923	168.101	169.253	199.626	221.002	247.075	244.069	222.906	192.000	171.170	160.697	194.537	194.537
CY2023	161.248	165.963	162.265	169.567	198.473	205.015	208.069	203.122	199.168	180.271	163.254	158.074	181.299	181.299

The December 2023 Community Water Use Report was recently distributed to communities and customers served by the MWRA's 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 2023 water use will be used to allocate the FY2025 water utility rate revenue requirement.

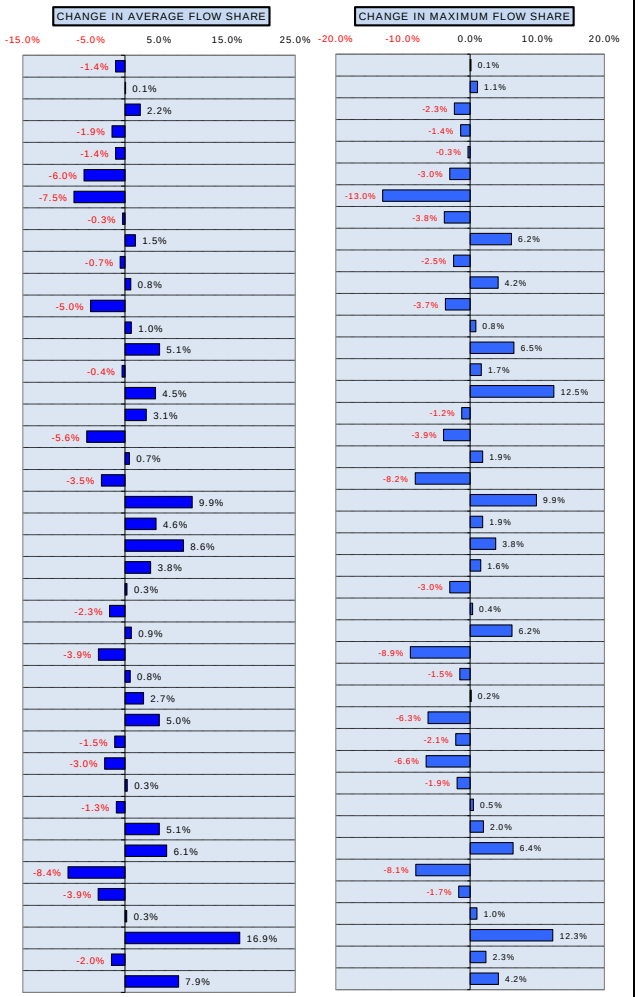
MWRA customers used an average of 167.2 mgd in the 2nd quarter (Oct-Dec 2023) of FY2024. This is a decrease of 7.4 mgd or 4.28% compared to the 2nd quarter of FY2023.

How CY2021-23 Community Wastewater Flows Could Effect FY2025 Sewer Assessments [1,2,3]

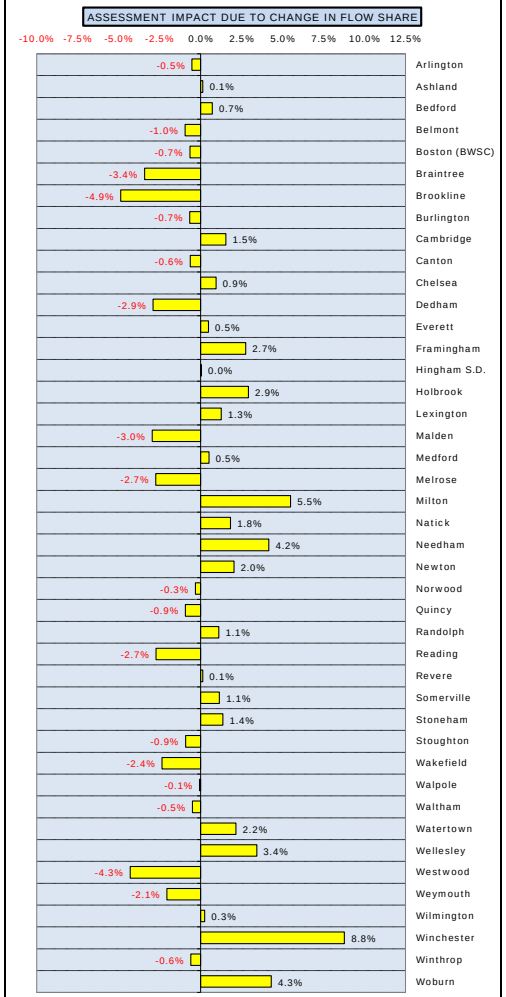
The flow components of FY2025 sewer assessments will be calculated using a 3-year average of CY2021 to CY2023 wastewater flows compared to FY2024 assessments that will use a 3-year average of CY2020 to CY2022 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2021 to CY2023 flow share compared to CY2020 to CY2022 flow share, compared to all other communities in the system.



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



[1] MWRA uses a 3-year flow average to calculate sewer assessments. Three-year averaging smoothes the impact of year-to-year changes in community flow share, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.

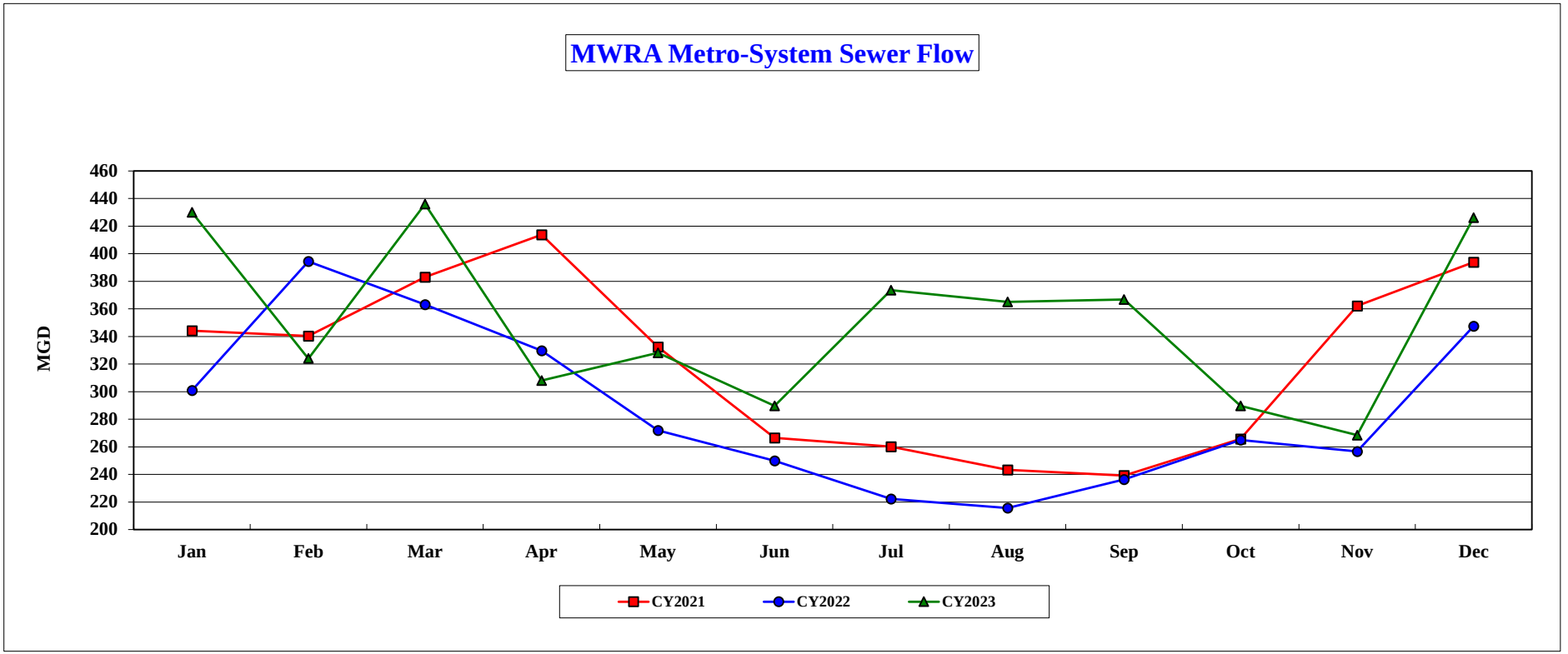
[2] Based on actual flows for 2022 and 2023, and January to March, and June to December 2020. April & May 2020 based on the average of 3 prior years, adjusted for 2020 water use. January to December 2021 estimated based on the average of the 3 prior years.

[3] Flow data is preliminary and subject to change pending additional MWRA and community review.

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

Community Sewer Flow

YTD - FY24



	Sewer Flow (million gallons per day)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Annual Average
CY2021	344.203	340.320	383.107	413.769	332.385	266.443	260.030	243.310	239.147	265.670	362.143	393.833	320.199	320.199
CY2022	300.930	394.400	363.110	329.710	271.890	249.840	222.280	215.600	236.380	264.960	256.590	347.420	287.098	287.098
CY2023	430.059	323.982	435.989	308.114	328.164	289.697	373.541	365.133	366.840	289.680	268.474	426.074	351.159	351.159

The 2023 12-Month Community Sewer Flow Report was recently distributed to the 43 communities served by the MWRA's Metropolitan sewer system. Each community's share of sewer flow relative to the system as a whole is used to allocate the annual sewer rate revenue requirement to MWRA sewer communities. The average of calendar year 2021-2023 sewer flow will be used to allocate the FY2025 sewer utility rate revenue requirement.

MWRA customer sewer flow averaged 351.2 mgd in CY2023. This is an increase of 61.1 mgd or 22.3% compared to CY2022.

