MASSACHUSETTS WATER RESOURCES AUTHORITY
Charlestown Navy Yard
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Boston, MA 02129

Frederick A. Laskey
Executive Director

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Chair: K. Theoharides
Vice-Chair: J. Carroll
Secretary: A. Pappastergion
Board Members:
C. Cook
K. Cotter
P. Flanagan
J. Foti
B. Peña
H. Vitale
J. Walsh
J. Wolowicz

BOARD OF DIRECTORS' MEETING

To be Held Virtually on November 18, 2020

Pursuant to Governor Baker's March 12, 2020 Order
Suspending Certain Provisions of the Open Meeting Law

WebEx Meeting Link

https://mwra.webex.com/mwra/onstage/g.php?MTID=ebd7cda84b0bf867cbca2feceaf8d5f3a

Meeting number (access code): 173 509 7117

Meeting Password: 1118

Time:
1:00 p.m.

REVISED AGENDA

I. APPROVAL OF MINUTES

II. REPORT OF THE CHAIR

III. REPORT OF THE EXECUTIVE DIRECTOR

IV. WASTEWATER POLICY & OVERSIGHT

A. Contract Awards

1. Power Purchase Agreement and Site License for a Photovoltaic System and Battery Storage at Deer Island Treatment Plant: Distributed Solar Development, Contract S591

B. Contract Amendments/Change Orders

1. Agency-Wide Technical Assistance Consulting Services: Kleinfelder Northeast, Inc., Contract 7604 Amendment 2
2. Chelsea Creek Headworks Upgrade: BHD/BEC JV 2015, A Joint Venture, Contract 7161, Change Order 43
3. Prison Point CSO Facility Improvements – Design, CA and RE Services: Arcadis, US, Contract 7359, Amendment 4
4. Piping Relocation at the Pelletizing Plant: Walsh Construction Company II, LLC, Contract 7173, Change Order 2

V. WATER POLICY & OVERSIGHT

A. Information

1. Update on Lead and Copper Rule Compliance - Fall 2020
2. Update on the Status of Water Supply Protection Efforts

B. Contract Awards

1. Quabbin Maintenance Building Design, Construction Administration and Resident Engineering Services: The Robinson Green Beretta Corporation, Contract 7677
2. Steel Water Storage Tank Painting and Improvements, Design and Engineering Services During Construction: Hazen and Sawyer, Contract 6832

C. Contract Amendments/Change Orders

1. Supply and Delivery of Carbon Dioxide the John J. Carroll Water Treatment Plant: Messer, LLC, Bid WRA-4818, Amendment 2

VI. PERSONNEL & COMPENSATION

A. Approvals

1. PCR Amendments – November 2020
2. Appointment of Senior Staff Counsel (Labor/Employment), Law Division
3. Appointment of Manager, Western Maintenance
4. Appointment of Program Manager, Operations Engineering
5. Deputy Director, Design and Construction, Tunnel Redundancy Department
6. Senior Program Manager, Geology, Tunnel Redundancy Department

VII. ADMINISTRATION, FINANCE & AUDIT

A. Information

1. FY16-FY20 Strategic Business Plan Annual Update for FY20
2. FY2021 First Quarter Orange Notebook
3. Delegated Authority Report – October 2020
4. FY2021 Financial Update and Summary as of October 2020

B. Contract Amendments/Change Orders

1. Automated Vehicle Locator Tracking System: Verizon Connect NWF, Inc., Contract A606, Amendment 2

VIII. CORRESPONDENCE TO THE BOARD

IX. OTHER BUSINESS

X. ADJOURNMENT

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the Board of Directors

October 14, 2020

Pursuant to Governor Baker's March 12, 2020 Order Suspending Certain Provisions of the Open Meeting Law the October 14, 2020 meeting of the Board of Directors of the Massachusetts Water Resources Authority was conducted by remote participation. Vice Chair Carroll presided. Present remotely from the Board, in addition to Vice Chair Carroll, were Ms. Wolowicz and Messrs. Cook, Cotter, Flanagan, Foti, Peña, Vitale and Walsh. Secretary Theoharides and Mr. Pappastergion were absent. MWRA staff participants included Frederick Laskey, Executive Director, Carolyn Francisco Murphy, General Counsel, David Coppes, Chief Operating Officer, Carolyn Fiore, Deputy Chief Operating Officer, Thomas Durkin, Director of Finance, Matthew Horan, Deputy Director of Finance/Treasurer, Michele Gillen, Director of Administration, Brian Rowzowsky, Director of Internal Audit, Betsy Reilley, Director of Environmental Quality, David Duest, Deer Island Treatment Plant Director, John Colbert, Chief Engineer, Michael Greeley, Manager, Metering and Monitoring, Stephen Estes-Smargiassi, Director of Planning and Sustainability, Lisa Hamilton, Assistant Director, Engineering, Bethany Card, Director of Environmental and Regulatory Affairs, Corrine Barret, Director of Construction, Andrea Murphy, Director of Human Resources, and Assistant Secretaries Ria Convery and Kristin MacDougall. The meeting was called to order at 1:03 p.m. All motions were individually made and presented for discussion and deliberation. After any discussion and deliberation, motions for which there were no objections were then consolidated for one omnibus roll call vote.

APPROVAL OF SEPTEMBER 16, 2020 MINUTES

A motion was duly made and seconded to approve the minutes of the Board of Directors' meeting of September 16, 2020.

Vice Chair Carroll called for any discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote.

REPORT OF THE EXECUTIVE DIRECTOR

Mr. Laskey announced that MWRA's Wachusett Aqueduct Pumping Station received the Sustainability in Civil Engineering Award from the Boston Society of Civil Engineers. Mr. Laskey then updated Board Members on the Metropolitan Tunnel Redundancy Program, the Biobot testing program, the status of the HEEC cable and MWRA's new PFAS testing equipment.

Finally, there was discussion about the Water Supply Protection efforts and staffing under the Memorandum of Understanding between MWRA and DCR. Mr. Laskey reported that an update would be provided to the Board at the next meeting. (Mr. Flanagan joined the meeting during the report.)

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ADMINISTRATION AND FINANCE
INFORMATION
Internal Audit Department Activities Report – FY2020

Staff provided a verbal summary. (ref. IV A.1)

Delegated Authority Report – September 2020

Staff provided a verbal summary. (ref. IV A.2)

FY21 Financial Update and Summary as of September 2020

Staff provided a verbal summary. (ref. IV A.3)

APPROVALS
Approval Award of Letter of Credit and Direct Purchase Agreements

A motion was duly made and seconded to approve the recommendation of the Selection Committee to enter into a Letter of Credit Agreement, in a principal amount not-to-exceed $42,100,000, with TD Bank, N.A. and a Direct Purchase Agreement, in a principal amount not-to-exceed $8,780,000, with Century Bank and Trust Company, and to authorize any necessary changes, in accordance with the applicable Issuance Resolutions, to the 24th and Part 3 of the 64th Supplemental Resolutions to reflect such agreements.

Staff provided a verbal summary. There were questions and answers.

Vice Chair Carroll called for any further discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. IV B.1)

WASTEWATER POLICY AND OVERSIGHT
INFORMATION
MWRA Industrial Waste Report No. 36: Industrial Pretreatment Program Annual Report to EPA for FY2020

Staff provided a verbal summary. (ref. V A.1)

2019 Outfall Monitoring Overview

Staff made a presentation. There were questions and answers. (ref. V A.2)

CONTRACT AWARDS
Supply and Delivery of Ferric Chloride for Deer Island: Kemira Water Solutions, Inc., WRA-4881

A motion was duly made and seconded to approve the award of Purchase Order Contract WRA-4881 for the supply and delivery of ferric chloride to the Deer Island Treatment Plant to the lowest responsive bidder, Kemira Water Solutions, Inc., and to authorize the Executive Director, on behalf of the Authority, to execute said purchase

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order contract in an amount not to exceed $1,974,000 for a period of one year, from December 1, 2020 through November 30, 2021.

Staff provided a verbal summary.

Vice Chair Carroll called for any discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. V B.1)

Supply and Delivery of Sodium Hypochlorite for Deer Island: Borden & Remington, WRA-4882

A motion was duly made and seconded to approve the award of Purchase Order Contract WRA-4882 for the supply and delivery of sodium hypochlorite to the Deer Island Treatment Plant to the lowest responsive bidder, Borden & Remington Corporation, and to authorize the Executive Director, on behalf of the Authority, to execute said purchase order contract in an amount not to exceed $1,673,715.30 for a period of one year, from November 17, 2020 through November 16, 2021.

Staff provided a verbal summary. There were questions and answers.

Vice Chair Carroll called for any further discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. V B.2)

Thermal and Hydro Power Plant Maintenance, Deer Island Treatment Plant: O'Connor Corporation, Contract S597

A motion was duly made and seconded to approve the award of Contract S597, Thermal and Hydro Power Plant Maintenance, Deer Island Treatment Plant, to the lowest responsible and eligible bidder, O'Connor Corporation, and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of $5,243,893 for a contract term of 1095 calendar days from the Notice to Proceed..

Staff provided a verbal summary. There were questions and answers.

Vice Chair Carroll called for any further discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. V B.3)

Agency-Wide Technical Assistance Consulting Services: Hazen and Sawyer, Contract 7691, and CDM Smith, Contract 7692

A motion was duly made and seconded to approve the recommendation of the Consultant Selection Committee to award two separate contracts to provide agency-wide technical consulting services and to authorize the Executive Director, on behalf of the Authority, to execute Contract 7691 with Hazen and Sawyer, P.C., and Contract 7692 with CDM Smith Inc., each in an amount not to exceed $2,500,000 for a contract term of twenty-four months from the Notice to Proceed.

Staff provided a verbal summary.

Vice Chair Carroll called for any discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. V B.4)

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Permanent Metering System Replacement Equipment and Installation: ADS LLC, Contract 7191

A motion was duly made and seconded to approve the award of Contract 7191, Permanent Metering System Replacement Equipment Purchase and Installation, to the lowest responsible and eligible bidder, ADS, LLC, and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of $3,286,114, for a contract term of 450 calendar days from the Notice to Proceed.

Staff made a presentation. There were questions and answers.

Vice Chair Carroll called for any further discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. V B.5)

CONTRACT AMENDMENTS/CHANGE ORDERS

Wastewater Metering System Replacement – Evaluation, Planning, Design, Resident Engineering/Inspection Services for Installation of Metering Equipment: RJN Group, Contract 6739, Amendment 1

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to approve Amendment 1 to Contract 6739, Wastewater Metering System Replacement Evaluation, Planning, Design, and Resident Engineering/Inspection Services for Purchase and Installation of Metering Equipment, with RJN Group, Inc., to increase the contract term by 449 calendar days from December 7, 2021 to March 1, 2023 with no increase in contract amount.

Staff provided a verbal summary. There were questions and answers.

Vice Chair Carroll called for any further discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. V C.1)

Agreement for Contract Extension, Operations and Maintenance of the Fore River Pelletizing Plant: New England Fertilizer Company, Contract S345, Amendment 3

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to approve Amendment 3 to Contract S345, Operations and Maintenance of the Fore River Pelletizing Plant, with New England Fertilizer Company in the amount of $30,719,338 plus escalation and adjustments for excess quantities and extending the contract term for two years, from January 1, 2021 through December 31, 2022, with an optional third year subject to further Board approval.

Staff made a presentation. There were questions and answers.

Vice Chair Carroll called for any further discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. V C.2)

WATER POLICY AND OVERSIGHT

INFORMATION

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America's Water Infrastructure Act (AWIA): Risk Assessments and Emergency Response Plans

Staff provided a verbal summary. (ref. VI A.1) Mr. Laskey thanked staff for a job well done.

Project Update: Section 22 Rehabilitation Alternatives Analysis and Environmental Permitting: Black & Veatch Corporation, Contract 7155

Staff made a presentation. (ref. VI A.2)

APPROVALS

Emergency Water Supply Agreement with the Town of Burlington

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to execute an Emergency Water Supply Agreement with the Town of Burlington, subject to the approval of the MWRA Advisory Board, for a period of up to six months, pursuant to the Emergency Water Supply Agreement attached to the October 14, 2020 staff summary presented to the Board and filed with the records of the meeting.

Staff provided a verbal summary.

Vice Chair Carroll called for any discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. VI B.1)

CONTRACT AWARDS

Weston Aqueduct Stop Plank Gates: WES Construction Corp., Contract 7369

A motion was duly made and seconded to approve the award of Contract 7369 Weston Aqueduct Stop Plank Gates to the lowest responsible and eligible bidder, WES Construction Corp., and authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of $2,294,000.00, for a contract term of 270 calendar days from the Notice to Proceed.

Staff made a presentation. There were questions and answers.

Vice Chair Carroll called for any further discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. VI C.1)

Technical Assistance Consulting Services for the John J. Carroll Water Treatment Plant: Hazen and Sawyer P.C., Contract 7713 and Stantec Consulting Services, Inc., Contract 7714

A motion was duly made and seconded to approve the recommendation of the Consultant Selection Committee to award two separate contracts to provide Technical Assistance Consulting Services for the John J. Carroll Water Treatment Plant and to authorize the Executive Director, on behalf of the Authority, to execute Contract 7713 with Hazen and Sawyer, P.C. and Contract 7714 with Stantec Consulting Services, Inc.,

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each in an amount not to exceed $1,000,000, with a contract term of 24 months from the Notice to Proceed.

Staff provided a verbal summary.

Vice Chair Carroll called for any discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. VI C.2)

(Mr. Foti left the meeting.)

CONTRACT AMENDMENTS/CHANGE ORDERS

Commonwealth Avenue Pumping Station Improvements: WES Construction Corp., Contract 7524, Change Order 8

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to approve Change Order 8 to Contract 7524, Commonwealth Avenue Pumping Station Improvements, with WES Construction Corp. for a not to exceed amount of $150,000, increasing the contract amount from $7,508,212.25 to $7,658,212.25, with no increase in contract term.

Staff made a presentation.

Vice Chair Carroll called for any discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. VI D.1)

Commonwealth Avenue Pumping Station Improvements: Black & Veatch Corp., Contract 7523, Amendment No. 1

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to approve Amendment 1 to Contract 7523, Commonwealth Avenue Pumping Station Improvements Design, Engineering Services During Construction and Resident Engineering/Inspection Services, with Black & Veatch Corporation, in the amount of $293,202, increasing the contract amount from $2,765,907 to an amount not-to-exceed $3,059,109 and extending the contract term by nine months, from July 4, 2021 to April 4, 2022.

Staff provided a verbal summary.

Vice Chair Carroll called for any discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. VI D.2)

PERSONNEL AND COMPENSATION

APPROVALS

PCR Amendments – October 2020

A motion was duly made and seconded to approve the amendments to the Position Control Register as presented, on a date to be determined by the Executive Director.

Staff provided a verbal summary. There was discussion and questions and answers.

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Vice Chair Carroll called for any further discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. VII A.1)

Appointment of Area Manager, Electrical, Deer Island Treatment Plant

A motion was duly made and seconded to approve the appointment of Mr. Thomas Wright to the position of Area Manager, Electrical, Deer Island Maintenance (Unit 6, Grade 12) at an annual salary of $105,760.86, commencing on a date to be determined by the Executive Director.

Vice Chair Carroll called for any discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. VII A.2)

Appointment of Shift Operations Manager, Deer Island Treatment Plant

A motion was duly made and seconded to approve the appointment of Mr. Angly Catulle to the position of Shift Operations Manager at an annual salary of $97,705.78, commencing on a date to be determined by the Executive Director.

There was brief discussion.

Vice Chair Carroll called for any further discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. VII A.3)

Appointment of Construction Coordinator, Engineering and Construction

A motion was duly made and seconded to approve the appointment of Mr. James Snow to the position of Construction Coordinator in the Engineering & Construction Department (Unit 9, Grade 30) at the recommended annual salary of $119,503.32, commencing on a date to be determined by the Executive Director.

Vice Chair Carroll called for any discussion or objections. Hearing none, the Vice Chair referred the motion to an omnibus roll call vote. (ref. VII A.4)

OMNIBUS ROLL CALL VOTE

Vice Chair Carroll called for an omnibus roll call vote on the motions made and seconded.

An omnibus roll call vote was taken in which the members were recorded as follows:

Yes	No	Abstain
Carroll		
Cook		
Cotter		
Flanagan		
Peña		
Vitale		
Walsh		

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Yes	No	Abstain
Wolowicz		

Voted: to approve the minutes of the Board of Directors' meeting of September 16, 2020 meeting as presented and filed with the records of the meeting (ref. I);

Further, voted: to approve the recommendation of the Selection Committee to enter into a Letter of Credit Agreement, in a principal amount not-to-exceed $42,100,000, with TD Bank, N.A. and a Direct Purchase Agreement, in a principal amount not-to-exceed $8,780,000, with Century Bank and Trust Company, and to authorize any necessary changes, in accordance with the applicable Issuance Resolutions, to the 24th and Part 3 of the 64th Supplemental Resolutions to reflect such agreements (ref. IV B.1);

Further, voted: to approve the award of Purchase Order Contract WRA-4881 for the supply and delivery of ferric chloride to the Deer Island Treatment Plant to the lowest responsive bidder, Kemira Water Solutions, Inc., and to authorize the Executive Director, on behalf of the Authority, to execute said purchase order contract in an amount not to exceed $1,974,000 for a period of one year, from December 1, 2020 through November 30, 2021 (ref. V B.1);

Further, voted: to approve the award of Purchase Order Contract WRA-4882 for the supply and delivery of sodium hypochlorite to the Deer Island Treatment Plant to the lowest responsive bidder, Borden & Remington Corporation, and to authorize the Executive Director, on behalf of the Authority, to execute said purchase order contract in an amount not to exceed $1,673,715.30 for a period of one year, from November 17, 2020 through November 16, 2021 (ref. V B.2);

Further, voted: to approve the award of Contract S597, Thermal and Hydro Power Plant Maintenance, Deer Island Treatment Plant, to the lowest responsible and eligible bidder, O'Connor Corporation, and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of $5,243,893 for a contract term of 1095 calendar days from the Notice to Proceed (ref. V B.3);

Further, voted: to approve the recommendation of the Consultant Selection Committee to award two separate contracts to provide agency-wide technical consulting services and to authorize the Executive Director, on behalf of the Authority, to execute Contract 7691 with Hazen and Sawyer, P.C., and Contract 7692 with CDM Smith Inc., each in an amount not to exceed $2,500,000 for a contract term of twenty-four months from the Notice to Proceed (ref. V B.4);

Further, voted: to approve the award of Contract 7191, Permanent Metering System Replacement Equipment Purchase and Installation, to the lowest responsible and eligible bidder, ADS, LLC, and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of $3,286,114, for a contract term of 450 calendar days from the Notice to Proceed (ref. V B.5);

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Further, voted: to authorize the Executive Director, on behalf of the Authority, to approve Amendment 1 to Contract 6739, Wastewater Metering System Replacement Evaluation, Planning, Design, and Resident Engineering/Inspection Services for Purchase and Installation of Metering Equipment, with RJN Group, Inc., to increase the contract term by 449 calendar days from December 7, 2021 to March 1, 2023 with no increase in contract amount (ref. V C.1);

Further, voted: to authorize the Executive Director, on behalf of the Authority, to approve Amendment 3 to Contract S345, Operations and Maintenance of the Fore River Pelletizing Plant, with New England Fertilizer Company in the amount of $30,719,338 plus escalation and adjustments for excess quantities and extending the contract term for two years, from January 1, 2021 through December 31, 2022, with an optional third year subject to further Board approval (ref. V C.2);

Further, voted: to authorize the Executive Director, on behalf of the Authority, to execute an Emergency Water Supply Agreement with the Town of Burlington, subject to the approval of the MWRA Advisory Board, for a period of up to six months, pursuant to the Emergency Water Supply Agreement attached to the October 14, 2020 staff summary presented to the Board and filed with the records of the meeting (ref. VI B.1);

Further, voted: to approve the award of Contract 7369 Weston Aqueduct Stop Plank Gates to the lowest responsible and eligible bidder, WES Construction Corp., and authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of $2,294,000.00, for a contract term of 270 calendar days from the Notice to Proceed (ref. VI C.1);

Further, voted: to approve the recommendation of the Consultant Selection Committee to award two separate contracts to provide Technical Assistance Consulting Services for the John J. Carroll Water Treatment Plant and to authorize the Executive Director, on behalf of the Authority, to execute Contract 7713 with Hazen and Sawyer, P.C. and Contract 7714 with Stantec Consulting Services, Inc., each in an amount not to exceed $1,000,000, with a contract term of 24 months from the Notice to Proceed (ref. VI C.2);

Further, voted: to authorize the Executive Director, on behalf of the Authority, to approve Change Order 8 to Contract 7524, Commonwealth Avenue Pumping Station Improvements, with WES Construction Corp. for a not to exceed amount of $150,000, increasing the contract amount from $7,508,212.25 to $7,658,212.25, with no increase in contract term (ref. VI D.1);

Further, voted:: to authorize the Executive Director, on behalf of the Authority, to approve Amendment 1 to Contract 7523, Commonwealth Avenue Pumping Station Improvements Design, Engineering Services During Construction and Resident Engineering/Inspection Services, with Black & Veatch Corporation, in the amount of $293,202, increasing the contract amount from $2,765,907 to an amount not-to-exceed

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$3,059,109 and extending the contract term by nine months, from July 4, 2021 to April 4, 2022 (ref. VI D.2);

Further, voted: to approve the amendments to the Position Control Register as presented, on a date to be determined by the Executive Director (ref. VII A.1);

Further, voted: to approve the appointment of Mr. Thomas Wright to the position of Area Manager, Electrical, Deer Island Maintenance (Unit 6, Grade 12) at an annual salary of $105,760.86, commencing on a date to be determined by the Executive Director (ref. VII A.2);

Further, voted: to approve the appointment of Mr. Angly Catulle to the position of Shift Operations Manager at an annual salary of $97,705.78, commencing on a date to be determined by the Executive Director (ref. VII A.3); and,

Further, voted: to approve the appointment of Mr. James Snow to the position of Construction Coordinator in the Engineering & Construction Department (Unit 9, Grade 30) at the recommended annual salary of $119,503.32, commencing on a date to be determined by the Executive Director (ref. VII A.4).

EXECUTIVE SESSION

Vice Chair Carroll moved that Board enter Executive Session to discuss real estate and collective bargaining since discussion in Open Session may have a detrimental effect upon the negotiating and litigating position of the Authority, and then return to Open Session solely for the purpose of adjournment.

MWRA General Counsel Francisco-Murphy announced that under the Open Meeting Law, at the start of an Executive Session, members who are participating remotely must state that no other person is present or able to hear the discussion at their remote locations, and that a response of “yes” to the Roll Call to enter Executive Session when their names are called would be deemed their statements that no other person is present or able to hear the Executive Session discussion at their remote locations.

Upon a motion duly made and seconded, a roll call vote was taken in which the members were recorded as follows:

Yes	No	Abstain
Carroll		
Cook		
Cotter		
Flanagan		
Peña		
Vitale		
Walsh		
Wolowicz		

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Voted: to enter Executive Session to discuss real estate and collective bargaining and to return to Open Session solely for the purpose of adjournment.

*** EXECUTIVE SESSION ***

ADJOURNMENT

The meeting returned to open session and adjourned at 3:30 p.m.

Approved: November 18, 2020

Attest: _____

Andrew M. Pappastergion, Secretary

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STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Power Purchase Agreement and Site License for a Solar Photovoltaic System and Battery Storage at Deer Island Treatment Plant
Distributed Solar Projects, LLC
Contract S591

COMMITTEE: Wastewater Policy & Oversight

____ INFORMATION
__X__ VOTE

Michele S. Gillen
Director of Administration

Carolyn Fiore, Deputy Chief Operating Officer
Ethan Wenger, Deputy Director, Deer Island Treatment Plant
Robert Huang, Program Manager, Energy Management
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To approve the award of Contract S591, Power Purchase Agreement and Site License for a Photovoltaic System and Battery Storage at Deer Island Treatment Plant, to Distributed Solar Projects, LLC, and to authorize the Executive Director, on behalf of the Authority, to execute Contract S591 with Distributed Solar Projects, LLC's special purpose entity, 190 Tafts Avenue Solar Project 2020, LLC, to include a not-to-exceed price of $0.0798 per kilowatt-hour for the purchase of electricity generated and a contract term from the Notice to Proceed until the twentieth anniversary of the system Commercial Operation Date.

DISCUSSION:

Treating over 300 million gallons of wastewater per day, the Deer Island Treatment Plant purchased over 100 million kilowatt-hours of electricity in FY20 – equivalent to the electricity needs of 9,000 homes.[1] Recognizing the need to reduce purchased power, Deer Island Treatment Plant over the years has developed a portfolio of on-site renewable power generation – wind turbines, hydro turbines, digester-gas-fueled combined heat and power and solar panels – that met 24% of electricity use in FY20.

One of the Deer Island renewable energy contracts is a solar Power Purchase Agreement (PPA) with Nexamp Deer Island I, LLC. Under a solar PPA, a third-party developer finances, plans, permits, designs, installs, interconnects, commissions, owns, operates and maintains a solar photovoltaic (PV) system. The host customer sites the system on its property and purchases the system's electric output for a predetermined period. This financial arrangement allows the host customer to receive stable and lower-cost electricity, while the developer provides financing and

[1] According to the U.S. Energy Information Administration, the average U.S. residential customer uses approximately 909 kWh per month of energy, or around 10,909 kWh per year.

acquires financial benefits such as tax credits, income generated from the sale of electricity to the host customer and revenue from Solar Renewable Energy Certificates. Under the Nexamp PPA, MWRA pays a substantially discounted price for renewable energy generated from ground-mounted solar panels on the south parking lot and rooftop panels on the Grit Building.

As part of its continued commitment to maximize renewable energy resources, MWRA sought proposals to enter into a PPA for a solar PV parking canopy system, with battery storage, to be located at Deer Island.

Procurement Process

On February 19, 2020, in accordance with Chapter 25A, §11C of the Massachusetts General Laws, MWRA issued a Request for Proposals (RFP) for Contract S591, Power Purchase Agreement and Site License for a Solar Photovoltaic System with Battery Storage at the Deer Island Treatment Plant. The RFP was publicly advertised in the Goods and Services Bulletin, the Boston Herald, Banner Publications and El Mundo, and notice was sent directly to eight firms.

MWRA sought proposals from qualified firms to finance, plan, permit, design, install, interconnect, commission, own, operate and maintain a solar PV parking canopy with battery storage at Deer Island, and to sell back to MWRA the electricity generated from the system for a term of up to 20 years from the system's Commercial Operation Date. Thirty firms downloaded the documents from the online portal. MWRA received proposals from the following two firms: Distributed Solar Projects, LLC (DSP) and Sun Power Corporation, Systems.

The RFP requested pricing based on dollars per kilowatt hour (kWh) for generation and delivery of solar PV power. Proposers were instructed to take full advantage of available incentives (e.g., Solar Massachusetts Renewable Target (SMART) Program[2]; DOER "Leading by Example" (LBE) solar grant funding[3]) and tax credits, reflecting the benefit in the price proposal offered to MWRA. In addition to providing system capacity and Estimated Annual Production (kWh), proposers were required to submit information regarding the firm's project team organization, project experience, capital finance structure and system design.

Pursuant to Chapter 25A, §11C, proposals were evaluated to determine the lowest proposer demonstrably possessing the skill, ability and integrity necessary to perform the scope of services. Such services must have the primary intention to reduce the cost of energy in operating buildings, and yielding a savings to the facility. In addition, the responsible and eligible proposer presenting the demonstrated experience, the lowest price per kWh, and an advantageous Estimated Annual Production (kWh) would be deemed the lowest cost proposer.

[2] The SMART Program provides financial incentives for 3200 MWs of solar capacity. As more solar developers apply, the SMART Program's sixteen "capacity blocks" fill and incentives decrease. Given the current status of the SMART program, the Deer Island Treatment Plant solar canopy will fall into either capacity "Block IV" or "Block V". Block V incentives will be lower than Block IV incentives.

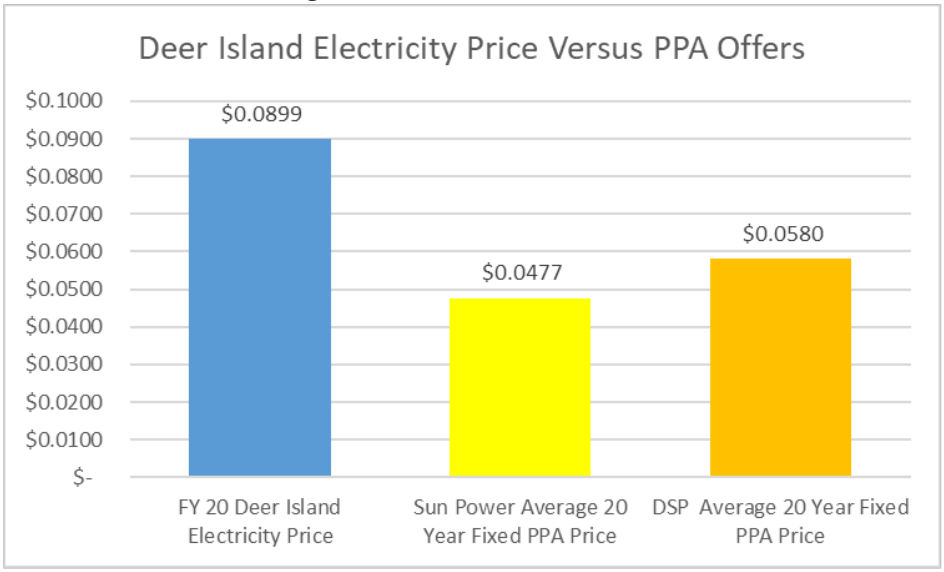
[3] Depending on availability of funding this grant, which targets solar canopies with energy storage, may be worth $875,000.

Both firms proposed to build solar canopies over Parking Lot #1 (the large parking lot north of Maintenance/Warehouse Building) and Parking Lot #2 (the smaller parking lot south of Reception/Training Building) at Deer Island. See Figure 1 below.

Figure 1: Location of Solar Canopies

Deer Island's electricity price for FY20 was $0.0899/kWh. As shown in Figure 2 below, Sun Power and DSP offered an average 20 year fixed electricity price of $0.0477/kWh and $0.0580/kWh, respectively.[4]

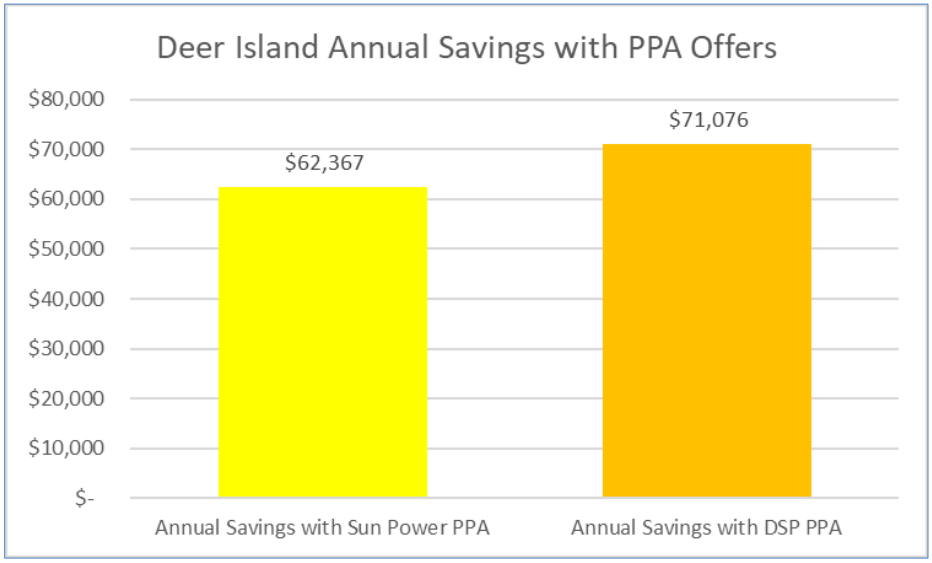
Figure 2: PPA Fixed Price Offers



[4] The fixed average 20 year price offerings ($/kWh) proposed by DSP and Sun Power are based on the project's anticipated SMART incentive and LBE grant funding. Prices offered were lowest (and resulting savings highest) when LBE funding was granted and the project fell in SMART base compensation Block IV. Prices were highest (and savings lowest) when LBE funding was not granted and the project fell in SMART base compensation Block V.

To determine which system would yield the greater savings in electricity costs, staff analyzed the generation capacity of the proposed systems. DSP proposed constructing a larger canopy than the Sun Power canopy. DSP's solar canopy system is capable of generating an Estimated Annual Production of 2.22 million kWh; whereas Sun Power's solar canopy system is capable of generating an Estimated Annual Production of 1.48 million kWh. As detailed in Figure 3, with a greater generation capability, DSP's proposed solar PV system will provide an estimated higher annual savings in electricity costs ($71,076) than the estimated annual savings ($62,367) from Sun Power's proposed solar PV system (based on the FY20 Deer Island electricity price). Simply put, although at a slightly higher dollar/kWh price, MWRA can purchase more electricity from the DSP system than the Sun Power system – yielding a greater savings.

Figure 3: Annual Estimated Savings from Solar Canopy Based on FY20 Electricity Price



In addition to advantageous annual savings, the DSP proposal was chosen based on the following:

- **Favorable References.** MWRA contacted a number of references for DSP and Sun Power. Both a Boston-based non-profit hospital network and a large HVAC manufacturing company use DSP as their "sole source provider" and "preferred contractor," respectively, for their long-term corporate-wide plans to design, develop, and construct solar arrays. Overall, DSP's references were very good.

- **Internal in-house capital.** Owned by BlackRock Real Assets, DSP has the ability to finance the operations of the project and facility by relying on in-house capital resources. This allows DSP to offer coordinated and seamless management.

- **Water management system.** DSP's solar canopy design included a unique "mini-gutter" storm water management system designed to sustain a three-inch/hour event (see Figure 4 below). In this system, alternately angled solar modules direct storm water from collection points into mini-gutters that run the length of the canopy and route water to larger cross gutters that lead to downspouts to the existing water management system. The mini-gutters also prevent icicle formation. Sun Power's design did not provide a storm water management system (rainwater will run through the spaces in between the solar panels). Figure 5 shows the proposed flat canopy design with dual-tilt, alternately angled panels.

Figure 4: DSP "Mini-Gutter" System

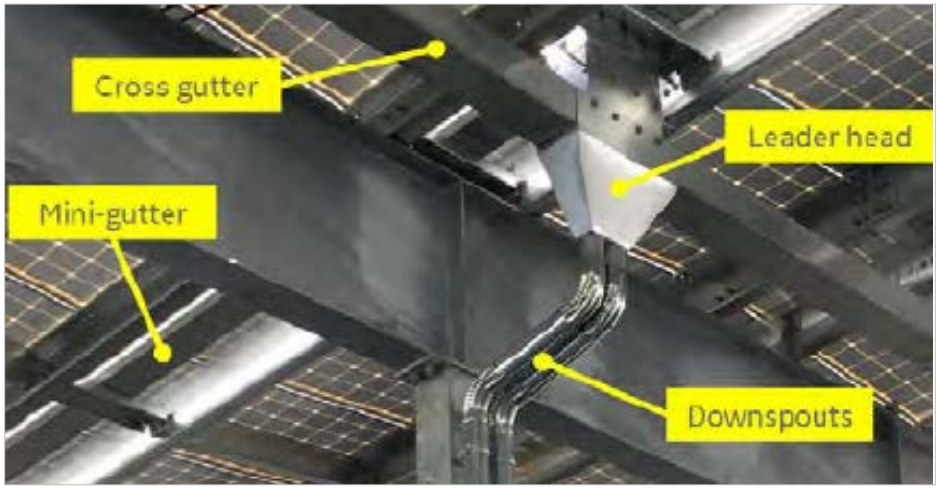


Figure 5: DSP Dual-Tilt Panels Picture

The proposed PPA and site license includes the financing, planning, permitting, installation, interconnection, commissioning, ownership, operation and maintenance of the solar PV canopy and battery energy storage system. Under the agreement, MWRA will purchase the electric generation from the solar canopy at a not-to-exceed fixed price for a term of 20 years. Depending

on state solar incentives and grants received after application to those programs, the fixed price will range from $0.0362/kWh to $0.0798/kWh (average of $0.0580/kWh); and the annual savings (based on the FY20 Deer Island electricity price) will range from $22,504/year to $119,648/year (average of $71,076/year). The two MW solar canopies offered by DSP will more than double Deer Island's current solar capacity (0.74 MWs) and include a 0.5 MW battery energy storage system to store solar power and discharge it when most beneficial.

For the reasons set forth above, staff recommend that Contract S591 be awarded to DSP. If award is approved, MWRA will enter into a PPA and site license with DSP's special purpose entity, 190 Tafts Avenue Solar Project 2020, LLC, which will be created after notice of award. Special purpose entities are separate legal entities created to fulfill narrow and specific objectives. They are commonly created by developers to more easily secure financing and reduce their risk on solar projects.

BUDGET/FISCAL IMPACT:

The projected average present value of savings is $965,944 based on the FY20 Deer Island electricity price and an average annual savings of $71,076/year over a 20-year term.

MBE/WBE PARTICIPATION:

There were no MBE or WBE participation requirements established for this contract due to the limited opportunities for subcontracting.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Agency-Wide Technical Assistance Consulting Services
Kleinfelder Northeast, Inc.
Contract 7604, Amendment 2

COMMITTEE: Wastewater Policy & Oversight

___ INFORMATION
_X_ VOTE

Michele S. Gillen
Director of Administration

John P. Colbert, P.E., Chief Engineer
Meredith R. Norton, Program Manager
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Amendment 2 to Contract 7604, Agency-Wide Technical Assistance Consulting Services, with Kleinfelder Northeast, Inc., extending the contract term by twelve months from December 29, 2020 to December 29, 2021 with no increase in the contract amount.

DISCUSSION:

Contract 7604 is an agency-wide, multi-discipline, technical assistance contract, which makes available, on a continuing, as-needed basis, the services of a qualified, professional engineering firm to assist MWRA staff on engineering study and design initiatives. Under this contract, the consultant has successfully worked on 28 task orders that include evaluations, structural assessments, construction cost estimates, permitting, code reviews, and design development. Some examples of the projects completed include evaluation and recommendations for Somerville Marginal Conduit failure; permitting, investigation and testing recommendations for structural evaluation of Belle Isle Siphon Sandcatcher; concrete/masonry, roof and structural review of the Bellevue 1 Standpipe and Arlington Heights Water Tanks; construction cost estimates for Nut Island Odor Control and HVAC System Improvements and Prison Point CSO Facility Improvements; and building code evaluations for Shaft 5, Hingham Pump Station, and Somerville Marginal CSO Facilities.

The Notice to Proceed for Contract 7604 was issued on June 29, 2018 to Kleinfelder Northeast, Inc., for a two-year term in an amount not to exceed $2,500,000. The contract was extended on April 22, 2020 under delegated authority by six months to December 29, 2020. This six-month time extension was required to complete several ongoing task orders, which are scheduled for completion by the end of December 2020. This time extension amendment is requested for the continued progress on longer duration task orders.

This Amendment

Amendment 2, if approved, will extend the current expiration date by one year, from December 29, 2020 to December 29, 2021, which will allow Kleinfelder to continue working on task orders that cannot be completed within the current contract duration.

The following on-going projects with Kleinfelder can be completed within the recommended time extension of this contract, thereby maintaining design-related knowledge and expertise and consistency from the design through engineering services during construction.

- River Road Drainage and Slope Stability – Geotechnical, Permitting, Design, Bidding and ESDC. In November 2018, a landslide occurred on the access road to the Wachusett Dam's Lower Gatehouse. A previous landslide along another section of the roadway had occurred in January 2008 and emergency repairs were made soon after to restore access. Kleinfelder, under task order, was contracted to design permanent repairs. The design for the repair project is complete and bids are expected in early December. The work includes demolition and replacement of the existing road, installing a new drainage system to meet Massachusetts Stormwater Standards, reducing the outboard slope of the roadway, narrowing the road to one lane, adding a new guardrail system, and providing additional support below the road with higher strength soils. During the design, hazardous soils were found, which required additional permitting from MassDEP and will require additional reporting during removal and disposal of the soils. Staff recommend that Kleinfelder complete the construction engineering and environmental services given that they performed the initial soils characterization, and developed and submitted the required permits, which required additional MassDEP submittals during the construction phase.

Figure 1 - River Road at Station 6+85

- Belmont, Spring Street and Lexington Street Pumping Stations Roof Replacements – Evaluation, Design and Bidding. This task order design is complete and in review prior to advertisement and bid. The anticipated construction award is March 2021. The design includes the replacement of the flat roofs at Belmont, Lexington Street, and Spring Street Pumping Stations. The construction work will entail replacement of the roofs, including membranes, flashing, insulation, conductor heads and downspouts, and the installation of a new OSHA-compliant roof access hatches and safety ladder systems. It is most efficient from both a time and cost prospective to have Kleinfelder complete the work under this contract asits staff have already completed the evaluation and

Figure 2- Spring St. Pump Station Roof

design and could then provide the final design documents and bidding services under the existing task order within the contract extension period.

- Lonergan Intake Lower Gatehouse and Southborough Facilities Fuel Storage Tank Replacements – Siting, Design and Bidding. This task order includes evaluation and final design services associated with the removal, disposal, and replacement of vehicle fuel storage tanks at Lonergan Intake Lower Garage (two tanks) and Southborough Facilities (two tanks). After one of the fuel tanks at Gillis Pumping Station developed a breach to its inner wall in July 2016, a fuel storage tank replacement program was implemented to replace tanks before potential failures. Tank replacement priorities were developed based upon tank construction, age of tank, and tank condition. This is the second of three planned fuel tank replacement projects. The Lonergan and Southborough tanks are past their useful life and require replacement.

Figure 3- Southborough Fuel Pumps

Replacement includes full piping, new vehicle fuel dispensers, upgraded leak detection and tank monitoring systems and new vehicle fuel management systems. The fifty percent progress design submittal will be completed in December 2020, final bid documents are scheduled to be completed in April 2021 and a construction notice to proceed is anticipated in July 2021. Staff recommend that Kleinfelder complete the work under this contract as they have already completed the siting, and are nearly complete with the fifty percent design. It is more efficient for them to complete the design instead of assigning it to a new consultant.