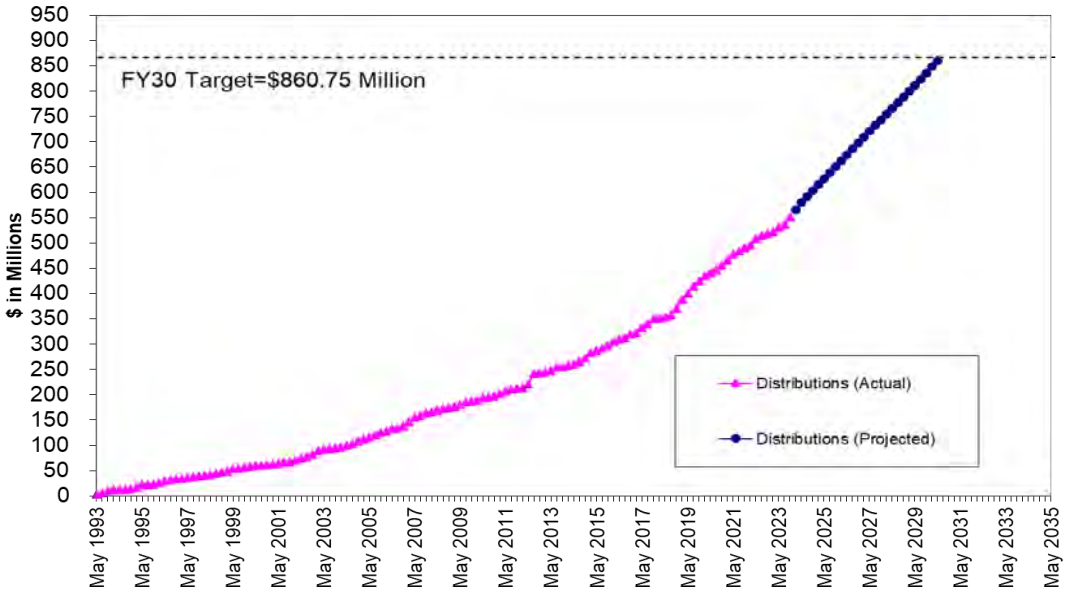
Community Support Programs

2nd Quarter – FY24

Infiltration/Inflow Local Financial Assistance Program

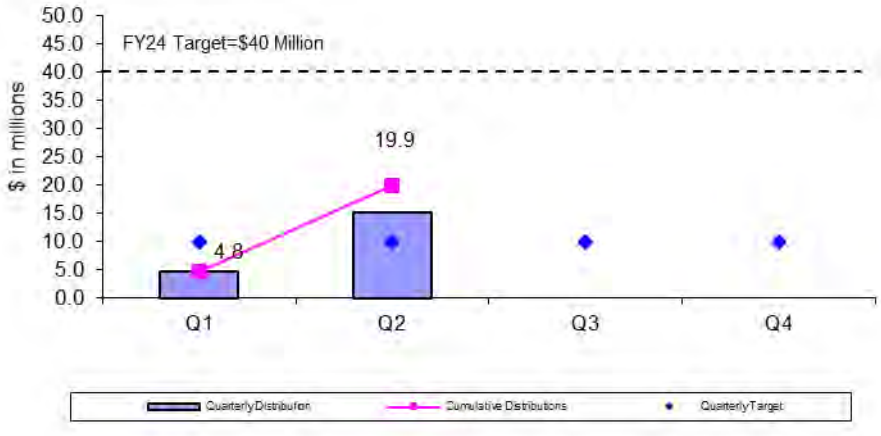
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides $860.75 million in grants and interest-free loans (average of about $22 million per year from FY93 through FY30) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned 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. Phase 14 funds (total $100 million) are distributed as 75% grants and 25% loans with interest-free loans repaid to MWRA over a ten-year period.

I/I Local Financial Assistance Program Distribution FY93-FY30



During the 2nd Quarter of FY24, $15.1 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Boston, Brookline, Dedham, Somerville, Stoneham, Wakefield, and Westwood. Total grant/loan distribution to date for FY24 is $19.9 million. From FY93 through the 2nd Quarter of FY24, all 43 member sewer communities have participated in the program and $551 million has been distributed to fund 676 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.

FY24 Quarterly Distributions of Sewer Grant/Loans



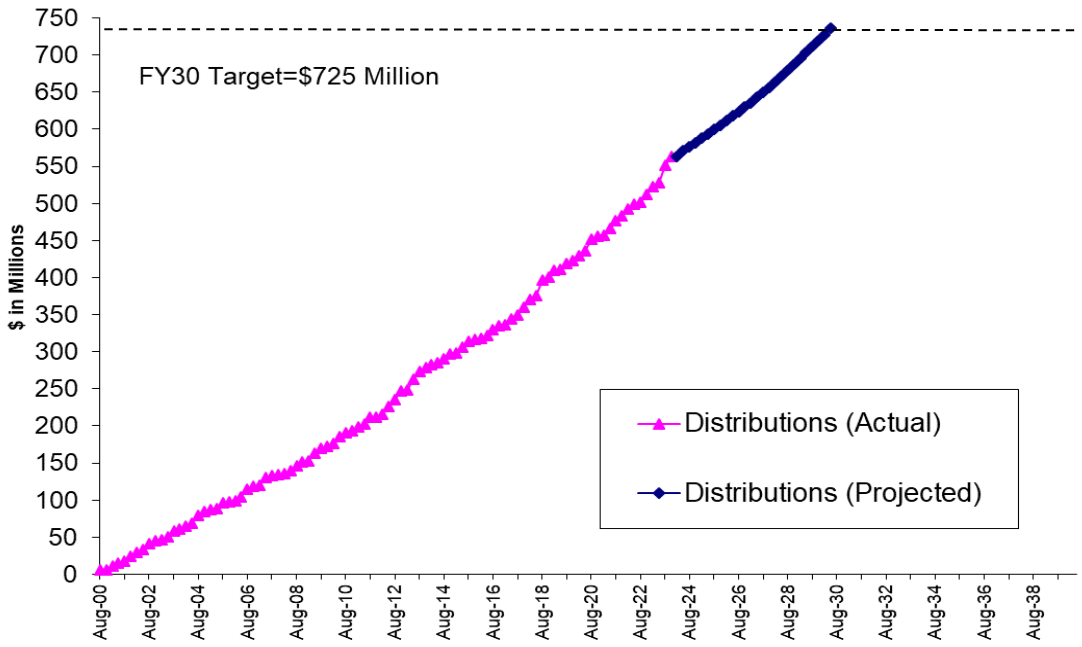
Community Support Programs

2nd Quarter – FY24

Local Water System Assistance Program

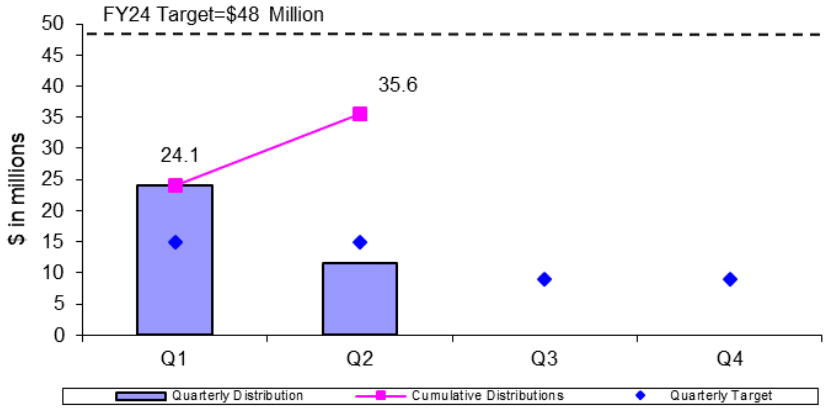
MWRA's Local Water System Assistance Programs (LWSAP) provides $725 million in interest-free loans (an average of about $24 million per year from FY01 through FY30) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. There have been three (3) funding 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 FY25. The Phase 3 Water Loan Program is authorized for distributions from FY18 through FY30.

Local Water System Assistance Program Distribution FY01-FY30



During the 2nd Quarter of FY24, $11.5 million in interest-free loans was distributed to fund local water projects in Boston, and Newton. Total loan distribution to date for FY24 is $35.6 million. From FY01 through the 2nd Quarter of FY24, $563 million has been distributed to fund 529 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.

FY24 Quarterly Distributions of Water Loans



Community Support Programs

2nd Quarter – FY24

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. To date, $41.3 million dollars have been distributed to 17 communities.

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 seven Lead Loans.

FY22 is the sixth year of the Lead Loan Program - MWRA made six Lead Loans.

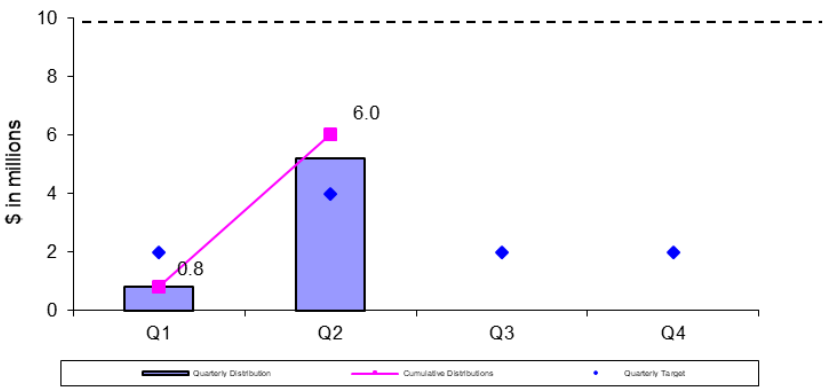
FY23 is the seventh year in the Lead Loan Program - MWRA has made six Lead Loans.

FY24 is the eighth year in the Lead Loan Program - MWRA has made five Lead Loans in the first two quarters.

Summary of Lead Loans:

Chelsea in FY24	$0.30	Million	Everett in FY20	$0.50	Million
Melrose in FY24	$1.04	Million	Marlborough in FY20	$1.00	Million
Lexington in FY24	$3.88	Million	Winchester in FY20	$0.60	Million
Watertown in FY24	$0.30	Million	Winthrop in FY20	$0.70	Million
Malden in FY24	$0.50	Million	Weston in FY20	$0.20	Million
Chelsea in FY23	$0.50	Million	Everett in FY20	$1.00	Million
Watertown in FY23	$0.30	Million	Somerville in FY20	$0.90	Million
Winthrop in FY23	$0.70	Million	Chelsea in FY20	$0.30	Million
Reading in FY23	$1.50	Million	Marlborough in FY19	$1.00	Million
Watertown in FY23	$0.30	Million	Winthrop in FY19	$0.50	Million
Winchester in FY23	$0.60	Million	Chelsea in FY19	$0.10	Million
Everett in FY22	$1.50	Million	Everett in FY19	$1.00	Million
Boston in FY22	$0.90	Million	Needham in FY18	$1.00	Million
Winthrop in FY22	$0.80	Million	Winchester in FY18	$0.50	Million
Somerville in FY22	$1.60	Million	Revere in FY18	$0.20	Million
Revere in FY22	$1.30	Million	Winthrop in FY18	$0.30	Million
Chelsea in FY22	$0.30	Million	Marlborough in FY18	$1.00	Million
Watertown in FY21	$0.60	Million	Newton in FY17	$4.00	Million
Marlborough in FY21	$2.00	Million	Quincy in FY17	$1.50	Million
Everett in FY21	$1.50	Million	Winchester in FY17	$0.50	Million
Boston in FY21	$2.60	Million			
Winthrop in FY21	$0.80	Million	TOTAL	$41.3	Million
Chelsea in FY21	$0.30	Million			
Winchester in FY21	$0.60	Million			