Presently, $2,358,366.53 (94.3%) of the total $2.5 million contract amount has been committed to various task orders, including each of the task orders outlined above; $1,362,190.97 (54.5%) of the total $2.5 million contract amount has been invoiced for task order-related work performed. Therefore, contract funds are adequate and staff are only recommending a time extension of 12 months under Amendment 2.

CONTRACT SUMMARY:

	AMOUNT	TIME	DATED
Original Contract:	$2,500,000.00	24 Months	06/29/18
Amendment 1:	0.00	6 Months	05/11/20
Amendment 2:	0.00	12 Months	Pending
Amended Contract Amount:	$2,500,000.00	42 Months	

BUDGET/FISCAL IMPACT:

Amendment 2 is a time extension only and has no budgetary impact.

MBE/WBE PARTICIPATION:

There were no minimum participation requirements established for these contracts due to limited opportunities for subcontracting.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Chelsea Creek Headworks Upgrade
BHD/BEC 2015, A Joint Venture
Contract 7161, Change Order 43

COMMITTEE: Wastewater Policy & Oversight

____ INFORMATION
__X__ VOTE

Corinne M. Barrett, Director, Construction
Martin E. McGowan, Construction Coordinator
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Change Order 43 to Contract 7161, Chelsea Creek Headworks Upgrade, with BHD/BEC 2015, A Joint Venture, for an amount not to exceed $1,000,000, increasing the contract amount from $83,280,801.06 to $84,280,801.06, and extending the contract term by 120 calendar days from December 5, 2020 to April 4, 2021.

Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 7161 in an amount not to exceed the aggregate of $250,000, in accordance with the Management Policies and Procedures of the Board of Directors.

DISCUSSION:

The Chelsea Creek Headworks is one of three remote headworks facilities that provides preliminary treatment and flow control of wastewater from MWRA's Northern Service Area before reaching the Deer Island Treatment Plant. Preliminary treatment at Chelsea Creek Headworks includes grit and screenings removal, which prevents excessive wear and maintenance of equipment at the North Main Pump Station, and protects the cross harbor tunnel from filling with debris. The Chelsea Creek Headworks was constructed in the 1960s and received its last significant upgrade in 1987.

This project is a major upgrade of the entire facility and includes automation of the screenings collection and solids conveyance system, allowing the facility to be unstaffed during dry weather flow. The grit collector systems are being replaced and existing climber screens are being replaced with catenary screens. Influent and effluent sluice gates are being replaced and the gate hydraulic operating system is being replaced with electric gate actuators. Carbon adsorbers are being

installed for odor control, HVAC systems are being upgraded, and redundancy is being added to both systems. Ancillary systems including the emergency generator, fuel oil tank, and transformer are being replaced. Instrumentation and control systems are being upgraded, the communications tower is being replaced and a communications building is being added. Abatement of hazardous building materials including paint containing PCBs, flood protection measures to protect the facility to the 100-year flood elevation plus 2.5 feet, and upgrades to meet current code requirements for egress, electrical, plumbing and fire suppression are also included.

Project Update

- The first three process channels have been completed and are available for service. The fourth process channel is currently undergoing rehabilitation. There have been multiple failures of the new stainless steel grit collector chain in the first two channels. MWRA, the Contractor, and the chain supplier disagree as to the cause of the failure and the parties have reserved their respective rights. The Contractor continues to repair the chain as it fails. New collector chain is being manufactured with an expected delivery to the site this month.

- The new odor control system, including filters, fans and carbon adsorbers was completed and placed into service in October 2020. The new makeup air units were placed into service in May 2020. The complete ventilation system will be balanced, with automatic controls in December 2020.

- Hazardous material abatement is approximately 99% complete.

This Change Order

With proposed Change Order 43 staff request authorization to extend the Contract Time by 120 calendar days and for a not-to-exceed sum of $1,000,000, as further described below.

On May 30, 2018, the Board of Directors approved Change Order 12 for a not-to-exceed amount of $1,000,000, with no increase in Contract Time, to remove additional deteriorated concrete and apply additional resurfacing materials to restore the concrete surfaces in each of the four process channels prior to applying an epoxy lining system. The actual depth of deteriorated concrete was significantly deeper than indicated in the contract documents.

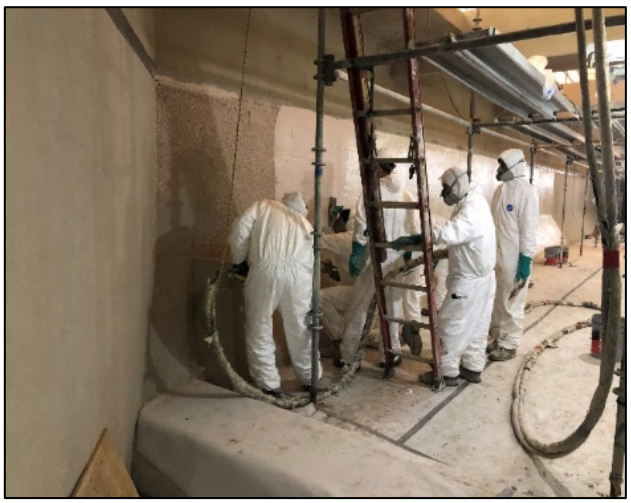
This required the Contractor to change from a water blast removal process to a dry blast removal process as a more effective method to get down to sound concrete. In addition, new resurfacing products had to be evaluated by the Consultant since the specified materials were not intended for the actual depths encountered. In-situ mock ups were done for two different resurfacing products to ensure required adhesion with the existing concrete substrate and the new epoxy lining system would be achieved. The selected product requires an additional step to brush blast all surfaces prior to applying the epoxy lining to provide the required surface profile. This step was not needed in the specified resurfacing products. Investigation, evaluation and mobilization of dry blast equipment took 40 calendar days to resolve.

Mock-up to evaluate resurfacing products

Resurfacing material applied to the channel floor

Once the Contractor resumed full production, an additional 20 calendar days were required to remove the additional deteriorated concrete, apply the new resurfacing materials and complete the final brush blasting. The 20 calendar day impact in process channel 1 was consistent with the time impact on the remaining three process channels. Since all of the work is on the critical path, this unforeseen condition resulted in a 120 calendar day cumulative impact to the project.

This condition was identified in February 2018 during the rehabilitation of the first process channel. At that time, the Contractor did not sign Change Order 12 because it did not include time for this additional work, nor additional costs associated with this delay. The Contractor ultimately submitted a notice of claim for additional time to complete the project. With more than 2 ½ years remaining in the contract term, staff monitored actual production rates for this work in subsequent process channels to ensure no other project issues would drive the critical path. Because the actual production rate was consistent in all four process channels, and no other issues have driven the critical path, the Contract Time should now be extended by 120 calendar days from December 5, 2020 to April 4, 2021.



Applying resurfacing material to channel walls

Spark testing final epoxy lining system

Also, the Contractor has requested approximately $1,000,000 for other costs it alleges are compensable as a result of the additional work and time to complete the project. Staff are reviewing those claimed costs to determine what is compensable under the Contract.

This item was identified by MWRA staff as an unforeseen condition. The Contract will expire on December 5, 2020, therefore, a time extension is necessary at this time. If MWRA and the Contractor cannot mutually agree on the compensable sum after staff's review, a unilateral change order will be issued.

Finally, the construction time extension is being evaluated for the impacts to the associated Arcadis U.S., Inc. design contract and the CDM Smith, Inc. resident engineering and inspection services contract.

CONTRACT SUMMARY:

	Amount	**Time**	**Dated**
Original Contract:	$72,859,000.00	1,460 Days	11/22/16
Change Orders:			
Change Order 1	$252,512.00	0 Days	06/29/17
Change Order 2*	$208,431.00	0 Days	07/24/17
Change Order 3	$1,129,740.20	0 Days	07/24/17
Change Order 4*	$237,870.00	0 Days	10/18/17
Change Order 5	$304,036.26	0 Days	12/21/17
Change Order 6*	$207,226.00	0 Days	01/26/18
Change Order 7	$1,278,783.00	0 Days	02/07/18
Change Order 8	$937,267.00	0 Days	02/22/18
Change Order 9	$17,321.00	0 Days	04/03/18
Change Order 10*	$20,879.00	0 Days	04/11/18
Change Order 11*	$200,000.00	0 Days	05/18/18
Change Order 12	$1,000,000.00	0 Days	05/31/18
Change Order 13*	$129,783.00	0 Days	06/12/18
Change Order 14	$500,000.00	0 Days	06/28/18
Change Order 15*	$24,634.00	0 Days	08/20/18
Change Order 16*	$21,584.00	0 Days	08/24/18
Change Order 17*	$109,065.00	0 Days	09/13/18
Change Order 18	$395,742.00	0 Days	09/28/18
Change Order 19*	$18,351.00	0 Days	10/26/18
Change Order 20*	$20,123.00	0 Days	11/06/18
Change Order 21*	$82,621.00	0 Days	11/13/18
Change Order 22	$182,792.00	0 Days	11/19/18
Change Order 23*	$70,125.00	0 Days	12/17/18
Change Order 24*	$15,618.00	0 Days	01/24/19
Change Order 25*	$149,469.00	0 Days	02/19/19
Change Order 26	$375,000.00	0 Days	03/14/19
Change Order 27*	$24,238.00	0 Days	05/21/19
Change Order 28*	$213,402.00	0 Days	06/17/19
Change Order 29	$400,000.00	0 Days	07/16/19

Change Order 30*	$24,122.00	0 Days	08/12/19
Change Order 31*	$164,177.00	0 Days	09/16/19
Change Order 32	$236,588.00	0 Days	09/25/19
Change Order 33*	$200,073.00	0 Days	11/20/19
Change Order 34	$425,000.00	0 Days	12/09/19
Change Order 35*	$248,039.60	0 Days	02/20/20
Change Order 36	$144,652.00	0 Days	03/31/20
Change Order 37*	$169,097.00	0 Days	06/30/20
Change Order 38	$226,853.00	0 Days	07/31/20
Change Order 39*	$24,128.00	0 Days	09/09/20
Change Order 40*	($15,556.00)	0 Days	09/09/20
Change Order 41*	$0.00	14 Days	10/21/20
Change Order 42*	$69,579.00	0 Days	Pending
Change Order 43	$1,000,000.00	120 Days	Pending
Total of Change Orders:	$11,421,801.06	134 Days	
Adjusted Contract:	$84,280,801.06	1594 Days	

*Approved under delegated authority

If Change Order 43 is approved, the cumulative value of all change orders to this contract will be $11,421,801.06 or 15.7% of the original contract amount. Work on this contract is approximately 86% complete.

BUDGET/FISCAL IMPACT:

The FY21 Capital Improvement Program includes a budget of $83,366,700 for Contract 7161. Including this change order for an amount not to exceed $1,000,000, the adjusted subphase total will be $84,280,801.06 of $914,101.06 over budget. This amount will be absorbed within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

The MBE/WBE participation requirements for this project were established at 3.4% and 3.8%, respectively. The Contractor has been notified that these requirements are still expected to be met.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Prison Point CSO Facility Improvements, Design, Construction Administration and Resident Engineering Services
Arcadis U.S., Inc.
Contract 7359, Amendment 4

COMMITTEE: Wastewater Policy & Oversight

___ INFORMATION
_X_ VOTE

John P. Colbert, P.E., Chief Engineer
Andrea K. Adams, P.E., Project Manager
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Amendment 4 to Contract 7359, Prison Point CSO Facility Improvements Design, Construction Administration and Resident Engineering Services with Arcadis U.S., Inc. to increase the contract amount by $1,159,259, from $3,390,100 to $4,549,359, and extend the contract term by 854 calendar days, from November 11, 2021 to March 14, 2024.

DISCUSSION:

The Prison Point CSO Facility in Cambridge came on-line in 1981. It provides screening and pumping of dry weather wastewater flows from portions of Cambridge and Boston to the Charlestown Branch Sewer. During wet weather, the facility provides screening, chlorination, detention and dechlorination of combined sewer flows from Cambridge, Boston and Somerville.

Prison Point CSO Facility–Main Building

On July 13, 2016, the Board approved the award of Contract 7359 to Arcadis, U.S., Inc. in an amount not to exceed $2,838,370, for a term of 60 months for design, construction administration and resident engineering services for the Prison Point CSO Facility Improvements project. This project will provide a major facility rehabilitation, including replacement of dry and wet weather mechanical bar screens, screenings conveyor system, grinder, influent and effluent sluice gates, several chemical feed and sampling pumps, diesel engines

driving the wet weather pumps; replacement of the underground fuel storage tank, five chemical tanks and two chemical waste tanks; installation of chemical induction units and additional sample lines; security updates; SCADA system upgrades; structural modifications including concrete repairs throughout the facility; and electrical and HVAC improvements. The design of this project is nearly complete, with the construction contract scheduled to be advertised for bidding in December 2020.

Amendment 1 was approved by the Board of Directors on January 17, 2018, increasing the contract amount of $302,189 and extended the contract term by three months to November 11, 2021. That amendment added out-of-scope design items including a new automatic transfer switch and standby generator, replacement of the lightning protection system on the Chemical Building, replacement of two additional diesel engines that drive the facility's storm pumps and lining of the pump discharge header that has experienced a number of leaks due to internal corrosion. Amendment 1 also included additional design efforts to relocate electrical room components to improve sequencing and constructability by reducing required power outages and temporary power needs.

Amendment 2 was approved by Delegated Authority on March 29, 2019 in the amount of $233,760, with no increase to the contract term, for out-of-scope items. The design added new MWRA standards for SCADA operator displays to reduce complexity, new facility radio system, improved total chlorine residuals analyzers, a towable generator quick connect docking station and uninterruptable power supply modifications. The Consultant also worked on approval of code variances and provided the e-Construction Orion software for use during construction activities.

Amendments 1 and 2 increased the level of effort required for design only and did not include the associated engineering services during construction. This additional level to support construction is a significant contributor to the costs of this amendment.

Amendment 3 was approved by Delegated Authority on September 16, 2019 in the amount of $15,781, with no increase to the contract term. That amendment added out-of-scope design services to obtain an air permit for the four new diesel engines that drive the wet weather pumps. A more extensive air permit was required by Mass DEP, which necessitated an additional level of effort that delayed the completion of the design documents.

The proposed amendment to the contract results in a total design and resident inspection services cost of $4,549,359. The current construction estimate is $41.5 million, which is significantly higher than anticipated when the design contract was proposed. This is due to additions of equipment to the scope, the complexity of upgrading an operational facility, and changes made to sequence the work activities. In order to complete the work, individual channels and pump units need to be taken out of service, which will reduce the capacity of the facility and increase the potential for untreated CSO discharges. A second construction shift for a 12-month period was added to reduce the amount of time that the capacity is reduced and limit the construction period

to 24 months. These changes require additional level of effort for engineering services during construction, including full-time additional resident engineering support services during a second shift. Accordingly, the total cost of this contract has increased substantially from the original proposal, along with the scope of the rehabilitation project. However, the cost for design and construction administration services relative to the construction cost is comparable to other rehabilitation projects.

As part of negotiations, Arcadis agreed to a Guaranteed Maximum Price (GMP) instead of a combination of Cost Plus Fixed Fee and Cost Plus Percentage Fee for the remaining scope-of-work on this contract. A GMP provides some assurance to the MWRA, as all scoped work will be completed within the budget provided. Only out-of-scope work during construction would be eligible for an amendment. Moreover, Arcadis agreed to reduce the contract profit rate of the amendment by 2%.

This Amendment:

Amendment 4 will increase the contract amount by $1,159,259, from $3,390,100 to $4,549,359, and extend the contract term by 854 calendar days.

The amendment consists of the following.

<u>Additional Time for Design Services</u> 28 months

Design of this complex project has taken significantly longer than originally anticipated. Design services were originally planned to take 21 months. An additional 28 months was required to complete the design. The time extension was impacted by:

- Time required for Massachusetts Department of Environment Protection approval and public review of the more stringent air permit than originally anticipated for the new diesel engines.
- Additional scope that was added after the completion of the preliminary design report, including replacement of the standby generator, additional diesel engines, lightning protection on the Chemical Building, lining of the discharge header, installation of a towable generator quick connect, facility radio system, total chlorine residual improvements and uninterruptable power supply modifications. The Consultant required additional time to incorporate lessons learned from the Chelsea Creek Headworks project into the design documents.
- The Consultant's project manager and project engineer were changed three times, contributing to delays in the submittal of the Preliminary Design Report.

Diesel Engine to be Replaced

- Given the project complexity and need for thorough review and comment, the Authority also took more time than allotted in the schedule to review the 90% and 100% submittals.

Although the time extension is for 28 months, the Consultant has only requested 12 months of project administration services as detailed later in this staff summary.

Resident Engineering and Resident Inspection Services $522,965

A significant portion of this project involves improvements to the facility's wet weather treatment and pumping system. To keep the facility operational during construction, only a portion of the system's equipment will be taken out of service to complete the required upgrades. One channel and one wet weather pump will be taken offline at a time to replace the associated pump engine, influent sluice gate and catenary bar screen, and to perform concrete repairs. This approach reduces the facility wet weather capacity by one third and requires a long construction period to complete all modifications. Initially the project was to have a 24-month construction schedule; however, the complexity of sequencing and the additional scope items increased the construction period to 36 months. To shorten this period of reduced treatment capacity and limit the potential upstream combined sewer overflows during large storm events, a second construction shift for one year will be added during the wet weather equipment system improvements.

The original contract includes funds for construction oversight by a resident engineer (RE) on the first shift for two years. A resident inspector (RI) will be added to provide construction oversight of the second shift work. This includes one hour per day for shift turnover between the regular shift resident engineer and the second shift resident inspector for required daily coordination.

Arcadis was unable to find an RE, with qualifications required for this complex rehabilitation project, at a rate close to their July 2020 proposal and, therefore, could not commit to a contract extension unless the rate was adjusted to reflect current market conditions. The rate they proposed is in line with rates seen in a separate as-needed resident engineering services contract. Consideration was given to removal- of the RE services from this contract, and rebid the resident engineering and inspection services separately. After consideration, it was decided that the benefits of maintaining the same designer and resident engineering and inspection staff on this project outweigh the risk of rebidding. Based on other recent procurements for RE services, there is uncertainty in MWRA's ability to receive proposals at a rate more favorable than the rate negotiated with Arcadis. In addition, another contract would also incur additional contract administration cost. The increase in the contract rate for the resident engineering hours allows Arcadis to provide experienced and qualified engineers.

Out-of-Scope Construction Administration $388,936

Due to the complexity of the construction sequencing, two shifts for construction, and increases in equipment replacements, an additional level of effort is required for construction administration services to ensure sufficient consultant support is provided, and includes the following:

- Additional project manager efforts to resolve engineering issues, project sequencing, and coordination issues are required. The original scope of the contract included one day a week of project manager support. Based on recent MWRA facility rehabilitation projects, including Nut Island Headworks Odor Control and HVAC Improvements, and Chelsea

Creek Headworks Upgrade, the project manager provides between half and full-time support; thus, adequate consultant support is provided for construction activities. To support this $41.5 million construction project, the project manager coverage was increased to half time.

- Due to the increase in the complexity and additional equipment added to the contract during the design, additional support is required to complete this project including:
  1. Specialty engineering support (structural, mechanical, electrical engineer, etc.) during construction for meetings and inspections to ensure the systems and equipment are constructed to meet the design specifications and plans.
  2. Additional meetings to coordinate operation shutdowns for the pump discharge piping coating.
  3. Additional startup services including checkout and witnessing of all field, shop, functional and performance testing, development of a turnover package compiling documents related to installation, testing, training and commissioning of equipment and development of a Facility Handbook to include detailed Standard Operating Procedures (SOPs).
  4. Additional SCADA system integration, start-up, testing, documentation, training and support services.
  5. Incorporation of additional equipment into the record drawings.

- Since the contract award in 2016, the Massachusetts State Building Code was updated to change the responsibility from the contractor to the consultant for structural inspections and tests (780 CMR Chapter 17) requiring an additional level of effort.

Out–of-Scope Design $173,570

Additional out-of-scope design work is required to be completed. These items include:

- Preparing revisions to the construction documents to revise the location of an electrical ductbank, the alignment of the temporary dry weather bypass pumping system, and the locations of trailers and staging areas to coordinate with a newly installed fence at the adjacent DCR property.
- Additional contract drawings and specifications for items added in earlier amendments including a new standby generator, lightning protection on the Chemical Building, replacement of additional diesel engines for the storm pumps, lining the discharge pipe force main, radio system, total chlorine residuals analyzer improvements, towable generator quick connect, and uninterruptable power supply modifications. These items significantly increased the number of contract drawings and specification sections. Additional costs include production of microfilm copies of the bid documents as required for archiving.
- Inclusion of COVID-19 requirements in the design documents.
- Additional administration and management services were required for the additional 28 months of design. An additional 12 months of administration and management services at the existing contract rate were negotiated. The reduced cost is attributed to the Consultant recognizing some responsibility for the time delay for this contract. This item is for 12 months of administration and management.

Escalation $73,788

This item is for escalation of labor rates associated with the 28-month time extension. These costs are associated with the contract time extension and are associated with design and engineering services during construction.

Submittals and Requests for Information

The number of submittals and requests for information are specified in the scope of services. The additional equipment added to the design and complexity of the construction to an operating facility may result in exceeding these quantities during the construction phase of the project. In addition, depending upon the contractor's practices, the number of submittals and requests for information may vary from that specified in the design contract.

CONTRACT SUMMARY:

	AMOUNT	TIME	DATED
Contract Amount:	$2,838,370	1,825 days	9/1/16
Amendment 1:	$302,189	93 days	10/21/18
Amendment 2*:	$233,760	0 days	3/29/19
Amendment 3*:	$15,781	0 days	9/16/19
Proposed Amendment 4:	$1,159,259	854 days	Pending
Adjusted Contract Amount:	$ 4,549,359	2,772 days	

* Indicates approved under delegated authority.
Amendments 1 through 4 increase the total contract amount by 62%.

BUDGET/FISCAL IMPACT:

The FY21 CIP includes a budget of $4,140,100 for Contract 7359. Including this amendment in the amount of $1,159,259, the adjusted contract total will be $4,549,359 or $409,259 over budget. This amount will be covered within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

The minimum MBE and WBE participation requirements for this contract were established at 7.18% and 5.77% respectively. Arcadis U.S. Inc. committed to 15% and 5.77%, respectively, and will be unchanged by this amendment.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Piping Relocation at the Pelletizing Plant
Walsh Construction Company II, LLC
Contract 7173, Change Order 2

COMMITTEE: Wastewater Policy and Oversight

___ INFORMATION
_X_ VOTE

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

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Change Order 2 to Contract 7173, Piping Relocation at the Pelletizing Plant, with Walsh Construction Company II, LLC, for a lump sum amount of $227,168.63, increasing the contract amount from $4,304,460.90 to $4,531,629.53, with no increase in contract term.

Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 7173, in an amount not to exceed the aggregate of $100,000, in accordance with the Management Policies and Procedures of the Board of Directors.

DISCUSSION:

The Pellet Plant located in Quincy receives processed sludge from the Deer Island Treatment Plant via two conduits within the Inter-Island tunnel system between the two facilities. The sludge is further processed into fertilizer pellets, which are distributed to nine 34,000 cubic feet storage silos. Five of the silos are adjacent to the plant while four of the silos are located approximately 500 feet away down the access road from the plant. The pellets are distributed to the four remote silos through four 5-inch galvanized steel pipes. The remote silos account for approximately 45% of the plant's pellet storage capacity. Pellets from the storage silos are then placed onto trains or trucks and transported to end users.

The pellet piping conveyance system was originally installed on the exterior northern wall of Building No. 11 in the Fore River shipyard that was demolished in 2018. The original pipeline system was removed and has been out of service. The remote silos cannot be utilized for storage of pellets until the new pipe system is replaced.

Contract 7173 was awarded in July 2019 and includes the installation of a new stand-alone pellet piping system. Staff anticipate the new piping system will be installed and fully functional before the end of December 2020. The work includes demolition of an existing ten-inch storm drain line,

reconfiguration of the existing electrical duct bank system, reconfiguration of a portion of the existing railroad tracks, installation of 31 standalone pipe supports and associate pneumatic and pellet conveyance piping systems, temporary power during construction and the disposal of hazardous materials.

This Change Order

Change Order 2 consists of the following four items:

Increase Hazardous Materials Disposal Allowance $114,000.00

The contract has an allowance for Hazardous Materials Disposal in the amount of $50,000 to remove the soils related to the excavation effort required for the new duct bank and the pipe supports for the pellet piping system. Four of 12 pits were tested (locations were along the perimeter of old Building No. 11) for contaminated soil and all four results indicated the soil could be disposed of by normal landfill means. The Contractor was required to test the soils before transporting to a waste handling facility. Tests of some of the soil, located by the old shipyard cranes, indicated high levels of lead. This soil was not tested during the design phase. The Contractor is required to convert the leachable metal (lead) into mineral crystals that are resistant to leaching into the environment, so a landfill will accept the material. Therefore, this allowance must be increased to dispose of the additional soils.

This item has been identified as an overrun. MWRA staff, the Consultant, and the Contractor have agreed to an amount not to exceed $114,000. The Contractor proceeded with this work at its own risk in order to continue with the remainder of the contract work.

Removal of Existing Concrete Slabs and Retaining Blocks $50,554.02

An existing electrical duct bank was required to be relocated to facilitate the installation of the new pellet piping conveyance system. During the excavation effort, a large buried concrete slab (Figure 1), that supported cranes that were previously utilized at the Fore River shipyard, was encountered.

Figure 1 Crane Slab Demolition

Figure 2 Concrete Retaining Blocks

In addition, several concrete retaining blocks (Figure 2) utilized to support the previous Building No. 11 foundation were also encountered. The slabs and the concrete blocks were required to be removed to install the new duct bank and the pellet line supports. The existing as-built documents did not identify the existing slabs or blocks on the drawings.

This item was identified by MWRA staff as an unforeseen condition. MWRA staff and the Contractor have agreed to a lump sum amount of $50,554.02 for this additional work. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Furnish and Install Pipe Support Posts in Lieu of those Specified $34,691.61

Figure 3 Pipe Support Posts

The design documents included the details of the pellet piping support posts, but only included wind pressure and wind speed in their basis of design. The Contractor was required to perform the final pipe stress analysis once the exact pipe system placement was determined in the field. That analysis indicated that the pipe support posts depicted on the Contract drawings were undersized and required to be upsized to adequately account for the stresses imposed on the pipe support posts.

This item has been identified as an unforeseen condition. MWRA staff, the Consultant and the Contractor have agreed to a lump sum amount of $34,691.61. The Contractor proceeded with this work at its own risk in order to continue with the remainder of the contract work.

Furnish and Install Schedule 80 Ceramic-Backed Elbows in Lieu of those Specified $27,923.00

The design documents incorrectly depicted the new ceramic backed elbows having a radius of 90 degrees. The existing elbows had a radius of 60 degrees, which is required to reduce the metal loss of the elbows due to the abrasive nature of the pellets as they are transported through the pipelines from the plant to the remote silos. The Consultant failed to verify the correct dimensions of the existing elbows during site visits in the design phase (Figure 4).

This item has been identified as a design error. MWRA staff, the Consultant and the Contractor have agreed to a lump sum amount of $27,923.00. The Contractor proceeded with this work at its own risk in order to continue with the remainder of the contract work.

Figure 4 Ceramic Backed Elbows

CONTRACT SUMMARY:

	AMOUNT	TIME	DATED
Original Contract:	$4,250,445.00	450 Days	08/13/19
CHANGE ORDERS:			
Change Order 1*	$54,015.90	0 Days	05/27/20
Change Order 2*	$227,168.63	0 Days	Pending
Total Change Orders	$281,184.53	0 Days	
Adjusted Contract:	$4,531,629.53	450 Days	

*Approved under delegated authority

If Change Order 2 is approved, the cumulative total value of all change orders to this contract will be $281,184.53 or 6.6% of the original contract amount. Work on this project is approximately 98% complete.

BUDGET/FISCAL IMPACT:

The FY21 CIP includes a budget of $4,250,000.00 for Contract 7173. Including this change order for $227,168.63, the adjusted sub-phase will be $4,531,629.53 or $281,184.53 over budget. This amount will be absorbed within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

The D/MBE and D/WBE participation requirements for this project were established at 7.24% and 3.6%, respectively. The Contractor has been notified that these requirements are still expected to be met.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Update on Lead and Copper Rule Compliance – Fall 2020

COMMITTEE: Water Policy & Oversight

X INFORMATION
VOTE

Beverly Anderson, Project Manager, Public Health
Stephen Estes-Smargiassi, Director, Planning and Sustainability
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

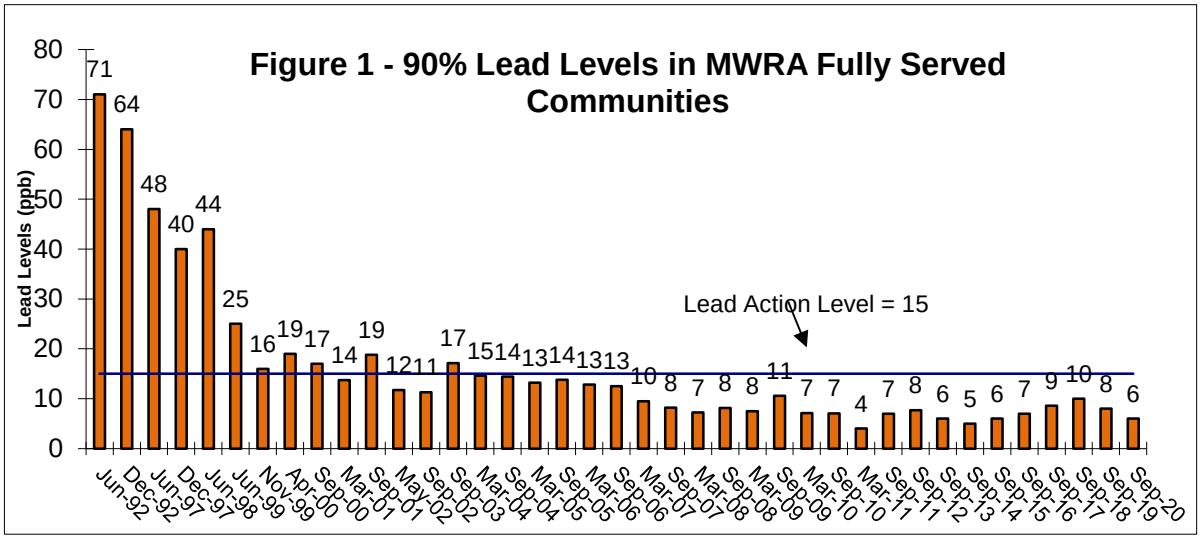
For information only.

DISCUSSION:

Under EPA's Lead and Copper Rule (LCR), each year MWRA and every fully supplied community must collect and test tap water in a sample of homes *that are likely to have high lead levels*. These are usually homes with lead services or lead solder. EPA requires that nine out of ten of the sampled homes have lead levels at or below the Action Level of 15 ppb.

MWRA and its communities conducted the 2020 LCR sampling round beginning in September 2020. The 90th percentile lead value for the system as a whole was 6.47 parts per billion (ppb). The MWRA system has been below the lead Action Level of 15 ppb in every round since 2004.

In addition to determining how the system as a whole performs, EPA looks at each individual community's results. Three communities were individually over the lead Action Level: Boston, Medford, and Melrose. Medford was above the Action Level in 2019 as well as for several rounds before then. Melrose was over in 2017; and Boston was last over in 2004.



Staff have notified all three communities that exceeded the lead Action Level. Massachusetts Department of Environmental Protection (MassDEP) has had extensive interactions with all three communities regarding the requirements of the Lead and Copper Rule. Each will need to meet the rule's public education requirements, including mailing updated lead education brochures to all customers, and each will be required to meet lead service line replacement requirements set by MassDEP. MWRA has provided an updated educational brochure and staff have offered assistance in working with MassDEP on the educational requirements and documentation that demonstrates that the community has replaced the required number of service lines.

Under the LCR, each community is also required to collect samples from two schools or childcare facilities. This year, MWRA provided additional guidance to communities on appropriate sampling in school buildings that were not in full use and on steps building managers could take to keep water fresh in buildings with less than normal water use. Six schools in five communities had one sample above the Action Level as part of the LCR testing. As with residential samples, MWRA staff immediately contact any community that has a school sample above the Action Level. All school data are available on DEP's online school database that includes over 38,000 school test results from MWRA communities. A link to the DEP database is available on the MWRA webpage.

MWRA has formally transmitted these results to MassDEP. The results were also transmitted to the communities and, through them, to each individual homeowner or school that collected a sample.

School and Childcare Sampling Program

MWRA continues to offer no-cost laboratory analysis services to any of our customer communities that want to sample drinking water taps in schools or childcare facilities. The program is offered in coordination with the Massachusetts Department of Environmental Protection's similar program. As of the end of October, MWRA's laboratory has conducted over 38,000 tests from 507 schools and childcare facilities in 44 communities.

Lead Service Line Replacement Program

In March 2016, the Board approved an enhancement to the Local Water System Assistance Program to make $100 million in 10-year interest-free loans available to communities solely for efforts to fully replace lead service lines. Under MWRA's Lead Service Line Replacement Loan Program, each community can develop its own replacement program, tailored to its local circumstances.

During the first four years of the program (through August 2020), MWRA has distributed a total of $17.6 million in Lead Service Line Replacement Loan Program funds to eleven communities:

- Quincy: $1.5 million in FY17;
- Winchester: $500,000 in FY17, $500,000 in FY18, $600,000 in FY20, and $600,000 in FY21 ($1.6 million total);
- Newton: $4 million in FY17;
- Marlborough: $1 million in FY18, $1 million in FY19, and $1 million in FY20 ($3 million total);

- Revere: $195,000 in FY18;
- Winthrop: $284,000 in FY18, $487,850 in FY19, and $690,000 in FY20 ($1,461,850 total);
- Needham: $1 million in FY18;
- Everett: $1 million in FY19, and $1 million and $500,000 in FY20 ($2.5 million total);
- Chelsea: $100,000 in FY19, $300,000 in FY20, and $300,000 in FY21 ($700,000 total);
- Somerville: $900,000 in FY20; and
- Weston: $160,000 in FY20.

Boston Water and Sewer Commission has its own long standing lead service line incentive program providing the first $2,000 toward replacement of lead service lines on private property with a zero-interest loan over 48 months for any cost above that.

Revisions to the Lead and Copper Rule

EPA's long awaited revisions to the Lead and Copper Rule have still not been released. As of early November, the proposed final rule is still under review by the White House Office of Management and Budget. It had been anticipated that the revised LCR would be released in September 2020. MWRA submitted comments on the draft rule and participated in developing comments with the American Water Works Association, the Association of Metropolitan Water Agencies and other water professional associations.

It is expected that there will be new requirements for inventorying and disclosing the presence of lead service lines, more intense and faster outreach after a lead Action Level exceedance, and potentially an additional trigger for action at 10 ppb. Once EPA releases the rule, staff will provide a briefing for the Board of Directors and will work with the Advisory Board on community outreach and eventually training on the new rule requirements.

Review of Corrosion Control Treatment

While awaiting EPA's revisions to the LCR, staff continue to review long-term water quality data and the state of knowledge about corrosion control treatment in case a change in corrosion control is ever desired or required. That effort has included construction of a pipe loop system with "harvested" lead service lines to enable future evaluation of possible changes to treatment. Initially, the system is being operated with MWRA finished water to acclimate and stabilize the harvested lead pipes. This period will help provide a more realistic evaluation of any potential treatment changes.

Evaluating a corrosion control treatment change is a significant undertaking. It would require careful consideration of both the level of confidence in the expected changes in long-term lead levels, as well as the likelihood of significant water quality problems during the treatment transition. In addition, the potential for issues in wastewater treatment and environmental impacts, if the addition of orthophosphate is recommended would need to be evaluated.

Prior to beginning any alternative treatment evaluation, staff anticipate consulting with an expert panel to provide input into the type of treatment adjustments to be considered and the type of evaluations to be included. DEP and EPA staff, as well as community and Advisory Board staff, would be invited to participate in the panel discussions, as has been MWRA's practice for all prior treatment evaluations.

BUDGET /FISCAL IMPACT:

MWRA began modern effective corrosion control treatment to reduce lead and copper levels at the tap in 1997. MWRA's corrosion control treatment involves raising the pH and alkalinity to the water to provide a stable, non-corrosive product, reducing the potential for both lead and copper to leach from customer's home plumbing. The annual average cost for corrosion control is approximately $3.6 million ($3.4 million in soda ash costs, and $0.2 million in carbon dioxide costs.)

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Update on the Status of Water Supply Protection Efforts

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COMMITTEE: Water Policy & Oversight

__X__ INFORMATION
_____ VOTE

Thomas J. Durkin
Director of Finance

Stephen Estes-Smargiassi, Dir. Planning and Sustainability
Valerie Moran, Director of Waterworks
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

Per the discussion at the last meeting of the Board of Directors, this informational staff summary provides a broad overview of the current status of water supply protection efforts and how various aspects of those joint responsibilities are being carried out by DCR and MWRA. It includes a review of DCR's water supply protection division staffing and an update on the various projects that the Authority is both currently undertaking and planning to undertake on behalf of the DCR.

RECOMMENDATION:

For information only.

DISCUSSION:

Need for Watershed Protection:

All water systems rely on the quality of their source water and the type of treatment they provide in delivering safe and aesthetically acceptable water to their customers. The Environmental Protection Agency (EPA) requires that all but a select few water systems provide filtration of their source water to ensure public health. Those systems with less well-protected sources must rely on more complicated and costly types of water filtration to overcome their poorer or less stable source water quality. Systems with reasonably well protected source water may use less complex forms of filtration. Only a few systems, like MWRA, with excellent watershed protection and stable high quality source water, can and are allowed by EPA to provide only disinfection.

EPA has 11 criteria, for systems like MWRA, to avoid filtration in the Surface Water Treatment Rule. These include two related to source water quality and two on the adequacy of watershed protection. Both of the source water quality criteria, turbidity (a measure of the particles in the water) and fecal coliform concentrations, require active watershed protection efforts to stay within the prescribed limits. In particular, MWRA has experienced what can happen if efforts to prevent birds from roosting on the reservoir are ineffective, for even a few days. What seemed like minor lapses in bird harassment efforts over a few days in 1998 resulted in fecal coliform levels being

over the filtration avoidance criteria, and created the factual basis for EPA's (ultimately unsuccessful) lawsuit in federal court to require MWRA to add filtration to the Wachusett Reservoir source.

EPA's watershed protection criteria include having a protection plan that demonstrates the water system has "ownership or control of the land within the watershed…for the purpose of controlling activities which will adversely affect the microbial quality of the water" and demonstrating each year that the plan and related activities are successful. The Massachusetts Department of Environmental Protection (DEP) approved watershed protection plans include both actions to manage existing activities within the watershed, such as wastewater disposal, runoff and drainage, and other human activities, but also actions to prevent future development that could endanger the water quality. Both management of current risks and prevention of future risks are required for successful maintenance of water quality and MWRA's filtration avoidance determination.

The watershed protection plans approved by DEP to maintain MWRA's waiver of filtration, include a continuing program of land acquisition to continue the system's ability to control land development activities that could adversely affect water quality. EPA has recognized the value of ongoing efforts to protect undeveloped land over time and the benefits of protecting higher value lands rather than simply owning more land.

Over the years since the watershed protection plans were first developed and approved by DEP in 1993, the land acquisition plans (along with on-going regulatory activity under the Watershed Protection Act) have focused on the need for an ongoing commitment to preventing adverse development on critical lands. This has been accomplished through support of good local community planning; use of Watershed Protection Act (Cohen Bill); and the purchase of conservation restrictions (CRs) or land in fee simple. The DCR/MWRA approach has been to identify highest "value" critical lands and intercept them before adverse development occurs. The pace and scale of the program are linked to the ability to "stay ahead" of development which might adversely affect water quality. At Wachusett Reservoir, lands owned rose from less than eight percent in 1985 to 30 percent today, with system-wide ownership at over 47 percent. As discussed below, land acquisition is now funded directly by MWRA through its Capital Improvement Program (CIP).

DCR's watershed protection program is operated under a 5 Year Watershed Protection Plan (updated in 2018) that is approved by DEP which regulates all water supplies in the Commonwealth under federal and state rules. DEP and EPA maintain close oversight on the DCR and MWRA watershed control, intake, and treatment programs.

Watershed Protection Responsibility and Funding:

When the Massachusetts legislature created the MWRA in 1984, the then MDC[1] water system was divided into two parts. The pipes, tunnels, pumping and treatment facilities were transferred to the MWRA. Ownership and management of the watershed land, and supply reservoirs and dams was kept with the MDC. Initially MWRA was required to reimburse the Commonwealth for 50 percent of the costs of watershed protection (presumably recognizing the dual benefits of the watershed to

[1] The Metropolitan District Commission was responsible for a number of regional activities, including the metropolitan water and sewer systems. Subsequently in 2003, the remaining functions of MDC and the Massachusetts Department of Environmental Management were merged into the newly created Department of Conservation and Recreation (DCR), including the responsibilities for maintaining and protecting MWRA's water supply.

both users of the water system but also for recreation and land preservation for all state residents. However, over a period of years, that was legislatively increased to first 75 percent and then 100 percent.

MDC and MWRA developed a Memorandum of Understanding that provided the practical division of responsibilities for the two agencies within the statutory framework, ranging from who cut the grass where, to which agency made certain operating and policy determinations. The MOU has been amended several times to further clarify the division of responsibility.

While the MOU was successful dividing responsibilities, the capacity of the two agencies to accomplish what needed to be done diverged. As an independent agency, MWRA evaluated the needs to the water supply system under its control and developed the capital and operating budgets, and staffing necessary to maintain and upgrade those systems. As a state agency, MDC (and then the DCR) was subject to annual legislative appropriations and hiring slowdowns and freezes despite the reimbursement from MWRA. This was a recurring frustration in accomplishing necessary watershed protection efforts, and MWRA repeatedly needed to step in to provide resources or contracts to ensure that necessary work was completed. This resulted in the MOU being amended again, in 2004, to more clearly allocate control of water related functions to MWRA and to increase fiscal accountability and oversight of the watershed function, now housed within the DCR. The MOU has provisions for MWRA to step in and directly manage any function that DCR is unable to undertake.