FY24 Quarterly Distributions of Lead Service Line Replacement Loans

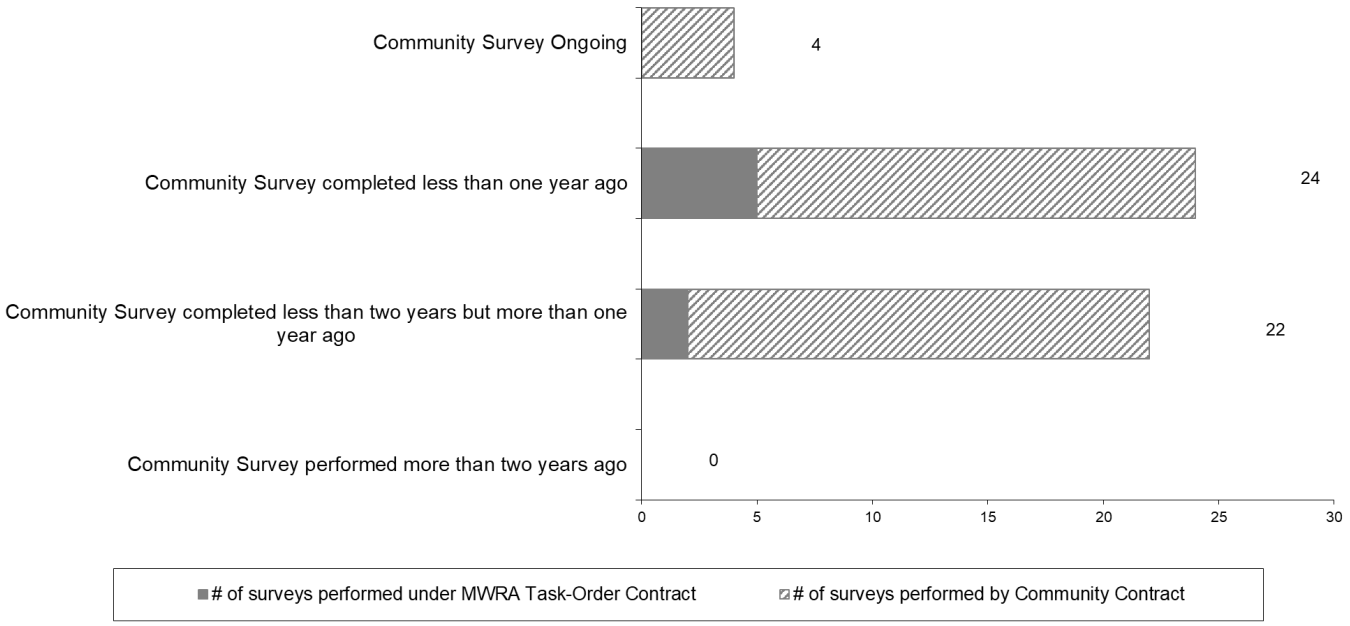


Community Support Programs

2nd Quarter – FY24

Community Water System Leak Detection

To ensure member water communities identify and repair leaks in locally-owned distribution systems, MWRA developed leak detection regulations that went into effect in July 1991. Communities purchasing water from MWRA are required to complete a leak detection survey of their entire distribution system at least once every two years. Communities can accomplish the survey using their own contractors or municipal crews; or alternatively, using MWRA's task order leak detection contract. MWRA's task order contract provides leak detection services at a reasonable cost that has been competitively procured (3-year, low-bid contract) taking advantage of the large volume of work anticipated throughout the regional system. Leak detection services performed under the task order contract are paid for by MWRA and the costs are billed to the community the following year. During the 2nd Quarter of FY24, 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, and toilet leak detection dye tabs), 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	357	8,330			8,687
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	1,175	796			1,971
Toilet Leak Detection Dye Tablets	_____	1,065	193			1,258

BUSINESS SERVICES

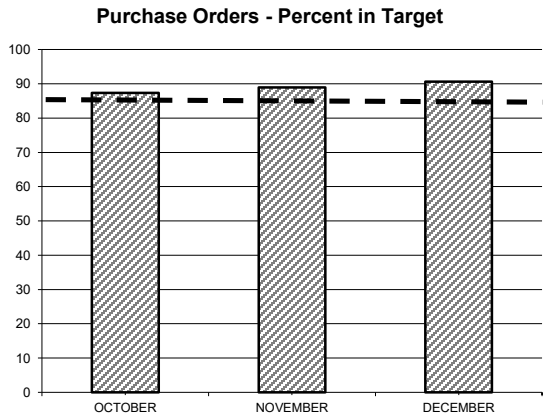
Procurement: Purchasing and Contracts

2nd Quarter - FY24

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

Highlights: Processed 93% of purchase orders within target; Average Processing Time was 4.14 days vs. 5.04 days in Qtr 2 of FY23. Processed 53% (8 of 15) of contracts within target timeframes; Average Processing Time was 172 days vs. 199 days in Qtr 2 of FY23.

Purchasing



	No.	TARGET	PERCENT IN TARGET
$0 - $500	448	3 DAYS	83.0%
$500 - $2K	622	7 DAYS	95.3%
$2K - $5K	330	10 DAYS	98.1%
$5K - $10K	164	25 DAYS	100.0%
$10K - $25K	66	30 DAYS	89.3%
$25K - $50K	15	60 DAYS	86.6%
Over $50K	19	90 DAYS	100.0%

The Purchasing Unit processed 1664 purchase orders, 14 less than the 1678 processed in Qtr 2 of FY23 for a total value of $7,668,533 versus a dollar value of $11,782,181 in Qtr 2 of FY23.

The purchase order processing target was not met for the $0 - $500 dollar category due to vendor delays providing quotes and end user approvals.

Contracts, Change Orders and Amendments

Procurement executed fifteen contracts with a value of $375,324,349 and thirteen amendments with a value of $2,936,238. Seven contracts were not executed within the target timeframes. One contract was cancelled due to the inability of the contractor to obtain DCAMM re-certification. Another contract was delayed due to delays obtaining permits resulting in a project time extension. A third contract was delayed due to a significant number of addendas which extended the bid opening date in addition to the need for considerable discussion regarding the status of the low bidder. An additional three contracts were delayed due to the consultant's use of a large number of sub-consultants resulting in delayed cost data submittals. The final contract was delayed given that the contract required a two-stage procurement process resulting in a longer processing time.

Staff reviewed 53 proposed change orders and 21 draft change orders.
Twenty three change orders were executed during the period. The dollar value of all non-credit change orders during Qtr 2 was $1,380114 and the value of credit change orders was ($3,556,415).

Note: A credit change order is a change order that results in a decrease in contract value.

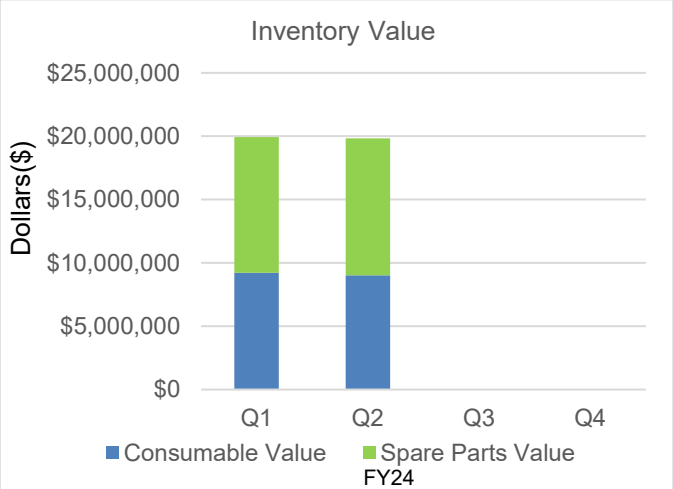
Materials Management

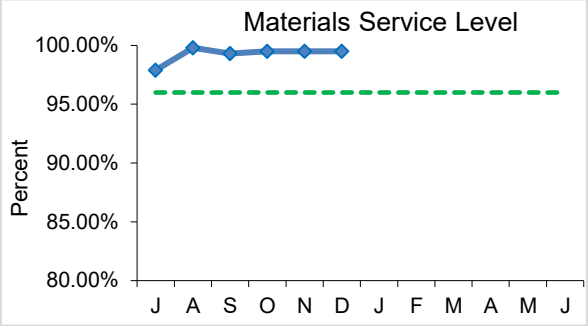
2nd Quarter - FY24

The Materials Management department manages the three regional warehouses (Chelsea, Deer Island and Southboro). This includes the replenishment and receipt of both consumable and spare parts items to meet the needs of the MWRA. Additionally, MWRA tools and equipment are safeguarded through the Property Pass unit within the Materials Management department.

Inventory goals focus on:

- Maintaining optimum levels of consumables inventory (office supplies, electrical, safety, etc.) and spare parts inventory (critical items such as actuators, motors, muffin monsters, etc.) necessary to support MWRA Operations and Maintenance. Typically spare parts carry longer lead times.
- 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.

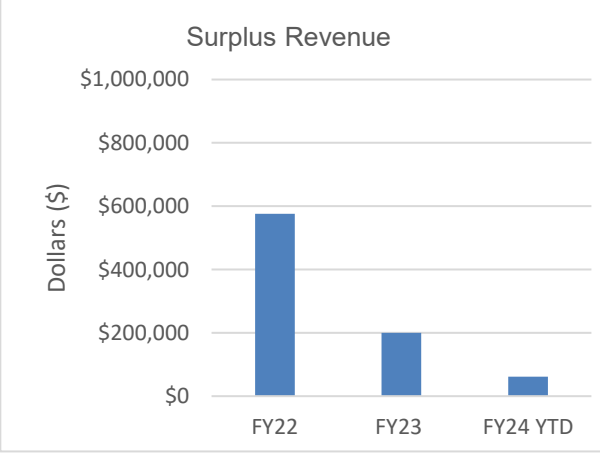


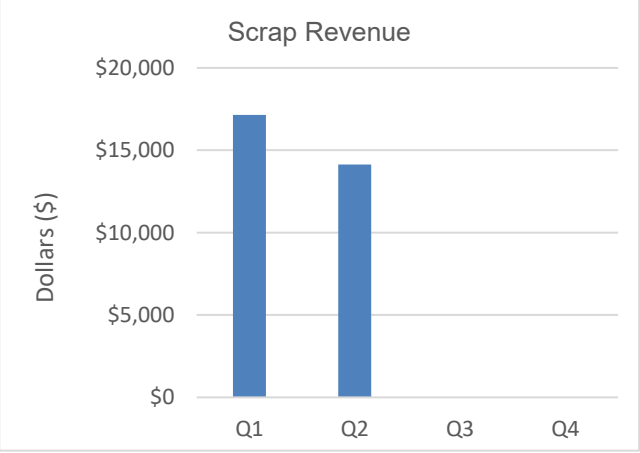


The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 7,626 (99.5%) of the 7,667 items requested in Q2 from the inventory locations for a total dollar value of $610,308.