At the same time as the MOU was being revised in 2004, legislation was passed to create the Water Supply Protection Trust. The Trust is designed to provide a dedicated funding mechanism for watershed protection, protected from the vagaries of the state budgeting process. DCR develops an annual work plan and budget that is reviewed and coordinated with MWRA and MWRA Advisory Board staff, and approved by the five-person Water Supply Protection Trust, chaired by the MWRA Executive Director. The Trust holds quarterly meetings to oversee DWSP's program and finances.

Current Expense Budget Process:

Each year, MWRA prepares a Current Expense Budget (CEB) that reflects the best available information for anticipated expenditures and revenues. Within its Indirect Expense Budget, MWRA budgets for the reimbursement of the operating and major project costs of the DCR Office of Watershed Management. The DCR budget is based on the annual Fiscal Year Work Plan and associated budget approved by the Water Supply Protection Trust, with the exception that MWRA applies a vacancy adjustment to the Wages & Salaries and Fringe Benefit line items of the budget to realistically reflect the expected timing of new hires (as it does for MWRA staffing).

The annual budget process begins in the fall, with the submission of the DCR Office of Watershed Management's proposed budget typically due to MWRA in November. Typically, in February, after review by MWRA senior staff, the Watershed budget is included as an indirect expense in the Proposed CEB presented by the Budget Department to the Board of Directors Directions and to the Advisory Board for its comments and recommendations. During the spring, the DCR Office of Watershed Management typically provides revised versions of their budget based on the latest information available for incorporation in the proposed final budget.

There is no current mechanism for the DCR Office of Watershed Management to have a multi-year capital budget comparable to the MWRA's CIP and the Commonwealth has not prioritized its limited environmental bond funds for watershed functions in recent years[2]. Under the terms of the MOU, if DCR is unable move a critical project forward, MWRA can take over the responsibility. MWRA has taken over a number of critical watershed maintenance activities. Land acquisition is funded directly by the MWRA with specific parcel purchases being approved by the MWRA's Board based on joint recommendations by DCR and MWRA staff. MWRA has taken complete control of inspection and maintenance of the major water supply dams, and MWRA has taken over a number of other capital projects as discussed with the Board in October 2019 and detailed below.

Expense Tracking, Billing, and True Ups:

MWRA reimburses the DCR for incurred expenses. The reimbursements are now presented for payment monthly in arears. Accruals are being made monthly based on estimated expenses provided by DCR and then trued up based on the monthly invoice. At the end of the fiscal year, an accrual is provided by DCR to the MWRA to account for any encumbrances that are expected to be paid by the Commonwealth's August 31st deadline, in order for them to be attributed to the current MWRA fiscal year. For FY2020, DCR did not provide an accrual that fully accounted for all the expected encumbrances, which led to an unanticipated balance forward of $959,000 being carried into MWRA's FY2021 CEB.

MWRA and DCR Coordination:

DCR and MWRA staff created a series of committees to maintain regular communication and coordination of activities. These include:

- Reservoir Operations Group which meets quarterly to review reservoir conditions, discuss operations changes, and coordinate maintenance and construction projects;
- Water Quality Sampling and Analysis Team which generally meets quarterly in conjunction with Reservoir Operations Group to review water quality data, and laboratory and sampling processes;
- Land Acquisition Panel which meets regularly to evaluate potential land purchases and make recommendations to be forwarded to the MWRA Board of Directors; and
- DCR/MWRA Coordination meetings held every other month with DCR and MWRA managers to maintain open communication on priorities and major projects.

The MOU and Water Supply Protection Trust work plan and budget process also provide formal as well as informal opportunities for DCR and MWRA staff to jointly set program priorities and adjust them over the course of the year.

Even beyond the formal policy parameters set by the MOU, the two agencies frequently work together to efficiently manage activities across the several hundred square miles of the watershed region rather than duplicate efforts or equipment. Recent examples include MWRA making a single purchase of water quality sampling and analysis equipment for both teams, and providing maintenance of the equipment, so that both DCR and MWRA teams would be using the same

[2] If the Commonwealth were to use bond funds for watershed projects, MWRA is obligated to reimburse the Commonwealth for the annual debt service costs.

equipment for consistent results under both regular and emergency conditions. DCR agreed to provide routine maintenance visits to MWRA's new Quabbin water quality monitoring buoy, which avoids MWRA needing a boat and having to send staff all the way from Southborough to Quabbin. MWRA purchased and maintains the spill containment and response materials at the reservoirs, and provides training to DCR, MWRA and community staff each year. When there is a spill, DCR staff are frequently the first on the scene and can promptly deploy the equipment. MWRA procures the in-reservoir invasive plant species management contracts each year, and DCR assists in daily oversight and proper disposal of the removed plant materials. MWRA now provides all laboratory services for DCR's watershed, tributary and reservoir sampling, rather than duplicating that function. The general pattern is that MWRA's budgeting and procurement processes provide flexibility when needed, and DCR has the staff "on the ground."

Staffing:

While the two agencies' activities are generally well coordinated, the issue of maintaining an adequate level of staff and resources for watershed protection has been a recurring issue since the split of functions with the creation of the MWRA. A review of agency records provides some clear examples. In 1990, the original watershed protection plans required by the federal Surface Water Treatment Rule were developed under an MWRA contract (with active MDC staff involvement) because the then-MDC was unable to move quickly enough to meet the regulatory timeline. As the protection plans were being developed, MDC reported on its staff situation. The Plan called for 195 permanent full time staff and 18 seasonal employees to handle tasks during the summer: the agency had a cap of 177 and only budget for 122. Later MWRA was required to report regularly from 1993 to 2005 to DEP and EPA on watershed staffing levels under the dual-track Administrative Consent Order leading up to the decision on whether filtration would be required. In January 1999, in the midst of the federal court case, MWRA reported to DEP and EPA that MDC had only a total of 165 FTEs against the plan commitment of 181. Only by prioritizing the most critical tasks, and with MWRA providing assistance, were the two agencies able to meet all the obligations under the SWTR and the Consent Order to convince DEP and the Federal Court that MWRA did not need to construct filtration as part of the John J. Carroll Water Treatment Plant. Two years ago, DCR did a new review of staffing needs, and further reduced its planned staff from 157.3 to 150 FTEs.

Each year, the DCR work plan provides staffing levels by region and position and also includes primary responsibilities. For FY2021, there are 150 FTEs budgeted. As of October 31, 2020, DCR has 132 FTEs (with a year-to-date average of 132.5). The table shows the FTEs for the most recent three completed fiscal years, as well as the year-to-date for the current fiscal year. MWRA budgets on the assumption that all positions can be filled, and applies a normal vacancy rate to account for the normal delay in posting and filling positions.

Fiscal Year	Actual	Budget	Variance
FY18	139.5	157.3	(17.8)
FY19	136.0	157.3	(21.3)
FY20	135.7	150.0	(14.3)
FY21	132.5	150.0	(17.5)

Due to the fact that the Executive Office of Administration and Finance (A&F) has included the DCR Office of Watershed Management within the state-wide hiring freeze, DCR has been unable to post any of the 19 positions currently vacant, despite the Water Supply Protection Trust having approved a budget for 150 FTEs. In the first week in November, DCR and MWRA received the good news that DCR had received permission from A&F to post eight of the 19 positions, as indicated by an asterisk in the table below.

DCR Water Supply Protection Staff Vacancies as of October 31, 2020

Quabbin/Ware Section	Wachusett\Sudbury Section
Aquatic Biologist (AB) II *	Forest and Park Supervisor II
Forest and Park Supervisor III *	Ranger I *
Program Coordinator III	Maintenance Equipment Operator (MEO) I *
Ranger I *	Civil Engineer II
Maintenance Equipment Operator (MEO) II *	Laborer II *
Environmental Analyst I *	Laborer II
Office Support Specialist	Laborer II
Carpenter II	**Natural Resources Section**
Laborer II	Environmental Analyst IV (Land Acquisition Coordinator)
Laborer II	**Finance Section**
	Management Analyst II

* - Positions Marked with an * were authorized for posting as of November 3, 2020.

DCR has been diligent in assessing the priority of the responsibilities of each of the vacant positons, and reassigning the most critical functions to other staff. This, of course, results in lower priority work of both positons not being completed.

The deferral of certain tasks, such as road maintenance, for a time will result in further deterioration and a greater cost later. Deferring water quality or storm sampling in tributaries will result in data gaps that cannot be filled later. Reducing the inspection and maintenance of gates, fencing and signage, may result in security lapses going unnoticed longer than necessary. Unfilled supervisors positions frequently results in less efficient use of staff as fewer crews can be mobilized. A necessary focus on short-term priority action has meant that longer-term priorities such as climate action planning are being deferred. The retired land acquisition coordinator agreed to serve as a temporary part time contract employee for the purposes of providing continuity and guiding succession planning. Not filling the vacancy to date has reduced the opportunity for overlap and risks crippling that critical long-term watershed protection function. Having two of the 16 ranger staff positions vacant has resulted in less coverage on both the reservoirs and the watershed lands, even though the use of the watershed has increased during the pandemic with many new visitors not familiar with the rules and restrictions designed to protect water quality.

A summary of the responsibilities of each of the vacant positions, how DCR has prioritized getting their critical functions accomplished, and what was not being accomplished due to the prolonged vacancies was requested by the Water Supply Protection Trust at their most recent meeting. A copy of DCR's response is attached.

Current Major Projects Funded and Managed by MWRA:

As discussed above and detailed in a Staff Summary and presentation at the October 2019 Board meeting, MWRA has taken over responsibility for advancing a number of major projects that DCR is unable to accomplish. DCR is in need of upgrades to several buildings and facilities at the Wachusett and Quabbin Reservoirs that are functionally obsolete and structurally deficient. MWRA staff continue to work on these projects. The current year CIP and CEB have sufficient amounts budgeted for most of these projects. The replacement of the New Salem buildings that were destroyed by a fire in April 2018 and the Quabbin Administration Building replacement well are not yet fully scoped or budgeted.

Quabbin Administration Building

Current DCR Major Projects		
Project	**Design and Construction Budget**	**Status**
Quabbin Administration Building	$15 million	MWRA will procure a designer to conduct a study of the rehabilitation of the 1930's facility. The study will be submitted to DCAMM for review and certification. Once certified by DCAMM, the study will serve as a basis in the preparation of the project's Final Design. The expected start date for the facility study is June 2021.
Quabbin Admin Building Well	TBD	DCR is under a DEP Administrative Consent Order to resolve deficiencies in the existing well. Design of the replacement well and connecting pipeline will be done under an MWRA task order contract, with an anticipated start date in late November. Construction cost not yet determined.
Quabbin Maintenance Building	$4.9 million	The MWRA has completed the DCAMM Designer Selection Board process and negotiations with the first ranked firm for the design of this building and garage. The staff summary for the award of this project to Robinson Green Berretta Corporation (RBG) will be presented at the November 18, 2020 Board of Director's meeting.
River Road Reconstruction	$3.2 million construction	The slope supporting and abutting the road that provides access to the bottom of the Wachusett Dam and Power House has failed. This project to reinforce the slope and rebuild the road is out to bid with an expected award in January 2021.
Quinapoxet Dam Removal	Design - $425 thousand Construction - $1.2 million*	Design awarded in April 2020. Construction currently scheduled to begin mid 2021.
Sudbury/Foss Dam Repairs	$2 million	Construction award anticipated July 2021
New Salem Building Replacement	TBD	Initial plans to purchase modular buildings proved more costly than budgeted causing DCR to study new construction options.

Quabbin Park Cemetery Buildings Demolition and Hazardous Materials Abatement	$105 thousand	This project was awarded to Associated Building Wreckers with a Notice to Proceed date of November 4, 2020.

* Preliminary estimate. Construction timeframe dependent on MWRA-DER grant funding success and schedule.

DCR/MWRA Partnership for High Quality Water:

As discussed above, DCR and MWRA have worked together well since the creation of the MWRA over 35 years ago, despite the split in responsibilities and differing budgetary frameworks. The work that has needed to get done, has gotten done, due to the professionalism of staff at both agencies and their dedication to our shared mission of providing the best quality water to our 2.5 million customers. The watersheds are better protected and the supply and treatment infrastructure in better shape now than it was in 1985. Both agencies continue to prioritize the most critical tasks, and strive to avoid creating longer-term problems when deferring what are, in the moment, lower priority projects. The current staffing issue is one that the Water Supply Protection Trust was supposed to prevent. Working with the Advisory Board, and the Water Supply Protection Trust, MWRA staff continue to advocate for the Commonwealth to allow DCR to use the resources that MWRA and the Trust have determined to be necessary and have approved.

ATTACHMENT:

DCR Memorandum to Water Supply Protection Trust, October 30, 2020

dcr
Massachusetts

MEMORANDUM

To: Water Supply Protection Trust (WSPT) Board
From: John Scannell, DWSP Director
Date: October 30, 2020
RE: Board Request for Information
Impacts of FTE Vacancies

During staffing discussions at the September meeting of the WSPT, the Board asked that we provide information regarding our current vacancies and what impacts each of those vacancies has on operations of the DWSP watersheds. Each of the vacancies is discussed below in detail, broken out by group (Quabbin\Ware River Region, Wachusett\Sudbury Region, Natural Resources, Finance).

Quabbin\Ware River

Aquatic Biologist (AB) II:
The Aquatic Biologist is responsible for phytoplankton monitoring in the Reservoir and tributaries, monitors for aquatic invasive species in the reservoir, implements the Aquatic Invasive Species Plan and manages the Quabbin Boat Seal Program. Over the past summer, the most essential responsibility of this position, routine and follow-up phytoplankton sampling and analysis in the Reservoir, was covered by a team from the Wachusett Region - Aquatic Biologist II and seasonal AB I as well as a seasonal AB I at Quabbin. The seasonal staff ended in October and we intend to hire for the winter.

However, the AB II responsibilities listed below are not being done:

- Monitor plankton in selected tributaries
- Conduct Annual Environmental Quality Assessments (2/yr) Aquatic Invasive Species (AIS) surveys of lakes, ponds, and tributaries; 1 Sanitary District/year/watershed
- Review/update Aquatic Invasive Species Management Plan
- Implement revised AIS Management Plan
- Educate Staff and public about AIS
- Oversee\work with MWRA contractors conducting annual AIS monitoring throughout Quabbin Reservoir.

There are other duties that must continue to occur; other Environmental Quality staff will need to take on the duties:

- Manage the overall Quabbin Boat Seal – AIS Program
- Administer annual Quabbin Boat Cleaning, Inspection, and Initial Boat Seal Events
- Administer annual Cold Weather Quarantine and Initial Boat Seal Scheduled Events

Forest and Park Supervisor III:

The F& P III is a working Supervisor of Watershed Maintenance staff stationed in Belchertown and is responsible for the maintenance of Quabbin Park, Quabbin Park Cemetery, and the south Quabbin area. This is a critical supervisory title and nearly all the functions of this position are being covered by a team of staff comprised of the Regional Coordinator, the New Salem Construction and Maintenance Foreman, Civil Engineering staff, and F&P II.
These essential tasks are listed below:

- Supervise WM staff stationed at Belchertown office (1) F&P I; (1) MEO II; (4) Laborer II. Assign work, approve SSTA, review leave requests, and conduct EPRS.
- Implement the Quabbin Park O & M Plan - update as necessary
    - Keeping Quabbin Park open and operating through regular maintenance and responding to storm events (wind, snow, etc.).
    - Maintaining the Dam and Dike
- Implement the Quabbin Park Cemetery O & M Plan; update as necessary
    - Locating gravesites, supervise burials, record keeping.

The lack of daily supervision for that crew has hindered their progress. In addition, this person is responsible for the long-term planning of cemetery operations. Without it, maintenance planning and improvements, as well as burial oversight will lead to deferred maintenance needs growing and lead to inefficiencies moving forward.

Program Coordinator III:

The PC III supervises the Interpretive staff at Quabbin and manages the Quabbin Visitor Center and education program. Currently, the Regional Director is left with direct supervision of the 3 Interpretive Services staff.
The following duties are being covered by other IS staff of lower grade:

- Oversee communication for the Visitor Center
- Coordinate purchases for the program
- Serve as a liaison with outside groups

The following duties will be limited or not done until the position is filled:

- Overall outreach planning
- Update Quabbin Interpretive Services Plan
- Develop plan for outreach to schools and libraries
- Oversee and develop displays and exhibits

Ranger I:

The Ranger I is responsible for patrol of Quabbin and Ware River watersheds and enforcement of DWSP regulations. The duties assigned to this individual include:

- Proactively patrol watershed lands to ensure compliance with DCR regulations and policies

- Cooperate with State, Environmental, Federal, and local police for help with enforcement as needed
- Continue to implement Public Access Management Plans
- Continue regular ranger patrols to provide watershed security.

A lack of staff is leaving coverage on some shifts inadequate, which limits the effectiveness of the program. This is exacerbated due to the high visitor usage that is currently occurring on watershed lands.

Some patrol tasks are limited due to vacancy:

- Less patrolling possible, especially at busy times.
- Some shifts only have one ranger present. This has become a major concern for staff safety. At times this ranger is answering multiple calls at once.
- Harder to have adequate coverage and specialized patrols, such as opening weekend of fishing and hunting. Currently we are filling these shifts with overtime.
- Fewer boat patrols possible due to staffing levels or boat patrols are cut short due to staff going off shift.

<u>Construction Maintenance Foreman (CMF):</u>
The CMF is a working supervisor of Watershed Maintenance staff in the Ware River watershed, working out of our Oakham field office. Currently, the responsibility for supervision of the Ware River maintenance staff is being covered by the Construction Maintenance Foreman from New Salem.

The CMF responsibilities listed below will be very limited, delayed or not done until this vacancy is filled:

- Overall Maintenance planning for the watershed.
- Maintenance of access points to Water Quality monitoring stations
- Maintenance of non-silvicultural lands in Ware River Watershed (fields, dams, gravel pits, etc.)
- Inspection, maintenance, and monitoring of gates, bar ways, and signage through the watershed. Installation of barriers, as needed to protect properties and control public access.
- Assessing and maintaining gravel pits and gravel resources on DWSP lands in the Ware River watershed.

<u>Maintenance Equipment Operator (MEO) II:</u>
This heavy equipment crew person is responsible for the maintenance of roadways and lands owned by DCR in the Ware River watershed. Currently an MEO II from New Salem has been reassigned to Ware River to cover the shortage. Unfortunately, this leaves the New Salem crew short-handed. The lack of staff impacts the program in a number of ways:

- Facility maintenance and land management activities including roads, roadsides parking areas, drainage structure, field mowing has lessened. This is leading to some road closures in the Ware River watershed due to a lack or upkeep and improvements.
- Maintenance of some non-silvicultural lands in the watershed (fields, dams, gravel pits,) is not occurring

- Inspection, maintenance and monitoring of gates, bar ways, and signage through the watershed has been reduced. Staff have focused on installing barriers, as needed to protect properties and control public access. This has been critical this year with increased usage and increased damage and violations.

Environmental Analyst I:
This individual in the Quabbin Environmental Quality group is responsible for or assists in a number of water quality monitoring programs. Over the past year and a half, the most essential responsibilities of this position have been covered by other EQ staff including Environmental Analysts II, III, and an Environmental Engineer II, including:

- Conduct routine and nonroutine water quality sampling and analysis in reservoir and watershed tributaries and water bodies.
- Monitor water quality at active forest harvest lots with stream crossings to measure the effectiveness of BMPs.
- Conduct short term water sampling of timber harvesting operations on DWSP lands.

EA I responsibilities listed below cannot be completed until this vacancy is filled:

- Conduct additional streamflow monitoring at selected sites in both watersheds.
- Assist with annual EQA fieldwork in both watersheds.
- Continue to identify, map, and monitor locations of (agricultural) operations that could impact water quality through the EQA process in both watersheds.

Office Support Specialist:
The Office Support Specialist II position has been vacant for nearly two years. This position supports Managers and other Sections (e.g., Forestry Section). The position provided administrative support primarily for the Forestry section. The following duties are being covered by forestry staff, other administrative staff, and the Regional Director:

- Tracking timber sale permits and corresponding with loggers.
- Preparing timber bid packages including advertising sales, processing bid openings and preparing timber sales calendar.
- Revenue tracking and deposits

Because most of these duties have shifted to forestry staff, there has been a noticeable decline in the how many miles of boundaries that are marked and maintained each year.
In addition, until the vacancy is filled, the tracking and reviewing of forestry web postings and spill plans can not be completed.

Carpenter II:
The Carpenter I position functions in the Trades subsection of the Building Maintenance group. The most pressing job duty is the general and emergency repairs and maintenance of our facilities. These tasks are being completed/shared by the Institution Maintenance Foreman, Custodians, and CMF-Belchertown. However, this is impacting their duties. More importantly, preventative maintenance is not occurring regularly which will be detrimental to facilities over time.

Laborer II (2 vacancies):
The Laborer II positions include mowing, trimming, and plowing in the Quabbin Reservoir and Ware River watersheds. The essential functions of these positions were partially completed by

two, short term seasonal staff for the summer. But, for the most part, many of the duties were not completed in 2020 due to the vacancies

Wachusett\Sudbury

Forest and Park Supervisor II:

This F & P II supervises the West Boylston Maintenance Crew including full time and seasonal staff. The supervisor's duties include:

- Supervises and oversees the activities of assigned work crews engaged in the operation, care and maintenance of watershed areas which includes roadways, administrative areas and forests.
- Determines work priorities and assigns tasks to watershed maintenance crew in areas of operations of forest roads, dams, dike, fields, parking areas, drainage structures, snowplowing, boat launch areas, and other management activities to protect and enhance the watershed areas.
- Supervises and assists in Watershed Maintenance crew work for other division staff including wildlife control activities and maintaining access to water quality sampling sites.
- Assists with inspecting damage to watershed from storms, vandalism and accidents and makes requests for supplies and materials to complete repairs.
- Performs snow plowing, shoveling and storm debris cleanup.

Due to the vacancy, the Forest and Park Supervisor III has been pulled off his regular duties to cover as a supervisor for the West Boylston crew. The lack of direct supervision and program oversight of the two F&P I's in Clinton often results in having one less crew available. Additionally, any time a supervisor is absent, the Regional Coordinator has to cover as direct supervisor, or crews must be combined. This limit the number of tasks that can be completed.

Ranger I:

The Ranger I is responsible for patrol of Wachusett and Sudbury Watershed and enforcement of DWSP regulations. This includes:

- Perform proactive patrol, surveillance and intervention function at varied hours/days , with regard to activities and incidents on Wachusett and Sudbury Reservoirs' lands and water by foot, snowshoe, x-country ski, on-road, off-road and snow vehicle and by boat.
- Provide services and emergency response to incidents concerning public safety, public health and resource protection
- Record and maintain data including patrol logs, visitor contacts, visitor surveys and incidents such as public health and safety, vandalism, water quality degradation and unlawful and potentially harmful acts to persons and/or property.
- Assist in the development and delivery of watershed, conservation and stewardship interpretive programs on-site as well as community-based education programs to individuals, schools and other groups.
- Use appropriate level of enforcement to gain public compliance with 313 CMR 11.09 regulations through education, written warnings, non-criminal citations, and eviction.

Many duties are not getting done or are limited due to vacancy, including:

- Specialized patrols with assisting agencies are reduced- MEP, MSP, assist Ware River Rangers on special operations.
- Fewer set enforcement days (example: dog enforcement day below dam).
- Less patrolling possible, especially at busy times.

- No opportunity to address a long standing and large backlog of encroachments, which continue to increase.
- Some shifts only have one ranger on for both watersheds. This has become a major concern for staff safety. At times this ranger is answering multiple calls at once.
- Harder to fill shifts for adequate coverage or specialized patrols such as opening weekend of fishing and hunting. Currently we are filling some of these shifts with overtime.
- Fewer boat patrols possible due to staffing levels, as it takes a minimum of three rangers on at the same time for a patrol. In addition, boat patrols can be cut short due to shift availability.
- Sudbury Reservoir operations are severely impacted, another ranger would free up a two-person patrol more often.

Maintenance Equipment Operator (MEO) I:

This MEO is a heavy equipment crew person responsible for maintenance of Wachusett and Sudbury Watershed roadways and lands. This includes:

- Maintain roads, parking lots, culverts, fields and forests through the operation of heavy or specialized equipment such as heavy and light trucks, front-end loaders, forklifts, plows, sanders, backhoes, tractors, bulldozers, chain saws, brush cutters, compressors, water pumps, pneumatic hammers, sprayers, and other associated heavy and light equipment necessary to repair and maintain access to the roads for the operation and protection of a watershed area.
- Repair fire roads and remove fallen trees or debris to ensure proper emergency access.

Due to a lack of staff, many duties will be reduced including:

- Projects and upgrades in the watershed will be put on hold or delayed due to lack of staffing. This includes maintenance and repair of fire roads, culverts, parking lots and other specific projects. Facility maintenance and land management activities including roads, roadsides parking areas, drainage structure, field mowing has lessened.
- Maintenance and monitoring of gates and signage through the watershed has been reduced. Staff have focused on installing barriers, as needed to protect properties and control public access. This has been critical this year with increased usage and increased damage and violations

Civil Engineer II:

This Civil Engineer performs engineering project work in the watershed and participates in other watershed protection duties as appropriate. Work includes:

- Assessment of roadway culverts and design of replacement culverts
- Permitting related to most road/parking, BMP, and dam repairs and new projects.
- Organizing and inventorying of deeds, permits, leases and other documents
- Integration and documentation of GIS capabilities with tracking culvert inspections, road repairs, BMP inspections and repairs
- Planning dam maintenance/improvement projects and property boundary work.
- Climate change action: assessment of infrastructure viability for future climate conditions.

The Civil III with daily assistance of the Civil IV, is completing some of this work. This is resulting in the Civil IV being pulled away from tasks and spending more time in the field to assist the Civil III.

What is not getting done or is limited due to vacancy:

- Climate change action: we are prioritizing things that are impact right now and losing out on planning opportunities.

- Planning dam maintenance/improvement projects and property boundary work.
- Organizing and inventorying deeds, permits, leases and other documents. Updating and integrating them into AGOL applications. This is critical for dealing with land encroachments

Laborer II (3 vacancies):
Laborer IIs are responsible for land maintenance including mowing, trimming and plowing in Wachusett and Sudbury Watershed. This includes the maintenance of forest roads, dams, dike, fields, parking areas, drainage structures , snowplowing, boat launch areas, and other management activities.

With these vacancies and the supervisor vacancy, we are essentially down one maintenance crew. While we do have 4 Long-term seasonal staff, these positions were created after the Staffing Study was completed in 2018. At the time 4 full-time laborers were converted to summer seasonal staff. We have extended those staff for the winter to assist with the loss of these FTE laborers.

A lack of staff is limiting the work that can occur and the frequency of work such as:

- Access road mowing frequency is down.
- Field mowing has been delayed, (Tractor Crew only had 1 tractor driver for the summer, which is caused by a lack of skilled laborers with specialized licenses).
- Risk of losing out on previous progress of invasive plant management on DCR properties.
- Very limited Sudbury access road maintenance. We currently are faced with a long-term maintenance shortcoming, and we do not have staff to try and address the backlog, which continues to increase.
- Terrestrial Invasive work.
- Vegetation cutting of shorelines.
- Upgrades to roadways and culverts to address climate change needs.
- Lack of skilled laborers with specialized licenses limits and handcuffs our ability on many day-to-day tasks.

Natural Resources

Environmental Analyst IV (Land Acquisition Coordinator):
The Land Acquisition Coordinator is responsible for the land purchase program within the DWSP. This includes fielding inquires and seeking lands, chairing the Land Acquisition Panel, negotiating purchases with landowners, and due diligence follow-up (appraisals, title work, environmental assessments). We are fortunate that Jim French accepted a post-retirement appointment to work 2 days per week.

However, not filling the position does not allow us to do advanced modeling for purchases and the outreach to landowners of critical parcels. In addition, the Natural Resources Director has had to cover some of the tasks because Mr. French is only working part-time.

Finance

Management Analyst II:
This finance staff person was responsible for encumbrances for contracts and some payment of bills. The vacancy has required some of this work to be done by other finance staff and the

Budget Director. This limits the Budget Directors time for planning and slows some of our purchasing

While the Division does hire a number of seasonal staff in both the summer and winter seasons, many of those staff have existed for many years that supplement the work being done by full-time staff. Only a handful of seasonal staff have been hired over the last couple of years to replace some of the work being done by staff in those vacated positions. This includes the Ranger I at Wachusett and the Aquatic Biologist, Ranger I and 2 Laborers at Quabbin.

Please let me know if there are any questions or clarifications needed.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Quabbin Maintenance Building Design, Construction Administration and Resident Engineering Services
The Robinson Green Beretta Corporation, Contract 7677

COMMITTEE: Water Policy & Oversight

_____ INFORMATION
__X__ VOTE

Michele S. Gillen
Director of Administration

Douglas J. Rice, Director of Procurement
John P. Colbert P.E., Chief Engineer
Maureen K. McAvoy, P.E., Program Manager
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to award Contract 7677, Quabbin Maintenance Building Design, Construction Administration and Resident Engineering Services, to the first ranked firm, The Robinson Green Beretta Corporation, and to authorize the Executive Director, on behalf of the Authority, to execute said contract in an amount not to exceed $1,318,278 for a contract term of 43 months from the Notice to Proceed.

DISCUSSION:

The Department of Conservation and Recreation (DCR) has proposed building a new Maintenance Building at Quabbin Reservoir to replace an existing facility that is currently housed in the West Garage at the main Quabbin Administration Building complex. After investigating the current maintenance facility, staff determined that considerable investment would be required to stabilize deteriorating conditions and to repair the structural deficiencies. However, investments to repair the existing facility would not be enough to overcome the space constraints, operational limitations and building shortcomings that severely limit the effectiveness of the DCR fleet maintenance program. A rendering of the proposed maintenance building is included in Figure 1.

Figure 1: Maintenance Building Conceptual Design

A new maintenance facility is intended to provide approximately 11,000 square feet of gross floor area to house and support vehicle fleet maintenance staff and equipment. The new space will accommodate oversized vehicles and heavy equipment, includes provisions for a vehicle wash bay and offers the space necessary to support staff and equipment needs. Moreover, the facility will offer working conditions that improve safety, efficiency and operational capability.

Consistent with a Memorandum of Understanding between DCR and the MWRA regarding the protection, construction, operation, maintenance and improvement of water supply resources, facilities and infrastructure within the watershed and waterworks system, MWRA has agreed to procure and manage both the design and construction services for the Maintenance Building on behalf of DCR.

Procurement Process

The Massachusetts Designer Selection Board (DSB) is responsible for the qualification-based selection of designers for state building projects undertaken by public agencies and as such, DCR is required to utilize the DSB process.[1] The DSB utilizes an advertised competitive process to solicit applications from designers to perform the design services requested. In response to the advertisement, Designers submit applications to the DSB and the DSB screens applications for completeness and forwards copies to the public agency. The DSB then ranks finalists based on pre-determined criteria, at which point the public agency can begin negotiations with the first ranked firm.

On May 6, 2020, the DSB issued a Public Notice of Designer Selection for this project. On June 10, 2020, the DSB received seven applications for this project, from the following designers: 1) Clark & Green, Inc.; 2) DiGiorgio Associates, Inc.; 3) edm Services, Inc.; 4) Hill Engineers, Architects, Planners, Inc.; 5) The Robinson Green Beretta Corporation; 6) STV Incorporated; and 7) Weston & Sampson Engineers, Inc. On July 8, 2020, the DSB reviewed the seven applications, and determined that two of the applicants failed to meet the required personnel requirements set forth in the public notice. The DSB members then proceeded to review the remaining applications with input from MWRA and DCR. Subsequently, in accordance with the provisions of Massachusetts General Laws, Chapter 7C, Section 49, the DSB voted to select the following three ranked finalists for this project:

1. The Robinson Green Beretta Corporation
2. Weston & Sampson Engineers, Inc.
3. DiGiorgio Associates, Inc.

[1] MWRA's projects typically fall outside of the jurisdiction of the DSB because the MWRA's building projects are generally "appurtenant" to and required to be constructed as an "integral" part of the development of its water and sewer system. These projects are statutorily exempted from the DSB process. Since the DCR Maintenance Building is not "appurtenant" to and required to be constructed as an "integral" part of the development of the MWRA's water and sewer system, MWRA, on behalf of DCR, is required by statute to seek the assistance of the DSB to select the designer for this project.

In accordance with Massachusetts General Laws, Chapter 7C, Section 50, MWRA staff reviewed The Robinson Green Beretta Corporation (RGB) proposal and then commenced cost negotiations with the first ranked finalist. RGB, as required pursuant to the public notice, provided a detailed cost proposal to complete the design, construction administration, and resident engineering services. MWRA staff reviewed RGB's cost proposal, which included an in depth review of scope and RGB's proposed level of effort of its staff and subconsultants to perform the required services for this project. The negotiations included discussions on the required level of effort to complete the design, construction, and schedule based upon MWRA and RGB's past experience with similar maintenance buildings. As a result, several scope items were changed, including the elimination of the Resident Inspector, reduction of the Resident Engineering hours by DCR staff support, reduction in the number of design submittals and the shortening of the design duration from 15 to 10 months. These negotiations resulted in a reduction of over $865,000 from the original cost proposal.

The Engineer's estimate for this project is $1,000,000. This estimate is based on a 2018 cost estimate prepared by the Kehes Group Ltd. for DCR. Since the estimate was prepared, several scope items have been added to the project, including the demolition of two small buildings and the abatement of hazardous materials in these buildings. The 18-month construction duration for this project is based on a worst-case scenario assuming no work being completed during the severe winter weather. The consultant has estimated that the construction may be completed in 12-16 months based upon previous projects of similar buildings. If completed in less than 18 months additional cost savings may be realized in construction engineering services. Staff have determined that RGB's cost proposal contains the level of effort necessary to perform the required services under this contract. Staff have further determined that the cost proposal is reasonable and complete.

BUDGET/FISCAL IMPACT:

The FY21 CIP includes a budget of $1,000,000 for Contract 7677. The award amount is $1,318,278, or $318,278 over budget. This amount will be absorbed within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

There were no MBE/WBE participation requirements established for this contract due to the limited opportunities for subcontracting.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Steel Water Storage Tank Painting and Improvements - Design and Engineering Services During Construction
Hazen and Sawyer, P.C.
Contract 6832

COMMITTEE: Water Policy & Oversight

_____ INFORMATION
_X_ VOTE

Michele S. Gillen
Director of Administration

John P. Colbert, P.E., Chief Engineer
Carmine De Maria, Project Manager
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To approve the recommendation of the Consultant Selection Committee to award Contract 6832, Steel Water Storage Tank Painting and Improvements - Design and Engineering Services During Construction, to Hazen and Sawyer, P.C. and to authorize the Executive Director, on behalf of the Authority, to execute said contract in an amount not to exceed $2,779,122.28 for a contract term of 57 months from the Notice to Proceed.

DISCUSSION:

MWRA's had six steel water storage tanks located around the water service area: Arlington Heights, Bellevue 1, Bellevue 2, Deer Island, Turkey Hill and Walnut Hill. (See attachment for details of each tank.) All were last painted over 20 years ago and were scheduled for re-painting as well as operational and security improvements. The tank painting and improvements were planned to occur under two phases.

Figure 1 - Deer Island Tank

The first phase, which was executed using two construction contracts, was completed in November 2019 and included the tank painting, structural repairs and installation of internal components for the cathodic protection systems for the Bellevue 2 and Turkey Hill tanks in a Chapter 30 contract and the Deer Island tank in a Chapter 149 contract. Design and engineering services during construction for Phase 1 were performed by Hazen and Sawyer under a technical assistance contract.

The second phase of tank rehabilitation is the scope of this contract and includes design and engineering services during construction for painting, structural repairs and installation of cathodic protection components at the Arlington Heights, Bellevue 1 and Walnut Hill tanks in a Chapter 30 contract, and SCADA, cathodic protection activation and security upgrades to all six tanks in a Chapter 149 contract.

Procurement Process

On September 10, 2020, MWRA issued a one-step Request for Qualifications Statements/Proposals (RFQ/P) that was publicly advertised in the Central Register, the Boston Herald, Banner Publications and El Mundo. The RFQ/P included the following evaluation criteria and points: Cost (25 points); Qualifications and Key Personnel (25 points); Experience/Past Performance on Similar MWRA and Non-MWRA Projects and Past Performance on MWRA Projects (25 points); Capacity/Organization and Management Approach (10 points); Technical Approach (10 points); and Minority/Women Business Enterprises (5 points).

On October 8, 2020, MWRA received proposals from the following two firms: Hazen and Sawyer, P.C. and CorrTech, Inc. The following represents the cost and level of effort proposed by each firm:

Proposer	**Proposed Cost**	**Proposed Hours**
Hazen & Sawyer	$2,779,122	15,451
CorrTech	$2,924,163	16,808
Engineer's Estimate	*$2,755,550*	*15,837*

The Selection Committee met on October 20, 2020 to evaluate and rank the proposals; the results are presented below.

Proposer	**Total Final Score**	**Order of Preference* Points**	**Ranking**
Hazen and Sawyer	392.25	5	1
CorrTech	361.50	10	2

*Order of Preference represents the sum of individual Selection Committee members' rankings where the firm receiving the highest number of points is assigned a "1," the firm receiving the next highest number of points is assigned a "2" and so on.

Hazen and Sawyer presented the lowest total price of $2,779,122.28, which is approximately 5 % lower than CorrTech. The Engineer's Estimate is $23,572 or 0.85% lower than Hazen and Sawyer's cost proposal.

Hazen and Sawyer offered well-qualified personnel who have extensive and relevant experience in performing steel water storage tank rehabilitation projects as well as significant knowledge of the operational requirements of the MWRA system. A subconsultant to Hazen and Sawyer, Corrosion Probe, Inc. has extensive experience with corrosion and materials testing and quality control inspections.

The Hazen and Sawyer team provided comprehensive documentation of its experience and past performance. In addition to positive references for performance on significant similar out of state projects, Hazen and Sawyer has successfully completed two recent tank painting contracts for MWRA; the painting of Bellevue 2 and Turkey Hill water tanks in a Chapter 30 contract and the Deer Island tank in a Chapter 149 contract. Hazen and Sawyer also demonstrated a full understanding of the project requirements in its Technical Approach, and has the capacity, organization and management approach necessary to manage and complete the project.

The CorrTech proposal included subconsultant Weston and Sampson and demonstrated a good team capable of performing the work, but the organization included two project managers, one for the prime and one for the subconsultant, where one might have sufficed. The Project Manager for CorrTech did not meet the required qualifications. The firm lacked the depth and breadth of the experience offered by the Hazen and Sawyer team and its price was higher.

The Selection Committee ranked Hazen and Sawyer first and the Committee voted unanimously to recommend the award of Contract 6832 to Hazen and Sawyer in the amount of $2,779,122.28.

BUDGET/FISCAL IMPACT:

The FY21 CIP includes a budget of $3,600,000 for Contract 6832

MBE/WBE PARTICIPATION:

The MBE and WBE participation requirements for this contract were established at 7.18% and 5.77%, respectively. Hazen and Sawyer proposed 17.50% MBE and 5.86% WBE participation for this contract.

ATTACHMENT:

Tank Locations and Details

ATTACHMENT 1

The tank service locations, size, age and service area are detailed below:

Arlington Heights - located in Arlington, is a 2 million gallon steel standpipe approximately 75 feet in diameter and 61 feet high. The tank was built in 1922 and operates in the Northern Extra High Pressure Zone. The tank was painted in 1997 under MWRA Contract 5136 - Rehabilitation of Water Storage Tanks. This tank is a registered historical landmark. The tank is encapsulated within a masonry structure, which is scheduled for structural repairs in June 2023.

Bellevue 1 - located in Boston, is a 2.5 million gallon steel standpipe approximately 100 feet in diameter and 44 feet high. The tank was built in 1915 and operates in the Southern Extra High Pressure Zone. The tank was last painted in 1997. It is a registered historical landmark. The tank is encapsulated within a masonry structure, which is scheduled for structural repairs in June 2023.

Bellevue 2 - located in Boston, is a 3.7 million gallon welded steel standpipe approximately 100 feet in diameter and 64 feet high. The tank was built in 1955 and operates in the Southern Extra High Pressure Zone. Painting to the interior and exterior, along with structural repairs, were completed in October 2019.

Deer Island - located in Boston, is a 2 million gallon elevated steel tank approximately 100 feet in diameter and 127 feet high. The tank was built in 1994 and operates in the High Pressure Zone. The tank supplies water and fire protection to the Deer Island Treatment Plant and it is also serves as an emergency feed to the Town of Winthrop. Painting to the interior and exterior along with structural repairs were completed in November 2019.

Turkey Hill - located in Arlington, is a 2 million gallon welded steel standpipe tank approximately 75 feet in diameter and 65 feet high. . The tank was built in 1945 and operates in the Northern Extra High Pressure Zone. Painting to the interior and exterior along with structural repairs were completed in October 2019.

Walnut Hill - located in Lexington, is a 2 million gallon elevated steel tank 102 feet in diameter and 35 feet high. The tank was built in 1961 and operates in the Northern Extra High Pressure Zone. The tank was last painted in 1997.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Amendment 2 for the Supply and Delivery of Carbon Dioxide to the John J. Carroll Water Treatment Plant
Messer, LLC
Bid WRA-4818

COMMITTEE: Water Policy & Oversight

____ INFORMATION
_X_ VOTE

Michele S. Gillen
Director of Administration

Valerie Moran, P.E., Director Waterworks
Douglas J. Rice, Director, Procurement
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Amendment 2 to purchase order contract WRA-4818 for the supply and delivery of carbon dioxide with Messer, LLC, increasing the contract amount by $216,389, from an amount not to exceed of $417,470 to $633,859, and extending the contract term by an additional four months.

DISCUSSION:

MWRA uses soda ash at the Carroll Water Treatment Plant to increase the alkalinity of the water supply. Carbon dioxide is then added to the water to maintain a target pH level of 9.5; this level helps reduce corrosion of lead and copper in the plumbing systems of older homes.

Purchase order contract WRA-4818 is a one-year contract with Messer, LLC for the supply and delivery of carbon dioxide on an as-needed basis, which currently is approximately one to two times per week. Carbon dioxide, in liquid form, is stored on-site in two 120-ton tanks that are adjacent to the Post-Treatment Building. Liquid carbon dioxide runs through vaporizers to convert it to gas, which is then injected into a water stream and added to the plant flow prior to entering the plant's water storage tanks. Based upon reasonable assumptions and previous contract history, staff estimated that MWRA would use approximately 2,000 tons of carbon dioxide in a one-year period.