Property Pass Program:

- Conducts audits of tools and equipment to ensure the safeguarding of MWRA assets.
- Manages the disposition and sale of surplus tools and equipment through GovDeals, an online auction site.
- Manages the surplusing of scrap metals and materials generating revenue to the MWRA staff.

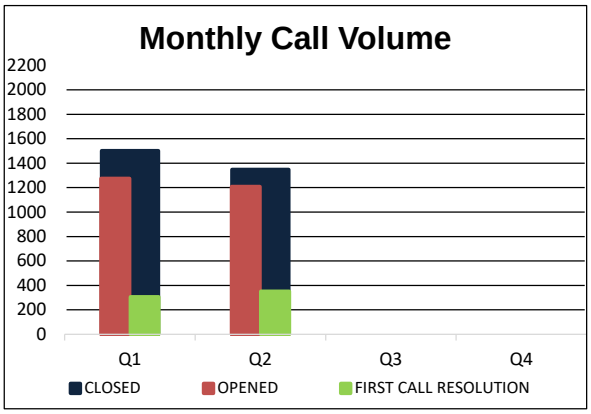




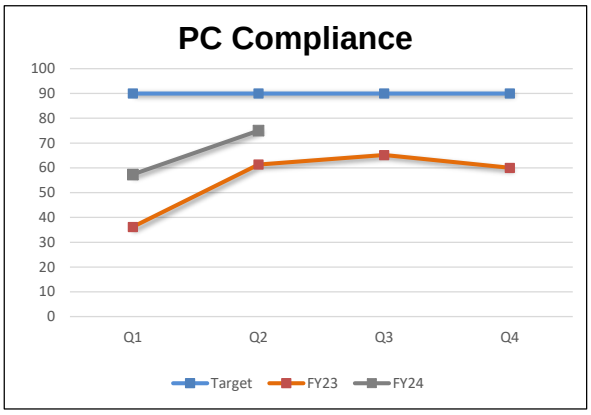
MIS Program

2nd Quarter – FY24

Numbers & Statistics



Summary of calls managed by the Helpline.



Percentage of user endpoints that are in compliance with system updates. These numbers are a direct reflection of accessibility to these systems. Daytime patching began in January for mobile devices.

Project Updates

Infrastructure & Security

Network Resiliency Improvements: SD-WAN implementation completed at all MPLS sites. Migration of branch offices to Fortigate firewalls underway. Wirelesss network expanded to DI Admin Lab 3rd & 4th floor, Cosgrove, Southboro, and CWTP.

VMWare Workspace ONE: Smartphone users migrated to the new solution for email access on mobile devices. MIS staff devices migrated to new WorkspaceONE and all new device deployments will be on WorkspaceONE.

Conference Room Media Upgrades: Upgraded 13 of 16 conference rooms have been to new MWRA meeting standard across the Authority. Three rooms are awaiting procurement of additional media kits.

Security Awareness Training: Cyber Security Training rolled out at the start of October. 62 % of staff (690/1120) completed training during the quarter.

VOIP: Migrated additional DITP extensions to Cisco VOIP solution, remaining migrations pending cabling upgrades.

MFD Hardware Refresh: Completed hardware refresh of 64 MFDs

Core Switch Hardware Refresh: Kickoff held and switches being configured by vendor. Implementation scheduled to begin in March.

Oracle Database Upgrades: Completed upgrades of Dev, Test and Production databases.

Library, Record Center, & Training

Library: Undertook 10 research requests, supplied books and reports for circulation. Renewed various library subscriptions. The MWRA Library Portal supported 430 end user searches. Research topics included: Common Algae in freshwater, foundation of dynamic equipment and Nitrogen removal in an oxygen facility.

Record Center (RC): Added 37 new boxes to the RC and handled 125 total boxes. The RC Manager attended 2 virtual RCB meetings. The RC shredded on-site eight 65-gallon bins, and one 96-gallon bin of confidential documentation. The RC performed 29 database/physical box searches for various departments. Research included: Invoices, staff summaries, AP vouchers. Geo samples and project related information. The RC staff is involved in on-going ECM training and testing to upgrade our Record Management database.

MIS Training: In Q2, 3 online IT lessons were taken (8 YTD), by 62 employees (124 YTD).

Applications

ECM/Electronic Document Management: Completed User Acceptance Testing and went live with all Engineering and Construction workflows in mid-November. Continued to work with vendor to fix minor issues as they occur. Plan to migrate all DITP drawings into production in January.

MWRA Website Refresh: Received the first iteration of the new mwra.com. MWRA and the vendor are working together to test and update the new site with all of the information from the old site. Go live planned for early 2024.

Infor Upgrade/Migration: MIS, end users and the vendor completed the project kick off, current state review and the Reports, Integrations, Customizations and Extensions (RICE) discovery. The SaaS (cloud) environments are configured and integrated with OKTA. Began preparation for the data migration and conference room pilot (design workshop – planned for in early February). MIS staff attended a technical training workshop hosted by the vendor.

Maximo/Lawson Interface: Currently in final preparations for User Acceptance Testing (UAT). Development is complete, messages that need to be reprocessed due to errors are being analyzed for remediation and reprocessing and reports have been completed. Configured the Maximo Test server for use in testing. UAT expected to finish in February with a production implementation planned for late March.

Discoverer to Business Objects Enterprise (BOE) Migration: Successfully completed this upgrade and migration project. Upgraded all Business Object reports to BOE version 4.3 and migrated the Oracle Discoverer reports to the SAP Webi platform. Training was provided to end users and administrators.

Maximo Version Upgrade: MIS staff continues to configure and validate the upgraded development and test environments that are using the latest versions of the application. Once validated, the production environment will be built and implemented as part of the Maximo-Lawson Interfaces project. MIS staff is also reviewing application security groups and reconciling user access against licensing entitlements.

Legal Matters

2nd Quarter FY2024

PROJECT ASSISTANCE – 2nd Quarter FY 2024

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

- **8(m) Permits and License Agreements:** Reviewed eighty-nine (89) 8(m) permits, including any related MEPA Section 61 Findings.

- **Real Property:** Assisted with notice of offer letter, an offer of acceptance, grant of easements, trustees' certificate, plans, and six licenses related to the acquisition of certain property rights needed for MWRA Contract 6224/6225 - Siphon and Junction Rehabilitation Phase I and MWRA Contract 7991/6898 – West Roxbury Tunnel Inspection – Sections 637 and 637A.

  Assisted with three draft notices of offer and plan related to the acquisition of certain property rights needed for MWRA Contract 7117 - Northern Intermediate High Section 89 Pipeline. Reviewed property rights in Newton for existing water main in Commonwealth Avenue.

  Reviewed property rights in West Newton in the area of Cheesecake Brook.

  Prepared staff summary and three eminent domain orders of taking and related documents for the acquisition of certain property rights needed for MWRA Contract 6224/6225 - Siphon and Junction Rehabilitation Phase I and MWRA Contract 7991/6898 – West Roxbury Tunnel Inspection – Sections 637 and 637A. Reviewed new plan and easement locations related to the acquisition of certain property rights needed for MWRA Contract 7117 - Northern Intermediate High Section 89 Pipeline.

  Drafted cease and desist order for unpermitted work being performed at 352 Broadway in Saugus in the immediate vicinity of MWRA's Section 70 Northern High Service water pipeline. Assisted with preparation of materials for surplus of an sewer easement on Charles Park Road, Boston to DCAMM.

  Finalized three eminent domain orders of taking and related documents and three notice of taking letters for the acquisition of certain property rights needed for MWRA Contract 6224/6225 - Siphon and Junction Rehabilitation Phase I and MWRA Contract 7991/6898 – West Roxbury Tunnel Inspection – Sections 637 and 637A.

  Assisted with notices of offer related to the acquisition of certain property rights needed for MWRA Contract 7117 - Northern Intermediate High Section 89 Pipeline. Assisted with Notice to Extend Records Center Lease Temporary Expansion Space.

- **Energy:** Reviewed public notice regarding the Department of Public Utilities investigation of the *Petition of Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, pursuant to G.L. c. 164, § 94 and 220 CMR 5.00, for Approval of a General Increase in Base Distribution Rates for Electric Service and a Performance-Based Ratemaking Plan*. D.P.U. 23-150.

- **Environmental:** Assisted Operations and Procurement with Pellet Plant Operator solicitation and draft contractor agreement.

  Assisted Operations in the preparation of comments regarding the draft NPDES permit, and related state permit, for the Deer Island Treatment Plant.

Prepared and finalized First Amendments to the Memorandum of Understanding and Financial Assistance Agreement with the Boston Water and Sewer Commission for the implementation of Fort Point Channel and Mystic/Chelsea Confluence Combined Sewer Overflow Control Projects.

- **Miscellaneous:** Participated as a Selection Committee Member in the RFQ/P for Broker/Dealer Services, MWRA Contract No. F271. Participated as a Selection Committee Member in the RFQ/P for Bond Counsel services, MWRA Contract F273. Reviewed and edited MCLE Environmental Law chapter regarding the Authority's history, intent, and key provisions.

  Assisted Tunnel Redundancy Program regarding access notice letters for test borings on various properties. Reviewed Massachusetts House Bill H.2096.

- **Public Records Requests:** During the months of October, November and December 2023, MWRA received and responded to one hundred fifty two (152) public records requests.

LITIGATION/CLAIMS – 2nd Quarter FY 2024

New Lawsuits:

- There are three new lawsuits in the 2nd Quarter FY 2024

  In Re: Zymergen, Inc., et al.; USBC Delaware Case No. 23-11661-KBO
  On Nov 6, 2023 Law Division received a Notice of Chapter 11 bankruptcy. Law Division determined that MWRA does not have a claim as a creditor.

  In re Rite Aid Corp. et al., USBC New Jersey, Case No. 23-18993
  On December 1, 2023, Law Division received a Notice of Chapter 11 bankruptcy. Law Division determined that MWRA does not have a claim as a creditor.