This Amendment:

Purchase order contract WRA-4818 was awarded to Messer at a unit price of $167.00 per ton. The contract does not expire until April 4, 2021.

At the time of award and under previous contracts, the Carroll Treatment Plant received its supply of carbon dioxide from Messer's production plant in Fulton, New York. Carbon dioxide is produced at the Fulton plant as a by-product of the burning of ethanol gas. In order to produce carbon dioxide at this plant, Messer receives its ethanol gas from Attis Biogas, also located in Fulton, New York. Due to the sharp decrease of fuel demand caused by COVID-19, Attis Biogas has stopped its production of ethanol. As a result, Messer notified its affected customers of the loss of this ethanol supply and the temporary closure of Messer's Fulton plant.

In order to maintain a continuous supply, Messer is obtaining carbon dioxide from other ANSI NSF Standard 60 certified sources without any disruption. The current supply of carbon dioxide is being shipped by railcar from Virginia, Ohio, and Mississippi. To recover the additional costs necessary to continue this supply, Messer implemented a surcharge of $85 per ton until the Fulton, New York plant reopens. On April 27, 2020, Amendment 1 was approved under delegated authority and included 982 tons (an approximate six-month supply) of carbon dioxide charged at an $85 per ton surcharge. At that time, staff were optimistic that the nation's demand for fuel and ethanol would increase enough to reopen the Fulton plant prior to the end of the fall of 2020.

Unfortunately, as the nation continues to experience impacts from COVID-19, the Fulton plant remains closed. A representative from Messer stated on October 22, 2020, that it is likely to remain closed at least through November and possibly longer. Due to this ongoing uncertainty, and as the original 982 surcharged-tons depreciate, staff are now recommending Amendment 2.

Amendment 2 will do two things. First, in order to address a lack of previous bid responses caused by a consolidation of the local suppliers of carbon dioxide, this contract will be extended by four months. While staff remain of the opinion that rebidding at this time would not yield favorable results, recent conversations with a previous supplier suggest that a solicitation conducted in the spring of 2021 will likely result in additional competition.

Second, the contract will be amended to address the additional surcharge fees between now and the extended end date of the contract as well as the additional tonnage needed during the four month extension. The four-month extension will include 602 tons of carbon dioxide at $167.00 per ton was well as the surcharge fees to cover the next 10 months (1,363 tons at $85.00 per ton) will be added for a total of $216,389. All charges are incurred as deliveries are received. In the event the fuel and ethanol demand returns and Attis Biogas resumes its operation, the Messer plant in Fulton will likely also reopen and the surcharges will stop.

As stated, MWRA estimates the use of 2,000 tons of carbon dioxide per year. Compared to the carbon dioxide demand in the U.S. beverage industry, which includes soda, carbonated water and beer, MWRA's usage is relatively small. Messer acknowledged MWRA provides a critical service to the public and has committed to maintaining 100% supply to the Carroll Plant.

Given the state of emergency, and the critical nature of this commodity for the drinking water supply, staff recommend approval of this amendment. If Amendment 2 is approved, an amended purchase order will be executed, adding an additional $216,389 to the total not-to-exceed purchase order sum for 602 tons of carbon dioxide at $167.00 plus 1363 tons of product at a surcharge of $85.00 per ton.

BUDGET/FISCAL IMPACT:

There are sufficient funds included in the Operations Division's FY21 Current Expense Budget for this amendment.

MBE/WBE PARTICIPATION:

Messer, LLC is not a certified Minority-owned or Women-owned business.

STAFF SUMMARY

TO: Board of Director
FROM: Frederick A Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: November PCR Amendments

COMMITTEE: Personnel and Compensation

____ INFORMATION
_X_ VOTE

Andrea Murphy, Director of Human Resources
Preparer/Title

Michele S. Gillen
Director, Administration

RECOMMENDATION:

To approve amendments to the Position Control Register (PCR) included in the attached chart.

DISCUSSION:

The Position Control Register lists all positions of the Authority, filled and vacant. It is updated as changes occur and it is published at the end of each month. Any changes to positions during the year are proposed as amendments to the PCR. All amendments to the PCR must be approved by the Personnel Committee of the Board of Directors. All amendments resulting in an upgrade of a position by more than one grade level, and/or an amendment which creates a position increasing annual cost by $10,000 or more, must be approved by the Board of Directors after review by the Personnel and Compensation Committee.

November PCR Amendments

There are two PCR Amendments this month.

Proposed Organizational Changes to the Office of Emergency Preparedness Department

Staff have recommended the creation of a Security Department to oversee both cyber and physical security. Cyber security and law enforcement partners at the federal and state levels continue to report the uptick of cyber issues in the government sector and the potential for civil unrest. As it is critical to maintain safe and secure continuous operations, and continue to provide water and wastewater treatment for millions of citizens of Massachusetts, staff are recommending the creation of a new position of Director of Security. As cyber and physical threats continue to evolve, so do the responses to those threats at the state, local, and federal level in the form of directives, standards, and recommendations. The volume of threat intelligence available for review from these sources and technology vendors continues to grow. Having a dedicated position in a new department reporting to the Executive Director to focus on IT security, physical security, and operations technology security makes sense as it represents an integrated holistic approach to protection. While staff throughout the MWRA play a role in information and physical security, staff recommend the creation of a senior management position to strategically address these issues

and be accountable for these areas. The recent retirement of the Manager, SCADA, Metering and Monitoring and some vacancies in the MIS Department, presented a timely opportunity to reassess the MWRA's long-term staffing needs and organizational structure.

The Director will report directly to the Executive Director and will oversee a team of four including a Senior Program Manager of IS Security, Manager of Security Services, Security Specialist, and an Administrative Systems Coordinator.

Organizational Changes

1. Title and grade change to one vacant position in the Administration Division, Office of Emergency Preparedness department from Deputy Director, Security and Emergency Preparedness Non-Union 14 to Director of Security Non-Union Grade 16, to manage information technology security, operations technology security, and physical security for the MWRA. Change in organizational structure to have the position report to the Executive Director.

2. Title change to one vacant position in the Administration Division, MIS department from Systems Analyst/Programmer III Unit 6 Grade 11, to Business Systems Analyst II Unit 6 Grade 11 to meet staffing needs.

BUDGET/FISCAL IMPACT:

The annualized budget impact of these PCR amendments will be a maximum cost of $ 46,657. Staff will ensure that the cost increase associated with these PCR amendments will not result in spending over the approved FY21 Wages and Salaries budget.

ATTACHMENTS:

New Job Descriptions
Old Job Descriptions

MASSACHUSETTS WATER RESOURCES AUTHORITY
POSITION CONTROL REGISTER AMENDMENTS
FISCAL YEAR 2021

PCR AMENDMENTS REQUIRING BOARD APPROVAL - November 18, 2020

Number	Current PCR #	V/F	Type	Current Title	UN	GR	Amended Title	UN	GR	Current/Budget Salary	Estimated New Salary			Estimated Annual $ Impact			Reason For Amendment
B23	Office of Emergency Preparedness Administration Division 1710002	V	T, G	Deputy Director, Security and Emergency Preparedness	NU	14	Director of Security	NU	16	$114,343	$139,000	-	$161,000	$24,657	-	$46,657	Title and grade change to manage information security technology security, operations security, and physical security.
B24	MIS Administration 8610010	V	T	Systems Analyst/Programmer III	6	11	Business Systems Analyst II	6	11	$106,646	$69,694	-	$106,646	-$36,952	-	$0	Title change to meet staffing needs.
				BOARD TOTAL= 2							**TOTAL:**			-$12,295	-	$46,657	

MWRA
POSITION DESCRIPTION

NEW

POSITION: Director of Security

DIVISION: Executive

DEPARTMENT: Security

BASIC PURPOSE:

Senior role responsible for oversight and long-term planning of MWRA cybersecurity policy. Additionally responsible for the day-to-day management, oversight and long-term planning of physical security systems for all MWRA locations. Ensures operations continuity, safety and security of systems, personnel, property and equipment. Develops and implements policies, protocols, and strategy, for cyber-security to reduce risk of threats, breaches, intrusions, and system downtime. Manages contracts related to physical security including guard services and intrusion alarm monitoring. Chairs MWRA Information Security Council and serves as primary liaison to external entities including local, state, and federal government law enforcement agencies on Information Technology/Operations Technology (IT/OT) security and physical security issues. Instills cybersecurity culture at the MWRA. This is a highly confidential position providing access to Security-Most Sensitive documents.

SUPERVISION RECEIVED:

Reports to the Executive Director, MWRA.

SUPERVISION EXERCISED:

Provides general supervision to a Senior Program Manager of IS Security, Manager of Security Services, Security Specialist, and an Administrative Systems Coordinator.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

Cybersecurity

- Develops, manages and maintains information security policies and standards as well as incident response protocols working closely with the Deputy Director, MIS and Director SCADA and Deputy Director, Deer Island.

- Conducts long-range, strategic planning efforts with internal and external partners in cyber activities. Collaborates with key stakeholders to enhance the cybersecurity risk management program.

- Monitors and evaluates the effectiveness of the MWRA's cybersecurity safeguards to ensure that they provide the intended level of protection.

- Ensures that plans of actions and milestones or remediation plans are in place for vulnerabilities identified during risk assessments, audits, inspections, etc.

- Monitors threats and conducts vulnerability testing and security audits.

- Oversees incident response planning, investigation of security incidents and/or data breaches, and related disciplinary and legal matters.
- May act as Incident Commander, Co-Commander, or as part of the Command team based on the incident type and severity. Oversees protective or corrective measures when a cybersecurity incident or vulnerability is discovered.

- Serves as primary liaison to SCADA and PICS managers on needed security improvements.

- Leads the Information Security Council and facilitates meetings.

- Acts as a liaison to federal, state, and local law enforcement authorities regarding responses to security threats, jurisdictional issues, and security enhancement tactics.

Physical security

- Oversees the design, definition, development, implementation and maintenance of physical security systems, applications, projects and programs.

- Manages MWRA physical security systems, video surveillance systems and access control procedures. Manages security guard services contract which includes 24/7 intrusion alarm monitoring.

- Oversees responses to security incidents.

- Leads efforts to innovate surveillance, access control, and public safety systems throughout operating units. Recommends changes to physical environment, systems, and technology to minimize risks.

- Oversees risk assessments and recommends/implements alternatives for mitigating vulnerabilities including physical hardening improvements, use of technology, and changes in policies and procedures.

- Manages audits of MWRA facilities to ensure compliance with MWRA security standards and provides a secure working environment.

- Acts as a liaison to federal, state, and local law enforcement authorities regarding responses to security threats, logistical support, jurisdictional issues, and security enhancement tactics.

Education and Awareness

- Communicates the value of information technology (IT) and Operations technology (OT) security and physical security throughout all levels of the organization stakeholders.

- Disseminates information relating to security and privacy legislation, advisories, alerts and vulnerabilities, and physical security incidents to executive staff.

- Routinely briefs executive staff on the state of cybersecurity at all facilities and provides periodic presentations at monthly Board of Directors meetings.

Staffing, Budgeting, and Procurement

- Leads and oversees information security and physical security budget, staffing, and contracting within unit.

- Serves on procurement teams on goods and services related to independent IT/OT and physical security audits, physical security contracts such as fire alarm response, surveillance systems, intrusion detection, and contracted guard services.

SECONDARY DUTIES:

Perform related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A Bachelor's degree in computer science, information technology, management science, criminal justice, or a related field. A Master's degree in related field is preferred; and

(B) Ten (10) to twelve (12) years of experience in information technology and physical asset protection, of which five (5) years must be in a managerial capacity (with a preference for experience managing large Information Technology Units and experience in contract administration, alarm response, and physical security systems); or

(C) Any equivalent combination of education and/or experience.

Necessary Knowledge, Skills and Abilities:

(A) Ability to develop policy, plans, and strategy in compliance with laws, regulations, policies, and standards in support of organizational cyber activities.

(B) Technical expertise in information security architecture and tools such as firewalls, intrusion detection and remediation.

(C) Knowledge of laws, regulations, policies, and ethics as they relate to cybersecurity and privacy and ability to interpret and apply laws, regulations, policies, and guidance.

(D) Knowledge of computer networking concepts and protocols, and network security methodologies.

(E) Knowledge of cybersecurity, privacy principles, cyber threats, and vulnerabilities.

(F) Knowledge of risk management processes and system and application security threats and vulnerabilities.

(G) Knowledge of emerging security issues, risks, and vulnerabilities.

(H) Knowledge of water and wastewater industry technology and associated potential cybersecurity vulnerabilities preferred.

(I) Understanding of physical security concepts and incident investigations as may be obtained by experience in law enforcement, military or public safety related fields.

(J) Ability to maintain confidentiality and exercise discretion and tact in sensitive matters.

(K) Strong managerial skills and a proven ability to direct and coordinate staff resources to successfully deliver services and products in a diverse technology environment.

(L) Excellent analytical, interpersonal, written and oral communication skills.

SPECIAL REQUIREMENTS:

- Must be available 24/7 for security incident response.
- A valid Massachusetts Class D Motor Vehicle Operators License.
- Global Information Assurance Certification (GIAC) as a Security Expert (GSE).
- ITIL Intermediate certification.

Certifications required – at least two of the following:

- ASIS - American Society for Industrial Security
- CISM - Certified Information Security Manager (ISACA)
- CPP - Certified Protection Professional (American Society for Industrial Security ASIS)
- CISSP - Certified Information Systems Security Professional (International Information System Security Certification Consortium, also known as ISC)
- CRISC - Certified in Risk and Information Systems Controls (ISACA)
- ISS – Internet Security Systems Real Secure
- PSP - Physical Security Professional (American Society for Industrial Security ASIS)

TOOLS AND EQUIPMENT USED:

Office equipment as normally associated with the use of telephone, personal computers including word processing and other software, copy and fax machines.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to walk and stand.

The employee must occasionally lift and/or move up to 25 pounds. Specific vision abilities required by this job include close vision and color vision, and the ability to adjust focus.

WORK ENVIRONMENT:

The work characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee works in an office environment.
The noise level in the work environment is a moderately quiet office setting.

November 2020

MWRA
POSITION DESCRIPTION

OLD

POSITION: Systems Analyst/Programmer III

DIVISION: Administration & Finance

DEPARTMENT: Management Information System (MIS)

BASIC PURPOSE:

This position is responsible for analyzing, designing, developing, testing, implementing and maintaining software applications. This position is also responsible for the post implementation support including incident, performance, capacity, continuity and problem management activities. The Systems Analyst/Programmer III is responsible for the preparation, and maintenance of system documentation to be used by the IT staff and user community.

The Systems Analyst/Programmer III also serves as a team lead for assigned projects, maintains and upgrades project plans and schedules and ensures IT testing is scheduled and documented

SUPERVISION RECEIVED:

Works under the general supervision of the group supervisor. On specific IT projects may be supervised by a team lead or project manager.

SUPERVISION EXERCISED:

Exercises supervision of assigned vendor resources and IT project team.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

Application Development

- Reviews application design prior to buy or build decision to ensure service levels can be met and recommend any performance enhancements prior to implementation

- Codes, configures, implements, maintains and supports, new and upgrades to software applications (in-house and third party software) and interfaces to ensure processes and functionality of the applications comply with the organization's requirements, processes and standards.

- Develops and maintains technical documentation for applications as follows:

  - Design Model - Description of the system design. Comprised of a variety of work products, potentially including a deployment model, an object model, a physical data model (PDM), a security threat model, a system overview document, and a user interface model.
  - Source Code – The program code for the system.
  - Regression Test Suite - Collection of test cases, and the code to run them in the appropriate order. The regression test suite will include a wide range of tests, including acceptance tests, unit tests, system tests, etc.
  - Installation Scripts - Code for installing the system into pre- and post-production environments.
  - Release Notes - Summarize the things to know pertaining to the current release of the system.
  - Operations Procedure - Procedures and supporting information to operate the system once it is in production including continuity and disaster recovery procedures.
  - Support Reference- Used by support staff, such as trouble shooting guides, contact information for the development team, which enables them to support end users

- Responsible for developing a release package for all systems changes when transitioning to the production environments.

Post Implementation Support

- Supports the resolution of incidents and problems with software application functionality.

- Researches and corrects problems with the system applications code during production processing in an efficient and timely manner ensuring system recovery and integrity.

- Is available to execute and carry out IT Continuity and Disaster Recovery Plans

- Is a Technical Member of the Change Advisory Board (CAB) as needed.

- Serves as team lead for assigned projects and updates/maintains project plans and schedules as required.

Mentoring & Professionalism

- Maintains professional interaction with the application development staff, user and extended IT community (i.e. project teams) to ensure adequate system functionality, promote team participation and encourage user confidence in the Application Development Staff's quality of service.

- Provides assistance to Systems Analysts/Programmer I and II personnel ensuring that all technical design work, coding and testing are done in a manner that meets or exceeds design and testing requirements and standards.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A four (4) year college program in management science, engineering management, computer science or related fields; and

(B) Five (5) to seven (7) years experience supporting enterprise wide applications as well as tier two applications.

(C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

(A) Extensive knowledge of programming languages, troubleshooting techniques, database structures, triggers and procedures, application server platforms, middleware and operating systems.

(B) Knowledge of the following is desirable: MS .Net, J2EE, Crystal Reporting, ORACLE 11g, SQL Server and PL/SQL.

(C) Analytical and interpersonal skills

(D) Written and oral communication skills.

SPECIAL REQUIREMENTS:

- Information Technology Infrastructure Library (ITIL) Foundation Certification is required or the ability to obtain within one year.
- Formal training or certification in programming methodologies and System Development Life Cycle methodologies is required or the ability to obtain within one year.
- Microsoft Certified Solutions Developer (MCSD) or equivalent is required or the ability to obtain within one year of scheduled training.

TOOLS AND EQUIPMENT USED:

Office equipment as normally associated with the use of telephone, personal computers including word processing and other software, copy and fax machines.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to walk and stand.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision and color vision, and the ability to adjust focus.

WORK ENVIRONMENT:

The work characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee occasionally works in various field settings and in an office environment. The employee regularly works near moving mechanical parts, and is occasionally exposed to risk of vibration.

The noise level in the work environment is very loud in field settings, moderately loud at other work locations and moderately quiet at office settings.

November 2018

MWRA
POSITION DESCRIPTION

NEW

POSITION: Business Systems Analyst II

DIVISION: Administration

DEPARTMENT: Management Information Systems (MIS)

BASIC PURPOSE:

The Business Systems Analyst II works with business unit staff to understand business processes and to document and prioritize user requirements and functional specifications for new and existing systems that support the organizations needs. Serves as the conduit between the development team and the rest of the organization. Facilitates communications to translate business requirements expeditiously to help develop technical specifications as well as translate technical specification into language accessible to user and management audiences.

SUPERVISION RECEIVED:

Works under the general supervision of the IS Custom Support Manager. On specific IT projects may be functionally supervised by a Business Systems Analyst III or IT Project Manager III.

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Gathers and documents business, functional and technical requirements from business leaders, end-users, and vendors for new and upgraded software applications (in-house and third party software) using proven business analysis methodologies and elicitation techniques. Documents project scope and creates vision documents.

- Supports Quality Assurance/Quality Control activities including developing functional and user test acceptance test plans in conjunction with IT and user stakeholders.

- Researches new approaches to improve business and system processes and develops reports and/or proposals for new or enhanced solutions.

- Identifies and documents gaps between the current as-is and recommended to-be processes.

- Collaborates with MIS Department engineering staff, contractors, and vendors to support development of technical specifications for appropriate system infrastructure hardware and software.

- Researches, designs, and tests interfaces between existing and new system applications and platforms to produce seamless integration that complies with business requirements.

- Maintains professional interaction with the IT staff and user community to ensure adequate system functionality, promotes team participation and encourages user confidence in the applications staff quality of service.

- Communicates and consults with end-users or management to provide information regarding the costs and ramifications of the decisions made.

- Evaluates MWRA application and business workflows, identifies improvements, documents requirements, prototyping, quality assurance, and makes recommendations on how business processes can be improved through better implementation of technology.

- Develops and maintains design documentation, report requirements and test plans of applications throughout the design process.

- Supports user acceptance testing and release management activities.

- Coordinates vendor access and resources as assigned.

- Develops and maintains functional unit's business continuity documentation as appropriate**.**

- Identifies project stakeholders by gathering and assessing information to determine whose interests should be considered.

- Creates detailed requirements development work plan and schedule.

- Clearly documents issues and/or risks related to user requirements to ensure the communication between end-users and IT staff is understood by both parties.

SECONDARY DUTIES:

Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

A) A Bachelor's degree in management science, engineering management, computer science or related field; and

(B) Four (4) to Six (6) years of experience gathering functional requirements, analyzing and accurately documenting requirements specifications, workflow diagrams, data flow diagrams, etc to effectively communicate needs to internal and external development teams and/or developing and testing prototypes; or

(C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

A) Demonstrated knowledge as acquired through work experience with business and systems analysis techniques within the information technology disciplines to include the development of Requirements Work Plans.

(B) Analytical and interpersonal skills.

(C) Written and oral communication skills.

(D) Knowledge of the following is desirable: MS Project, MS Visio, MS .Net, J2EE, Crystal Reporting, ORACLE, SQL Server and PL/SQL.

SPECIAL REQUIREMENTS:

Information Technology Infrastructure Library (ITIL) Foundation Certification is required or the ability to obtain within 12 months.

TOOLS AND EQUIPMENT USED:

Office equipment as normally associated with the use of telephone, personal computers including word processing and other software, copy and fax machines.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to walk and stand.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision and color vision, and the ability to adjust focus.

WORK ENVIRONMENT:

The work characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee occasionally works in various field settings and in an office environment. The employee regularly works near moving mechanical parts, and is occasionally exposed to risk of vibration.

The noise level in the work environment is very loud in field settings, moderately loud at other work locations and moderately quiet at office settings.

May 2020

STAFF SUMMARY

To: Board of Directors
From: Frederick A. Laskey, Executive Director
Date: November 18, 2020
Subject: Appointment of Senior Staff Counsel (Labor/Employment)

COMMITTEE: Personnel & Compensation

_____ INFORMATION
_X_ VOTE

Andrea Murphy, Director, Human Resources
John S. Chinian, Associate General Counsel
Preparer/Title

Michele S. Gillen
Director of Administration

RECOMMENDATION:

To approve the appointment of Ms. Hilary K. Detmold as Senior Staff Counsel Labor/Employment (Confidential 6 Grade 13) in the Law Division at an annual salary of $124,984.08, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The position of Senior Staff Counsel will become vacant upon the retirement of the incumbent in December. This position reports to the Associate General Counsel, Labor/Employment and is responsible for representing the MWRA in various forums with respect to labor and employment matters, providing legal advice and counsel in all areas of federal and state labor and employment law, and assisting in civil litigation cases. Given the continued need for legal representation in these areas, it is necessary to fill the position prior to December.

Selection Process

The position of Senior Staff Counsel (Labor and Employment) was posted internally and externally. Applications were received from 31 candidates from which seven candidates were interviewed. The General Counsel, Associate General Counsel, Labor/Employment, Director of Administration, and the Special Assistant for Affirmative Action participated in the interviews. Ms. Hilary Detmold was determined to be best qualified for the position based on her education and experience.

During her career as a labor and employment lawyer Ms. Detmold has represented both public and private employers in virtually all areas of the labor and employment law. She has appeared before various arbitrators, and in various administrative tribunals, including the Massachusetts Commission against Discrimination, the Equal Employment Opportunity Commission, the state Department of Labor Relations (formally the state Labor Relations Commission) the Division of Administrative Law Appeals, and the Civil Service Commission. She has provided advice on all aspects of employment relations, including hiring, performance evaluations, and discipline. She has also coordinated training of managers in such areas. In her role as an employment and labor lawyer, she has extensive experience in counseling employers about reasonable accommodation

under the Americans with Disabilities Act and the state's anti-discrimination statute. In addition, she has both negotiated and implemented collective bargaining agreements with numerous unions.

Ms. Detmold began her legal career at Deutsch Williams Brooks DeRensis & Holland, P.C, a prominent labor and employment law firm in Boston, where she represented public sector employers in the full range of collective-bargaining and employment issues, including providing advice and representing employers in administrative litigation before the MCAD and the state's Department of Labor Relations.

She then joined Boston Public Schools Office of Labor Relations as Labor Counsel. At Boston Public Schools, she built on her experience at Deutsch Williams and both provided legal guidance and represented the Boston Public Schools in arbitration and disciplinary matters as well as continuing to appear before the Department of Labor Relations.

Following her three years of practice as in-house counsel for Boston Public School District, she moved to Littler Mendelson, P.C., a global law firm with an extensive employment and labor law practice. There she continued to represent employers and gained more experience in the private sector practice of employment law.

Ms. Detmold's performance in her interview was excellent. Her answers demonstrated strong and impressive knowledge in the area of labor and employment law. She also showed sound judgment in her answers to a series of hypotheticals that presented some difficult set of facts similar to those often confronted by in-house counsel in these areas.

Ms. Detmold is a graduate of Brown University, and Suffolk University Law School from which she graduated with honors. She served as the editor in chief of the Suffolk University Law Review 2012- 2013.

BUDGET/FISCAL IMPACT:

There are sufficient funds for this position in the FY21 CEB.

ATTACHMENTS:

Resume of Hilary K. Detmold
Position Description
Organization Chart

HILARY K. DETMOLD

PROFESSIONAL EXPERIENCE

LITTLER MENDELSON, P.C. BOSTON, MA
Associate, June 2018-present

- Represent employers in collective bargaining and labor arbitrations, as well as discrimination claims before the Massachusetts Commission Against Discrimination and the U.S. Equal Employment Opportunity Commission.
- Train managers on positive labor relations; leaves of absence and reasonable accommodations; and preventing and responding to discrimination and harassment in the workplace.
- Provide advice and counsel to human resources professionals on every aspect of the employment relationship, from hiring, training, and performance evaluation to discipline, discharge, and severance.

OFFICE OF LABOR RELATIONS, BOSTON PUBLIC SCHOOLS BOSTON, MA
Labor Counsel, August 2015-June 2018

- Established strong relationships with school leaders, department heads, and the Office of Human Capital.
- Drafted, negotiated, and implemented collective bargaining agreements, employment contracts, and settlement agreements.
- Provided legal guidance on personnel matters including hiring, performance evaluations, leaves of absence, discipline, and discharge.
- Represented the Boston Public Schools in arbitrations and disciplinary hearings, as well as in matters before the Civil Service Commission and the Department of Labor Relations.

DEUTSCH WILLIAMS BROOKS DERENSIS & HOLLAND, P.C. BOSTON, MA
Associate, September 2013-November 2014
Law Clerk, May 2012-May 2013

- Advised public-sector clients on a variety of labor and employment issues, including collective bargaining, discipline and discharge, layoffs and severance agreements, leave requests, discrimination complaints, unemployment benefits, school committee policy, and student discipline.
- Drafted briefs, motions, and position statements in matters before the Massachusetts Commission Against Discrimination, Department of Labor Relations, and Division of Administrative Law Appeals.

BROWN UNIVERSITY OFFICE OF ADVANCEMENT SAN FRANCISCO, CA
Regional Development Officer, August 2008-June 2010

- Cultivated major gifts of $100,000 and higher from alumni, parents, and community members as part of a $1.4 billion capital campaign.

UCLA DEPARTMENT OF INTERCOLLEGIATE ATHLETICS LOS ANGELES, CA
Director of Camps and Clinics, June 2005-June 2008
Corporate Relations Assistant, October 2004-June 2005

- Oversaw hiring, training, budgets, venue contracts, and travel arrangements for sports camps.
- Assisted in compliance with NCAA regulations, Title IX, and all applicable state and federal laws.

EDUCATION

SUFFOLK UNIVERSITY LAW SCHOOL, BOSTON, MA
Juris Doctor, *cum laude*
Honors: *Suffolk University Law Review*, Editor-in-Chief (2012-2013)

BROWN UNIVERSITY, PROVIDENCE, RI
Bachelor of Arts, Modern Culture and Media

MWRA
POSITION DESCRIPTION

POSITION: Senior Staff Counsel (Labor and Employment)

DIVISION: Law

DEPARTMENT: Law

BASIC PURPOSE:

Provides legal analysis, advice, and representation of the Authority as requested by the General Counsel and Associate General Counsel.

SUPERVISION RECEIVED:

Works under the general supervision of General Counsel or an Associate General Counsel as assigned.

SUPERVISION EXERCISED:

Exercises close supervision of a legal assistant and support staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Acts as labor and employment counsel. Provides advice and counsel to staff in all areas of federal and state labor and employment law. Represents the Authority at all stages of litigation before state and federal courts and in administrative and arbitration proceedings.

- Handles substantive and procedural legal matters in the following areas: labor, employment, wage and hour, unemployment, administrative, arbitration, and litigation.

- Research and determines the applicability of federal, state and local laws, regulations, and case law, etc.

- Drafts and analyzes advice memoranda, pleadings, motions, briefs, legal documents, claim documents, contract documents, collective bargaining agreements and other memoranda.

- Develops and drafts rules, regulations, policies and procedures.

- Construes and applies the Authority's enabling statute and regulations.

- Analyzes and drafts legislation.

- Conducts legal research as required.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) Analytical and writing skills as normally attained through a Bachelor's degree; and

(B) J.D. from an accredited law school; and

(C) A minimum of three (3) to six (6) years as an attorney in the field of labor and employment law; and

D) Admittance in good standing to the bar to practice law in Massachusetts state and federal courts; or

(E) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

(A) Understanding of and experience in labor and employment law. Experience representing clients in litigation, administrative proceedings and arbitrations. Experience in providing advice and counsel to clients in labor and employment law. Experience drafting and analyzing legal documents, collective bargaining agreements, claim documents, memoranda, legislation and regulations.

(B) Strong analytical, research, organizational, and oral and written communications skills.

SPECIAL REQUIREMENTS:

Massachusetts Bar License. (State bar admission must be obtained as of date of hire. Federal bar admission must be obtained no later than 6 months after hire.)

A valid Massachusetts Class D Driver's License.

TOOLS AND EQUIPMENT USED:

Office machines as normally associated, with the use of telephone**,** personal computer including word processing and other software, copy and fax machine**.**

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to sit, talk or hear. The employee is regularly required to use hands to finger, handle, feel or operate objects, including office equipment, or controls and reach with hands and arms. The employee frequently is required to stand and walk.

There are no requirements that weight be lifted or force be exerted in the performance of this job. Specific vision abilities required by this job include close vision, and the ability to adjust focus.

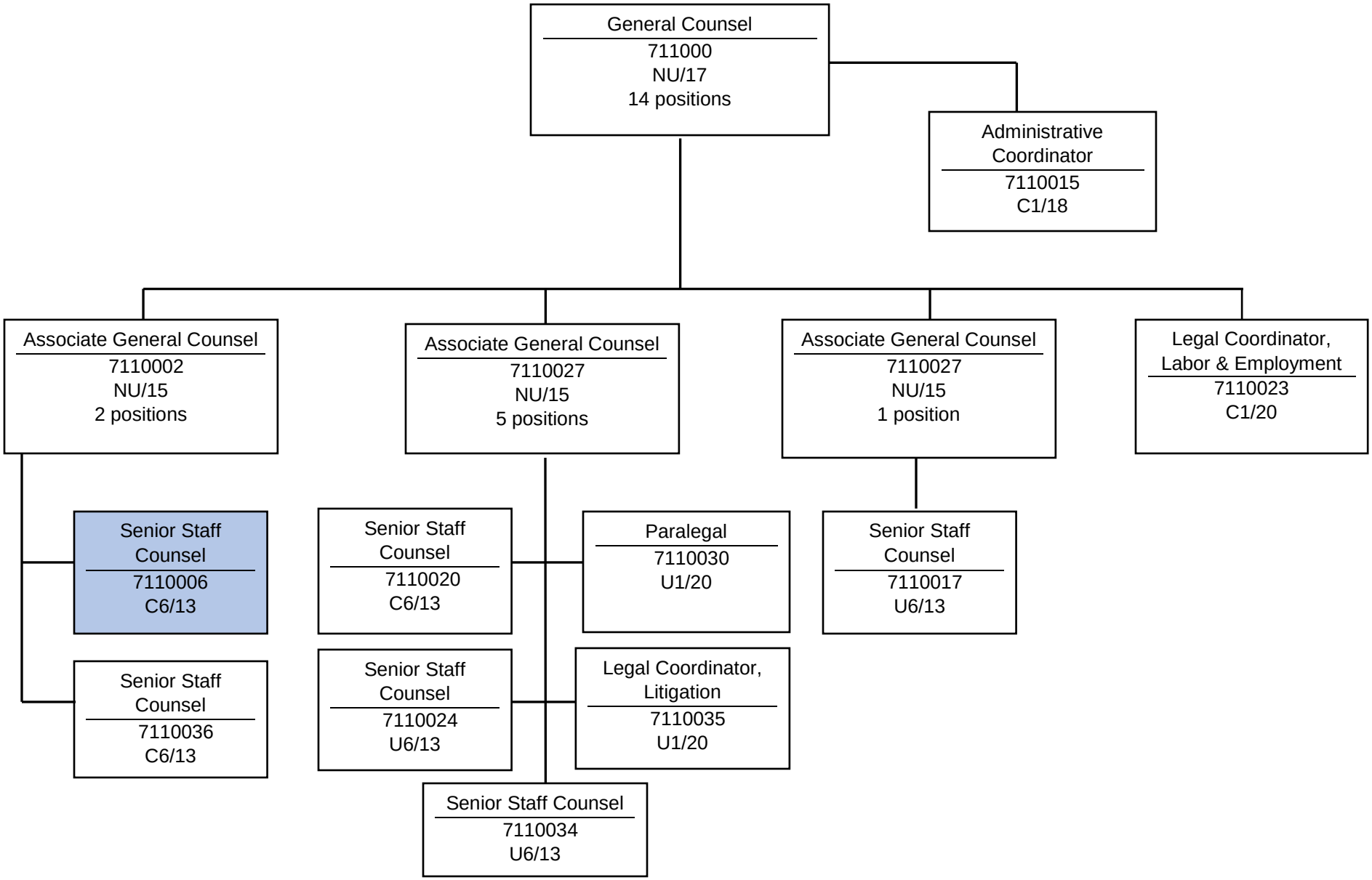
WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job. While performing the duties of this job**,** the employee regularly works in an office environment.

The noise level in the work environment is usually a moderately quiet office setting.

July 2020

Legal Division
November 2020



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Appointment of Manager, Western Operations, Operations Division

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COMMITTEE: Personnel & Compensation

____ INFORMATION
__X__ VOTE

Andrea Murphy, Director, Human Resources
Guy Foss, Director, Western Operations
Valerie Moran, P.E., Deputy Director, Waterworks
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To approve the appointment of Mr. Steven Schmitt to the position of Manager, Western Maintenance, Operations Division, (Non-Union, Grade 14), at an annual salary of $136,000, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The Manager, Western Maintenance position reports to the Director, Western Operations and Maintenance and is responsible for directing and managing all of the staff and maintenance programs for Western Operations' facilities, grounds, and equipment, including intakes, aqueducts, the John J. Carroll Water Treatment Plant, the William A. Brutsch Water Treatment Facility, hydroelectric facilities, and other water supply-related structures. Responsibilities also include budget management for assigned units, development of procedures and improvement programs, condition assessment of facilities, labor management, and maintenance contract management.

Selection Process

The position of Manager, Western Maintenance was posted internally and externally. A total of 34 candidates applied for the position. Nine candidates, three internal and six external, were determined to be qualified and were referred for an interview. The Deputy Director, Waterworks, the Director, Western Operations and Maintenance, the Manager of Treatment and Transmission and a representative from MWRA's Affirmative Action and Compliance Unit interviewed the candidates. Upon completion of the interviews, three of the candidates withdrew from consideration. Of the remaining candidates, Mr. Steven Schmitt was determined to be the most qualified to fill the position based on his combination of experience, abilities, knowledge, skills and education.

Mr. Schmitt spent over five years as a naval officer on a nuclear powered submarine, progressing from Technician Supervisor and Shift Leader to Shift Supervisor. He led three engineering and weapons teams in ship maintenance while at sea and in port. Mr. Schmitt has extensive experience in power generation from this period. He was involved in the start-up, operation, and maintenance of steam powered generators and propulsion turbines. He was also responsible for ship hydraulics, wastewater, and emergency diesel generators.

After leaving the US Navy, Mr. Schmitt worked for six years at Koch Industries as the Maintenance and Reliability Manager at two plant locations. While at the Flint Hill Resources Ethanol Plant, he led a Reliability Department of 20 engineers and technicians across two sites responsible for the proactive and corrective maintenance of equipment to maximize uptime and minimize negative operational impact. Then at Georgia-Pacific Consumer Products, he led a department of 16 mechanics and service contractors in maintaining injection-molding equipment, automated packaging and building services to maximize overall equipment effectiveness in a high-volume manufacturing setting. While there, he implemented a reliability program within the facility, including vibration monitoring, infrared scanning, work order management, maintenance scheduling, and outage tracking. He is currently a Production Manager at Nestle Waters overseeing 30 staff involved with operations and maintenance of a water bottling plant.

Mr. Schmitt is knowledgeable in predictive, preventive, and corrective maintenance practices. He has experience in managing maintenance staff in a unionized environment with progressive discipline, hiring and issue resolution processes.

Mr. Schmitt has a Bachelor of Science in Systems Engineering from the United States Naval Academy and is a graduate of the Naval Nuclear Power School. He is also Lean Six Sigma certified (a management approach for business performance improvement) from Villanova University.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the Operations Division's FY21 Current Expense Budget to fund this position.

ATTACHMENTS:

Resume of Steven Schmitt
Position Description
Western Operations and Maintenance Organization Chart

Steven R. Schmitt

Nestle Waters North America

Senior Production Resource, Large Format Water Bottling, Framingham, MA Sep 2019 - Current

- Lead the site operations team of 30 personnel across 2 shifts to return, clean, and fill a mix of 3 and 5 gallon bottles with an average production of 80,000 bottles/day between 2 production lines
- Coordinated production resources to meet demand through the COVID19 lockdown while missing significant portions of the team due to quarantines
- Work with a cross functional team from safety, maintenance, and logistics to shift production when required to meet customer needs with only one day of supply maintained at our distribution branches
- Coach and develop the operations team through implementation of Total Performance Management on our 2 production lines. Currently progressing both lines with cleaning, inspection, and lubrication (CIL) tasks, tagging abnormalities, loss tracking, centerline production parameters, and visual transformation of the production floor

Georgia-Pacific Consumer Products (Koch Industries)

Reliability Manager, Plastic Injection Molding Manufacturing, Leominster, MA June 2017 – Aug 2019

- Lead a department of 16 mechanics plus contractor site support to maintain injection molding equipment, automated packaging, and building services to maximize Overall Equipment Effectiveness in high-volume manufacturing setting. Daily production of 18 million utensils
- Implement reliability fundamental program elements within the facility – vibration monitoring, IR scanning, work order management, maintenance scheduling, outage tracking
- Drive projects for reliability as Project Manager to include the replacement of 2 electrical switchboards to eliminate overduty equipment, replacement of a moving platen on a 725-ton injection molding machine, and installing remote vibration monitoring on mechanical equipment for condition monitoring
- Implemented machine downtime code monitoring and built new downtime codes that were relevant to current operating equipment to focus efforts and develop root cause analysis
- Implemented a mechanical integrity program for pressure vessels and piping on site and oversaw all CMMS through MP2 and SAP

Flint Hills Resources (Koch Industries)

Reliability Manager, Ethanol Plant, Fairbank & Shell Rock, IA 2013 - May 2017

- Lead the Reliability department of 20 engineers and technicians across two sites with proactive and corrective maintenance of equipment to maximize uptime and minimize operational impact
- Project manager for 43 capital and expense projects totaling $10.7 million - including replacing 3 vessels in cyclical vacuum service drying alcohol each weighing approximately 90,000lbs ahead of schedule and below cost
- Responsible for annual expense budget at each site and had the lowest fixed cost of 7 plants
- Execution Coordinator for 4 plant wide outages that staffed up from 60 plant personnel to 300-400. Site owner for the transition of these events from a centrally managed event to a site run event with significant cost savings
- Maintained 4 cell cooling tower and anaerobic digester waste water system for production
- Coordinated steam boiler R stamp repairs, mechanical integrity piping & tank inspections for upgrades & repairs, distillation tower repairs, electrical distribution testing, and confined space maintenance within our CMMS Maximo system
- Fulfilled plant manager responsibilities during absences
- Worked with multifunctional team to maintain the plant within environmental and safety compliance for a PSM facility with MON, LDAR, and Title V requirements

Steven R. Schmitt

US Navy Nuclear Submarine Warfare Officer

Shift Supervisor, Submarine Forces Pacific, Pearl Harbor, HI 2011 - 2013

- Responsible for radio communications to the submarines in the eastern Pacific Ocean
- Generated strategic targeting exercises for the US ballistic missile submarines

Technician Supervisor and Shift Leader, USS Louisiana, SSBN 743, Bangor, WA 2008 - 2011

- Led 3 engineering and weapons divisions/teams (ranging from 4 to 18 personnel) through intensive in port maintenance periods and a rigorous at sea deployment schedule
    - Damage Control - Owned ship hydraulics, trim, waste water, and emergency diesel gen.
    - Chemistry and Radiological Control – Owned reactor plant chemistry and exposure
    - Assistant Weapons Officer – Owned the 24 tube Trident missile system
- Shift leader for pressurized water nuclear reactor and steam turbine operations for generating electrical power and propulsion
- Shift leader for overall operation of the submarine directing navigation and task execution as the Officer of the Deck for surfaced and submerged operations

Education and Training

- **Bachelor of Science in Systems Engineering** – U.S. Naval Academy 2007
- **Naval Nuclear Power School and Prototype** – SC & NY 2008
- **Certificate in Lean Six Sigma** – Villanova University 2018

MWRA
POSITION DESCRIPTION

POSITION: Manager, Western Maintenance

DIVISION: Operations

DEPARTMENT: Western Operations

BASIC PURPOSE:

Directs and manages the maintenance programs for Western Operations facilities; equipment; and grounds including intakes, aqueducts, treatment facilities, hydroelectric facilities and other water supply related structures. Required to be on-call for emergencies 24 hours per day, seven days a week.