  In re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation, USDC (E.D. N.Y.), MDL 1720 (MKB)
  MWRA received notice of a class action settlement with Visa, MasterCard and their issuing banks. Plaintiffs alleged that defendants wrongfully inflated Interchange fees from January 1, 2004 through January 25, 2019.

New Claims:

- There are no new claims in 2nd Quarter FY 2024.

Significant Developments:

- In re Aqueous Film-Forming Foam Products Liability Litigation, MDL No. 2:18-mn-02873-RMG
  U.S. District Court for the District of South Carolina: PFAS Class Action Settlements
  MWRA filed Requests for Exclusion, opting out of settlements in these class actions.

- (Current employee) v. MWRA, et al.; Suffolk Superior Court C.A. No. 284CV01434.
  Mediation conducted.

Closed Cases:

- There was one closed case in 2nd Quarter FY 2024:

  MWRA v. Department of Unemployment Assistance and (former employee), Chelsea District Court, 2314CV180. The Court allowed MWRA's Motion for Judgment on the Pleadings and reversed the DUA's decision, ordering the entry of a finding of ineligibility. The DUA had sixty days to appeal by October 10. No appeal filed, the matter is closed.

Closed Claims:

- There was one closed claim in 2nd Quarter FY 2024:

Edgar G: Marques MVA Claim: Settled for $50,000. Release executed and the matter is closed.

Subpoenas:

- During the 2nd Quarter FY 2024, one subpoena was received and one subpoena is pending.

Wage Garnishments

- There is one wage garnishment matter that is active and monitored by Law Division.

SUMMARY OF PENDING LITIGATION MATTERS

TYPE OF CASE/MATTER	As of Dec 2023
Construction/Contract/Bid Protest	1
Tort/Labor/Employment	3
Environmental/Regulatory/Other	3
Eminent Domain/Real Estate	0
TOTAL	**7**
Other Litigation matters (restraining orders, etc.) - Class Action suits	2
TOTAL – all pending lawsuits	**9**
Claims not in suit	0
Bankruptcy	5
Wage Garnishment	1
TRAC/Adjudicatory Appeals	3
Subpoenas	1
TOTAL – ALL LITIGATION MATTERS	**19**

TRAC/MISC. ADMIN. APPEALS

Appeals Pending:

- There are three pending TRAC appeals in 2nd Quarter FY 2024:

  1058 Beacon Street, Newton, MA; MWRA Docket No. 22-01

  Tri-Town Regional Water District; MWRA Docket No. 23-03

  Marriott Courtyard Downtown Boston; MWRA Docket No. 23-04

Settlement by Agreement of Parties	A Settlement Agreement Term Sheet was executed during the Second Quarter FY 2024.
Stipulation of Dismissal	No Stipulations of Dismissal filed in 2nd Quarter FY 2024.
Notice of Dismissal Fine paid in full	No Notices of Dismissal, Fines Paid in Full in 2nd Quarter FY 2024.
Tentative	No Tentative Decisions were issued in 2nd Quarter FY 2024.
Final Decisions	No Final Decisions were issued in 2nd Quarter FY 2024.

LABOR AND EMPLOYMENT – 2nd Quarter FY 2024

New Matters

- A former employee filed an appeal of the Department of Unemployment Assistance's determination that the former employee was disqualified from receiving unemployment benefits.

- A Union filed a request for arbitration after the MWRA denied a grievance alleging that the MWRA unjustly suspended a Union member and disputing that the member engaged in inappropriate and unprofessional behavior toward his supervisor.

Significant Developments

- The Department of Labor Relations deferred to arbitration a charge of prohibited practice in which a Union alleged that the MWRA unilaterally altered working conditions when it filled an open position with an employee in an acting role.

Matters Concluded

- The Massachusetts Commission Against Discrimination dismissed two charges that an employee filed against the MWRA for discrimination and retaliation, after mediation and settlement.

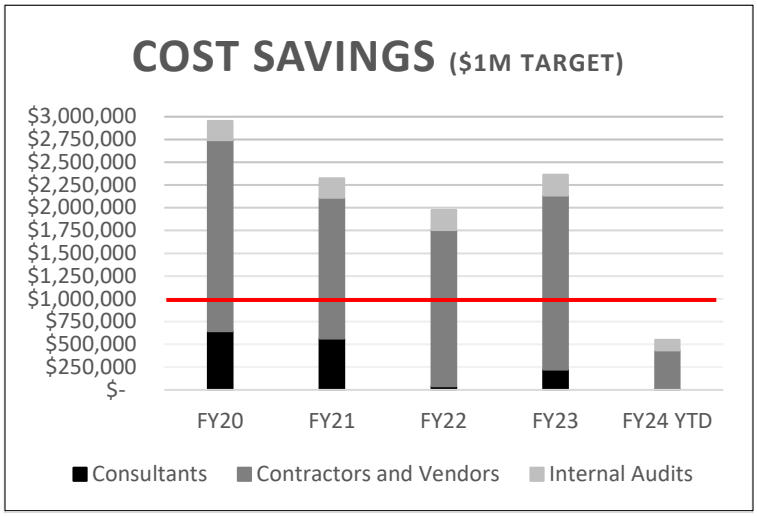
INTERNAL AUDIT AND CONTRACT AUDIT ACTIVITIES

2nd Quarter - FY24

Purpose

Internal Audit evaluates the effectiveness of internal controls and procedures and monitors the quality, efficiency and integrity of the Authority's operating and capital programs. Through our audits and reviews, we assess whether internal controls are functioning as intended and that only reasonable, allowable and allocable costs are paid to consultants, contractors and vendors.

Cost Savings	FY24 YTD
Consultants	$8,302
Contractors and Vendors	$426,142
Internal Audits	$117,110
Total	$551,554



Highlights

During the 2nd quarter FY24, an audit of Accounts Payable Process controls and procedures and an audit of Payroll Process controls and procedures progressed and are nearing completion. A review of travel reimbursement (employee owned car usage) is nearing completion and an internal review of MIS assets is progressing.

In addition, IA completed 1 incurred cost audits, 3 labor burden reviews, and 1 consultant preliminary reviews. There are 4 incurred cost audits, 2 labor burden reviews, and 1 consultant review in process. IA also issued 30 indirect cost rate letters to consultants following a review of their consultant disclosure statements. Internal Audit has continued to monitor Harbor Electric Energy Company (HEEC) Cross-Harbor Cable project costs as incurred and reviewed HEEC's filing with the DPU.

Internal Audit participated in the Operations and Maintenance of the Fore River Pelletizing Plant selection process. Internal Audit has also supported various policy updates.

Status of Recommendations

During FY24, 2 recommendations were closed.

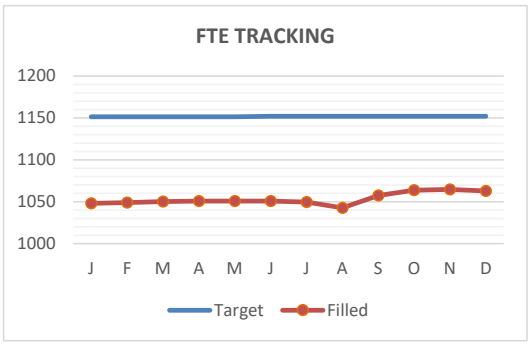
IA follows-up on open recommendations on a continuous basis. All open recommendations have target dates for implementation and are generally targeted to be closed within 12 months of the audit report issue date.

Report Title (issue date)	**Audit Recommendations**		
	Open	**Closed**	**Total**
Water and Wastewater Licenses and Certifications (3/31/23)	**0**	***3***	***3***
Total Recommendations	***0***	***3***	***3***

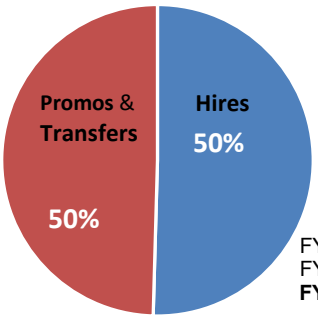
OTHER MANAGEMENT

Workforce Management

2nd Quarter - FY24



Position Filled by Hires/Promos & Transfer for YTD



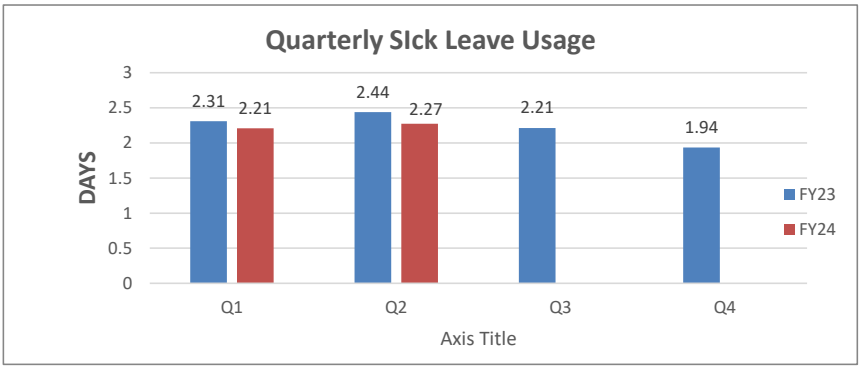
	Pr/Trns	Hires	Total
FY22	138 (68%)	65 (32%)	203
FY23	133 (59%)	91(41%)	224
FY24	56 (50%)	57 (50%)	113

FY24 Budget for FTE's = 1152
FTE's as of Dec = 1062.7
Tunnel Redundancy as of Dec 2023 = 10

POSITION CHANGE by FY

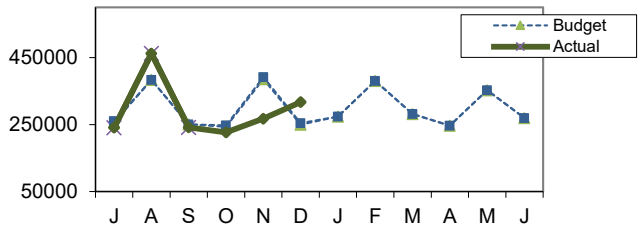
FY	HIRES	PROMOS	TRANSFER	RETIRE	RESIGN	DISMISS	DECEASED
FY20	58	70	14	38	23	2	1
FY21	64	66	15	58	15	2	2
FY22	65	108	30	82	45	2	3
FY23	91	118	15	46	31	5	5
FY24*	57	49	7	27	15	2	1

*** as of 12/31/2023**



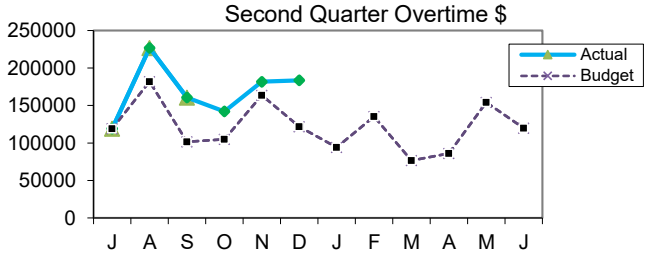
Average quarterly sick leave for the 2nd Quarter of FY24 has decreased as compared to the 2nd Quarter of FY23. (2.27 from 2.44)

Field Operations
2nd Qtr Overtime $



Total Overtime for FOD for 2nd Quarter FY24 was $893k which is $81k under budget, or 9.1%. Emergency overtime was $231k, or 49.2% of expended OT, primarily because of numerous rain events. Rain events totaled $157k and Emergency Maintenance was $53k. Coverage overtime was $228k, which is 28.7% of the 2nd Qtr OT, primarily due to numerous vacant shift coverage requirements. Planned overtime was $334k, $65k, or 24.3% over for the 2nd Quarter FY24 OT spending.

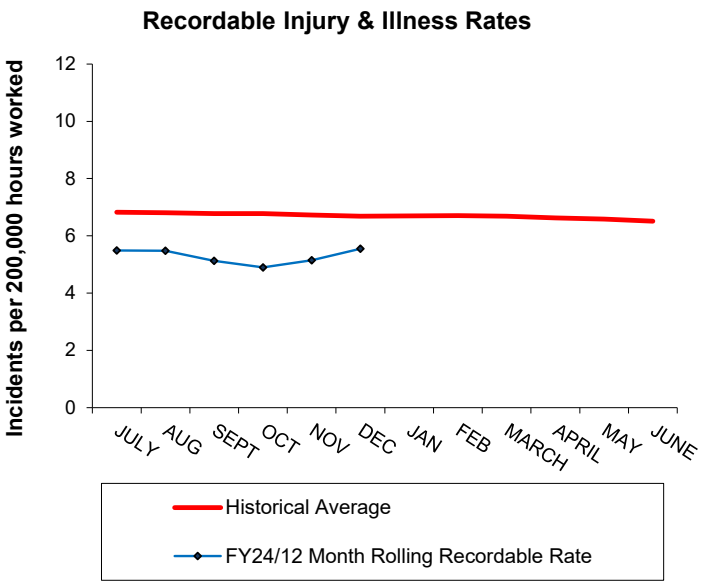
Deer Island Treatment Plant
Second Quarter Overtime $

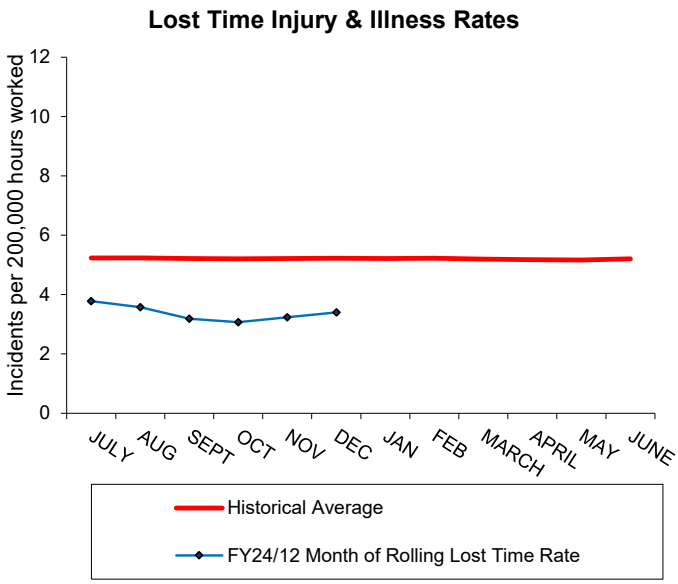


Deer Island's total overtime expenditure for the second quarter was $507K, which is $117K or 29.9% over budget due to higher than anticipated shift coverage of $143K - driven by Wastewater Ops $122K. Planned/Unplanned overtime of $19K. This is offset by lower storm coverage of ($45K).

Workplace Safety

2nd Quarter - FY24





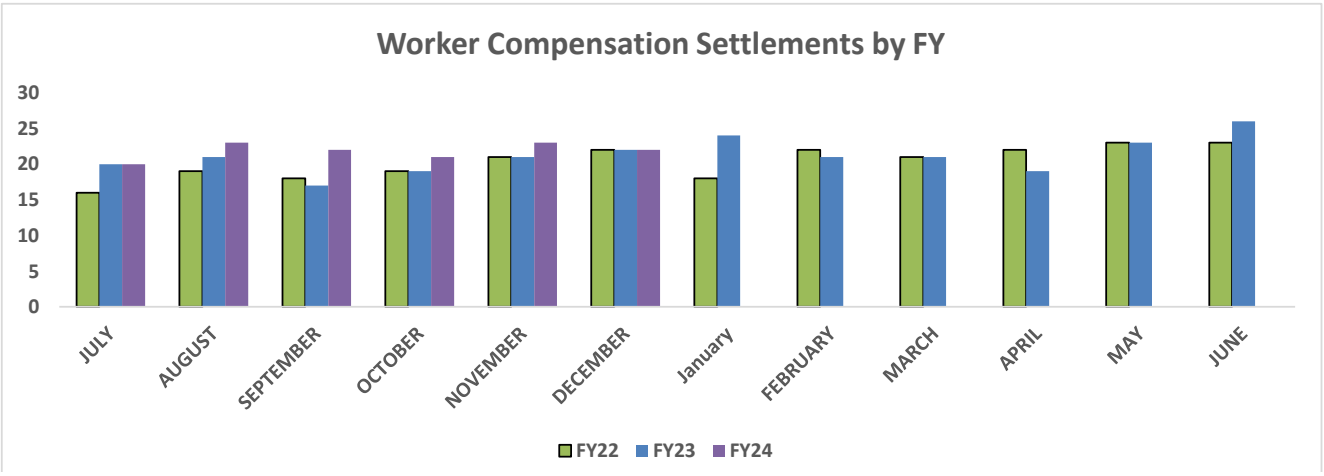
1 "Recordable" incidents are all work-related injuries and illnesses which result in death, loss of consciousness, restriction of work or motion, transfer to another job, or require medical treatment beyond first aid. Each month this rate is calculated using the previous 12 months of injury data.

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 FY03 through FY24

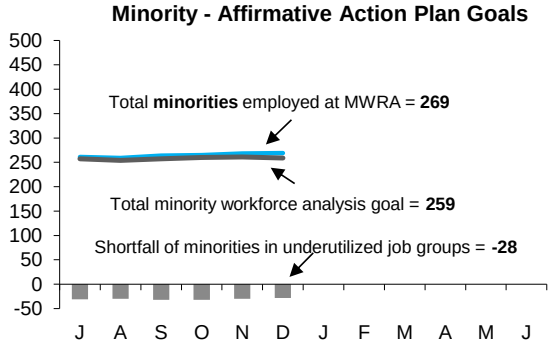
WORKERS COMPENSATION HIGHLIGHTS

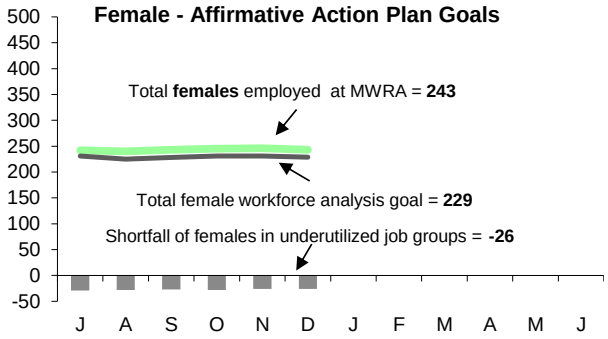
	2nd Quarter Information		
	New	Closed	Open Claims
Lost Time	1	5	27
Medical Only	5	4	105
Report Only	4	4	
	QYTD		FYTD
Regular Duty Returns	3		6
Light Duty Returns	0		0
Indemnity payments as of December 2023 included in open claims listed			22



MWRA Job Group Representation

2nd Quarter - FY24





Highlights:

At the end of Q2 FY24, 6 job groups or a total of 28 positions are underutilized by minorities as compared to 3 job groups for a total of 19 positions at the end of Q2 FY23; for females 6 job groups or a total of 26 positions are underutilized by females as compared to 8 job groups or a total of 30 positions at the end of Q2 FY23. During Q2, 7 minorities and 7 females were hired. During this same period 3 minorities and 7 females were terminated.

Underutilized Job Groups - Workforce Representation

Job Group	Employees as of 12/31/2023	Minorities as of 12/31/2023	Achievement Level	Minority Over or Underutilized	Females As of 12/31/2023	Achievement Level	Female Over or Underutilized
Administrator A	23	4	2	2	9	5	4
Administrator B	25	4	5	-1	8	8	0
Clerical A	24	8	5	3	20	18	2
Clerical B	22	6	5	1	3	11	-8
Engineer A	83	18	21	-3	21	21	0
Engineer B	61	21	17	4	16	15	1
Craft A	115	19	26	-7	0	6	-6
Craft B	128	28	28	0	1	5	-4
Laborer	58	16	17	-1	5	3	2
Management A	89	19	22	-3	33	25	8
Management B	36	11	10	1	5	8	-3
Operator A	64	3	16	-13	4	7	-3
Operator B	60	19	9	10	4	2	2
Professional A	28	8	7	1	14	13	1
Professional B	163	50	47	3	72	52	20
Para Professional	43	15	10	5	20	20	0
Technical A	50	17	11	6	7	9	-2
Technical B	5	3	1	2	1	1	0
Total	**1077**	**269**	**259**	**38/-28**	**243**	**229**	**41/-26**