SUPERVISION RECEIVED:

Works under the general supervision of the Director, Western Operations.

SUPERVISION EXERCISED:

Exercises direct supervision of Senior Program Manager, Western Maintenance, Work Order Coordinator, and Program Managers for Electrical, Mechanical, and Facilities as well as other maintenance program and project management staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Manages all aspects of Western Operations maintenance program. Oversees emergency and preventative maintenance of facilities, equipment and grounds to ensure adequate and reliable water supply service and safe operations.

- Manages maintenance staff to ensure proper assignment and functioning of the work unit.

- Reviews, monitors and evaluates work performed in facilities and recommends appropriate improvements in equipment, techniques and procedures.

- Develops long-term maintenance strategies, implements new maintenance initiatives, capital projects, and required maintenance programs.

- Oversees the periodic assessment of buildings, facilities and equipment to define rehabilitation requirements including in-house and contractor supplemented projects as appropriate.

- Coordinates with Operations groups to assure that maintenance work is properly prioritized.

- Participates in capital project design, construction and start-up as needed to ensure that MWRA standards are met and ensure smooth transition to facility maintenance.

- Oversees planning and implementation of appropriate in-house or consultant-led training program.

- Oversees development, training, periodic review and updating of Standard Operating Procedures (SOPs), facility manuals and MWRA safety policies and procedures.

- Oversees budget management for assigned units. Ensures that budget resources are allocated appropriately between units. Monitors spending and ensures budget compliance.

- Oversees personnel management. Ensures that major initiatives and policy changes are properly communicated to all staff. Identifies organizational needs and proposes re-organization plans to address changing needs.

- Oversees staff productivity monitoring and continual improvement through staff skills development, strategic planning, SOPs improvements and research and implementation of technology advances. Maximizes effective use of the Maximo maintenance software and related computer programs.

- Manages the department safety programs, maximizing employee involvement, supporting the Authority-wide safety program, and making inspections. Acts as liaison to the Manager, Occupational Safety and Health. Immediately notifies Occupational Safety and Health of any safety issues or risks that need attention.

- Reviews assigned employees' performance per MWRA procedures.

- Establishes emergency response procedures and oversees training and practice drills.

- Ensures consistency and uniformity of work rules in accordance with established policies and procedures. Identifies needed improvements to work.

- Manages successful administration of collective bargaining agreement provisions to maintain harmonious labor management relations. Participates in grievance resolution, collective bargaining and contract negotiations. Serves as Step I hearing officer. Hears disciplinary actions.

SECONDARY DUTIES:

- Provides emergency coverage as required.

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) Knowledge of engineering principles and practices as normally attained through a Bachelor's degree in civil, mechanical or electrical engineering or a related technical discipline; and

(B) Understanding of planning, supervising and implementing the operation and maintenance of all aspects of water treatment and/or water transmission as normally acquired through eight (8) to ten (10) years experience in the water industry, of which at least five (5) years must be in the management of a large maintenance program related to water or wastewater systems; and

(C) Understanding of planning and supervisory maintenance strategies such as Reliability Centered Maintenance and computerize maintenance management software such as Maximo; or

(D) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

(A) Excellent working knowledge of the maintenance of a large water system.

(B) Excellent interpersonal, written and oral communication skills.

(C) Demonstrated ability to plan, organize, direct, train and assign duties to subordinates.

(D) Working knowledge of maintenance management systems and procedures and computerized maintenance management systems.

(E) Demonstrated successful experience managing in a union environment with a diverse workforce.

(C) Proficiency in use of PC software for word processing, spreadsheets and databases is required.

SPECIAL REQUIREMENTS:

A valid Massachusetts Class D Motor Vehicle License.

A valid Grade 2D OIT and a 1T OIT Drinking Water Supply Facilities Operators license is

required, or the ability to obtain them within 1 year.

A Certified Maintenance and Reliability Professionals (CMRP) certification preferred.

Is required to be part of an on-call rotation for emergencies 24 hours a day, 7 days a week.

TOOLS AND EQUIPMENT USED:

Office equipment as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, including office equipment or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to stand and walk; climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 10 pounds, occasionally lift/or move up to 25 pounds. Specific vision abilities required by this job include close vision, distance vision, depth perception and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

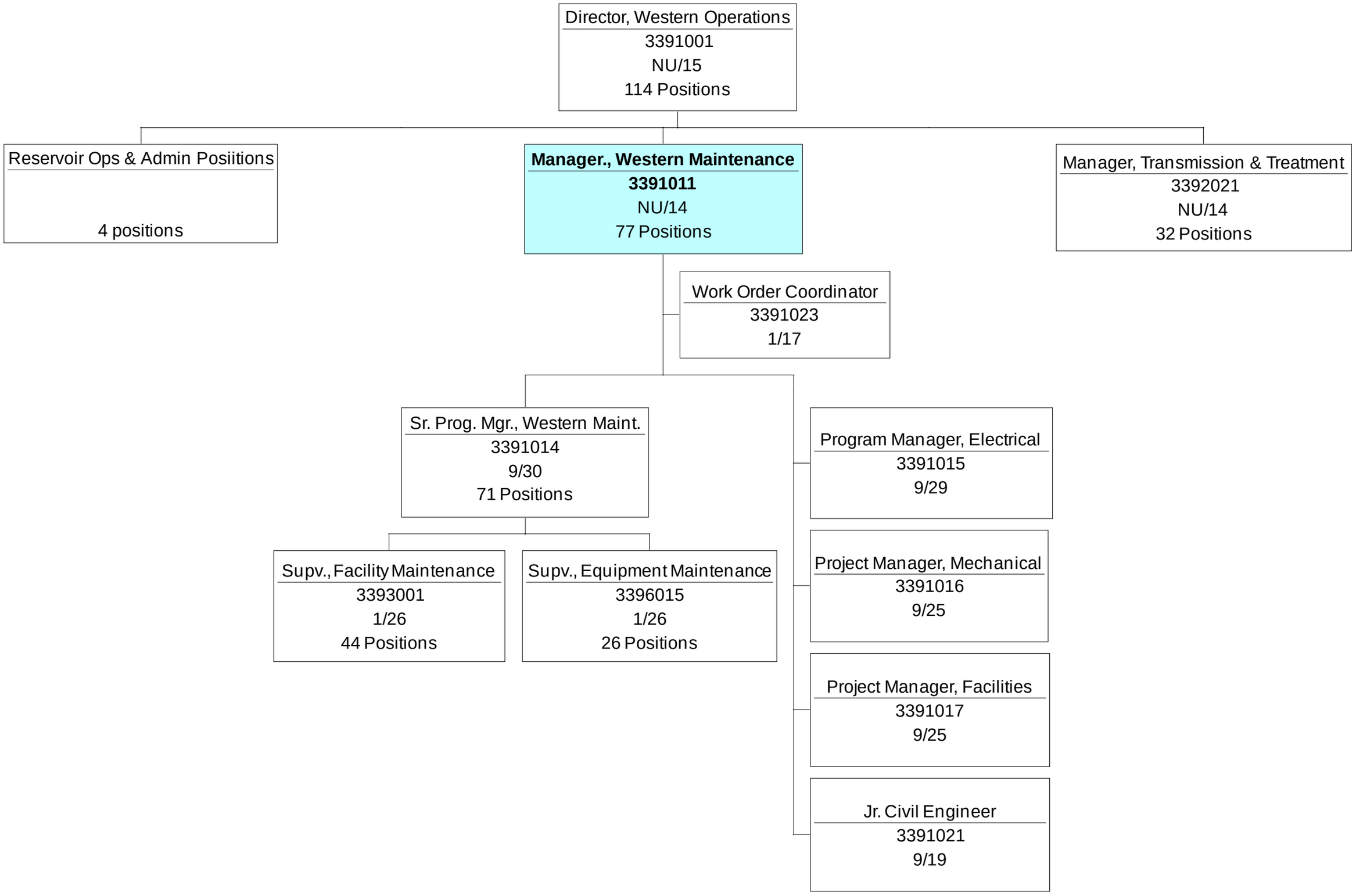
While performing the duties of this job, the employee regularly works in an office environment and occasionally in an industrial plant or field environment. The employee is occasionally exposed to outdoor weather conditions. The employee is occasionally exposed to fumes and airborne particles.

The noise level in the work environment is a moderately quiet in office setting and occasionally in a noisier industrial plant or field environment.

November 2019

Western Maintenance

November 2020



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Appointment of Program Manager, Operations Engineering

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COMMITTEE: Personnel & Compensation

____ INFORMATION
__X__ VOTE

Andrea Murphy, Director, Human Resources
Valerie Moran, P.E., Director, Waterworks
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To approve the appointment of Mr. Nathan Little to the position of Program Manager, Operations Engineering (Unit 9, Grade 29), in the Operations Engineering Department, at an annual salary of $101,288.42, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The Program Manager, Operations Engineering manages the planning, design and construction services for various operation and maintenance projects and programs, and provides technical reviews and support for capital improvement projects. The position manages and coordinates the startup of new equipment and systems during construction of new and rehabilitated facilities to ensure equipment is designed to meet MWRA operational requirements. The Program Manager, Operations Engineering also supports the day-to-day monitoring and operations of water and wastewater facilities, water distribution and transmissions systems and wastewater collection systems. The position will monitor and manage system operations during wet weather events, system emergencies and normal operations to improve system performance and increase optimization. The Program Manager works under the general supervision of the Senior Program Manager in Operations Engineering and supervises in-house engineering staff.

Selection Process

This position was posted internally. Six candidates applied for the position and five candidates were determined to be qualified and were referred for an interview. The Director of Waterworks, the Senior Program Manager in Operations Engineering, the Director of Wastewater Operations and Maintenance, and the Associate Special Assistant for Affirmative Action conducted the interviews. Upon completion of the interviews, Mr. Little was determined to be the best qualified to fill the position based on his experience, knowledge, skills and education.

Mr. Little has nine years of engineering experience working on various civil and environmental engineering projects from the conceptual phase through construction and startup. Prior to coming to MWRA, he worked as a Project Engineer for Woodard & Curran where he was the lead engineer for several water treatment plant upgrades and system improvement projects. He worked on the design, construction, and start-up phases of these projects, and he was responsible for ensuring that new equipment met all operational requirements. Mr. Little then worked at Pennichuck Water as a Principal Water Supply Engineer, where he provided day-to-day technical support to operators and managed the design and construction of several capital improvement projects, such as a booster pumping station and a water main river crossing. Since joining MWRA in 2019 as a Project Manager in the Engineering and Construction Department, he has been successfully managing the development of the Northern Extra High System Improvements Project and the Cathodic Protection Program.

Mr. Little has experience in drinking water supply, treatment and distribution. He has managed multi-disciplinary teams comprised of internal staff and external subcontractors, and has mentored younger engineers. He currently serves on the Board of Directors of the New England Water Works Association and was previously the Chairman of the Young Professionals Committee. He recently received the New England Waterworks Younger Member of the Year Award.

Mr. Little has a Bachelor of Science degree in Environmental Engineering and a Master of Science degree in Civil Engineering from University of New Hampshire, and he holds a Professional Engineering License in Massachusetts and New Hampshire.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the FY21 Current Expense Budget to fund this position.

ATTACHMENTS:

Resume of Nathan Little
Position Description
Operations Engineering Department Organization Chart

August 2020

NATHAN H. LITTLE, P.E.

GOALS Seeking the Program Manager, Operations Engineering position at the MWRA.

EDUCATION

M.S. Civil Engineering (Water Treatment), University of New Hampshire, Dec 2011
Thesis: Assessing Innovative Separation Processes for an Arsenic Treatment System Using Zero-Valent Iron

B.S. Environmental Engineering (Municipal Processes), University of New Hampshire, May 2009

LICENSURE AND CERTIFICATIONS

Professional Engineer, Massachusetts, License No. 51836
Professional Engineer, New Hampshire, License No. 15505

RELEVANT WORK EXPERIENCE

May 2019 - Present Project Manager, MWRA, Chelsea, MA
Responsibilities include managing the design and execution of capital projects, primarily for the drinking water system. Major projects include the evaluation and replacement of cathodic protection systems at Shafts E&L, Shafts N&W, and the entire metropolitan water system as well as the Northern Extra High Improvements Project. Other projects include assisting with risk and resiliency assessments for compliance with AWIA as well as the Norumbega Tank Cleaning project.

Aug 2017 – May 2019 Principal Water Supply Engineer, Pennichuck Water, Merrimack, NH
Responsibilities included planning, design, construction management, and implementation of water supply capital projects as well as operational programs, and management of engineering co-op students and interns. I worked with internal operations, distribution, and engineering departments as well as external consulting firms to accomplish our goals. Major projects included the Merrimack River Watermain Crossing and Booster Station as well as the Locke Lake Surface Water Supply Project.

Nov 2011 - Aug 2017 Project Engineer, Woodard & Curran, Andover, MA
Over 5 years of experience focusing on civil and environmental engineering projects. Worked on a range of projects for both municipal and private clients, including water planning, water treatment, water distribution, water supply, stormwater management, and site design. Primary focus has been on drinking water treatment projects. Specific project experience includes;

University of New Hampshire - Water Treatment Plant Replacement Project. Project involved replacement of the existing treatment plant with a new 1.8 MGD conventional plant. Responsibilities included lead project engineer tasked with the water treatment process design and coordination with all design disciplines.

City of Marlborough, MA – Millham WTP Upgrades. Project involved design and construction of a new UV system to meet compliance with the LT2ESWTR as well as upgrades to the existing WTP including chemical feed system upgrades, finished pump replacement, filter media and underdrain replacement, and process valve replacement. Project was funded through the SRF program. Responsibilities included lead project engineer tasked with treatment evaluation, design, bidding assistance, and construction oversight.

City of Lowell, MA – Water System Improvements. Project involved the design and construction of system-wide upgrades, including architectural improvements to the Intake Pumping Station, a new HVAC system, uninterruptible power system, turbidimeters and sample pumps, and raw water flow meters and flow control valves at the Water Treatment Plant, and a new prefabricated booster pump station in the distribution system. Project was funded through the SRF program. Responsibilities included lead project engineer for all aspects of design, bidding, and construction.

2009 – 2011 Teaching and Research Assistant, UNH, Durham, NH
Teaching assistant for the Environmental Pollution and Control course of over 150 students. Responsibilities included assisting students with a broad range of environmental topics, technologies, and concepts, leading class reviews, tutoring sessions, and facility tours, and evaluating students' written reports and exams. Research

assistant under Dr. M. Robin Collins. Responsibilities included designing and performing bench- and pilot-scale experiments in support of my thesis as well as technical writing and presenting. .

RELEVANT VOLUNTEER EXPERIENCE

NEWWA, Board of Directors, Director at Large, September 2018 – present
Responsibilities include hiring and overseeing the new Executive Director and ensuring the short term and long term prosperity and viability of the association by participating in annual budget review and approval and setting the general direction of the association.

NEWWA Young Professionals Committee, Chair, January 2017 – September 2018
Responsibilities include organizing and leading monthly meetings as well as organizing, planning, promoting, and leading events to support the committee's mission and goals. Major accomplishments during my term as chair include; organizing and emceeing the NEWWA/NEWEA YP Summit that was attended by over 80 young professionals, representing NEWWA at the national AWWA/WEF YP Summit in February 2018, creating the YP Social Media Subcommittee and supporting the subcommittee in their efforts with social media outreach,

INTERESTS

Traveling, hiking, running, softball, soccer, homebrewing

MWRA
POSITION DESCRIPTION

POSITION: Program Manager, Operations Engineering

DIVISION: Operations

DEPARTMENT: Operations Engineering

BASIC PURPOSE:

Supports day-to-day monitoring of wastewater facilities and collection systems and water facilities, distribution and transmissions systems. Monitors system operations during wet weather events, system emergencies and normal operations to improve system performance and increase optimization. Independently manages the planning, design and construction services for various operation and maintenance projects and programs.

SUPERVISION RECEIVED:

Works under the general supervision of the Senior Program Manager in Operations Engineering.

SUPERVISION EXERCISED:

Exercises close supervision of assigned staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Manages and monitors system performance during wet weather events, develops tracking systems to monitor operational performance, provides recommendations for improvements, and initiates the implementation of identified short-term and long-range improvements. Participates in the Emergency Operations Center (EOC) staffing as required. Acts as a back-up to and assists the Managers of Water and Wastewater Operations during emergencies and as needed.

- Utilizes existing Authority software and databases (ex Process Book, PI, Telog Enterprise Website, etc) to analyze facility and system data for post-event evaluations investigations and process control and hydraulic investigations. Develops Process Book graphics for system monitoring. Gathers data and formulates storm reports for Wastewater Operations.

- Maintains ongoing readiness documentation for all wastewater facilities in preparation of wet weather events.

- Implements facility reviews to ensure SCADA automation, alarming functions, and emergency safeguards are functioning as designed and documented.

- Manages the development and implementation of project work plans to support operations, maintenance and construction activities to ensure minimal impact to operations and to water/wastewater customers.

- Manages and coordinates the startup of new process control equipment and systems during construction of new and rehabilitation of facilities to ensure new equipment as designed to meet MWRA operational requirements.

- Manages technical support for senior staff in the development of program plans and standard designs for projects which may include design and construction of new and rehabilitation projects, development of maintenance and operations procedures, and hydraulic evaluation efforts.

- Provides technical review of consultants prepared reports and design projects, contractor shop drawings and O&M manuals for new facilities and facility rehabilitation projects.

- Performs condition assessments and field audits on equipment at MWRA facilities, CSOs, outfalls and other structures within the system in support of safe/efficient infrastructure. Develops written reports of field investigations and corrective actions plans for any faulty equipment and/or systems found during the investigations.

- Develops, updates and assists in the implementation of Standard Operating Procedures (SOPs) and facility manuals for water and wastewater facilities.

- Manages the development and coordination of maintenance service contracts in the field such as, but not limited to, Paving, I&C and Electrical at Metro water and wastewater facilities.

- Represents the department at various internal and external meetings, including, O & M Meetings, and project progress meetings for MWRA design and construction projects.

- Assists in the project development with other MWRA departments to identify potential operational conflicts and ensure MWRA systems will maintain required level of services during implementation of designs.

- Manages staff productivity monitoring and continual improvement through staff skill development, strategic planning, SOP improvements, and research and implementation of technology advances.

- In conjunction with E&C staff, develops consultant engineering scope of services, participates in the consultant procurement efforts and manages consultant teams as necessary for operational improvement projects done by task orders.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A Bachelor's degree in civil, mechanical, chemical, or environmental engineering; and

(B) A thorough knowledge of the operation and maintenance of a large Municipal Sewerage and/or Water System as normally attained through seven (7) to nine (9) years of experience including at least three (3) years experience supervising staff and/or large projects; or

(C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

\Demonstrated ability to work effectively as part of an engineering team and also to function independently with minimal supervision.

(A) Demonstrated ability to supervise technical staff.

(B) Demonstrated understanding of process design, hydraulics and mechanical equipment integral to pumping and treatment systems typically found in water and wastewater facilities.

(C) Demonstrated knowledge of process control theory, practices and principles.

(D) Demonstrated abilities to work productively and maintain working relationships with external parties.

(E) Proficiency with personal computers and knowledge of MS Office, database programs, and engineering applications software.

(F) Experience with GIS, Arcmap, Telog, SCADA, hydraulic modeling software, MAXIMO, process book, and PI is preferred.

(G) Excellent interpersonal, verbal and written communications skills.

SPECIAL REQUIREMENTS:

Must be available to respond to emergencies as needed. May be required to be part of an on-call rotation with other Operations Engineering staff twenty-four (24) hours a day, seven (7) days a week.

Required to provide support during planned off-hour operational events, including wet weather events
A valid Massachusetts Class D Motor Vehicle Operators License is required.

A Massachusetts Registered Professional Engineer's License is preferred.

A valid Grade 5 wastewater operator's license, a Grade 4 collections system certification or 3D Drinking Water Supply Facilities Operators license is preferred.

TOOLS AND EQUIPMENT USED:

Hand tools, mobile radio, telephone, beeper, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms. The employee occasionally is required to site, stand and walk. The employee is frequently required to climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 10 pounds and occasionally lift and/or move up to 25 pounds. Specific vision abilities required by this job include close vision, distance, color vision, peripheral vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in an office environment. The employee occasionally works in outside weather conditions. The employee occasionally works near moving mechanical parts and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in high, precarious places and is occasionally

exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock.

The noise level in the work environment is usually loud in field settings, and moderately quiet in office settings.

July 2020

Operations Engineering

November, 2020

Deputy Director, Waterworks
5811025
NU/15
14 Positions

Program Manager, Mon. & Ctrl.
5811014
9/29

Sr. Program Manager
24700134
9/30

Project Engineer
5811009
9/21

Program Manager,Ops. Engineering
5811027
9/29

Project Manager
24700139
9/25

Project Manager
5811021
9/25

Project Engineer
24700143
9/21

Project Engineer
24700144
9/21

Program Manager, Ops. Engineering
5811032
9/29

Project Manager
5811023
9/25

Sr. Engineer
5811018
9/23

Project Engineer
5811026
9/21

Staff Engineer
5811024
9/19

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Appointment of Deputy Director, Design and Construction
Tunnel Redundancy Department

COMMITTEE: Personnel & Compensation

_____INFORMATION
_X_VOTE

Andrea Murphy, Director, Human Resources
Frederick Brandon, P.E., Director, Design and Construction
Preparer/Title

Kathleen Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

To approve the appointment of Mr. Paul V. Savard to the position of Deputy Director of Design and Construction, Tunnel Redundancy Department (Non-Union, Grade 15) at an annual salary of $147,000, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The Deputy Director of Design and Construction is a new position. It is one of the five new positions that was created and approved by the Board of Directors in July 2020 to increase staff in the Tunnel Redundancy Program and match the progress of the Program now that the Preliminary Design contract has been awarded. The Deputy Director of Design and Construction will direct the administration of the Tunnel Redundancy Department to ensure timely and cost-effective delivery of tunnel redundancy projects. The position will oversee program quality management, schedule and budget controls, risk management, and constructability/value engineering. This position will report to the Director of Design and Construction.

Selection Process

The position was posted internally and externally, and five external candidates applied for the position. Three candidates were determined to be qualified and were referred for an interview. The Director, Tunnel Redundancy, Director of Design and Construction, Tunnel Redundancy and the Associate Special Assistant for Affirmative Action conducted the interviews. Mr. Savard was deemed the best candidate for this position based on his experience, abilities, knowledge and education.

Mr. Savard has 32 years of experience in planning, designing, and constructing water and wastewater transmission and conveyance systems. His experience has a strong focus on design and construction using tunnel and trenchless construction methods, including soft ground and hard rock tunnel boring machines, micro-tunneling and other construction methods. He also has extensive experience in quality management of engineering services, risk management and risk registers, and project controls.

He is currently a Project Manager and Senior Water Practice Group Lead with Parsons Corporation. He led a multidiscipline joint venture team in design of a $280 million sewer conveyance tunnel and sewage pump station replacement project serving the Regional Municipality of York, Ontario that involved building a tunnel that was 9.8 feet in diameter and 8.6 miles long using an earth pressure balance tunnel boring machine. Prior to his role at Parsons Corporation, he was a Project Manager at Jacobs Engineering, responsible for managing large infrastructure design and construction projects including the MWRA's Hultman Aqueduct Interconnections Project and East Boston Branch Sewer Relief Project. Mr. Savard has also served as a quality manager for eight years responsible for training up to 200 staff members on corporate quality requirements. Mr. Savard worked at MWRA from 1988 to 1992 working as a Staff Engineer in the then Waterworks Division working on the design of large diameter water transmission mains.

Mr. Savard has a Bachelor of Science Degree in Civil Engineering from the University of Massachusetts at Amherst and Master of Science Degree in Environmental Sciences and Engineering from the University of North Carolina, Chapel Hill. He is a registered professional engineer in the Commonwealth of Massachusetts.

BUDGET/FISCAL IMPACTS:

There are sufficient funds for this position in the FY21 CEB.

ATTACHMENTS:

Resume of Paul V. Savard
Position Description
Organization Chart

PAUL V. SAVARD, PE

TRAINING & CERTIFICATIONS

OSHA 29 CFR 1910 Construction Safety and Health 10 Hour Training | 2020

NASTT Horizontal Directional Drilling Good Practices Course. North American Society of Trenchless Technology | 2019

NASTT Rehabilitation Good Practices Course. North American Society of Trenchless Technology | 2018

NASTT Cured-in-Place Pipe Good Practices Course. North American Society of Trenchless Technology | 2018

Project Management Course (PMC). Parsons | 2014

PACE Quality Management Training. Parsons | 2014

CSM Microtunneling Short Course. Colorado School of Mines | 2013

OSHA 29 CFR 1910.146 Confined Space 8 Hour Training | 2012

PROJECT AWARDS

East Boston Branch Sewer Relief Project, Trenchless Technology Project of the Year New Installation, North American Society of Trenchless Technology, 2011.

HDD Construction Risks and Challenges on the King County Bellevue Pump Station Force Main Project, Trenchless Technology NASTT No-Dig Outstanding Paper Award, 2008.

West Roxbury Tunnel Rehabilitation Project, Trenchless Technology Project of the Year Honorable Mention, Rehabilitation by the North American Society for Trenchless Technology, 2003.

REGISTRATION

Professional Engineer – Active

- Massachusetts - #41768

PROFESSIONAL AFFILIATIONS

Boston Society of Civil Engineers, 2011-2014

North American Society for Trenchless Technology, 2002-2018

PROFESSIONAL PROFILE

Successful project, program, and construction management roles with a proven history building and leading multifunctional teams to meet budget, schedule, and quality performance. Experience over 30 years involving planning, designing, and constructing water and wastewater transmission and conveyance systems. Strong focus on design and construction using tunnel and trenchless construction methods including soft ground and hard rock TBM, microtunneling, and other construction methods.
Led large tunnel design and construction teams in multiple roles as project engineer, lead design manager, and project manager.
Experienced in constructability reviews and value engineering.
Excellent communicator with passion as a results oriented manager, mentor and leader.

Project Management

Managed tunnel projects with construction valued between $500,000 and $280 million and supporting federal, state, municipal, and commercial stakeholders. Understands national and international markets through management of projects in California, Connecticut, Florida, Georgia, Maryland, Massachusetts, Missouri, New York, Rhode Island, Texas, Washington, Washington D.C., Puerto Rico, and Canada. Effectively used information technology to lead design groups across multiple offices to complete work on time and on budget.

Quality Management

Served as a quality manager for 8 years responsible for training up to 200 staff members on corporate quality requirements. Conducted project audits to verify compliance with quality procedures and developed job-specific quality plans and monitoring implementation for compliance.

Professional Experience

Parsons Corporation **June 2013 - Present**

- Senior water practice group lead responsible to coordinate workload and assignments for 20 staff, manage backlog, identify new project opportunities, and monitor and take corrective action for financial performance.
- Led multidiscipline joint venture team in design of a $280M sewer conveyance tunnel and sewage pump station replacement serving the Regional Municipality of York consisting of 3-meter diameter tunnel 14 kilometers long using an earth pressure balance tunnel boring machine and a new sewage pumping station with a capacity of 2,400L/d. Developed Project Management Plan in compliance with PMP® certification program and managed cash flow, quality assurance, risk management, and project controls of the design team's 55,000 labor hours.
- Provided staff augmentation to the Washington Suburban Sanitary Commission (WSSC) engineering group associated with their consent decree driven sewer rehabilitation program. Directed the quality control program responsible for verifying compliance on more than 100 construction task orders with construction value from $700,000 to $5 million each.
- Condition Assessment Task Lead for DC Water Capital Improvement Program (CIP) Program Management (PgMC) DC Water. Developed asset management plans documenting physical condition and performance levels and set risk-based protocols for 40 miles of large

Member Program Committee 2018-present

Northeast Chapter North American Society for Trenchless Technology Member Publication Committee and Treasurer 2017-present

EDUCATION

Master of Science, Environmental Sciences and Engineering, University of North Carolina at Chapel Hill, 1995

Bachelor of Science, Civil Engineering, University of Massachusetts Amherst, 1987

COMPUTER/SOFTWARE SKILLS

Microsoft Office

diameter sewer gravity and force mains and 25 miles of pressure water pipeline assets.

Jacobs Engineering **Oct 1994 - June 2013**

Project Manager Boston, MA

- Lead project manager for large regional water and wastewater clients including Massachusetts Water Resources Authority, Narragansett Bay, and Hartford Metropolitan District Commission focused on delivering high quality, schedule driven design and construction phase services.
- Representative projects include rehabilitation of 17 miles of the 132-inch Hultman Aqueduct and 84-inch Hultman Aqueduct Branch pipeline; East Boston Branch Sewer Relief Project 14,000 feet of relief sewer installed by microtunneling and other infrastructure rehabilitation, including management of the subsurface exploration program to minimize overall risk; tunnel rehabilitation study for West Roxbury Tunnel; constructability review for SFPUC on 15 miles of large diameter water transmission infrastructure.
- Managed multiple projects for design of water, wastewater, electric and gas pipelines installed using trenchless technology of HDD, microtunneling, pipe jacking, and other construction methodologies receiving project awards and recognition.

Massachusetts Water Resources Authority **Oct 1988 - Aug 1992**

Project Engineer Boston, MA

- Capital Engineering and Development department responsible for large diameter water transmission main designs.

MWRA
POSITION DESCRIPTION

POSITION: Deputy Director of Design and Construction

DIVISION: Tunnel Redundancy

DEPARTMENT: Tunnel Redundancy

BASIC PURPOSE:

Directs the administration of the Tunnel Redundancy Department to ensure timely and cost-effective delivery of the Tunnel Redundancy Program. Reports on the status of all program issues that affect quality, schedules and budgets. Develops, implements and manages program cost and schedule controls, quality management, risk management and document control policies and procedures for the Tunnel Redundancy Program. Oversees constructability and value engineering reviews of design submittals.

SUPERVISION RECEIVED:

Works under the general supervision of the Director of Design and Construction

SUPERVISION EXERCISED:

Directly manages Tunnel Redundancy Department professional staff including a Project Controls Specialist and a Program Quality Manager and consultants.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Oversees project control functions of the Tunnel Redundancy Program. Develops and adheres to a Project Controls Plan. Manages all budget and cost control functions, and supports the Program on all levels of cost reporting and forecasting.

- Oversees and monitors key performance indicators to ensure budgets and schedules are met and develops corrective actions.

- Oversees the preparation, update, and maintenance of integrated project/program schedules for engineering/design, procurement, construction, and commissioning/closeout.

- Directs, develops and administers a Program Risk Management Plan. Conducts assessments to define and analyze program risks. Oversees the development and management of a risk register. Develops processes to eliminate or mitigate potential risks.

- Determines cost and schedule impacts associated with risks that have been identified for the Program.

- Directs preparation of Program cost estimates. Prepares and updates construction budget and schedule projections.

- Manages annual development of current expense and capital budgets and directs variance reporting, analysis and reallocation of budget resources. Develops, updates, and maintains cash flow projections, including cost at completion. Directs program performance monitoring and analysis and monitors performance against the CIP schedule.

- Oversees and administers a Program Quality Management Plan.

- Oversees and monitors quality management during design and construction phases. Ensures that Quality Assurance/Quality Control practices and procedures are followed by the project team through project audits and surveillance.

- Oversees constructability and value engineering reviews of design submittals.

- Manages professional staff including assigning projects, evaluating performance and planning staff development.

- Addresses community and professional organizations and maintains liaison with other agencies.

SECONDARY DUTIES:

Supervises Staff Engineer, Project Engineer, Manager of Design, and Program Manager in the absence of the Director, Design and Construction (Tunnel Redundancy).

Performs other related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A Bachelor's degree in civil engineering, geotechnical engineering, or associated engineering field required; (advanced degree or other significant post-graduate educational experience in an engineering discipline preferred); and

(B) Ten (10) to twelve (12) years demonstrated success in progressively responsible management positions in engineering design, engineering project management, and/or construction functions relating to deep shaft and rock tunnel systems or major water/wastewater facilities; and

(C) At least five (5) years of experience must be in a managerial capacity; or

(D) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

(A) Preferred experience: project management, project controls, risk management, contract administration and/or claims management in a public sector environment. Experience with water systems. Design or construction experience on megaprojects (i.e., projects over $1B).

(B) Knowledge of principles of and practices of civil, geotechnical or tunneling engineering.

(C) Advanced understanding of issues related to design, construction and operation of large and complex water and wastewater facilities and infrastructure.

(D) Demonstrated ability to work effective loin a senior leadership position of a collaborative project team and to function independently with minimal supervision.

(E) Demonstrated understanding of Massachusetts bidding laws, including MGL Chapter 30 and Chapter 149 construction bidding regulations.

(F) Knowledge of environmental regulations and permitting requirements.

(G) Proficiency with Microsoft Office Suite.

(H) Exceptional leadership and project management skills.

(I) Excellent interpersonal, written, and oral and communication skills.

SPECIAL REQUIREMENTS:

A valid Massachusetts Class D Motor Vehicle Operators License is required.

A Registered Massachusetts Professional Engineer license is required.

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Certified Project Management Professional by the Project Management Institute is preferred.

TOOLS AND EQUIPMENT USED:

Office equipment as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms. The employee occasionally is required to sit, stand and walk. The employee is frequently required to climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 10 pounds and occasionally lift and/or move up to 25 pounds. Specific vision abilities required by this job include close vision, distance, color vision, peripheral vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

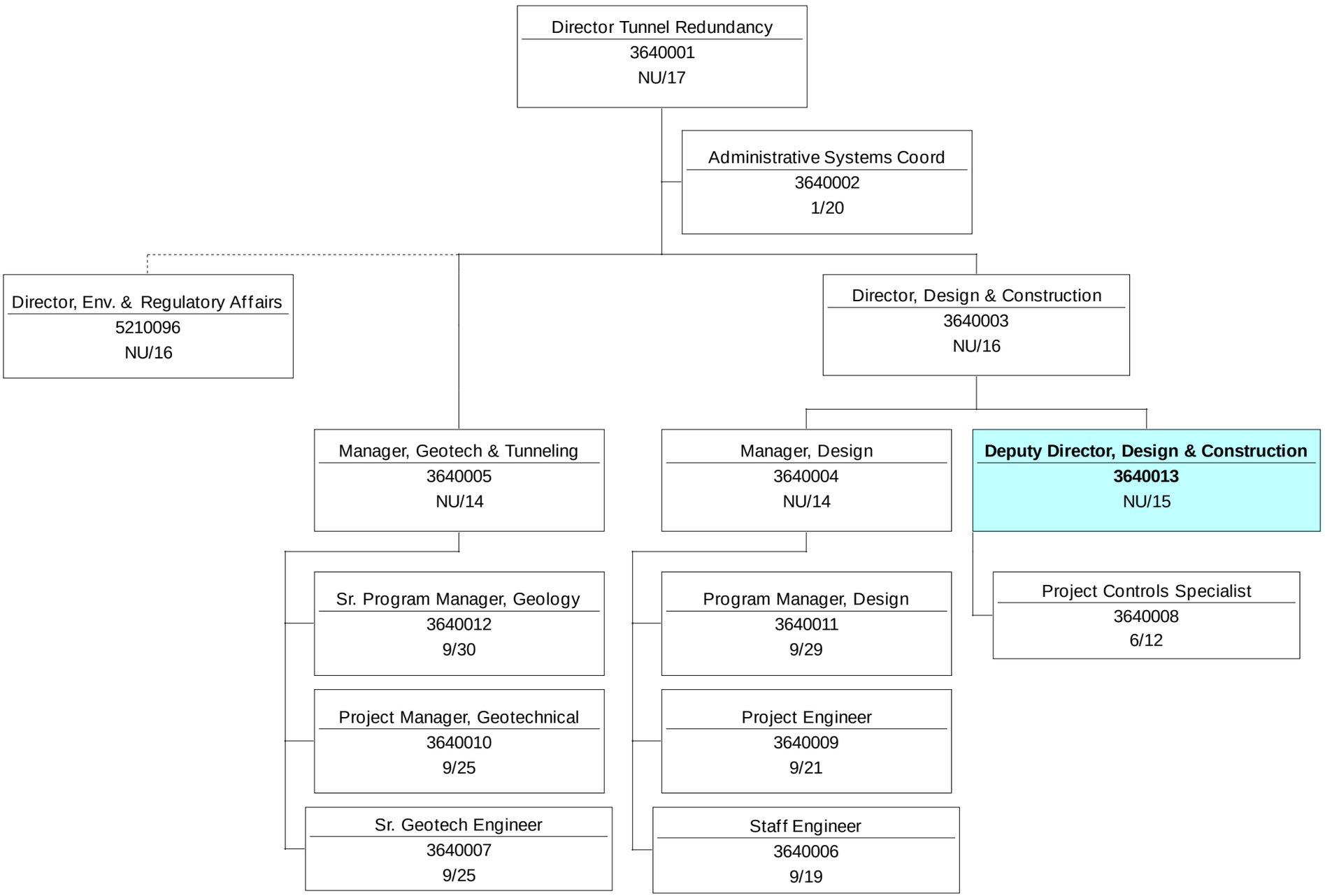
While performing the duties of this job, the employee regularly works in an office environment. The employee occasionally works in outside weather conditions. The employee occasionally works near moving mechanical parts and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in high, precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock.

The noise level in the work environment is usually loud in field settings, and moderately quiet in office settings.

July 2020

Tunnel Redundancy

November, 2020



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Appointment of Senior Program Manager, Geology
Tunnel Redundancy Department

COMMITTEE: Personnel & Compensation

X INFORMATION
X VOTE

Andrea Murphy, Director, Human Resources
Vivian Chan, P.E., Manager, Geotechnical and Tunneling
Preparer/Title

Kathleen Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

To approve the appointment of Mr. Bradford Miller to the position of Senior Program Manager, Geology, Tunnel Redundancy Department (Unit 9, Grade 30) at an annual salary of $134,318.08, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The Senior Program Manager, Geology is a new position. It is one of the five new positions that was created and approved by the Board of Directors in July 2020 to increase staff in the Tunnel Redundancy Program and match the progress of the Program now that the Preliminary Design contract has been awarded. The Senior Program Manager, Geology will oversee major geotechnical and geological field investigation programs, and database and mapping activities for the multi-year Tunnel Redundancy Program. This position will also serve as the Program Geologist during the planning, design and construction of the tunnel systems related to the Program. The Senior Program Manager, Geology will work under the supervision of the Manager, Geotechnical and Tunneling.

Selection Process

The position was posted internally and externally. A total of nine external candidates applied. Two candidates were determined to be qualified and were referred for an interview. The Director of Tunnel Redundancy, the Manager of Geotechnical and Tunneling, Tunnel Redundancy, and the Manager, Operations Support conducted the interviews. Upon completion of the interviews, Mr. Miller was deemed the best candidate for this position based on his experience, abilities, knowledge, skills and education.

Mr. Miller has over 34 years of experience in engineering geology, including extensive experience with subsurface investigation, geologic mapping, preparation of Geotechnical Data Reports and Geotechnical Baseline Reports, and integration of geology with design and construction of large infrastructure projects. He has been involved in various deep tunnels and trenchless construction projects, including the deep rock CSO tunnel in Hartford, Connecticut. As a Technical Specialist and Senior Engineering Geologist for Haley and Aldrich, Inc., Mr. Miller provides expertise in geology and rock mechanics for many trenchless, civil and infrastructure projects. He has also managed numerous large, complex field investigation programs and has overseen remedial implementation programs.

Mr. Miller is very knowledgeable on regional and local geology as reflected in his work experience and other engagements. He is currently serving as the Chairperson for the New England Chapter of the Association of Environmental and Engineering Geologists. He is also an Adjunct Professor at Northeastern University for Engineering Geology. Mr. Miller has experience in managing professional staff and consultants, and has previously held positions as manager of field exploration services and project manager.

Mr. Miller has a Bachelor of Arts degree in Geology and Biology from Colby College. Although Massachusetts does not have registered Professionals Geologists, he is a registered Professional Geologist in the State of New Hampshire and the Commonwealth of Pennsylvania.

BUDGET/FISCAL IMPACTS:

There are sufficient funds for this position in the FY21 CEB.

ATTACHMENTS:

Resume of Bradford Miller
Position Description
Organization Chart

BRADFORD A. MILLER, P.G.

PROFESSIONAL SOCIETIES

Current and Former Chairperson, Association of Environmental and Engineering Geologists - New England Chapter 2018-present, 1999-2001; Treasurer, 1996-1998
Member, Scientific Advisory Board UMass-Lowell Department of Earth & Atmospheric Sciences 2014-2017
Geological Society of America
North American Society for Trenchless Technology (NASTT)

SPECIAL STUDIES AND COURSES

40-Hour HAZWOPER Training (25 CMR 1910.120) and Annual Refresher
Industrial Ropes Access Training - Level 1 Certified SPRAT Professional
OSHA/ANSI Z359 Fall Protection Training
OSHA 10-hour Confined Space Training
Rockfall Mitigation and Management, Transportation Research Board (TRB) Webinar
Practical Rock Slope Engineering Short Course, Maine DOT

ACADEMIC CONTRIBUTIONS

Adjunct Professor at Northeastern University, Department of Civil and Environmental Engineering, for CV-3407 Engineering Geology

PROFESSIONAL OVERVIEW AND SUMMARY OF EXPERIENCE

Senior Engineering Geologist/Technical Specialist, Haley & Aldrich, Charlestown, MA (2009 to present)

Serves as senior geological specialist responsible for the execution and coordination of large, complex field investigation programs for a broad variety of geotechnical projects, including infrastructure improvements, pipelines, highway rock slopes, trenchless alignments (by HDD or microtunneling), bridges, linear energy corridors, deep tunnels, and foundation construction.

Provides expertise in geologic interpretation of complex soil, rock and groundwater conditions as they affect geotechnical engineering design and trenchless utility construction and tunneling, as well as environmental site characterization, on selected projects located in all six New England states, New York, New Jersey, Pennsylvania, Virginia, DC, Maryland, South Carolina, Georgia, Minnesota, South Dakota, Iowa, Texas, Utah and California.

Skills include bedrock structure mapping and analysis for slope stabilization design, evaluating rock blasting feasibility along pipeline/trenching routes, rock volume estimating for drill-and-blast rock removal, characterization of ground conditions during all phases of project design and feasibility studies, and determining the nature of mixed cut-and-fill slopes. Data analysis capabilities include use of RocScience products (DIPS, RocFall, RocPlane, Slide, Swedge) to evaluate rock slope stability for slope design, catchment ditch and rockfall fence design, and comparative evaluations of rockfall mitigation system alternative studies. Interprets and prepares a wide variety of subsurface geologic profiles.

Very strong technical writing and report organizational capabilities, preparing geotechnical data/geotechnical baseline reports (GDR/GBR), feasibility studies, all types of work plans, health & safety documents, technical specifications, and concept development and preliminary engineering studies related to rock slope alternatives analysis.

Possess significant field experience in the design and oversight of geotechnical and environmental test borings, vertical and angled deep-rock boreholes, downhole geophysical investigations (e.g., acoustic and optical televiewers), water pressure testing, in-situ rock strength testing, and the coordination of large, multi-personnel field programs. Thoroughly familiar with a wide variety of geotechnical field explorations, rock classification and testing procedures, including wireline rock coring, pressure meter testing, water pressure (Packer) testing, ODEX and GeoProbe drilling procedures, Cone Penetrometer Testing (CPT) and deep borehole grouting.

Environmental Geologist/Project Manager, Haley & Aldrich, Charlestown, MA (1996-2009)
Provided regulatory compliance strategy and project management that included field program design, execution, documentation, contaminated soil and groundwater management, and project cost budgeting and cost management. Furnished oversight of remedial implementation and participated in various public involvement activities and public hearings for municipal utilities in Massachusetts and New York. Primary responsibilities included environmental investigation/site remediation phases in accordance with Massachusetts Contingency Plan (MCP) regulations.

Manager of Field Exploration Services, Haley & Aldrich, Charlestown, MA (1994-1996)
Responsible for design, implementation, scheduling and oversight of all Boston Office subsurface exploration efforts, serving the professional geotechnical and environmental staff. Additional duties included staff management, technical training of personnel, project cost estimating, preparation of project-related technical specifications, negotiating subcontractor bids and fees, contract generation and authorization, invoice review, and daily management and scheduling of Geology Department field personnel.

Field Geologist, Haley & Aldrich, Charlestown, MA (1988-1994)

Team Leader, DeLorme Mapping Company (1986-1988)

RELEVANT PROJECT EXPERIENCE

Water/Wastewater

Massachusetts Water Resources Authority (MWRA) Deer Island Effluent Outfall Tunnel, Boston Harbor. As manager of field explorations, coordinated field acquisition and analysis of over 160 large-diameter bedrock cores taken through the concrete-segmented liner of the deep-rock TBM-mined tunnel. The rock samples were re-cored in axial and diametral orientations for confirmatory unconfined compressive strength testing, rock anisotropy evaluations, and petrographic/mineralogical analysis that demonstrated concurrence with the geotechnical baseline project data.

South Hartford CSO Conveyance and Storage Tunnel, Hartford, CT. Completion Date: 2015-2017. Role: Project Geologist. Primary author producing Geotechnical Data Reports for four Consolidation Conduits associated with Contracts 4 and 5, to be built by microtunnel and cut-and-cover methods.

Proposed MWRA Residuals Landfill, Walpole, MA. Role: Lead Project Geologist. Responsible for multi-month phased field investigations, evaluation, geological re-interpretation, and analysis of complex glacial site stratigraphy and hydrogeology for proposed MWRA Grit & Screenings Landfill. Proposed project was located on 94-acre land tract controlled by the Massachusetts Department of Corrections, requiring heightened security procedures, employee background clearances, and detailed project “look-ahead” scheduling. As Lead Project Geologist, managed up to five drill rigs, trained and supervised all field staff, selected piezometer instrumentation intervals, conducted extensive downhole permeability testing, and performed interpretive review of both legacy test boring logs and newly-acquired soil, bedrock and groundwater data. Presented technical findings and conclusions to contractual client and MWRA.

24” HDD Sludge Force Main Replacement, Philadelphia, PA. Project geologist, analyst and report author for engineering feasibility studies, field program execution and geotechnical site characterization for a 1,400 LF replacement sludge pipeline crossing the Schuylkill River, to be installed by Horizontal Directional Drilling (HDD) methods. Geologic conditions include highly-contaminated urban soils, deep compressible organic sediments, Coastal Plain sediment sequences and weathered mica schist bedrock. As principal author, prepared geotechnical data report and geotechnical baseline report.

Transportation/Bridges

Central Artery/Tunnel Project, Geotechnical Design Contracts D007D, D008A and Porter Street Outfall Relocations, East Boston, MA. Role: Field Coordinator/Field Geologist. Responsible for training, scheduling and managing field staff and overseeing specialized downhole in-situ Menard Pressuremeter testing programs. Participated in weekly scheduling meetings with Massport representatives governing Landside and Airside (secure) Logan Airport work areas. Responsible for contractor conformance during permitted Airside work, machinery and personnel movements, and night work limitations. Possessed a Vehicle Operation Permit allowing unescorted Airside driving privileges.

MassDOT Fore River Bridge Replacement Design-Build Project, Quincy/Weymouth, MA. Senior geologist responsible for soil and rock review of design-phase geotechnical test borings for a design-build vertical-lift bridge replacement supported on rock-socketed drilled shafts about 170 ft deep. Responsible for interpretation of rock structure within MWRA Fore River sludge transfer tunnel located directly below bridge shafts for 3-D FLAC analysis. Interpreted Cambrian bedrock geology, developed field templates for recording rock strength estimates, RQD, joint spacing, joint condition, and joint orientations, and calculated Rock Mass Ratings (RMR) based on AASHTO Geomechanics System to support LRFD bridge design approach.

Energy/Pipelines

Chelsea River Submarine Conduit HDD Installation, NStar Electric & Gas, Chelsea/East Boston, MA. Role: Project Geologist. Evaluated geological and geotechnical issues at four potential crossing locations in support of a comparative, matrixed feasibility study related to installation of 21 bundled electric transmission and distribution lines that were ultimately installed by HDD methods in three drill paths below the Chelsea River. Designed field programs for land-side drilling and overwater drilling in the navigable Federal channel, interpreted site geology from site-specific boring data, and conveyed engineering implications to project team.

Blasting Mitigation Study, 36" HP Gas Pipeline, 3.8-mile Alignment, Sandisfield, MA. Performed geologic mapping and depth-to-bedrock quantification to support FERC and State-level permitting of high-pressure looping pipeline western Massachusetts. Developed probability ranking matrix of encountering bedrock that could require trench blasting during construction, and prepared blast mitigation approaches when pipeline trench is upslope, downslope or within freshwater wetlands to minimize excessive rock fracturing. Established acceptable vibration criteria, means of reducing impacts to drinking water wells, recommendations for perimeter control blasting techniques (cushion blasting or presplitting) and other construction measures.

Boston Reserved Channel Cable Evaluation, NStar Electric & Gas, Boston, MA. Compiled and interpreted existing subsurface geological information and designed overwater test boring and test probe field program supporting engineering studies related to relocation, deepening or protection of multiple existing marine electric cables serving Deer Island from the South Boston K-Street Substation.

National Grid, HDD under MBTA Rail Tunnel Feasibility Study, Salem, MA. Project geologist involved with geologic characterization, in-situ thermal testing, and historic research supporting technical feasibility study and cost comparison of multiple HDD routes. Project constrained by tight right-of-way and HDD entry/exit ends. Examined five routes with multiple bundled electrical conductor configurations and differing HDD radii. Documented historic city shoreline, railroad plans, and challenging ground conditions including fills, thick organic deposits, and soft clay.

Rock Slopes

I-80 Westbound Rockfall Mitigation Project, Delaware Water Gap, Warren County, NJ. Team geologist supporting technical slope design expert assessing ¾ mile long rock slope and steep soil slopes contributing rockfall into active interstate roadway within a National Park. Performed slope and structural geologic mapping. Defined rockfall source zones and key failure mechanisms for preliminary kinematic rockfall modeling and mitigation engineering report. Contributed concept designs for alternative analyses of engineering options, using a combination of source removal, trim blasted rock slopes, rockfall barrier fences, rock dowels, high- strength anchored netting, shotcrete buttresses and soil embankment/berm. Prepared preliminary engineering and alternatives analyses reports and presented key engineering findings at public Inter-Agency meeting with NJDOT, FHWA, National Park Service, and other stakeholders.

Rock Slope Remediation, Industrial Park, Woburn, MA. Provided geologic site characterization and design-build rockfall remediation oversight for an 85-foot high former quarry wall where rockfall struck an occupied electronics manufacturing building. Using industrial ropes access methods, collected structural data, and conducted on-slope field engineering design for temporary and permanent mitigation systems, consisting of high-strength GeoBrugg pinned netting, rock dowels, cable anchors, and cable lashing. Performed 5-year monitoring review of system performance and effectiveness.

Massachusetts Turnpike Authority, Rock Slope Improvements, I-90 WB MP 102, Westborough, MA. Provided structural geologic measurements and initial rockfall hazard ratings for irregular highway rock slope that was mitigated by trim blasting and catchment ditch enlargement.

Geologic Mapping / Development

Gillette Sports Stadium Site/CMGI Field, Foxborough, MA. Performed large-scale surficial geology mapping program, evaluated bedrock lithology along the faulted margin of the crystalline Sharon Uplands and downdropped Pennsylvanian-age sedimentary basin, and interpreted depth-to-bedrock for geotechnical design purposes on 325-acre parcel for new professional sports complex.

3COM Corporate Campus, Massachusetts. Performed large-scale surficial geologic and depth-to-bedrock reconnaissance mapping for a proposed corporate campus on an undeveloped 75-acre parcel dominated by glacial till drumlins and wetlands.

Government

U.S. Army Corps of Engineers Mansfield Hollow Dam Seepage Analysis, Mansfield, CT. Project task manager for execution of seepage analysis study using SEEP/W finite element computer model on six seepage sections for 14,050-ft-long flood control dam. Managed technical, financial, and document preparation tasks, producing a seepage analysis report for the COE New England Section.

PUBLICATIONS/PRESENTATIONS

"Understanding Geological History When Selecting Trenchless Installation Methods," with co-author Dennis Doherty. Three-part periodical series published in the NASTT-NE Journal of Trenchless Technology Practices; Part 1: Spring 2018, Part 2: Fall 2018, Part 3: Fall 2019.

"Taking It To The Streets: Horizontal Directional Drilling Below Historic Auburn Avenue In Downtown Atlanta," with co-authors Mark Smith and Dennis Doherty. Refereed technical paper presented at the North American Society for Trenchless Technology (NASTT) No-Dig Conference, March 2015, Denver, Colorado, Paper TA-T2-04.

"Summary of Boston Geology and Unique Impact on Foundation Types," ASCE Structures Congress 2014, Track 3: Building Case Studies, Part I of IV presentations, Session ID BB130, 3 April 2014.

"Three Trenchless Crossings – One Urban Waterway: Subsurface Engineering Geology at Chelsea River, Boston Harbor, Massachusetts," co-author of refereed paper, ASCE Pipelines Conference, June 2013, Ft. Worth, Texas.

"Insight Into the Composite Stratigraphy of Middle Cambrian-Age Weymouth Formation, Quincy and Weymouth, Massachusetts," co-author and technical session chair; presented at the Geological Society of America (GSA) Northeastern Section conference, March 2013, Bretton Woods, NH, Topic #32149, Session #21.

"Installation of Three Parallel Electric Ductbanks Beneath the Chelsea River Using HDD, in Boston/Chelsea, Massachusetts" co-author of refereed paper presented at the North American Society for Trenchless Technology (NASTT) No-Dig Conference, March 2012, Nashville, Tennessee, Paper A-1-03.

"No Net Increase: An Engineered Solution to Meet The Onsite Stormwater Management Challenge" poster presentation at the EBC Water Resources Management Conference held on 18 April 2006, co-authored with J.R. Kastrinos of Haley & Aldrich, and T.J. Williams, P.E., of Allen & Major Associates, Inc., Woburn, MA.

"Geology of Massachusetts," with co-author Patrick J. Barosh. Association of Engineering Geologists (AEG) New England Section webpage resource, 2006.

"Digging Up Boston – The Big Dig Builds on Centuries of Geological Engineering." GeoTimes Magazine cover story, October 2002, published by the American Geological Institute (AGI), Alexandria, VA.

MWRA
POSITION DESCRIPTION

POSITION: Senior Program Manager, Geology (Tunnel Redundancy)

DIVISION: Tunnel Redundancy

DEPARTMENT: Tunnel Redundancy

BASIC PURPOSE:

Manages activities relative to subsurface investigations, geologic mapping, tunnel geology, design and construction. Additionally, provides engineering geology support to projects related to the Tunnel Redundancy Program as well as rehabilitation and capital improvement of other water and wastewater facilities and infrastructure.

SUPERVISION RECEIVED:

Works under the general supervision of the Manager, Geotechnical and Tunneling (Tunnel Redundancy).

SUPERVISION EXERCISED:

Exercises close supervision of a staff of professional and technical employees and consultants.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Serves as the Program Geologist during the planning, design and construction of the tunnel systems related to the Tunnel Redundancy Program.

- Manages projects, including the planning, design and construction of projects within the Tunnel Redundancy Program as well as rehabilitation and capital engineering projects for waterworks and wastewater facilities and pipelines. Reviews project schedules and budget development, provides technical assistance, develops and monitors contracts, reviews and evaluates progress, invoice and change order.

- Manages MWRA's geologic samples including their cataloging and storage.

- Reviews the work of consultants and construction firms for large tunneling projects, including all work products, for quality of work, budget, schedule, and compliance with contractual terms and MWRA objectives and policies.
- Manages the implementation of multi-phase, multimillion dollar subsurface investigation programs related to the Tunnel Redundancy Program. Supervises the quality and consistency

of the subsurface investigation data, geologic mapping, geophysical testing and survey, instrumentation installation, testing, data acquisition, and the interpretation of geologic data from consultants throughout various contracts related to the Tunnel Redundancy Program.

- Prepares and participates in the review of procedures, work plans, and schedules for conducting subsurface investigations and inspections, and records management of subsurface/geologic data and materials.

- Manages activities and interactions related to geotechnical and geological investigations and evaluations. Reviews subsurface investigation work plan, geotechnical, geological and geophysical data and reports received from consultant firms related to the Tunnel Redundancy Program and for projects Authority-wide.

- Reviews work of consultants related to geology and hydrogeology, including subsurface investigation and testing methods, geologic mapping, geophysical survey and testing, tunnel alignment, shaft location selection, tunnel boring machine specification, shaft and tunnel groundwater control, probing and grouting, blasting, and tunnel support.

- Reviews geotechnical data reports and geotechnical baseline reports, preliminary design reports, designs, cost estimates and contract documents (plans and specifications) for shaft and tunnel projects. Review sources of project delays for tunnel and shaft construction identified by the consultant and their proposed mitigation measures.

- Manages project site inspections for subsurface investigation, geophysical survey, geologic mapping, and related activities.

- Supervises professional staff, including assignment of tasks, evaluation of performance, and staff development planning. Provides technical and administrative assistance to staff in the development and management of projects, which include design and engineering services during construction in the Tunnel Redundancy Program as well as new and rehabilitation water and wastewater projects.

- Assists with the development and review of annual and supplementary budgets and schedules for compliance with established department, division, and MWRA program goals.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A Bachelor's degree in geology, geotechnical engineering, civil engineering or related engineering field; and

(B) Eight (8) to ten (10) years of engineering geology, civil/geotechnical/tunnel engineering experience, including rock core logging, geologic mapping, and geophysical testing including at least three (3) years of progressive experience in shaft and tunnel design or construction, including experience with tunnel mapping, preparation and review of geotechnical data report and geotechnical baseline report; and

(C) At least three (3) years of experience in a supervisory or project management capacity; or

(D) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

(A) Knowledge of principles and practices of tunnel engineering and underground construction, engineering geology and civil engineering.

(B) Understanding of issues related to design and construction of large underground infrastructure is required. Experience in large deep rock tunnel programs is preferred.

(C) Knowledge of principles and practices of rock mechanics.

(D) Knowledge of regional geologic setting required; knowledge of local geology preferred.

(E) Proven interpersonal, managerial, verbal and written communication skills.

(F) Demonstrated ability to work effectively as part of a collaborative project team and also to function independently with minimal supervision.

(G) Familiarity with engineering software related to subsurface investigations, rock mapping, shaft, and tunnel design is preferred.

SPECIAL REQUIREMENTS:

A valid Massachusetts Class D Motor Vehicle Operator's license.

Registration as a Professional Geologist (any state) is preferred.

TOOLS AND EQUIPMENT USED:

Office machines as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machines, measuring equipment, light tools and mobile radio.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to talk or hear, and to use hands to finger, handle or operate objects, including office equipment and controls. The employee is frequently required to reach with hands and arms. The employee is occasionally required to stand; walk; sit; climb or balance; and stoop, kneel, crouch or crawl, taste or smell.

The employee may be required frequently to lift and/or move up to ten pounds and occasionally be required to lift and/or move up to twenty five pounds. Specific vision abilities required by this job include close vision, distance vision, color vision, peripheral vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

The work characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

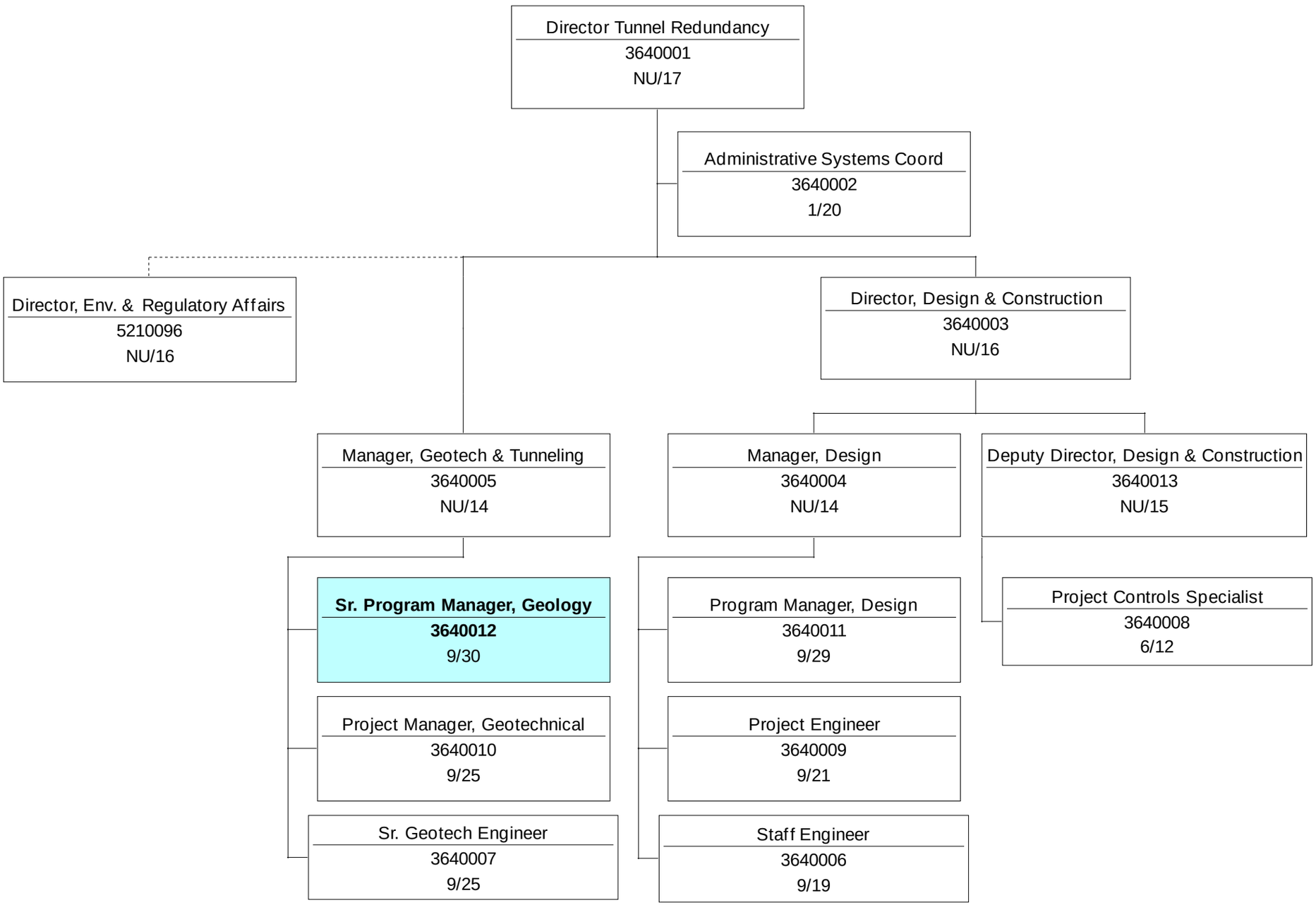
While performing the duties of this job, the employee frequently works in outside weather conditions. The employee at times works near moving mechanical parts, and is at times exposed to wet and/or humid conditions and vibration. The employee occasionally works in high or underground precarious places and is at times exposed to fumes or airborne particles, extreme heat or extreme cold, and the risk of electrical shock.

The noise level in the work environment is usually loud in a field setting and moderately quiet in an office setting.

July 2020

Tunnel Redundancy

November, 2020



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: FY16-FY20 Strategic Business Plan: Annual Update for FY20

COMMITTEE: Administration, Finance and Audit

__X__ INFORMATION
____VOTE

Carolyn M. Fiore, Deputy Chief Operating Officer
Denise Breiteneicher, Program Manager, Energy and Environmental Management
Preparer/Title

David W. Coppes, P.E
Chief Operating Officer

The MWRA's current five-year Business Plan, covering FY16 through FY20, was presented to the Board of Directors in March 2015. The plan described MWRA's mission, identified values, and outlined five key strategic priorities and 18 goals, as well as specific initiatives associated with these goals, which provide a framework for MWRA's business initiatives over the five-year period. This staff summary presents a review of the final year of MWRA's five-year business plan, including progress made on initiatives and accomplishments, and new issues that have been identified. Staff have developed an updated Business Plan covering years FY21 through FY25, which will be presented at the December Board of Directors meeting.

RECOMMENDATION:

For information only.

DISCUSSION:

The FY16-FY20 MWRA Business Plan is a strategic blueprint that articulates the mission statement, values, and goals of the agency, as well as specific initiatives associated with these goals to be achieved or evaluated over the five-year period. The Plan was developed as a tool to guide staff in prioritizing projects and programs within the broader framework of MWRA goals and mandates, and to evaluate system-wide performance.

Five strategic themes integral to MWRA's mission form the basis of the Plan:

I. Drinking Water Quality and System Performance
II. Wastewater Management and System Performance
III. Infrastructure Management and Resilience
IV. Finance and Management
V. Environmental Sustainability

MWRA identified a series of goals to help it achieve its stated priorities, as well as core and special initiatives that described the specific projects and direction MWRA planned to undertake over this five-year period. Core Initiatives address the activities that MWRA must do to meet its performance goals, regulatory requirements and financial commitments. Special Initiatives address activities, projects and emerging issues that staff will be assessing or undertaking in order to improve MWRA's performance of its core responsibilities. Existing reporting mechanisms, such as the Orange and Yellow Notebooks, continue to be used to track monthly and quarterly performance.

The annual update allows MWRA to assess progress toward achievement of its goals as well as to assess progress made on individual projects within Core Initiatives and on Special Initiatives. It also provides an opportunity for managers to review projects at a high level and decide whether the priority status of the project has changed since the development of the current Business Plan and whether the level of resources devoted to the project should remain the same or be increased or reduced.

The attached document presents all the goals by priority areas with the associated initiatives. Symbols included show progress made in FY20, and an associated list of highlights for each initiative. Completed items are identified. Arrows identify many initiatives related to ongoing requirements. On-going initiatives will be carried over into the next five-year plan. The year 2020 has been dominated by the coronavirus pandemic, which began affecting MWRA operations in mid-March. This year's evaluation highlights (with pink shading) initiatives that were impacted by the coronavirus pandemic.

Some of the highlights for FY20 listed by strategic theme are:

<u>Drinking Water Quality and System Performance</u>

- Named 'New England's Best Drinking Water' by the New England Water Works Association again in FY20.
- Continued the School Lead Sampling Program, begun in 2016, that provides assistance to MWRA member communities with analysis of drinking water for lead from schools and childcare facilities. Since FY16, MWRA's Central Laboratory has conducted over 37,000 tests from 87 schools and daycare facilities in 44 communities. With the shutdown of schools in March, this is an example of an initiative that has been impacted by COVID-19.
- Distributed an additional $5.2 million in loans to communities targeting full removal of lead water service lines to water communities. In total, $16.7 million in loans targeting full removal of lead water services has been distributed.
- Participated in the DEP process for developing PFAS regulations.

Wastewater Management and System Performance

- Received the Platinum award for Deer Island Treatment Plant from the National Association of Clean Water Agencies for 13 consecutive years without a NPDES violation.
- Implemented a CSO public notification system in July 2020, ahead of December 2020 requirement.
- Completed the design of the replacement wastewater meter system with installation planned to begin in January 2021. The project should be completed by the end of CY2021.

Infrastructure Management, Resilience, and Redundancy

- Implemented several measures to protect MWRA's assets from cyber-attacks, including establishing an internal committee to review MWRA's resilience, and identifying deficiencies and subsequently outlining safety systems to provide multiple levels of protection.
- Continued major facility rehabilitation and equipment upgrades in order to build resiliency and redundancy, including the Chelsea Creek Headworks rehabilitation, the Nut Island Headworks Odor Control and HVAC Systems Improvements, with substantial completion scheduled for Chelsea in March 2021 and for Nut Island in December 2022.

Financial and Management

- Restructured the annual loan repayments and extended the term for one year under the Local Water System Assistance Program to provide budgetary flexibility for these communities during the COVID-19 pandemic, as recommended by the MWRA Advisory Board.
- Expanded use of remote access technologies and the use of virtual meeting technology in support of teleworkers due to the COVID-19 pandemic.
- Implemented electronic procurements and purchasing of goods to reduce costs, increase efficiency and improve MWRA's environmental footprint.

Environmental Sustainability

- Continued to reduce MWRA's greenhouse gas emissions through the purchase of hybrid and electric vehicles. In FY20, MWRA purchased three all electric Chevy Bolts, and six Flex Fuel Chevy Equinoxes and installed five additional charging stations; three in Chelsea and two at Deer Island to help reduce vehicle fuel emissions.
- Commenced a Comprehensive Energy Study on Deer Island in FY20 to evaluate Deer Island's combined heat and power for the next 25 years.
- Continued successfully incorporating energy efficiency into large CIP projects, including the Chelsea Creek Headworks Rehabilitation project, Braintree-Weymouth Pump Station improvements, the Nut Island HVAC Improvement Project and the rehabilitation of

Alewife Brook Pump Station. Measures incorporated include LED lighting; occupancy sensors; building energy management systems; variable frequency drives on the odor control fans, HVAC, and hot water pumps; automatic controls for ventilation; replacement of inefficient pumps and motors with more efficient ones; and installation of insulation and energy-efficient doors and windows.

Next Steps

Staff are currently finalizing the next five-year Strategic Business Plan and will return to the Board in December to present the FY21-FY25 Plan.

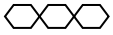
BUDGET/FISCAL IMPACT:

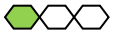
Any budgetary impacts of the initiatives in the Business Plan are accounted for in the CEB and CIP.

ATTACHMENT:

Attachment 1: Review of MWRA Five-Year Strategic Business Plan, FY16-FY20 with FY20 updates

KEY:

Not started 

Initiated 

In progress 

Achieved 

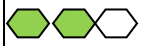
On-going Core Activities ⟶

I. Drinking Water Quality and System Performance

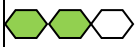
Goal #1: **Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations.**		
Objective	**2020**	**Highlights/ Progress Updates**
A. Optimize operation of water treatment facilities to produce high quality, safe drinking water while maximizing water aesthetics (e.g. taste, clarity, and odor).	⟶	• MWRA met all regulatory requirements for safe drinking water. • MWRA won the annual New England's Best Drinking Water Taste Test at the September 2019 annual conference. • Updated standard operating procedures and reporting for assessing water treatment plant chemical dosing.
B. Monitor drinking water quality in collaboration with member communities and the Department of Conservation and Recreation (DCR) in order to verify high quality water and provide guidance for operating decisions.	⟶	• MWRA continues to coordinate monitoring efforts with DCR for both routine algae and algal toxin monitoring as well as reservoir emergency response planning. • MWRA continued weekly inspections to monitor for cyanobacteria blooms in standby and active reservoirs during May-September. In FY20 staff, along with MIS, completed a project which includes a secure web-based application to document and review weekly inspections. • MWRA continued to coordinate field and laboratory resources to aid local water departments and in-house staff in resolution of water quality complaints, low chlorine residuals or coliform detections, and water storage tank cleaning projects or activations.

		• During COVID-19, staff developed sampling guides and commenced online-based training for coliform sampling. Trained community sampling staff for EPA's Unregulated Contaminant Monitoring Rule 4 program (UCMR4). • Staff completed training in FY20 and by mid-July, all internal sampling staff across numerous departments were using new colorimeters. The new equipment also allows for additional monitoring for monochloramine and free ammonia at all sample sites. • Continued to work with UMass Amherst, under an Interdepartmental Service Agreement, to assess potential impacts from a chemical spill and how treatment can mitigate those effects. • Assisted two communities with Boil Water Order operational planning. One resulted in an actual Boil Odor and staff provided regulatory, call center, and sampling assistance during the event. • Due to COVID-19 staff and operational changes, staff reviewed regulatory sampling program changes with MADEP and EPA and participated in biweekly meetings to keep regulators informed. • Updated Water Advisory Committee on current chloride conditions within source water reservoirs.
C. Ensure reliability of data presented in required regulatory compliance reports.	→	• Increased automation of the process for calculation of annual statistics for CCR/Annual Water Quality report. • Commenced automation of the weekly Water Quality Report.

D. Work cooperatively with DCR and the Watershed Trust to ensure effective and transparent watershed management for water quality protection.	→	• Staff reviewed and commented on the update of the Quabbin, Ware and Wachusett Watersheds Protection Plans.
E. Operate the reservoir system to optimize both quality and quantity of water available for water supply purposes and to meet statutory and regulatory requirements for downstream releases.	→	• Met all statutory requirements for downstream releases. • MWRA achieves exceptional raw water quality through effective water transfer between the Quabbin and the Wachusett Reservoirs, based on amount and timing of transfers. • MWRA completed annual standby reservoir monitoring during annual water quality sonde profiling and grab sample analysis. • Sudbury Reservoir, Foss Reservoir, Chestnut Hill Reservoir, Fells Reservoir, and Spot Pond are all kept within their normal operating ranges. Water has not been added to either Fells or Spot Pond since going into standby status in 1998. Level control has been maintained through the removal of excess water when the elevation has been above the normal operating range.
F. Enhance the safety and security of the water supply and watershed system against accidental or intentional threats and hazards.	→	• Continued implementation of consequence management practices to guide alarm response at contaminant monitoring locations. In FY20, twenty-eight actionable alarm events were responded to across MWRA contaminant monitoring system locations. • FY20, staff and DCR commenced the procurement of a water quality profiling buoy and associated sonde equipment for the Quabbin Reservoir intake area. Additional planning coordinated with MIS for data communication and transfer efforts. • Continued deployment of water quality profiling buoys and sondes for Wachusett Reservoir monitoring. All three water quality-profiling buoys were deployed, and

		collected profiling data at Basin South, Basin North and the intake locations.
G. Identify potential transportation related contaminants to the source water and develop a response to potential contamination from these sources.		• Continued UMass Amherst research project to evaluate strategies for minimizing impacts of an oil spill and cyanotoxins in Wachusett Reservoir using treatment scenarios at the Carroll Water Treatment Plant. • UMass Amherst continued developing an analytical method to quantify cyanotoxins removed during the mitigation of cyanotoxins in Wachusett water using treatment processes deployed at the CWTP.
H. Evaluate ways to improve monitoring and managing the system to maintain high quality water all the way to the ends of the community systems.		• Developed MWRA Compliance Tap Report which highlights water quality data from frequent coliform sampling and testing at MWRA storage tanks & other finished water taps. • Developing ways to organize, disseminate, and communicate water quality data to community & MWRA staff routinely. Data will help assess the need for treatment or distribution system operational changes. • Coordinated the specification and purchase of a water quality profiling buoy for Quabbin Reservoir. Buoy will be installed in FY21. Staff to coordinate network server integration so profile data can be reviewed and managed routinely. Staff will also incorporate the new buoy water quality data into daily water quality trend reporting. • In FY21, staff will develop and report a multi-year review of water quality data for all standby reservoirs.
I. Advocate for responsible and reasonable revised drinking water regulations.		• MWRA staff continue to be active in state and federal review of the Lead and Copper Rule, and Unregulated Contaminant Monitoring Rule, as well as other proposed rule and guidance changes. • MWRA began sampling in January 2018 for the Unregulated Contaminant Monitoring Rule 4 (UCMR4), a three year monitoring

		program (2018-2020). In December 2018, staff developed and delivered a training program for selected partial and CVA communities. Training continued in 2019 and 2020. • MWRA staff participated in the DEP stakeholder process for developing PFAS regulations. Completed voluntary sampling for PFAS at DEP's request for all public water systems. Sampling occurred at each MWRA source reservoir and finished water tap, covering all the drinking water going to fully served communities. Staff assisted partially served communities with sampling at their finished water taps.
J. Develop improved data handling, auditing, and reporting functionality.		• Developed a data infrastructure to enable increased computer data processing and use of robust relational databases. • Monthly compliance report made available to DEP via electronic download. • Automated the generation of monthly DPH fluoride monitoring form.

Goal #2: Continue to effectively report and communicate water quality information to our customers and public officials.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Distribute the federally required annual water quality report, the Consumer Confidence Report (CCR), to all households.		• Completed Annual Water Quality report in June and distributed to homes, as well as posted on MWRA website. Additional focus this year on lead related issues and infrastructure investment.
B. Maintain and improve water quality and public health information on MWRA's web page, www.MWRA.com.		• During FY20, MWRA continued to update and add water quality information to website. • In FY20, the Annual Water Quality Report was prominently featured at the top of the home page and was publicized through Twitter and other news outlets. The monthly water quality reports were posted regularly and sent directly to subscribers through the Everbridge application. • In late FY20, MWRA began including information on COVID-19 on its website, including a notice that it cannot be transmitted through drinking water. • MWRA again participated in AMWA's "Imagine a Day Without Water" in October 2019 and AWWA's "Drinking Water Week" in May 2020 with relevant postings on MWRA.com and Twitter.
C. Investigate web-based and more real time reporting of data for the Environmental Quality, Water Group		• Continued investigating operational data sources and technologies for data management, integration and warehousing. This initiative will continue into FY21. • A new system was implemented for the collection, storage and visualization of operational buoy data leveraging OSISoft's PI technology. The PI database in Chelsea will be the central repository for all MWRA PI data. In FY21, the system for collection, storage and visualization of operational buoy data through OSISoft's PI technology will be modified to include seasonal water quality data from the new profiling buoy at Quabbin Reservoir.

		• Created data dashboards for ENQUAL Water staff to use in reviewing online analyzer and grab sampling source and finished water data. In FY20, three dashboards were created to automatically update and disseminate internal reports daily. This initiative will continue into FY21 and efforts will be made to expedite and communicate MWRA and community chlorine residual, temperature, coliform testing, and reservoir buoy data. • Developed automated processes to generate weekly reports. This includes an initiative to migrate current and historical data stored in Microsoft Excel and Access to relational databases. In FY21, the initiative will include transferring automation to other routine reports.
Goal #3: Assist member communities to improve local water distribution systems through ongoing financial, technical and operational support programs to maximize long-term water quality benefits.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Provide technical and operational support through training, on-call contracts, and targeted assistance, as needed.	→	• During FY20, MWRA's lab completed 901 tests from 84 schools and childcare facilities in 33 communities. Additionally we completed 94 lead tests for the DPH program, and 1866 lead tests for other drinking water projects in FY20. Since 2016, MWRA's Laboratory has conducted over 37,000 tests from 487 schools and daycares in 44 communities. • Provided technical assistance to communities during water quality events and water main breaks. • Provided assistance with leak detection and valve operations to communities as requested. Assisted municipalities in the MWRA's Service Area with leak detection in their systems in FY20 on 278 occasions. • Met with eleven communities and Hanscom Air Force Base in FY20. The meetings were held to discuss water quality and distribution system topics.

		• Participated in MWRA community Emergency Response Plan Training sessions and discussed various water quality subjects including coliform and building flushing following periods of little to no water use. • MWRA continues to provide drinking water sampler training. This endeavor has now switched to online video-based training. Staff continue to train newly hired samplers upon community request or in response to coliform events.
B. Promote and manage MWRA's Local Water System Assistance Program to help facilitate improvements in local community infrastructure.		• In FY20, an additional $24.7 million in MWRA interest-free loans were distributed to member water communities. In total, more than $436 million in loans have been distributed to fund 466 local projects and 43 of 45 eligible water communities are participating. Since 1998, 568 miles of local water main have been replaced or cleaned and lined (about 9% of the regional system) via projects funded by MWRA financial assistance. In FY17, $100 million lead service line replacement loan program began; in FY20, an additional $5.2 million was distributed to member water communities in this program. In total, $16.7 million in loans targeting full removal of lead water services have been distributed. • Conducted significant outreach associated with the addition of the lead service line replacement program, as well as additional outreach on other local lead issues. • At the recommendation of the Advisory Board and with Board approval, Treasury staff have worked with communities to restructure the annual loan repayments and extended the term for one year to provide budgetary flexibility during the pandemic.
C. Coordinate with MWRA's Advisory Board and develop a recommendation for a third phase of the community water financial assistance program for		• Coordination with the Advisory Board on development of Phase 3 Local Water System Assistance Program was completed in FY17. Beginning with the Final FY18 CIP, a new $292 million Phase 3 of the community

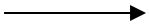
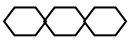
the FY21 to FY30 timeframe consistent with the Water Master Plan. COMPLETED		water loan program was approved by the Board of Directors and has been made available to member communities.

II. Wastewater Quality and System Performance

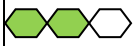
Goal #4: Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Continue to carry out the Pretreatment Program to protect receiving water quality, maximize the beneficial reuse of wastewater residuals, and protect workers and MWRA's wastewater treatment plants.	→	• Conducted a total of 1,102 industrial waste inspections (SIUs and non-SIUs), 681 gas/oil separator inspections, and 107 septage and septage hauler inspections. • Responded to 100% of all discharge violations for both Significant Industrial Users (SIUs) and Non-Significant Industrial Users (NON-SIUs) by taking enforcement action in accordance with its EPA approved Enforcement Response Plan (ERP). • Conducted a total of 2,447 sampling events for the following activities: o 1,227 industrial o 203 NPDES permit related o 18 for emergency response o 174 for local limits o 825 for special projects • Sampled 172 permitted Significant Industrial Users (SIU) with a discharge at least once in FY20. • Issued or renewed 442 permits • TRAC met all of its EPA goals for the Industrial Pretreatment Program despite the suspension of a majority of its fieldwork on March 20, 2020, including monitoring and inspections for MWRA's industrial pretreatment program. All TRAC staff began working from home and spent April, May, and June writing and issuing permits and reviewing permittee compliance with permit requirements. Field activities resumed on June 22, 2020. All remaining EPA inspection and monitoring requirements were completed during the final weeks of June 2020.
B. Continue to monitor DITP and Clinton Process Controls and quality of treated effluent to optimize plant performance and ensure that all applicable NPDES	→	• Deer Island was awarded a Platinum award from the National Association of Clean Water Agencies (NACWA) for 13 consecutive years without a NPDES permit violation.

permit limits continue to be attained.		
C. Implement enhanced phosphorus control at the Clinton Wastewater Treatment Plant. COMPLETED		• Construction of phosphorus removal facility (Contract 7411) substantially complete as of March 2018. The facility operated in full compliance with the new NPDES permit phosphorus limits effective April 1, 2019.
D. Develop a molybdenum (Mo) control strategy to enable more widespread biosolids reuse.		• In FY17, DEP simplified its Mo limits from two separate limits into one and raised the limit to 40 ppm, which enables MWRA to use its biosolids in-state year-round. MWRA pellet Mo levels remained below the 40 ppm limit at all times in FY18, FY19, and FY20. Staff are continuing to work with water treatment chemical suppliers to avoid cooling tower products containing Mo and have developed a draft Mo fact sheet for distribution by the chemical suppliers to their customers.
E. Comply with I/I mapping and planning requirements in state environmental regulations and NPDES permits. COMPLETED		• Submitted Clinton Collection System Operation and Maintenance Plan outline by 9/1/2017, full plan by 12/31/2017 (in advance of March 2019 deadline), and collection system map by 5/15/2017 (in advance of September 2019 deadline), and annual report including I/I data by March 2019 to comply with Clinton NPDES permit. • Submitted I/I control plan for MWRA collection system by 12/31/2017, to comply with 314 CMR 12.04(2).
F. Conduct an evaluation of the CSO treatment processes to determine potential opportunities to better meet permit limits. COMPLETED		• Evaluation of the CSO treatment processes was conducted in FY16 under MWRA Contract #7400, Task Order No. 15. The evaluation of each CSO facility involved reviewing both the equipment and operation of each CSO facility, as well as performing additional sampling during activations. A final report was submitted with the findings and recommendations for each facility. Next steps: o Several key recommendations have been carried forward into the Prison Point Improvement Project (induction mixers, additional post chlorination sample locations, *etc.*). This improvement project is currently at the 100% design level. Lessons

		learned as a result of the Prison Pt. Improvement Project will be applied at Cottage Farm.
Goal #5: Continue to initiate plans and studies to prepare for regulatory changes; identify opportunities to refine monitoring requirements; and improve effluent quality.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Prepare updated Local Limits Studies for Clinton and Deer Island in accordance with EPA guidelines to confirm appropriate discharge limits from industries.		• New Clinton NPDES permit was issued by the EPA and became effective March 1, 2017. The Local Limits reassessment was approved by EPA in FY19. In the spring of 2019, MWRA issued revised regulations for public comment. Revisions included updates to the Local Limits for the Clinton Sewerage Service Area based on the reassessment approved by EPA. The revised regulations, including updates to the Local Limits for the Clinton Sewerage Service Area were promulgated on September 6, 2019. All industrial permits for the Clinton Sewerage Service Area were updated to include the revised Local Limits. • Awaiting EPA's issuance of new NPDES permit for DITP.
B. Continue to review all Ambient Monitoring Plan questions and conduct evaluations to ensure they address MWRA needs and public concerns		• Follow-up meetings with the Outfall Monitoring Science Advisory Panel and its subcommittees were held in April, July, September, and October 2019 to review workshop results and recommend next steps. Minor modifications to the monitoring plan resulting from these discussions were proposed to regulatory agencies by MWRA in June 2020.
C. Continue to closely follow potential permit issues such as the impact of changes in bacterial and nutrient water quality standards, NPDES delegation to MA, stormwater permitting, endangered species designations, co-permittees, and nitrogen impacts on Massachusetts Bay.		• Key issues in FY20 were emerging contaminants including perfluorinated compounds and pharmaceuticals, rapid notification of CSO discharges, industrial stormwater permitting; and nitrogen limits. In FY20, MWRA provided comments on DEP draft water quality standards updates, and on several draft NPDES permits in the region.