AACU Candidate Referrals for Underutilized Positions

Job Group	Job Title	# of Vacancies	Requisition Internal/ External	Promotions/ Transfers	AACU Referral External	Position Status = New Hire/Promotion
Administrative B	Asst Director, Engineering	1	Int.	1	1	PROMO = BF
Engineer A	Pics Project Engineer	1	Ext.	0	0	NH = WM
Engineer A	Project Manager	1	Ext.	0	0	NH = HM
Engineer A	Sr Program Manager,T&T Ops	1	Int./Ext.	1	0	PROMO= WM
Engineer A	Program Manager, Pics Control	1	Int./Ext.	1	0	PROMO= WM
Engineer A	Manager, Trans & Treatment	1	Int./Ext.	1	0	PROMO= WM
Engineer A	Sr Monitoring & Control Eng	1	Int./Ext.	1	0	PROMO= WM
Craft A	Heavy Equipment Operator II	3	Int./Ext.	3	0	PROMO=2WM, 1HM
Craft A	Electrical Operations Supervisor	1	Int.	1	0	PROMO= WM
Craft A	Unit Supervisor-Electrician	1	Int./Ext.	1	0	PROMO = WM
Craft B	Plumber/Pipefitter	2	Ext.	0	0	NH = 1WM, 1BM
Craft B	Equipment Repair Specialist	1	Ext.	0	0	NH = 1WM
Craft B	Electrician	2	Ext.	0	0	NH = 1WM, 1BM
Craft B	Heavy Equipment Operator I	2	Int./Ext.	1	0	NH=TM, PROMO=WM
Craft B	Facilities Specialist	2	Int./Ext.	1	0	NH=HM, PROMO=WM
Craft B	Junior Instrument Technician	1	Int.	1	0	PROMO=WM
Craft B	Third Class Engineer	1	Int.	1	0	PROMO=WM
Laborer	OMC Laborer	3	Ext.	0	0	NH=2WM, 1TM
Management A	Project Mgr, Envir Permitting	1	Int./Ext.	1	0	PROMO = WF
Management B	Asset Control Supervisor	1	Int.	1	0	PROMO = WM
Operator A	Sr Trans/Treatment Operator	1	Int.	1	0	PROMO = WM
Technical A	Sr Field Service Technician	1	Int./Ext.	0	0	NH= WM
Technical A	Sr Instrument Technician		Int./Ext.	1	0	PROMO = WM

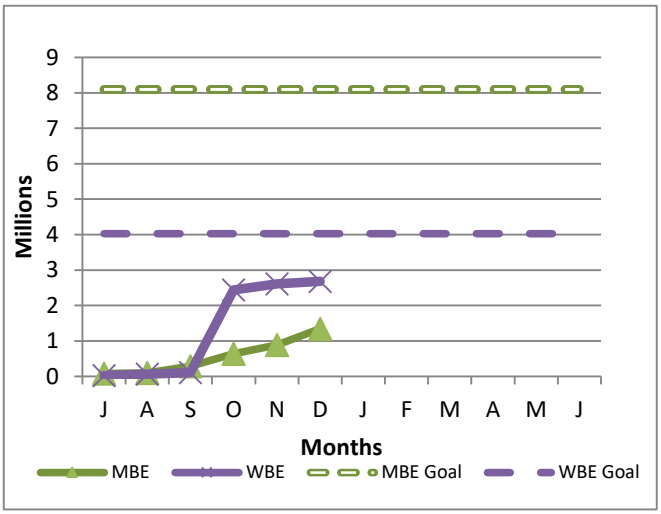
MBE/WBE Expenditures

2nd Quarter - FY24

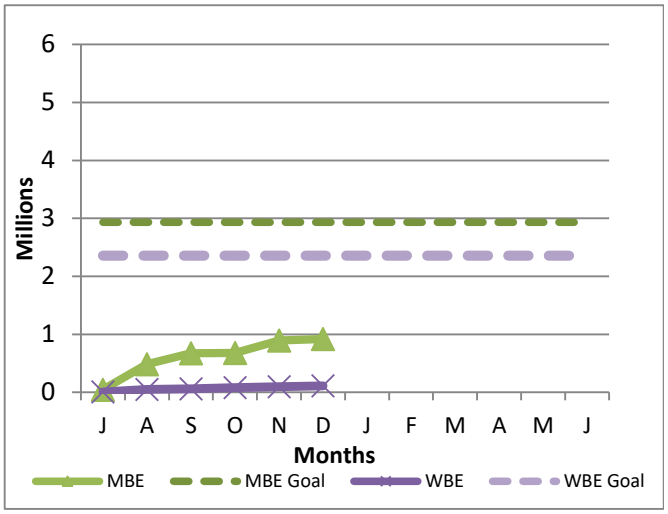
MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. The goals for FY24 are based on 85% of the total construction and 75% of the total professional projected spending for the year. Certain projects have been excluded from the goals as they have no MBE/WBE spending goals.

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

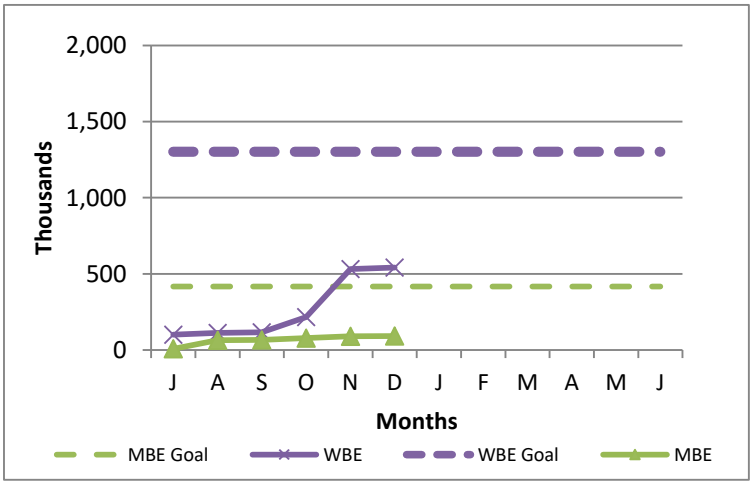
Construction



Professional Services



Goods/Services



FY24 spending and percentage of goals achieved, as well as FY23 performance are as follows:

MBE					WBE			
FY24 YTD		FY23			FY24 YTD		FY23	
Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent
1,345,342	17.5%	2,808,124	34.7%	Construction	2,682,373	70.0%	4,927,964	95.3%
918,194	20.0%	2,794,126	95.3%	Prof Svcs	110,085	3.0%	1,220,172	51.8%
91,592	22.4%	69,250	16.6%	Goods/Svcs	541,503	8.4%	174,521	13.4%
2,355,128	18.5%	5,671,500	49.6%	**Totals**	3,333,961	37.5%	6,322,657	82.3%

FY24 MBE/WBE dollar totals do not include MBE and WBE payments to prime contractors and consultants.

MWRA FY24 CEB Expenses

2nd Quarter – FY24

As of December 2023, total expenses are $396.1 million, $12.4 million or 3.0% lower than budget, and total revenue is $441.3 million, $3.9 million or 0.9% over the estimate, for a net variance of $16.3 million.

Expenses –

Direct Expenses are $138.8 million, $11.4 million or 7.7% under budget.

- **Wages & Salaries** are $7.3 million under budget or 12.1%. Regular pay is $7.4 million under budget, due to lower head count, and timing of backfilling positions. YTD through December, the average Full Time Equivalent (FTE) positions were 1,066, 102 below the 1,168 FTE's budgeted.
- **Chemicals** are lower than budget by $2.0 million or 14.9%. Lower than budget spending on Sodium Hypochlorite of $1.1 million driven by Water Operations of $1.1 and Wastewater Operations of $143k due to contract pricing, partially offset by higher DITP of $200k due to additional usage for disinfection and odor control due to higher flows. Carbon Dioxide was lower than budget by $354k primarily due to lower dosage needed, Sodium Bisulfite of $127k primarily driven by Deer Island due to lower quantities to dechlorinate the effluent, Aqua Ammonia of $160k due to lower usage and deliveries due to lower flow, Other Oxidizers (Bioxide) at Framingham PS was lower than budget by $111k due to less deliveries and lower price. DITP flows are 5.2% greater than the budget and the CWTP preliminary flows are 4.1% less than the budget through December. It is important to note that Chemical variances are also based on deliveries which in general reflect the usage patterns. However, the timing of deliveries is an important factor.
- **Professional Services** expenses are $1.3 million under budget or 26.3%, primarily due to lower Other Professional Services of $594k, lower spending on a Computer Consultant of $208k, lower Lab Testing & Analysis of $171k, and lower Legal expense of $166k.
- **Other Services** are lower than budget by $1.3 million or 7.9% driven by Telecommunications of $561k due to less than anticipated costs, Sludge Pelletization and Grit & Screenings Removal of $223k and $222k, respectively, due to lower quantities, and Police Details of $83k due to less than anticipated need.
- **Ongoing Maintenance** expenses are $1.1 million over budget or 5.3% primarily due to the actual timing of projects.
- **Fringe Benefits** expenses are $870k under budget or 6.9%, primarily due to under spending for Health Insurance of $880k, reflecting the lower than budget head count. As of December, FTEs were 102 below budget.

Indirect Expenses are $35.6 million, $1.0 million or 2.8% under budget due to lower Watershed Reimbursement of $1.3 million.

Capital Finance Expenses totaled $221.6 million, matching budget after the transfer of $1.6 million to the Defeasance account. The transfer reflects lower variable rate debt expense due to lower than budget variable interest expense of $1.6 million as a result of lower interest rates as well as the savings from the swap terminations.

Revenue and Income –

Total Revenue and Income is $441.3 million, $3.9 million or 0.9% over the estimate. The favorable variance was driven by Investment Income of $14.6 million, $4.0 million or 37.6% over the budget due to higher than budget interest rates and higher average balances.