D. Develop a plan to respond to emerging contaminants as they are identified and frame an approach to respond to the public's concerns about these constituents.		• Enqual is responsive to the public's concerns about emerging contaminants and performs investigations as needed to address these concerns. • In FY20, MWRA contributed support to Water Research Foundation and academic studies of emerging contaminants in wastewater and in Massachusetts Bay. There are two studies that the MWRA is currently participating in with WRF; each focused on different aspects of the presence of PFAS compounds either in wastewater or in biosolids. For one of the studies which is in a start-up phase, MWRA is providing both Deer Island influent and effluent data for analyses and for the second, it is providing funding for a study to assess the release of Poly- and Perfluoralkyl compounds from biosolids. • For the third project, MWRA has provided effluent data for a study of the presence of PFAS and other contaminants of emerging concern, in wastewater. The data analysis phase of this project has begun, but was suspended due to COVID-19. Work on this study is expected to begin again in the fall of 2020. • MWRA continues to support wastewater based epidemiology (WBE) research for tracking the spread of COVID-19. MWRA has provided in-kind samples to research groups from MIT, Northeastern, Tufts and UMASS-Amherst. MWRA is also piloting an early warning approach by submitting samples from DITP to Biobot Analytics, Inc. for the analysis of the genetic signal for the SARS-CoV-2 virus that causes COVID-19. The results of these analyses are shared with the state COVID-19 command center as they are received and shared with the public on MWRA.com.
E. Review new organic waste treatment technologies as they arise.		• No new technologies to review in FY20.
F. Prepare for the Dental Amalgam Rule change.		• The final rule was issued with an effective date of July 14, 2017. It requires only dentists who begin discharge to the sewer after July 14, 2017 to comply immediately with a certification statement that they have an approved amalgam

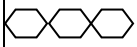
COMPLETED		separator. In the revised Sewer Use Regulations issued for public comment in FY19, TRAC included a new group permit for Dental Discharges The revised regulations, which included a new Dental Discharges group permit were promulgated on September 6, 2019. In FY20, TRAC continued to work closely with MassDEP to transition the dental certification to MWRA and began permitting dental facilities throughout the Service Area. In total, TRAC issued 714 Dental Discharges permits in FY20.
Goal #6: Complete all CSO milestones by 2021 and demonstrate that the CSO Plan meets its performance objectives at all outfalls. Ensure compliance with CSO NPDES permit and CSO Variance requirements.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Complete implementation of the remaining three of the original 35 CSO control projects. COMPLETED		• Staff attained substantial completion of the last three CSO projects in FY16, in compliance with Schedule Seven, with the cooperation of BWSC and the City of Cambridge.
B. Attain levels of CSO discharge frequency and annual volume specific to each of the receiving basins addressed in the long-term CSO plan by 2021.		• Staff continue to report CSO discharge estimates to EPA and DEP annually, track, and evaluate performance against the court-ordered long-term levels of control. • As part of the scope of the CSO performance assessment noted below (D.), staff and the consultant are investigating site-specific measures that can further reduce CSO discharges where needed to help meet the long-term CSO plan's levels of control.
C. Comply with the CSO Variances for the Alewife Brook/Upper Mystic River Basin and the Lower Charles River/Charles Basin issued to MWRA and CSO communities for the term of 9/1/19 through 8/31/24		• Staff implemented a CSO public notification system in July 2020, ahead of the December 2020 requirement. • AECOM developed receiving water quality models for the two variance waters. Calibration is underway. Staff conducted receiving water, CSO and storm water sampling to support model calibration. • Staff have commenced project evaluations required by the CSO variances, including Alewife

		P.S. optimization, CSO optimization, and Somerville-Marginal Facility CSO reduction. • Staff continue to comply with all other variance conditions to minimize CSO impacts.
D. Complete final eligibility reviews and closeout of the completed community-implemented CSO projects.		• Staff completed final eligibility reviews and closed out the community CSO memoranda of understanding and financial assistance agreements ("MOU/FAA") with Town of Brookline and BWSC in FY15 and FY17, respectively. • Regarding a separate but related financial assistance agreement, BWSC submitted, and MWRA approved for funding, construction plans for removal of inflow from systems tributary to BWSC's Dorchester Interceptor. BWSC expects to complete construction by June 30, 2021. • The MOU/FAA with City of Cambridge ended on June 30, 2018, and staff expect to complete final eligibility reviews and close out by early FY21.
E. Develop scope for the court-ordered CSO verification assessment by FY16 and implement the assessment during the period CY 18-21.		• MWRA received an extension of the final milestone to submit the assessment of the CSO program by December 2021 (rather than 2020). • MWRA issued Notice to Proceed with the contract for the CSO Post-Construction Monitoring and Performance Assessment in November 2017, ahead of and in compliance with the January 2018 milestone in Schedule Seven. • The consultant continued to collect and evaluate data from the temporary meters, as well as permanent community and MWRA meters, and a network of rain gauges. The consultant has updated MWRA's hydraulic model. In November 2018, May 2019, October 2019 and April 2020, MWRA issued semiannual reports on the progress of the performance assessment towards issuing a final report in December 2021 that will assess the attainment of court-ordered levels of CSO control.

Goal #7: Assist member communities to improve their wastewater collection systems through ongoing technical, financial, and operational support programs.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Provide technical and operational support including TV inspections, fieldwork assistance, or other targeted assistance, as needed.	→	• Staff routinely provide technical assistance when requested. In FY20, no requests were submitted by the communities for TV inspections.
B. Promote and manage MWRA's Inflow/Infiltration (I/I) Local Financial Assistance Program to facilitate reduced I/I in local community infrastructure.	→	• In FY20, an additional $40.4 million in MWRA grants and interest-free loans were distributed to member sewer communities. In total, more than $441 million in grants and loans have been distributed to fund 605 local projects and all 43 sewer communities are participating. Since 1989, average annual wastewater flow to DITP has been reduced by about 76 mgd, a 19% reduction. (See more information in the Annual NPDES I/I Reduction Report).

III. Infrastructure Management and Resilience

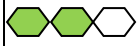
Goal #8: Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support service levels.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Continue to ensure proper operations and maintenance of the water and wastewater systems and minimize system downtime by performing Preventative, Predictive, and Corrective maintenance on equipment and linear assets, water system leak surveys, valve inspections and exercise, and performing inspections and cleaning of wastewater pipelines, structures, water storage tanks, and inverted siphons inspections, and cleaning.	→	• Only emergency fieldwork and critical preventative maintenance was performed from mid-March through June 22nd; a result of restrictions in place due to the pandemic. • Replaced 4 water blow-off retrofits and 10 main line valves, entailing excavating and isolating the main from the valve, cutting out the old valve and installing a new one. • Inspected 101 miles of MWRA water mains and repaired 23 leaks. • Performed independent water meter testing to confirm the accuracy of the meters supplying the municipalities in MWRA Service Area. • Inspected 27.18 miles of MWRA wastewater interceptors and 41 siphon barrels. • Cleaned approximately 28.85 miles of wastewater interceptors and 70 siphon barrels. • Replaced 51 water and wastewater manhole frames and covers.
B. Inspect, maintain, and improve the dams, dikes, and other facilities constituting the infrastructure of the reservoir system through ongoing regulatory inspections, maintenance and adequate multi-year operations and maintenance program, and capital improvement program in order to ensure system reliability to impound reservoirs, regulatory compliance, and limit	→	• Since 2005, over $23M has been invested in capital and major maintenance of source and distribution water supply dams across the system, with over $7M committed in current CIP projects. • Contracts underway for needed dam repairs design, bid document production and ESDC for Sudbury Dam spillway masonry and vent repairs, Wachusett North Dike earthen berm restoration, Wachusett North and South Dike instrumentation, Foss Dam overtopping protection. FY20 Award of new dam safety

potential downstream flood hazards.		inspection contract and instrumentation design at Chestnut Hill Reservoir Dam and Weston Reservoir Dam.
C. Continue use of Condition Monitoring for Deer Island and expand Condition Monitoring techniques for all other water and wastewater facilities to provide earlier indication of asset degradation.		• Condition Monitoring techniques continue to be utilized in normal business practices at DITP. Deer Island is now expanding its lube oil program. Staff are able to perform basic oil testing in lieu of sending samples out. This provides immediate results about MWRA's assets and reduces downtime. • Continued to roll-out Condition Monitoring in FOD, including all the headworks, pump stations, and CSO facilities. Actions include oil sampling to determine the remaining life expectancy of the oil, ultrasonic testing of the grit pipe in the headworks, and vibration analysis. Staff continues to implement infrared thermography and laser alignment of pumps and fans. Initial staff training has already been instituted, and training will continue in FY21, specifically on vibration analysis and laser alignment.
D. Conduct an updated benchmarking analysis in order to identify gaps and sustain the goal of maximizing asset protection while potentially identifying new best practices in the industry.		• No work on this initiative to date.
E. Update the wastewater metering system and evaluate new technologies to ensure continued accurate flow accounting and to enhance its usefulness for operational and evaluation purposes by adding additional monitoring locations.		• Design of the replacement wastewater meter system has been completed, and bids for implementation were received in early September 2020. Installation of new and replacement meters will begin in early CY2021 and be completed by the end of CY2021.
F. Continue to research and develop Key Performance Indicators (KPI) to compare our performance internally and against the industry. COMPLETED		• The MAXIMO upgrade was completed in FY19. The updated MAXIMO is assisting MWRA in making KPI's easy to track, display and compare with other industries. • Maximo 7.6 has an Ad-Hoc reporting tool that allows users to design one-time or multi-use reports to measure wide array of business metrics.

		• In FY20, MWRA hired a new Business Analyst to assist in expanding Maximo's Business Intelligence Reporting Tools. These tools will assist staff in determining the best data to select for metrics.
G. Enhance and monitor water pipeline protection to maximize pipeline lifetime.		• In FY16, MWRA began the process of replacing old cathodic protection on MWRA water mains. In FY20, this work continued in force, with the following activities: o Designed eleven replacement cathodic protection systems for Section 57, an 80 year old 48-inch diameter steel water main in the northern low service area. In-house construction staff are working to replace these systems. Nine of these systems were completed in FY17-FY18, and work continues on the remaining two. o Replaced the cathodic protection system at Shaft 5 of the City Tunnel. o Replaced the cathodic protection system at at Shafts E and L of the MWWST. o Design NTP (under Technical Assistance Contract 7498, Task Order No. 20) for the replacement of cathodic protection systems at Shafts N and W began in August 2019. o Assessment of existing cathodic protection systems on Section 98 running through Winthrop to Deer Island was completed. o Capital program has added design and construction phases to replace and upgrade cathodic protection systems based upon testing results.

H. Upgrade MWRA's Authority-wide Computerized Maintenance Management System (MAXIMO) to increase functionality to track assets, improve work flow and augment the use of handheld units to increase productivity. COMPLETED		• Maximo now tracks life-cycle costs for Clinton, DITP, FOD, IT and Lab assets. End of Life asset values are now captured in the Property Pass site. • Maximo Spatial (GIS) interface updates the mapping features giving staff easier access to buried assets history for the Water Distribution and Wastewater Collection systems. • Maximo Anywhere (mobile solution) allows staff to receive work and update work orders and asset history in the field.
I. Continue to upgrade and improve upon the Supervisory Control and Data Acquisition (SCADA) hardware and software to meet the current industry standard and to address cyber security concerns.		• PLC upgrade was completed at Comm. Ave West Pump Station; Comm. Ave East has been upgraded under the recent redundancy project. A new PLC Panel was designed, purchased and installed at BWTF, with the system programmed in-house. A design contract for the JJCWTP SCADA Improvement was finalized in January 2019 with construction to begin in February 2021 and substantial completion in June 2023. PLC upgrades for BOS019 and Framingham PS are underway and scheduled to be completed in early 2021. Additional PLC replacements are being performed as part of facility rehabilitation projects (Chelsea Creek Headworks, Wachusett Dam LGH, Braintree-Weymouth, and Water Tank Improvements, etc.), and will be developed in future PLC upgrade projects for water and wastewater facilities. • Standards templates and guidelines were developed for MWRA Human Machine Interface (HMI) Graphics. New graphics will be implemented to improve operator situational awareness through ongoing design and construction projects and MWRA staff implementation. • Continued work on the installation, configuration, and documentation for the new network security monitoring system

		and new firewall technologies for SCADA. Work on this project has been slower than expected due to COVID-19-19. • Established internal committees to review MWRA's physical resilience, and identify deficiencies and subsequently safety systems to provide multiple levels of protection from cyber attacks on MWRA's assets. • Continued the process of converting the SCADA network to an active directory domain that will allow the MWRA to centralize protection of its computer network from cyber attacks.
Goal #9: Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Continue to design and implement the rehabilitation projects for various pump stations, headworks, and CSO facilities.	→	• A major facility rehabilitation and equipment upgrade construction project was completed at Alewife Brook Pump Station. Additional work is underway at Chelsea Creek Headworks. Work on all construction projects continued during the pandemic, albeit slightly slower due to additional safety practices put in place. Specific rehabilitation projects include: o Chelsea Creek Headworks Upgrades, Contract 7161, is underway and 79% complete with substantial completion expected for March 2021. Lessons learned from this upgrade project will be applied to the rehab of Ward St. and Columbus Park Headworks. The work at Chelsea Creek was shut down for two weeks because of positive COVID-19 tests for several of the construction workers. Certain areas of the facility were deep cleaned and all of the construction workers were required to self-quarantine for 2 weeks. o Design of Prison Point CSO Facility Improvements, Contact 7359, to

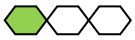
		upgrade, replace and add major facility components (gates, screen, conveyors, pump engines, mixers etc.) is at 100% design. o Nut Island Headworks Odor Control & HVAC Systems Improvements construction contract, #7548, began in February 2020 with substantial completion expected in December 2022. o The Remote Headworks & DI Shaft Study was awarded in June 2020. The study provides an assessment of the shafts and provides recommendations for rehabilitation. Recommendations will be carried forward into a future Headworks rehabilitation design contract. o Braintree-Weymouth Pump Station improvements (Design Contract 7435) was awarded in December 2018 and is ongoing.
B. Develop ongoing program to review, prioritize, and accelerate the implementation of interceptor renewal projects.		• Evaluated wastewater interceptors and prioritized them for rehabilitation. In the FY 16 CIP a number of project schedules were accelerated. • The Dorchester Interceptor Renewal project (sections 240, 241, and 242) was awarded and had an NTP of July 2020. • Rehabilitation of a portion of the Charles River Sewer Rehabilitation (section 191 & 192) was designed in house and construction was substantially completed in July 2020. • The design of Interceptor Renewal No. 7 (Malden/Melrose) sections 41/42/49/54/65), to line 22,000 lf of sewer was awarded in June 2020

C. Implement feasible recommendations from the North System Hydraulic Study to maximize conveyance of wastewater to Deer Island.		• Wastewater operations has implemented operational changes at the Headworks facilities to reduce the possibility of overwhelming screens during high flow conditions and maximizing the full capacity of the Boston Main Drainage Tunnel by allowing more than design capacities to pass through Columbus Park or Ward Street Headworks when available capacity exists in the other. MWRA continues to provide funding for Inflow/Infiltration projects to North Metropolitan Communities.
D. Complete DITP valve and piping replacement project including operationally complex North Main Pump Station/Winthrop Terminal valve replacement. COMPLETED		• 100% complete on the DITP valve and piping replacement project. Entire project was completed by the second quarter of FY18.
E. Replace six (6) 600 HP motors and six (6) Variable Frequency Drives in Winthrop Facility on Deer Island.		• Completed three 600 HP motor and Variable Frequency Drive units by end of FY20.
Goal #10: Prepare for catastrophic events that could affect the water and wastewater delivery systems.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Continue to improve and incorporate redundancy in the water system to ensure uninterrupted service by developing and implementing plans to eliminate or mitigate single points of failure within MWRA's water transmission and distribution system, including the Northern Intermediate High, the Southern Extra High, and the Metro Tunnel System.		• In February 2017, the Board of Directors approved a plan for construction of two new water supply tunnels to provide redundancy for the Metropolitan Tunnel system (City Tunnel, City Tunnel Extension and Dorchester Tunnel). • In April 2018, a Director of Tunnel Redundancy was hired to lead a new Tunnel Redundancy Department. • Since April 2018, five staff have been added to the Tunnel Department including a Director of Design and Construction. • In March 2019, a contract was awarded for Program Support Services to support early program level work.

		• During FY20, the Tunnel Department developed the following program-wide standards, procedures and guidelines: Quality Management Plan, Risk Management Plan, Geotechnical Field Manual, Program Delineation Report and Existing Geotechnical Data Report. • In May 2020, a contract was awarded for Preliminary Design, Geotechnical Investigation and Environmental Impact Report. • Construction on the Wachusett Aqueduct PS, Contract 7157, begun in FY16 and reached substantial completion in February 2019. • Construction continued on various sections of the Northern Intermediate High: o Work on the first Stoneham Section 110, Contract 7478, was complete in September 2018. The new 48" water main was activated on July 10, 2018. o Work on the second Stoneham Section 110, Contract 7067 was completed June 2020. The new 48" water main was activated December 2019. o Northern Intermediate High, Sections 89/29 Replacement Design is at 100% design with anticipated construction award in November 2020 (Contract 7117). • Construction continued on various sections of the Southern Extra High: o Work on Section 111 Boston Section of the Southern Extra High Pipeline project, Contract 6454, was completed in July 2018.

		o Section 111 Dedham North, Contract 7504, started in October 2017 and is 96% complete with an expected completion date of September 2020. o Section 111 Dedham South, Contract 7505 - NTP was issued in August 2018, and is 80% complete with an expected completion date of May 2021. • Commonwealth Ave. Pump Station Improvements designed to provide additional water system redundancy in the event of the loss of the City Tunnel (Contract 7524) began the construction phase in February 2019 and is anticipated to be complete by June 2021. Work is 75% complete. • Steel Tank Painting at Turkey Hill and Bellevue 2 Water Tanks (Contract 7634) started in August 2018 and was completed by October 2019. • Sections 23, 24, and 47 Rehabilitation Design Contract 6385 Final design is complete and Bid ready. When constructed, it will provide redundancy to Boston and Watertown. • Sections 50 and 57 Rehabilitation Design Contract 7540 is at 100% design. • Low Service Pressure Reducing Valve Improvements Design Contract 7575 was awarded June 2018 and will provide additional operational flexibility to provide water service during emergencies. • Intermediate High Improvements Design Contract 6955 was awarded January 2019 and will, when complete, interconnect two Intermediate High Service Areas to provide redundancy and operational flexibility in the event of pipe failures.

B. Continue to train staff on various potential emergency scenarios and participate in broader Massachusetts Emergency Management Agency (MEMA) and other training exercises.	→	• Staff participated in externally hosted training, including a MEMA Hurricane Evacuation exercise, a National Guard sponsored cyber defense drill, and a FEMA sponsored 'Black Sky' extended power outage exercise. Internal trainings and exercises included the following: site characterization, unmanned aerial systems training, Deer Island emergency response team drills, boom deployment, terrestrial spills, severe weather response, mobile disinfection, communications, tunnel incident response, and community Emergency Response Plan training.
C. Continue to implement a comprehensive security and emergency preparedness program.	→	• Staff continue to upgrade and expand the MWRA security system by establishing a new security center for the guards to monitor the alarms and video and by integrating the new John J. Carroll Water Treatment Plant guardhouse, and Caruso PS into the overall system. Camera coverage was added at Carroll, the Interim Corrosion Control Facility, and the newly built Wachusett Aqueduct PS. • Facility Emergency Action Plans are updated annually. The western dam emergency action plans were updated in FY20. • Staff performed facility security audits at 10 facilities in FY20, bringing the total number of security audits completed in the last four years to 124. There are six facilities still to be audited. • In compliance with the American Water Infrastructure Act, updated risk and resiliency assessments for all water system facilities. • Increased communication redundancy in FY19 by installing six wireless routers in various locations in the MWRA's system. • Security made improvements to the Wachusett dam and several microwave towers (Norumbega, Fells, JCCWTP and

		Chelsea) that includes the installation of anti-climb devices and robust security fencing in FY20. Infrared cameras that includes motion detection and flood lighting has also been added. This has aided in capturing, identifying and preventing several incidents of trespassing in the past year
D. Develop and implement an Information Security Plan (ISP) to increase the resiliency and sustainability of the MWRA's data security practices.		• Since establishing MWRA's ISP by ADM.31, 10 additional policies, 12 standards, and 30 procedures were drafted. These drafts continue revision and realignment with the latest version of the NIST Cyber Security Framework and integration of both MWRA Information Technology ("IT" – *i.e.* MIS) and Operational Technology ("OT" -- *i.e.* SCADA, PICS, I&C, and Physical Security) areas. • Planning continues for the next phase of this effort – to apply current cyber security standards, controls, and best practices appropriate to each IT system without disruption of service.
E. Enhance cyber security defense in-depth strategy to mitigate and manage new and evolving threats.		• MWRA staff conducted a risk and resiliency assessment of key IT network components in line with the requirements of the America's Water Infrastructure Improvement Act (AWIA). • The Managed Security Services Contract (MWRA No. 7499), which began on July 1, 2016, was extended for two additional years, now ending on June 30, 2021. • MWRA staff participated in a weeklong cyber security incident response drill alongside the National Guard for the 4th year. • All MWRA staff continued to be trained in basic cyber security awareness, and IT and OT staff in advanced cyber security technical topics. • Staff continue to update the internal cyber security incident response plan.

IV. Finance and Management

Goal #11: Ensure Financial Sustainability, Integrity, and Transparency.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Continue the long-term strategic budgeting practice to ensure sustainable and predictable sewer and water assessments to our member communities.	→	• Community Assessments increased by 1.0% for FY21, a reduction from the proposed 3.6% in response to the anticipated financial challenges facing member communities due to the pandemic. Assessments are projected to increase no more than 3.6% annually through FY2025. Assessments for the Water and Sewer utilities are now "smoothed" reducing the volatility of year-to-year assessment changes thereby improving the sustainability and predictability for member communities.
B. Manage debt and investment portfolios to maximize savings/returns in compliance with all applicable rules and regulations.	→	• Staff continue to explore opportunities for refunding for interest rate savings. Most recently issuing $547.8M in taxable and tax-exempt refunding bonds in October 2019 for a net present value savings of $73.3M.
C. Continue diversification strategy to insulate against overexposure and promote resiliency to changing market conditions.	→	• Staff continue to seek prudent diversification.
D. Maintain a system of internal controls to best protect the organization's resources.	→	• Staff continue to review and monitor key controls and limit physical and electronic access to assets.
E. Continue to employ budget and expense control practices to manage expenses.	→	• Continued to drive cost improvement and containment measures throughout FY20 that allowed MWRA to achieve the projected rate revenue requirement level for FY21.
F. Identify and pursue optimization in all aspects of MWRA financial operations	⬢⬢⬡	• Continued the effort of reducing the use of paper by publishing documents on-line. Staff are actively evaluating the electronic financial system's existing and possible additional software modules to optimize operations. • The Budget Department has been exploring a software solution to replace existing obsolete software. • Staff have undertaken a pilot to scan accounts payable voucher documents to reduce physical paper storage and improve electronic/remote access to the information.

		This process was begun before COVID-19 appeared, but it has provided more incentive to implement this project.
G. Continue to conduct strategic energy procurements.	→	• Continued to procure electricity based on competitive bid process and took advantage of electricity rebates from utilities pertaining to installation of more efficient equipment.
H. Continue to fund the pension fund at the annual required contribution level and to develop strategies to address the growing Other Post- Employment Benefits (OPEB).	→	• The pension fund has again reduced the assumed rate of return from 7.5% to 7.10% in connection with the Actuarial Valuation Study as of 1/1/2020. The cost of living base increased from $14K in FY20 to $15K in FY21 and beyond. Though the valuation of the investment portfolio has increased, this has mathematically reduced the funded status from 89.19% to 86.6%. • The current OPEB Trust balance is $43.7 million reflecting a funded ratio of 32.9%. The annual funding practice has been and is projected to be half the annual determined contribution. This practice will be evaluated annually and may be changed according to overall budgetary conditions.
Goal #12: Ensure Cost-Effective Operational and Resource Management.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Maintain and expand MWRA-wide recycling efforts.	→	• As of July 1, 2019, the MWRA implemented a single stream recycling program in Chelsea in conjunction with existing paper, cardboard, and metal recycling efforts.
B. Work with staff MWRA-wide to update construction and professional services contract documents. COMPLETE	⬢⬢⬢	• As of April 2020, all procurements are now done electronically.
C. Develop, implement, and transition to fully automated, virtually paperless procurement and purchasing system. COMPLETED	⬢⬢⬢	• All Ch. 30 and Ch. 149 construction and non-professional contracts are now procured electronically. Staff will be implementing an electronic system of procuring Professional Services in the second half of CY2019.

D. Expand use of electronic platforms for the purchase of all goods and services. COMPLETED		• Virtually all goods are now purchased via electronic platforms.

E. Procure, Develop and Implement E-Construction and E-Design Software for use in managing and tracking design and construction project.		• E-Construction has been tested successfully in managing the Chelsea Headworks Rehabilitation construction project. E&C and MIS developed a scope and bid the work for the procurement and implementation for future design and construction projects. Bids were received and ECM products are being reviewed in FY21.
Goal #13: Maintain an Excellent Workforce.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Prioritize Succession Planning in anticipation of critical retirements over the next five years.		• Continue to identify succession planning initiatives including training programs, leadership program, and expedited replacement hiring processes in advance of critical retirements. • A comprehensive exit procedure was developed in FY19 for use when employees leave the MWRA, documenting knowledge and information on projects, contacts, and location of files.
B. Continue to provide a safe workplace free of hazards for all employees		• Continued to review and implement best safety practices during the COVID-19 pandemic to protect the safety of all employees and ensure continuity of critical services. • Continued to develop the Occupational Health and Safety Department including program and policy review and development, facility audits and by participating in training classes. Procure safety software to aid in reducing workplace injuries and preparing OSHA regulatory reports. • Provided Safety Awareness and Hazard Communication training to all employees.

		• Continued to improve safety culture through communication and leading by example. • Continued to assess the risks associated with tasks and provide the appropriate training, procedures and equipment to eliminate the risks. Examples of such training include confined space entry, lockout/tagout, electrical safety, Right to Know, Tower and Wind Turbine climbing, OSHA-10 Construction Safety and training in railroad track area safety procedures, OSHA 24, Hot Works Safety and Scaffolding training.
C. Provide effective training necessary for employees to obtain and maintain required licenses and certifications to ensure a highly skilled workforce.	→	• Wastewater and Collection Operator certification and license prep courses provided at least twice per year on a virtual platform, or at approved vendor locations. • Employees may be sent to approved vendor locations for training throughout the year for prep on Water Distribution and Treatment. Virtual classes are regularly offered to employees to meet continuing education requirements for license renewals and required hours. • Training staff have worked to redesign all in-house training to a virtual format.
D. Continue MWRA's efforts to develop new recruitment and retention strategies to foster diversity, including traditionally underrepresented categories, people with disabilities, and veterans.	→	• Staff attended job fairs and continued to expand social media and other online recruitment efforts to increase access to diverse pools of candidates. Job postings are now sent to numerous web-based sites and professional associations. • Launched partnership with a social media recruitment network that reaches 2,500 plus followers who are minorities and people of color, 56% of whom are females between the ages of 18-34. • Participated in employment training program with local job readiness program. • Continued the use of The Local Job Network, a web based recruiting site where entry, mid-level, and senior level positions are

		posted to expand outreach to diverse protected classes. • Continued to add to the existing 258 recruitment sources for minorities, women, individuals with disabilities, and veterans in addition to its existing 53 recruitment sources identified in the Affirmative Action Plan. • Hired a total of 59 new employees including 15 (25.4%) females and 23 (40.7%) minorities. • Promoted 71 employees including 17 (23.9%) females and 16 (22.5%) minorities. • These numbers were lower than expected due to COVID-19 because no hiring of full time employees or interns took place from mid-March through May. Promotion of internal employees and hiring of interns began in late May. External hirings for full time positions began again in late June.
E. Continue to expand on MWRA's in-house Job Shadowing and career development training programs.		• Continued the Operator on-the-job training program and maintenance mechanic shadow training programs. • Completed medium voltage training program at Deer Island and continue to provide this training elsewhere across the MWRA. Continue to offer supervisory development programs and water and wastewater prep courses.
F. Create programs with a focus on professional and leadership development.		• Due to Covid, the Leadership Development Program for non-union managers through Bentley University has been put on hold. Staff are researching alternative programs held online.
G. Upgrade MWRA's employment application system to add the onboarding module. COMPLETED		• Completed implementation of the onboarding module.

H. Continue intern initiative designed to increase future applicant pool.	→	• Hired 16 interns for the 2020 summer intern program. This number was significantly lower than in the past due to effect of COVID-19.
I. Continue to ensure compliance with new state and federal regulations and labor.	→	• Staff did a thorough review of all non-union positions and the incumbents and implemented recommended changes as required by the Massachusetts Equal Pay Act. • New regulations regarding Paid Family Leave were finalized in September 2019. Contributions began the first pay cycle in October of 2019. The benefits for bonding and medical leave begin January 1, 2021 and benefits for family leave begin July 1, 2021. • Staff implemented the benefits of the Families First Coronavirus Response Act for eligible employees.
Goal #14: Leverage Information Technology to Improve Organizational Effectiveness.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Deliver Information Technology (IT) services and solutions efficiently and effectively.		See highlights under specific initiatives below.
B. Provide Information Technology solutions to streamline work processes while ensuring the security and integrity of MWRA data by leveraging the use of existing or emerging technologies.	→	• Expanded use of remote access technologies in support of teleworkers due to the COVID-19 pandemic. • Expanded use of Webex for virtual meetings in support of teleworking. • Increased adoption of the user of Sharefile for securely sharing large files internally and with external parties, as necessary.
C. Obtain feedback from users on satisfaction levels and desired new services and implement changes accordingly.	→	• Continued meeting with ENQUAL and Lab Services. Met with Operations in FY20.
D. Maintain current technology hardware, software, and network infrastructure.	→	• Deployed over 1100 updates to existing hardware and software throughout the year to ensure currency and mitigate vulnerabilities. • Upgraded Vmware infrastructure supporting over 200 virtual servers.

		• Upgraded server hardware in Clinton, Southborough, CWTP and Chelsea. • Upgraded the internet network link in Chelsea 50 MB to 100 MB to provide improved performance for teleworkers and the use of WebEx Meetings.
E. Enhance Information Technology workforce capabilities through new certification and license requirements.	→	• Maintain a three-year rolling training plan in order to maintain staff skill sets. In FY20, staff were sent to 23 training classes, obtained three certifications and participated in two out-of-state conferences and five in-state conferences to ensure that the IT workforce capabilities are up to date.
F. Implement an Application Improvement Program that will continue MWRA's efforts to update and enhance the myriad applications used by MWRA to improve efficiencies of business processes and effectiveness of staff.	→	The following is a list of applications that were either updated or had functionality changes throughout FY20: • **Business Objects Crystal Report Server:** The system supports reporting functions for Maximo. • **Portia Server upgrade:** Supports the Finance department investment debt and cash management. • **Environmental Response Program Assessment:** An independent assessment of the current ERP system, requirements and gap analysis to recommend upgrade strategy. • **Lawson Contracts Management:** Manages sourcing and contract items through Lawson interface with supplier portal to replace legacy Oracle Contracts Management application. • **Exchange and Active Directory Upgrade:** Enterprise messaging and authentication platform.
G. Implement an e-Discovery, Archive and Purge System that will provide an automated and integrated solution for archiving electronic content that will allow the Authority to intelligently store, manage and discover		• Completed user testing of Archiving and Purge and e-Discovery of several pilot systems and none were found to be appropriate for MWRA's needs. MIS is researching a new Archive and Purge solution with our current backup software vendor.

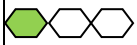
email and all critical business information sources, while providing easy and intuitive access for end users.		
H. Execute a Technology Infrastructure Improvement Program that will assess and implement consolidated and optimized versions of MWRA's core IT infrastructure elements and improve data management practices.		• Print, Fax, Scan and Copy: Installed new multi-function devices (MFDs) throughout MWRA facilities consolidating services (Print, FAX, Scan, Copier) onto one platform.
I. Improve the organization of Information Technology and the oversight processes for selecting and implementing IT solutions throughout the MWRA.		• Information Technology Steering Committee: The Business-IT Project Prioritization Committee, made up of senior staff representing the Authority's Divisions established in FY17 continues to meet to assess project progress and set priorities. • Standardized documentation templates for the development and implementation of IT Systems are now being included as required documentation in IT Services Contracts.
J. Implement real-time SSO reporting system to provide public information and ensure reporting timeframes meet regulatory requirements. COMPLETED		• Streamlined SSO field data collection is in progress. The collection application is available and has been field tested once. Upon completion of the ArcGIS Server upgrade, the application will be able to validate that required fields are entered. The field data collection portion of this project was completed in FY20 Q1.
K. Implement Enterprise Content Management for e-Construction and e-Engineering and Documents/Records Management		• Continued working on documenting existing use cases and workflows for E&C Department and Records Management processes, and designing conceptual requirements for a management dashboard.

V. Environmental Sustainability

Goal #15: Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA's energy assets.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Continue to conduct energy audits at all facilities and establish regular audit schedules.	→	• Energy audits of all other Operations facilities (e.g. water and wastewater pump stations, CSOs, office buildings, etc.) substantially complete in Metro Ops, but on-going in Western Ops. Lighting audits of facilities in NGRID territory including Carroll and Clinton were completed in FY19. Recommendations were submitted in FY20. These projects are expected to be bid in FY21. • Clinton conducted an HVAC audit in FY 20 that resulted in a series of recommendations for the operations building (high efficiency air handlers, condensing boiler, upgraded controls), chemical controls building (high efficiency water heater) and sludge dewatering building (air side heat recovery and air purification system). • Deer Island began working with Eversource on a comprehensive lighting audit in FY20. Eversource offered to conduct a plant-wide lighting audit and provide MWRA with free fixtures and lamps to be installed by DITP personnel.
B. Optimize processes to save energy.	→	• Work continues on identifying processes that can be optimized to save energy. Internal studies in FY20 examined the efficiency of the two hydro turbines and the ten North Main Pump station pumps at Deer Island as a first step in reducing their energy use. • Refurbishment of Pump #9 at the Deer Island's North Main Pump Station in FY 20 included an innovative epoxy coating to the wetted surfaces that resulted in the pump becoming the most efficient pump at North Main Pump Station. • Plans were made in FY20 to replace three single-speed 50-HP water booster pumps at

		Deer Island with energy-efficient variable speed pumps.
C. Incorporate energy efficiency into new construction, rehabilitation projects, and equipment replacement.	→	• Chelsea Creek Headworks upgrade, Contract 7161, is on-going and contains several energy efficiency components including LED lighting, occupancy sensors, a building energy management system, and VFDs on the odor control fans, HVAC, and hot water pumps. • Wachusett Pumping Station was constructed as a zero net energy facility using solar panels, geothermal heating, and high efficiency building design features. The solar arrays at the pump station became operable at the end of FY19. • The rehabilitation of the Alewife Brook Pump Station, completed in 2019, included several energy efficiency components such as controlling ventilation to occupancy, replacing inefficient pumps and motors with more efficient ones, insulating the ceiling, and installing more energy efficient doors and windows. • The rehabilitation of the odor control and HVAC at Nut Island contains several energy efficient components, began construction at in February 2020 and is scheduled to be completed in December 2022. • Refurbish and coat North Main Pump 9 to increase pump efficiency with Eversource Incentive. This work was completed in FY20 and provided pump efficiency improvements of 16-20%. • Natural gas was installed as part of facility rehabilitation projects to replace oil at Chelsea Creek HW, Alewife Brook PS, Caruso PS, and Clinton WWTP. • Commonwealth Ave. Pumping Station Improvements will include LED lights in Control Room and restrooms, premium efficiency motors, higher efficiency HVAC

		equipment and a building automation system.
D. Continue to invest in the production and utilization of cost effective renewable energy at MWRA facilities.	→	• The Brutsch Hydroelectric Facility came on-line in FY18. It is a Qualified Facility under the Renewable Portfolio Standard. Through FY20, Brutsch Hydro has generated approximately 909,039 kWh. • Received bids in FY20 for a 1 to 2 MW solar canopy with energy storage at Deer Island that is expected to be constructed in FY21. • Commenced Comprehensive Energy Study on Deer Island to evaluate DITP's CHP for the next 25-yrs. in FY20.
E. Continue to reduce greenhouse gas emissions that result from MWRA operations.	→	• Through implementation of energy efficiency projects, use of renewable energy sources, and low emission technologies, such as electric vehicles, MWRA continues to reduce its GHG emissions. From 2006 through 2018, MWRA has reduced its GHG emissions by about one third. • MWRA continues to implement measures consistent with Governor Baker's Executive Order 569, "*Establishing an Integrated Climate Change Strategy for the Commonwealth*", by purchasing lower emissions fleet vehicles. In FY20 we purchased three all electric Chevy Bolts, and six Flex Fuel Chevy Equinox's and installed five additional charging stations; three in Chelsea and two at Deer Island to help reduce vehicle fuel emissions.
F. Continue to maximize revenue from generation assets.	→	• In FY20, all green assets, with the exception of hydro and wind were in operation greater than 95% of the time. Deer Island hydro assets were in operation 90.8% of the year, while FOD hydro assets were in operation between 92% and 99.8% of the time, with the exception of Oakdale, which was in operation only 75% of the time due to higher than normal rainfalls in late winter and early spring. Deer Island wind was available for operation 93.7% of the time and Charlestown wind was available 95% of the time.

		• Deer Island and the Carroll Water Treatment Plant used backup generators in FY20 to: 1) Participate in ISO-NE and Eversource Demand Response programs, cutting load when dispatched, with Deer Island earning over $1 million and Carroll earning over $119,000 in incentives; and 2) Reduce load during ISO-NE system –side one-hour peak to avoid installed capacity charges of over $1 million per year.
G. Take full advantage of utility energy efficiency rebate opportunities.		• Signed 3-year MOUs with NGRID and Eversource in FY19. This is the first MOU with NGRID and the second with Eversource. The MOUs are non-binding, but commit MWRA to continue to implement energy efficiency projects, while obtaining a higher incentive amount from the utilities. For example, replacement of three single-speed 50-HP water booster pumps with energy-efficient variable speed pumps at DITP resulted in qualifying for $70,000 in Eversource incentives at the higher than typical rate of $0.325/kWh. • In FY20, MWRA received $13,930 in Eversource incentives for LED lighting replacement at the Southborough Facility. • Participating in an Eversource Demand Reduction project that utilizes battery storage technology to reduce electricity demand costs at Brattle Ct. Pumping Station and the Chelsea Admin. Building. Eversource is providing the batteries at no cost to the MWRA. Construction began in FY20 with an expected operation date of mid-November 2020. The projects are expected to save MWRA approximately $413,000 over ten years.
H. Incorporate employee education on energy efficiency in MWRA training outlets (e.g. tool box talks and HR training classes.)		• Staff developed an outline of tool box talks for Metro and Western Ops staff. They had been scheduled for FY20, but they were postponed due to the pandemic.

I. Determine technical and economic feasibility of co-digestion at Deer Island Wastewater Treatment Plant to ensure it is compatible with existing MWRA wastewater and sludge treatment processes while producing a significant amount of additional high quality gas for energy production. COMPLETED		• Co-digestion on Deer Island was found to be financially unsustainable due to limitations on receiving material via barge. • Continuing to follow Greater Lawrence Sanitary District's (GLSD) pilot co-digestion project to relate to DITP and Clinton WWTP in the future. The project at GLSD is progressing slowly due to a shortage of pre-processed food waste needed to support the project. • The feasibility of conducting co-digestion at Clinton WWTP was evaluated and found to be not viable for two reasons – the process would increase the phosphorus loadings by a factor of 5 which would cause violations of Clinton's new NPDES permit, and the existing generators are not equipped to use the extra gas generated, requiring significant capital upgrades.
J. Move forward with the design of new gas turbine technology combined heat and power equipment to take advantage of the higher power and thermal efficiencies of new equipment, maximizing the production of additional electric power for on-site use at Deer Island, as well as cost savings while reducing maintenance spending on aging equipment.		• A project to evaluate DITP's comprehensive energy programs relative to Heat and Power was awarded in FY19 and kicked off in early FY20, to be completed in FY21. This will recommend changes, if any, to DITP's CHP programs and equipment.
K. Investigate the potential energy savings from installing new, larger residuals drying trains at the Pelletizer Plant compared to the operational cost of running them. COMPLETED		• MWRA completed an evaluation of upgrading to larger dryers at the Pelletizer Plant (100 ton/day on average). The study concluded that there would be some energy savings by moving to the larger dryers but the payback would be more than 30 years, and the current dryers are not near the end of their useful life. Staff recommend that when the existing dryers need to be replaced, MWRA will re-consider moving to the larger dryers.