	Dec 2023 Year-to-Date			
	Period 6 YTD Budget	Period 6 YTD Actual	Period 6 YTD Variance	%
EXPENSES				
WAGES AND SALARIES	$ 59,899,414	$ 52,644,767	$ (7,254,647)	-12.1%
OVERTIME	2,910,062	3,033,220	123,158	4.2%
FRINGE BENEFITS	12,683,527	11,813,159	(870,368)	-6.9%
WORKERS' COMPENSATION	1,072,197	1,171,801	99,604	9.3%
CHEMICALS	13,502,534	11,490,114	(2,012,420)	-14.9%
ENERGY AND UTILITIES	15,255,312	14,988,460	(266,852)	-1.7%
MAINTENANCE	20,760,785	21,869,227	1,108,442	5.3%
TRAINING AND MEETINGS	278,658	180,345	(98,313)	-35.3%
PROFESSIONAL SERVICES	5,127,251	3,777,963	(1,349,288)	-26.3%
OTHER MATERIALS	2,391,828	2,817,881	426,053	17.8%
OTHER SERVICES	16,360,275	15,061,918	(1,298,357)	-7.9%
TOTAL DIRECT EXPENSES	**$ 150,241,843**	**$ 138,848,855**	**$ (11,392,987)**	**-7.6%**
INSURANCE	$ 2,032,690	$ 2,255,817	$ 223,127	11.0%
WATERSHED/PILOT	9,597,465	8,313,612	(1,283,853)	-13.4%
HEEC PAYMENT	4,232,163	4,252,503	20,340	0.5%
MITIGATION	889,543	889,543	-	0.0%
ADDITIONS TO RESERVES	3,930,518	3,930,518	-	0.0%
RETIREMENT FUND	15,972,804	15,972,804	-	0.0%
POST EMPLOYEE BENEFITS	-	-	-	---
TOTAL INDIRECT EXPENSES	**$ 36,655,183**	**$ 35,614,797**	**$ (1,040,386)**	**-2.8%**
STATE REVOLVING FUND	$ 40,920,462	$ 40,920,462	$ -	0.0%
SENIOR DEBT	145,534,072	145,534,072	-	0.0%
DEBT SERVICE ASSISTANCE	(1,187,297)	(1,187,297)	-	0.0%
CURRENT REVENUE/CAPITAL	-	-	-	---
SUBORDINATE MWRA DEBT	34,713,059	34,713,059	-	0.0%
LOCAL WATER PIPELINE CP	-	-	-	---
CAPITAL LEASE	1,608,530	1,608,530	-	0.0%
VARIABLE DEBT	-	(1,578,944)	(1,578,944)	---
DEFEASANCE ACCOUNT	-	1,578,944	1,578,944	---
DEBT PREPAYMENT	-	-	-	---
TOTAL CAPITAL FINANCE EXPENSE	**$ 221,588,825**	**$ 221,588,825**	**$ -**	**0.0%**
TOTAL EXPENSES	**$ 408,485,851**	**$ 396,052,477**	**$ (12,433,373)**	**-3.0%**
REVENUE & INCOME				
RATE REVENUE	$ 417,134,000	$ 417,134,000	$ -	0.0%
OTHER USER CHARGES	5,256,048	5,208,738	(47,310)	-0.9%
OTHER REVENUE	4,311,235	4,283,045	(28,190)	-0.7%
RATE STABILIZATION	152,741	152,741	-	0.0%
INVESTMENT INCOME	10,585,807	14,566,381	3,980,574	37.6%
TOTAL REVENUE & INCOME	**$ 437,439,831**	**$ 441,344,905**	**$ 3,905,074**	**0.9%**

Cost of Debt
2nd Quarter – FY24

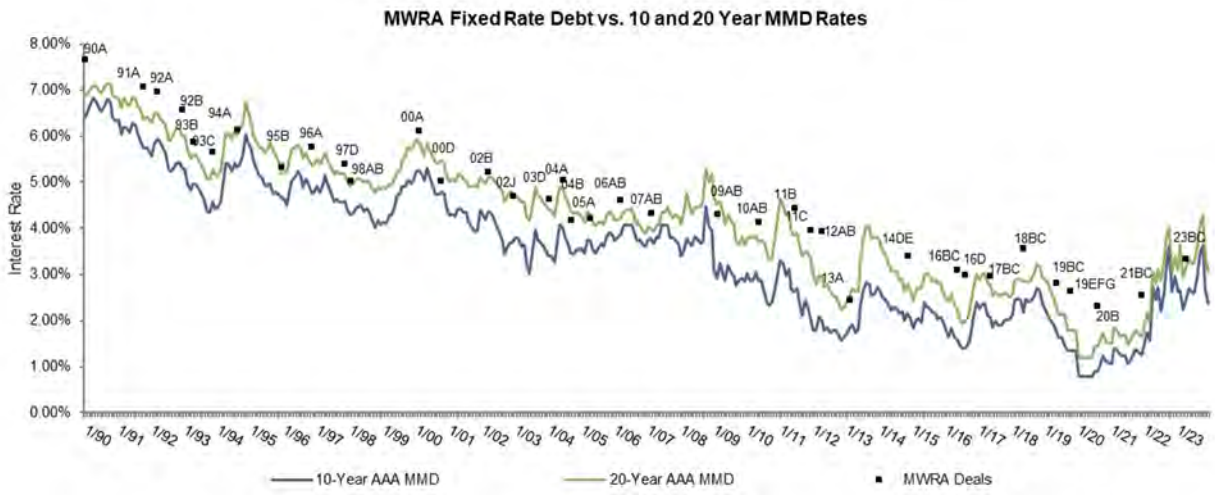
MWRA borrowing costs are a function of the fixed and variable tax exempt interest rate environment, the level of MWRA's variable interest rate exposure and the perceived creditworthiness of MWRA. Each of these factors has contributed to decreased MWRA borrowing costs since 1990.

Average Cost of MWRA Debt FYTD

Fixed Debt ($2.91 billion)	3.12%
Variable Debt ($382.4 million)	4.12%
SRF Debt ($808.83 million)	1.70%
Weighted Average Debt Cost ($4.11 billion)	3.04%

Most Recent Senior Fixed Debt Issue
April 2023

2023 Series B and C ($234.3 million) 3.35%

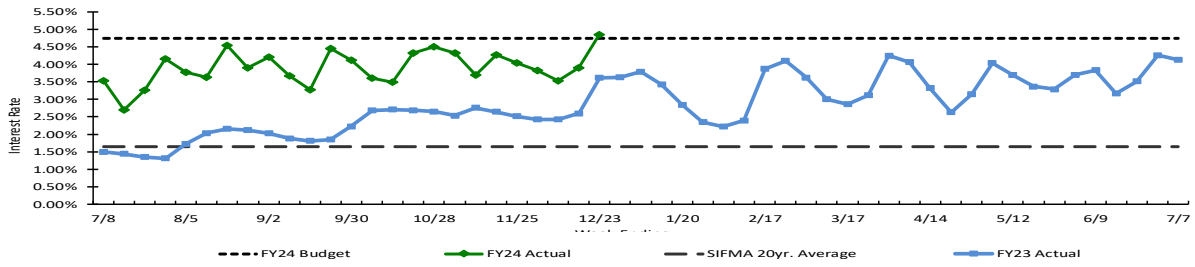


Bond Deal	1997D	1998AB	2000A	2000D	2002B	2002J	2003D	2004A	2004B	2005A	2006AB	2007AB	2009AB	2010AB
Rate	5.40%	5.04%	6.11%	5.03%	5.23%	4.71%	4.64%	5.05%	4.17%	4.22%	4.61%	4.34%	4.32%	4.14%
Avg Life	21.6 yrs	24.4 yrs	26.3 yrs	9.8 yrs	19.9 yrs	19.6 yrs	18.4 yrs	19.6 yrs	13.5 yrs	18.4 yrs	25.9 yrs	24.4 yrs	15.4 yrs	16.4 yrs

Bond Deal	2011B	2011C	2012AB	2013A	2014D-	2016BC	2016D	2017BC	2018BC	2019BC	2019EFG	2020B	2021BC	2023BC
Rate	4.45%	3.95%	3.93%	2.45%	3.41%	3.12%	2.99%	2.98%	3.56%	2.82%	2.66%	2.33%	2.56%	3.35%
Avg Life	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	12.2 yrs	10.45 yrs

Weekly Average Variable Interest Rates vs. Budget

MWRA currently has eight variable rate debt issues with $382.4 million outstanding, excluding commercial paper. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In December, the Securities Industry and Financial Markets Association rate ranged from a high of 4.52% to a low of 2.98% for the month. MWRA's issuance of variable rate debt, although consistently less expensive in recent years, results in exposure to additional interest rate rise as compared to fixed rate debt.

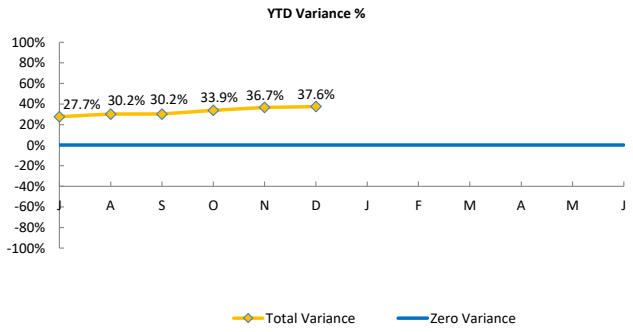


Investment Income

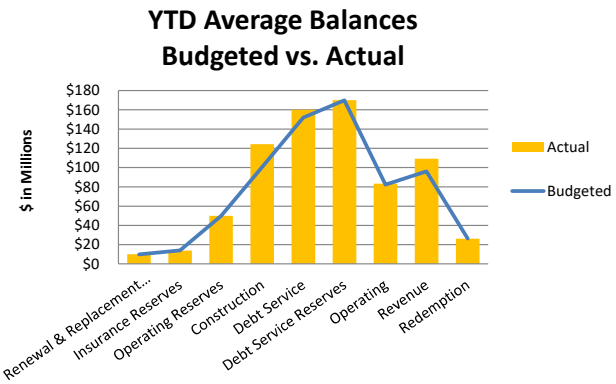
2nd Quarter – FY24

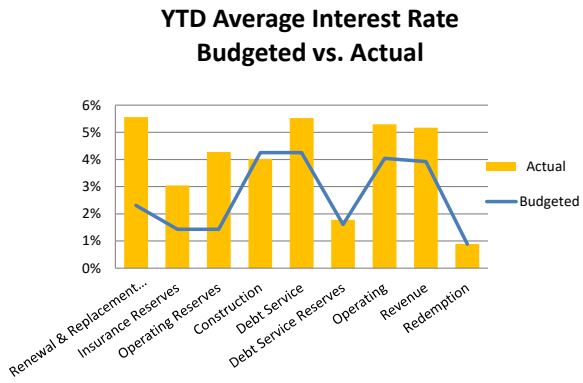
Year To Date

- YTD variance is 37.6%, $4.0 million, over budget due to higher than budgeted interest rates and higher than budgeted average balance.



	YTD BUDGET VARIANCE ($000)			
	BALANCES IMPACT	RATES IMPACT	TOTAL	%
Renewal & Replacement Reserve	$0	$157	$157	140.7%
Insurance Reserves	$0	$109	$109	112.1%
Operating Reserves	$0	$684	$685	198.4%
Construction	$481	-$141	$340	16.5%
Debt Service	$165	$980	$1,145	36.8%
Debt Service Reserves	$1	$138	$139	10.6%
Operating	$16	$487	$503	31.3%
Revenue	$250	$654	$904	49.7%
Redemption	$0	$0	$0	-0.1%
Total Variance	$914	$3,067	$3,981	37.6%





Monthly