Goal #16: Continue to monitor climate change research and move forward with plans to reduce impacts of projected sea level rise and storm surge events on MWRA infrastructure.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Incorporate design modifications into facility renovations and maintenance activities to address sea level rise and storm surge. COMPLETED		• Continued to update flood elevations as FEMA revised its projections. Now regularly including these design parameters in all renovation and new construction projects.
B. Plan and install flood protection barriers at water and wastewater sites which fall below expected elevations of flood waters under condition of a FEMA 100 year storm plus 2 ½ feet to minimize damage and still provide service.		• Staff continue to install flood protection barriers at facilities that fall below FEMA 100 year storm plus 2 ½ feet. These facilities include Chelsea Administration Building, Chelsea Maintenance Building, South Boston CSO, Squantum Pump Station, Quincy Pump Station, Braintree Weymouth RPS, Hough's Neck Pump Station and the Hingham Pump Station. • In-house design is underway to provide flood protection at certain siphon locations. Staff are also procuring consultant services for Siphon Structure Rehabilitation, Phase 1, that will provide flood protection at other siphons. • Flood protection is also being incorporated into facility rehabilitation projects and is currently being installed at Chelsea Headworks Facility as part of the ongoing construction project.
C. Work with State and regional organizations and academic institutions to identify how MWRA's existing long-term environmental data sets can be used to help assess and project impacts of climate change. COMPLETED		• Staff participated with regional regulators and scientists on the development of an integrated Sentinel Monitoring Network (ISMN) identifying key datasets and parameters that can be used to identify climate change impacts. Existing MWRA monitoring data were identified as important long-term monitoring datasets in the ISMN plan, which was completed in FY17. • Distinguishing climate change impacts from potential effects of MWRA's outfall in Massachusetts Bay, and how to best leverage the long-term environmental monitoring data set, was a major focus of

		the fall 2018 workshop held by the Outfall Monitoring Science Advisory Panel.
D. Participate in regional activities aimed at preparing for the potential impacts of climate change and ensuring the resiliency of MWRA's facilities.	→	• MWRA is an active member of the Metro Mayors Coalition and has participated in several discussions and workshops to establish a common framework to prepare for the impacts of climate change. Staff are integrating this framework into MWRA's planning initiatives and project reviews. • MWRA continues to work with key stakeholders, including the City of Boston, MassPort, UMass Boston and others, to share progress on vulnerability assessments and coordinate adaptation efforts.
Goal #17: Advance reasonable water system expansion.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Continue to provide assistance to communities seeking admission to the MWRA's water system or seeking emergency withdrawals.	→	• Provided assistance with the Water System Admission process to Ashland, Burlington, both of which are actively moving forward. In addition, guidance was provided to several project proponents regarding specific project inquires.
B. Work with prospective communities to inform them of the benefits of admission.	→	• Work continues on this initiative through outreach to communities, watershed groups, and associations and through requests from consultants representing the communities.
C. Advocate for a more streamlined regulatory review procedure, including expediting the Massachusetts Environmental Policy Act and Interbasin Transfer Act review process.	⬢⬢⬡	• In the year ahead MWRA will consider preparation of a donor basin application that once approved, can be utilized for all interbasin transfer requests in the future. Because Burlington and Ashland are already in process, the donor basin application may be considered after their applications are complete.
D. Work with MWRA's Advisory Board on legislative initiatives to pursue funding for connection assistance for new communities connecting to the water system.	⬢⬡⬡	• Work with the Advisory Board continues.

Goal #18: Continue to recognize the environmental, cultural, historical, and recreational importance of the watershed lands, the aqueduct system, and the unique location on Boston Harbor of the Deer Island Treatment Plant and Nut Island Headworks, to the citizens of the Commonwealth.		
Objective	**2020**	**Highlights/ Progress Updates**
A. Continue to work cooperatively with DCR and cities and towns to ensure that these lands are available for appropriate public access.	→	• Staff have participated in the DCR Land Acquisition Panel (LAP) offering guidance since 1995. The MWRA Board has had approval oversight of watershed land purchases under the CIP since FY07. Staff continue to be active in the LAP attending quarterly meetings and offering MWRA viewpoints on land purchases, preservation restrictions and disposition. *This update also supports Goal #1, assisting MWRA to maintain drinking water quality.* The Executive Direction is chairing the Boston Harbor Islands Partnership, a federally sanctioned group that maintains stewardship responsibilities of the Harbor Island National Park.
B. Continue to work with cities and towns to implement the Public Access Initiative on the Wachusett, Weston, Sudbury, and Cochituate Aqueducts. This program creates a partnership between MWRA and communities that host each piece of infrastructure, granting access to applicant communities to use MWRA controlled aqueduct right-of-ways of the Cochituate, Sudbury, Wachusett, and Weston Aqueducts, along with the lands surrounding the Weston and Norumbega distribution reservoirs.	→	• The MWRA Aqueduct Trails Program is an innovative initiative that has opened up new recreational opportunities in communities across Metro West on appropriate MWRA aqueduct infrastructure. • Since 2011, MWRA staff have been working with aqueduct communities to provide technical assistance through the 8(m) permit process and have had great success opening access to these resources for the first time. • To date, MWRA staff have issued many Section 8 (m) Permits as part of the Aqueducts Trails Program authorizing approximately 30 miles of Aqueduct Trails. MWRA estimates that approximately 23 miles are currently open to the public.
C. Continue to provide public access to Boston Harbor at Deer and Nut Islands, while ensuring appropriate security for MWRA's operations.	→	• The Division of Marine Fisheries permitting for the Deer Island pier was completed in the Spring of 2017 then rebid in late 2018. A notice to proceed was issued in late FY19 to start construction of the pier with different parking options that addressed neighbor concerns about open space construction.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: FY21 First Quarter Orange Notebook

COMMITTEE: Administration, Finance & Audit

X INFORMATION
____ VOTE

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

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

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

DISCUSSION:

The Orange Notebook presents performance indicators for operational, financial, workforce, and customer service parameters tracked by MWRA management each month.

The effects of the pandemic and MWRA's response to protect staff and slow its spread continue to be present on a number of performance indicators. With the return to full field staffing in late June, most measures are now showing substantial progress during this quarter toward normal levels.

Deer Island Maintenance

The effects of the 2020 drought are evident in flows at the Deer Island Wastewater Treatment Plant. The August total plant flow of 213.32 mgd broke the low flow record of 214.64 mgd set back in September of 2016 (the last New England drought). Then in September, flows of only 204.12 mgd broke that record by a sizable margin. (See page 2.) Low flows result in reduced energy use for pumping and reduced total sodium hypochlorite usage for disinfection. (See pages 1 and 2.)

The return to full on-site operations staffing in late June has allowed many maintenance metrics to begin to return to their normal levels. As reported last quarter, during the COVID-19-related staffing limitation, critical equipment availability was maintained, but lower priority predictive and maintenance tasks were delayed or deferred. During this quarter, Predictive Maintenance began to trend toward its target of 100 percent. Predictive Maintenance was back above the Industry Benchmark of 90 percent and trending toward MWRA's expected Best in Class performance of 100 percent. Maintenance Backlog remained above the Industry Standard, but is trending downward. (See page 5.)

Deer Island Residuals

Molybdenum levels in the fertilizer pellets produced from Deer Island wastewater residuals rose over the summer, and were slightly above the standard for unrestricted use in Massachusetts and New York in September. This further limits their marketability in those states. The pattern seems similar to that seen in 2016 during that drought, although temperatures and building use patterns were likely different. TRAC staff are in the process of investigating potential sources and control measures. (See page 4.)

Metering

As indicated in the third and fourth quarter Orange Notebooks, restrictions on the use of meter maintenance staff due to COVID quarantine and safety practices resulted in a significant increase in wastewater meters not providing flow data either due to battery failure or needed required maintenance, with less than 50 percent of flow data captured by meters in May. With the return to full staffing in June, meter availability quickly rose back to around 85 percent to 90 percent, still below MWRA's target of 95 percent. Almost half of the estimated flow is related to a single obsolete meter for which replacement parts are not available: it will be replaced as part of the recently awarded meter replacement contract. (See Page 8.)

Disinfection Byproducts

As reported in the Second Quarter FY2020 Orange Notebook, annual average levels of the byproducts of chlorine disinfection in the Chicopee Valley Aqueduct system had risen, coming very close to the regulatory limit, due to unusually high sample results in the fall of 2019. With lower results in the past several quarters, annual averages have returned to more typical levels. Levels in the metro Boston system are also at typical levels for that system. (See page 25.)

Water Supply

Precipitation in the watershed has been below the long-term average in eight of the past twelve months. Massachusetts declared a Level 2 Significant Drought in several regions in June and extended that to statewide in August. MWRA's supplies remain in Normal Operating Range for this season, due in large part to the substantial storage capacity of the Quabbin Reservoir and the fact that demand remains almost 100 million gallons per day below the safe yield of MWRA sources. The low precipitation did result in an unusual event in September where stream flows into the reservoirs provided less water than evaporated from the reservoirs, resulting in a negative yield for the month. (See page 26.) At the end of September, Quabbin Reservoir was at 90.2 percent of capacity with just under 372 billion gallons of water and Wachusett Reservoir at 91 percent full contained almost an additional 60 billion gallons. While MWRA supplies are in Normal Operating range and no mandatory restrictions are in place, MWRA's website and social media have encouraged conservation, with an "Every Drop Counts" message.

Community Water Use and Wastewater Flow

Communities continue to see shifts in their share of total water use and wastewater flow during this unusual year. As reported earlier, the initial lockdown in mid-March resulted in water use shifts from the central cities to the more residential suburbs as stay at home directives emptied out office buildings. Later in the year, dryer conditions with the beginnings of the drought resulted in an overall increase in water use, but retained much of the center city/suburb shift in share.

Wastewater flows saw both shifts due to COVID and apparent flow reductions in infiltration with lower ground water levels. (See pages 29 and 30.)

MWRA provides user communities monthly updates on water use, and every other month updates on wastewater flows showing community use and shares. These regular updates provide the information communities can use to plan for MWRA water and wastewater charges in the following fiscal year. MWRA rates staff will be briefing the Advisory Board in November on flows, flow shares and rates methodology.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report

on

Key Indicators of MWRA Performance

for

First Quarter FY2021

Q1	Q2	Q3	Q4
■			

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

Board of Directors Report on Key Indicators of MWRA Performance

1st Quarter - FY21

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Operations and Maintenance

Construction Programs

Drinking Water Quality and Supply

Wastewater Quality

Community Flows and Programs

Business Services

Other Management

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

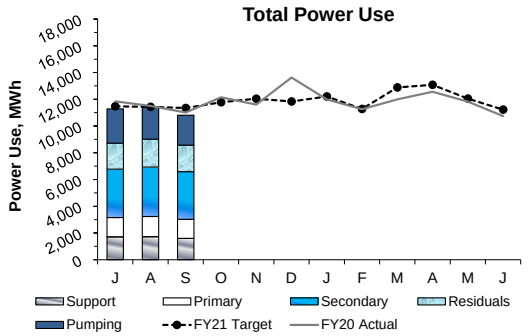
Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer

November 18, 2020

OPERATIONS AND MAINTENANCE

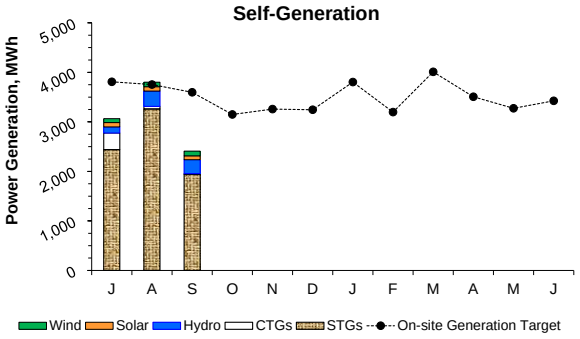
Deer Island Operations

1st Quarter - FY21

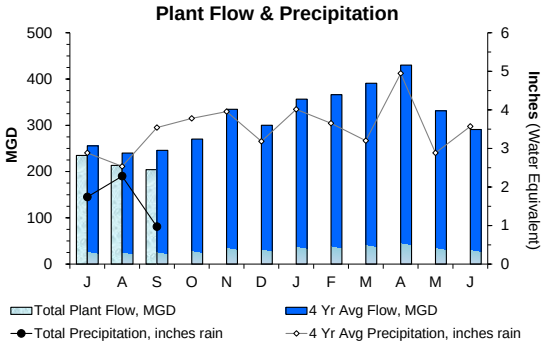


Total power usage in the 1st Quarter was 2.1% below target. Plant flow for this period was 12.0% below target with historical data (4 year average) as rainfall was 44.3% below the 4 year average rainfall target (8.96 inches expected vs. 4.99 inches actual). While power usage was near or below target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

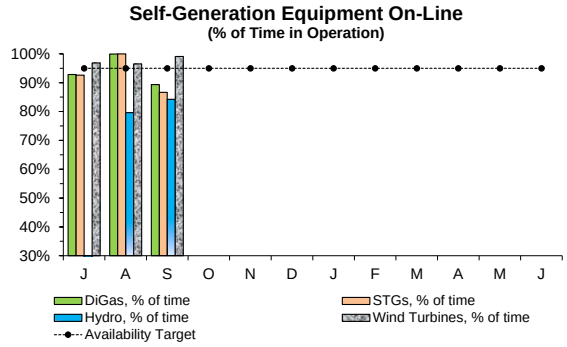
Note: Power usage projections are based on 4 year averages.



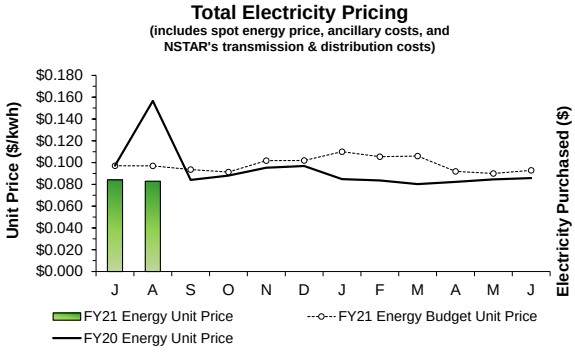
Power generated on-site during the 1st Quarter was 16.9% below target. CTG generation fell below target by 40.5% as the FY21 budget estimate included more CTG operation for peak system demand to avoid the capacity charge, as well as more operation for anticipated utility cable maintenance outage periods.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



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

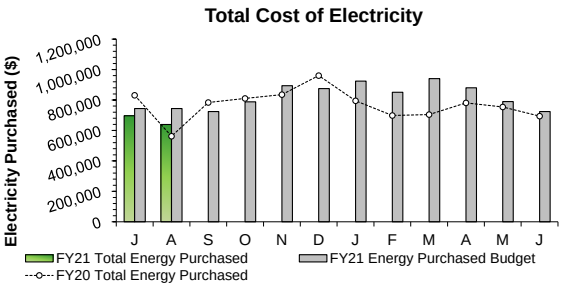


The availability of the DiGas system, STGs, and Hydro Turbines all fell below the 95% availability target, while the Wind Turbines remained above target during the 1st Quarter. The availabilty of both the Digas system and the STGs was reduced because of essential maintenance on the steam system in July,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



Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The actual Total Energy Unit Price through August (the most current invoice available) was 13.9% below target with budgetary estimates. The actual total energy unit price in September is not yet available as the complete invoices have not been received. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges.

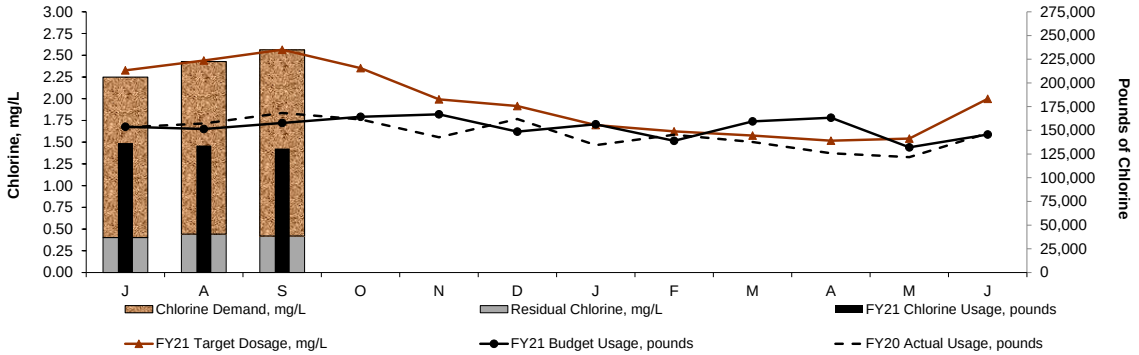
Note: Only the actual energy prices are reported. Therefore, the dataset lags by one (1) month due to the timing of invoice receipt and review.



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

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

Deer Island Sodium Hypochlorite Use



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

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

Secondary Blending Events

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

Month	Count of Blending Events	Count of Blending Events Due to Rain	Count of Blending Events Due to Non-Rain-Related Events	Secondary, as a Percent of Total Plant Flow	Total Hours Blended During Month
J	0	0	0	100.0%	0.00
A	1	1	0	99.97%	1.17
S	0	0	0	100.0%	0.00
O					
N					
D					
J					
F					
M					
A					
M					
J					
Total	1	1	0	99.99%	3.79

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

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

Deer Island Operations & Maintenance Report

Environmental/Pumping:
The plant achieved an instantaneous peak flow rate of 795.5 MGD during the evening of August 23. This peak flow occurred during a storm event that brought 1.33 inches of precipitation to the metropolitan Boston area. Overall, Total Plant Flow in the1st Quarter was 12.0% below target with the 4 year average plant flow estimate for the quarter.

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

August Low Plant Flow Records

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

September Low Plant Flow Records

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

Deer Island Operations & Maintenance Report (continued)

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

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

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

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

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

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

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

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

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

Clinton Operations & Maintenance Report

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

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

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

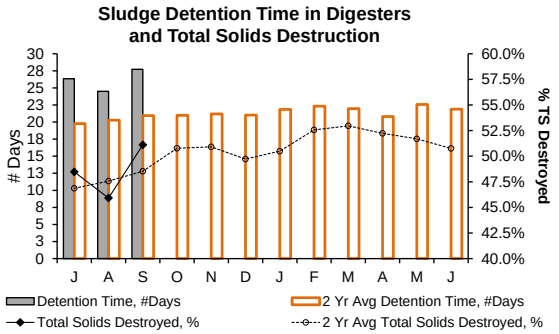
Phosphorus Building
Staff acid washed all three disk filters, cleaned troughs and inspected all nozzles. Operations staff switched to polymer pump #1, they will clean #2 now that it is off line. Maintenance replaced the oil seal, diaphragm and check valves on #2 ferric pump.

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

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

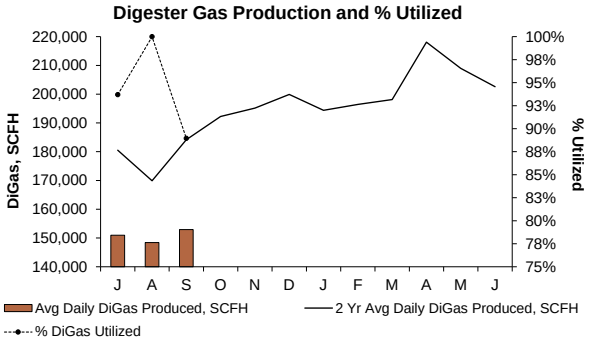
Deer Island Operations and Residuals

1st Quarter - FY21



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

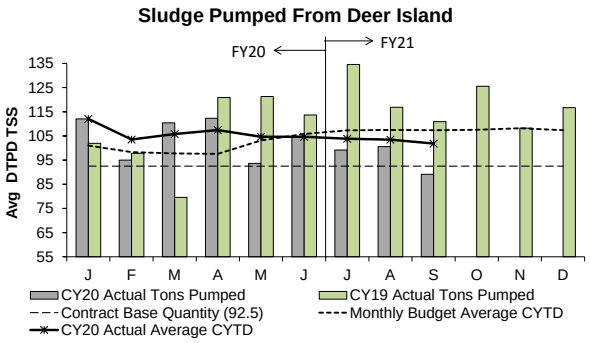
Total solids (TS) destruction is dependent on sludge detention time which is determined by primary and secondary solids production, plant flow, and the number of active digesters in operation. Solids destruction is also significantly impacted by changes in the number of digesters and the resulting shifting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



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

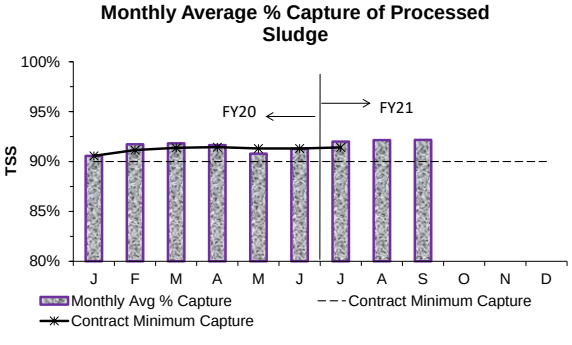
Residuals Pellet Plant

New England Fertilizer Company (NEFCO) operates the MWRA Biosolids Processing Facility (BPF) in Quincy under contract. MWRA pays a fixed monthly amount for the calendar year to process up to 92.5 DTPD/TSS as an annual average. The monthly invoice is based on 92.5 DTPD/TSS (Dry Tons Per Day/Total Suspended Solids) times 365 days divided by 12 months. At the end of the year, the actual totals are calculated and additional payments are made on any quantity above the base amount. On average, MWRA processes more than 92.5 DTPD/TSS each year (FY20's budget is 107.4 DTPD/TSS and FY21's budget is 107.9 DTPD/TSS).

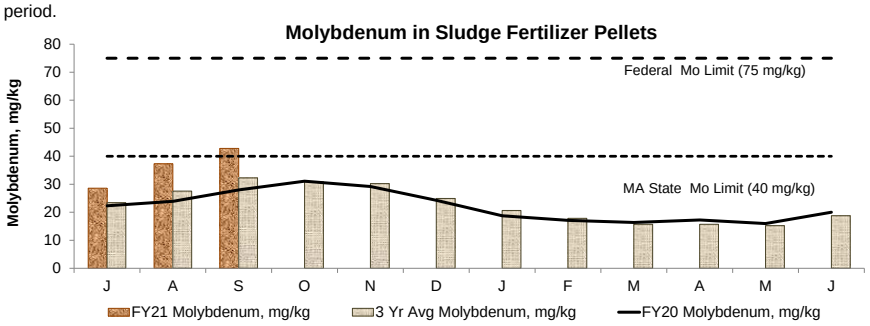


The average quantity of sludge pumped to the Biosolids Processing Facility (BPF) in the 1st Quarter was 96.3 TSS Dry Tons Per Day (DTPD) - 12.8% below target with the FY21 budget of 110.4 TSS DTPD for the same period. Sludge delivered to the BPF was lower than expected during the quarter mainly due to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

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



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



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

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

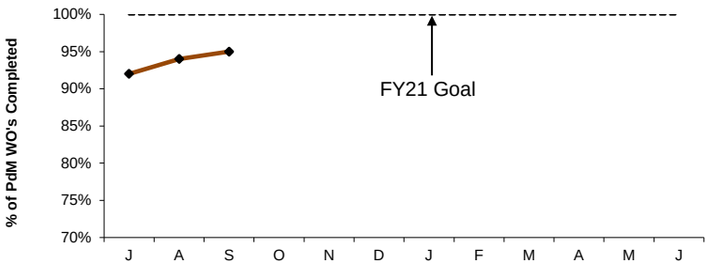
Deer Island Maintenance

1st Quarter - FY21

Productivity Initiatives

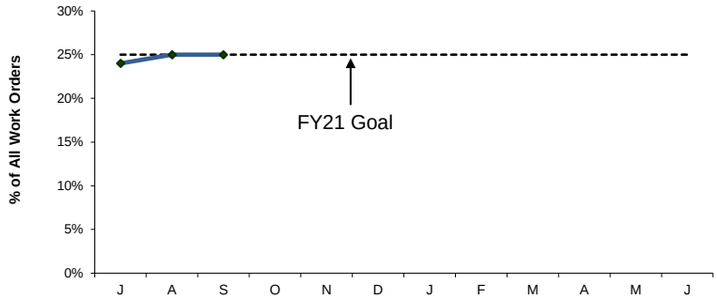
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in overall maintenance backlog.

Predictive Maintenance Compliance



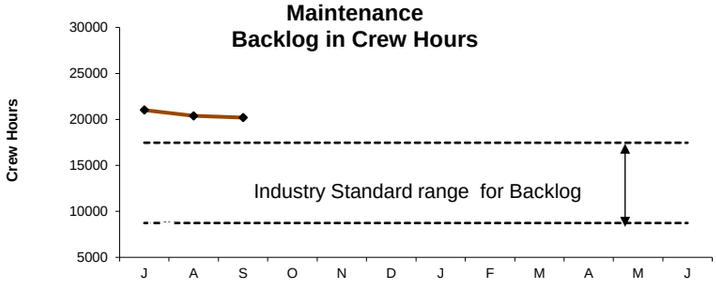
Deer Island's FY21 predictive maintenance goal is 100%. DITP completed 95% of all PdM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program. Due to COVID-19 and limited staffing prior to June 22, 2020, our percentage is below our goal of 100%, we anticipate meeting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

Predictive Maintenance



Deer Island's increased FY21 predictive maintenance goal is 25% of all work orders to be predictive. 25% of all work orders were predictive maintenance this quarter. The industry is moving toward increasing predictive maintenance work to reduce downtime and better predict when repairs are needed.

Maintenance Backlog in Crew Hours

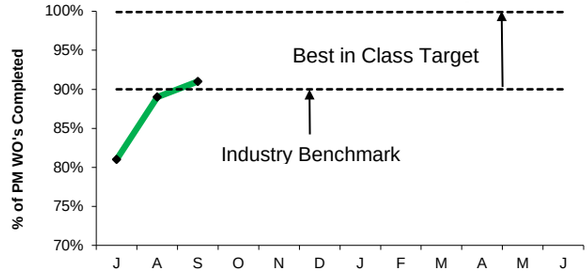


DITP's maintenance backlog at Deer Island is 20,194 hours this quarter. DITP is at the upper end of the industry average for backlog. The industry Standard for maintenance backlog with 97 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog is affected by five vacancies;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

Proactive Initiatives

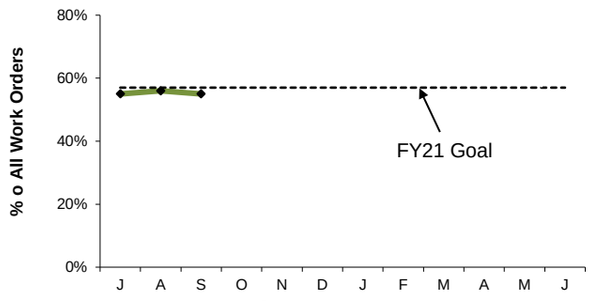
Proactive initiatives include completing 100% of all preventative maintenance tasks and increasing preventative maintenance kitting. These tasks should result in lower maintenance costs.

Preventive Maintenance Compliance



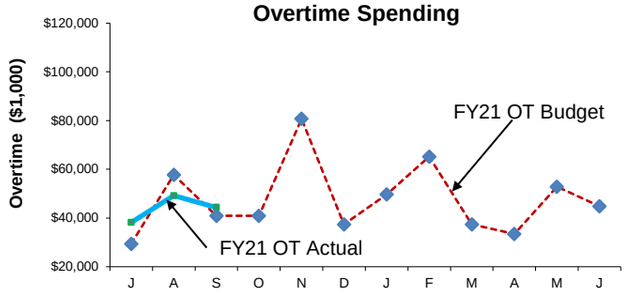
Deer Island's FY21 preventative maintenance goal is 100% completion of all work orders from Operations and Maintenance. DITP completed 91% of all PM work orders this quarter. Due to COVID-19 and limited staffing prior to June 22, 2020, our percentage is below our goal of 100%, we anticipate reaching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

Maintenance Kitting



Deer Island's increased FY21 maintenance kitting goal is 57% of all work orders to be kitted. 55% of all work orders were kitted this quarter. Kitting is staging of parts or material necessary to complete maintenance work. This has resulted in more wrench time and increased productivity.

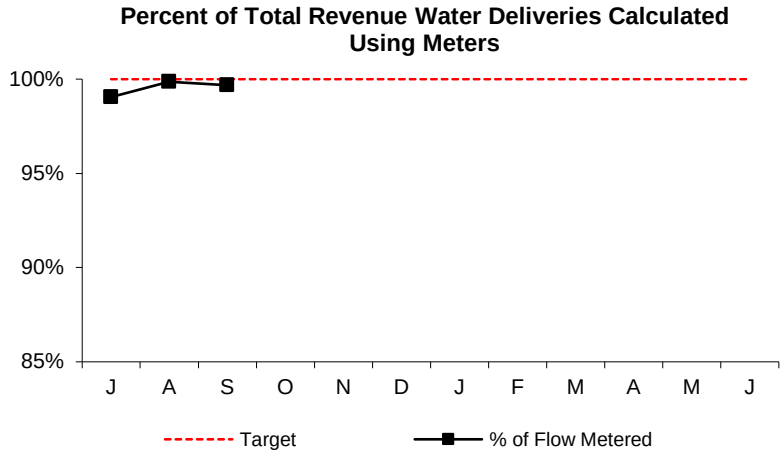
Overtime Spending



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

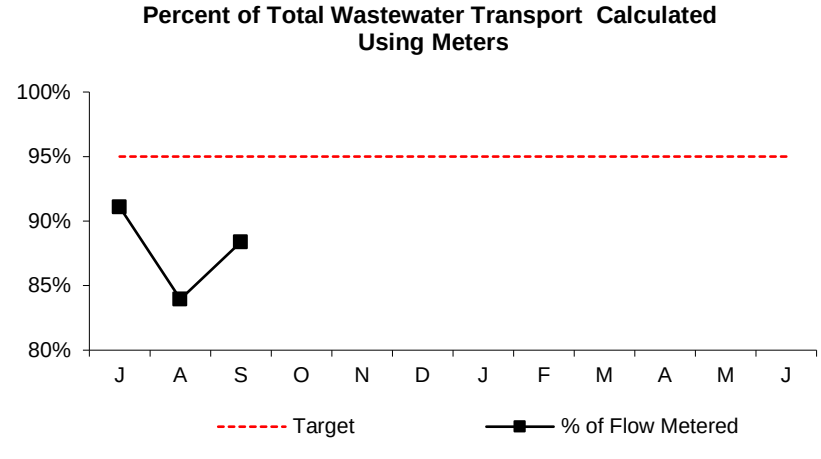
Operations Division Metering & Reliability
1st Quarter - FY21

WATER METERS



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

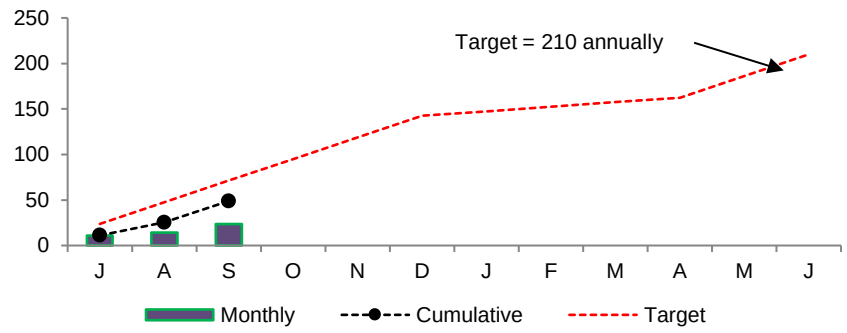
WASTEWATER METERS



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

WATER DISTRIBUTION SYSTEM PIPELINES

Miles Surveyed for Leaks



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

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

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

1st Quarter - FY21 Leak Report

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

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

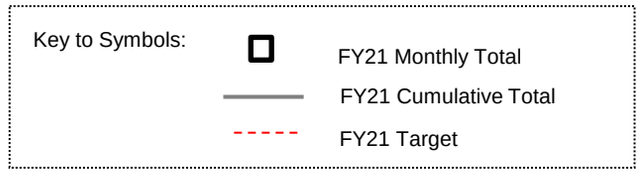
Water Distribution System Valves

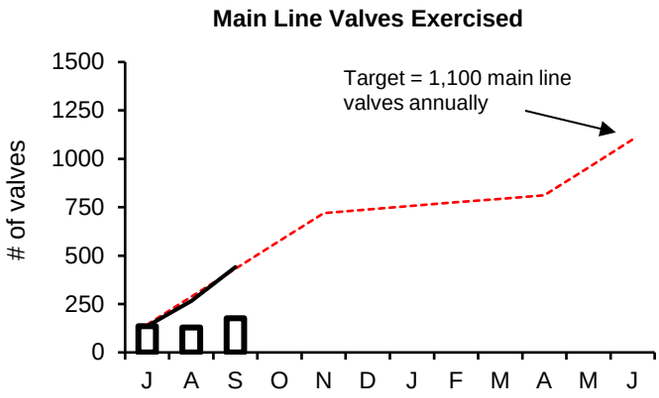
1st Quarter - FY21

Background

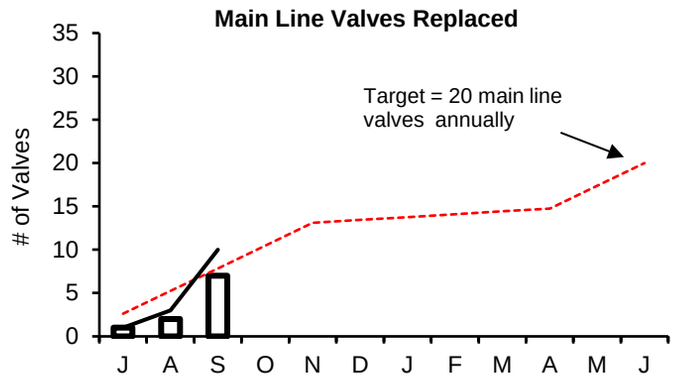
Valves are exercised, rehabilitated, or replaced in order to improve their operating condition. This work occurs year round. Valve replacements occur in roadway locations during the normal construction season, and in off-road locations during the winter season. Valve exercising can occur year round but is often displaced during the construction season. This is due to the fact that a large number of construction contracts involving rehabilitation, replacement, or new installation of water lines, requires valve staff to operate valves and assist with disinfection, dechlorination, pressure-testing, and final acceptance. Valve exercising can also be impacted due to limited redundancy in the water system; valve exercising cannot be performed in areas where there is only one source of water to the community meters or flow disruptions will occur.

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

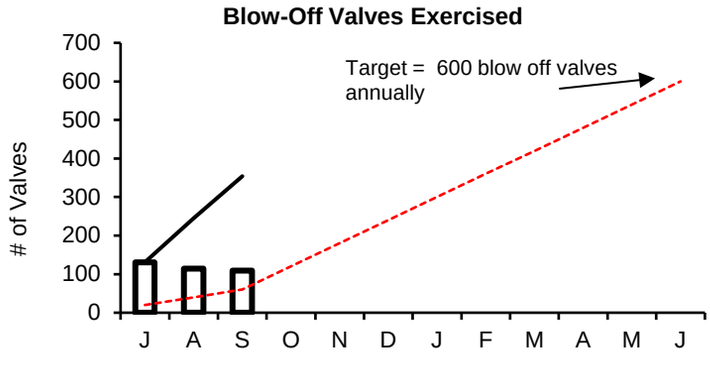




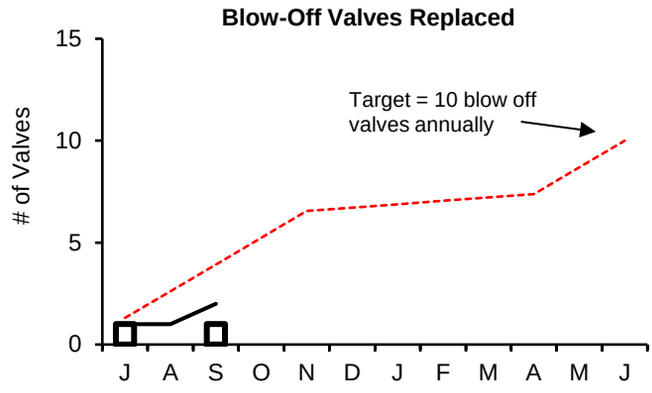
During the 1st Quarter of FY21, 441 main line valves were exercised. The total exercised for the fiscal year to date is 441.



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



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



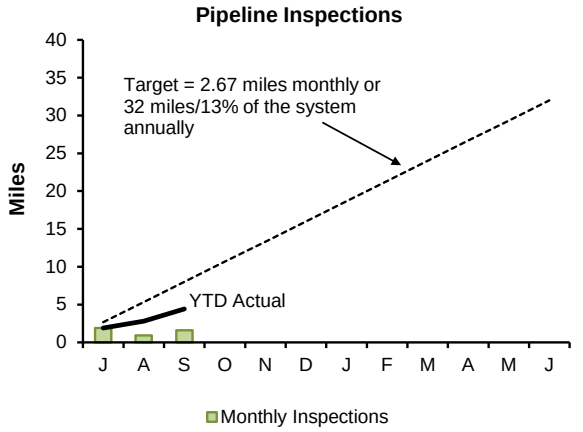
During the first Quarter of FY21, there were two blow off valve replaced. The total replaced for the fiscal year to date is two. Below target due to isolation & permit issues and Covid 19.

Wastewater Pipeline and Structure Inspections and Maintenance

1st Quarter - FY21

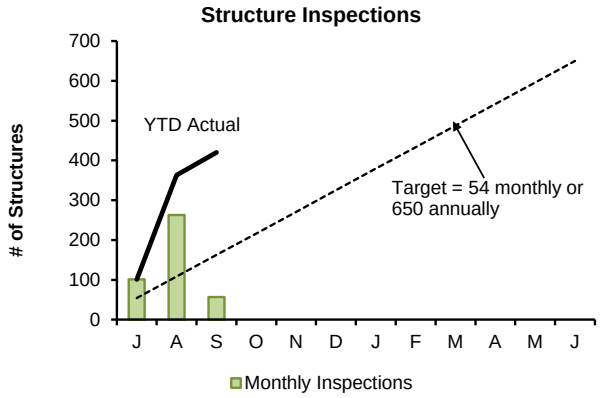
Inspections

Pipeline Inspections



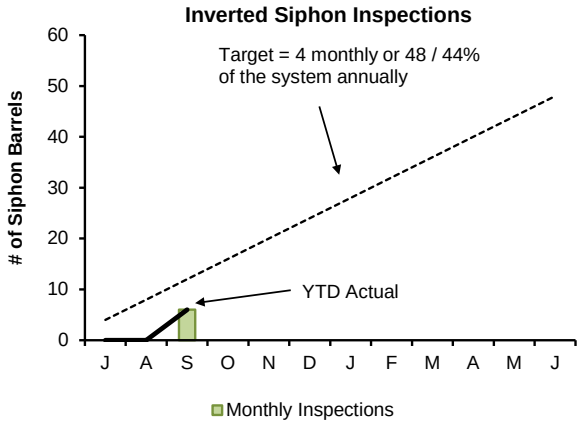
Staff internally inspected 4.42 miles of MWRA sewer pipe during this quarter. No Community Assistance was provided. Shortcomings for this quarter were a direct results of assisting E&C with inspections, as part of MWRA Siphon Rehabilitation 6224.

Structure Inspections



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

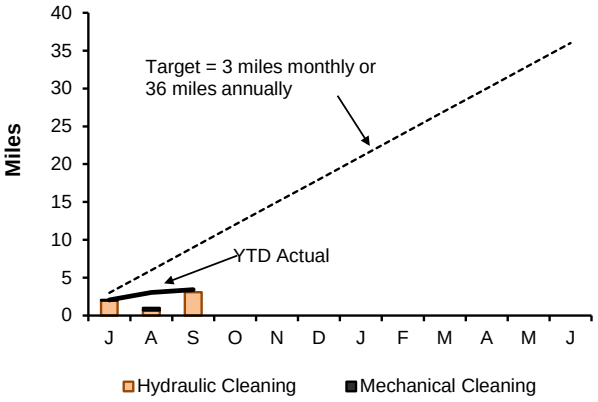
Inverted Siphon Inspections



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

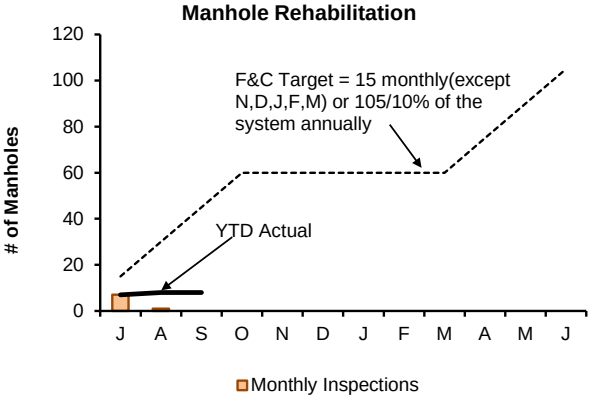
Maintenance

Pipeline Cleaning



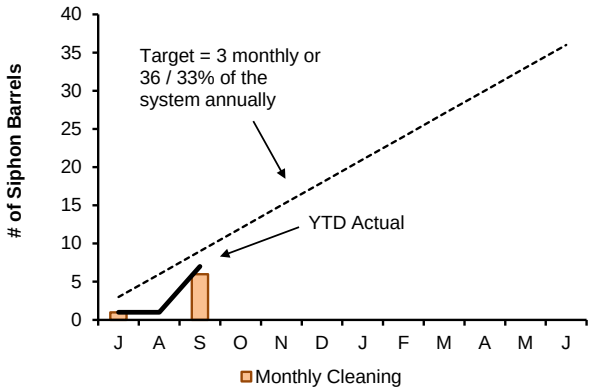
Staff cleaned 3.42 miles of MWRA sewer pipe, and removed 27 yards of grit this quarter. No Community Assistance was provided. Shortcomings for the quarter were a direct results of assisting E&C with inspections, as part of MWRA Siphon Rehabilitation 6224.

Manhole Rehabilitation



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

Inverted Siphon Cleaning

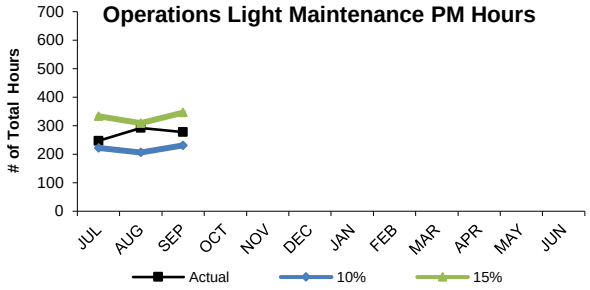


Staff cleaned 7 siphon barrels this quarter. Shortcomings for the quarter were a direct results of assisting E&C with inspections, as part of MWRA Siphon Rehabilitation 6224.

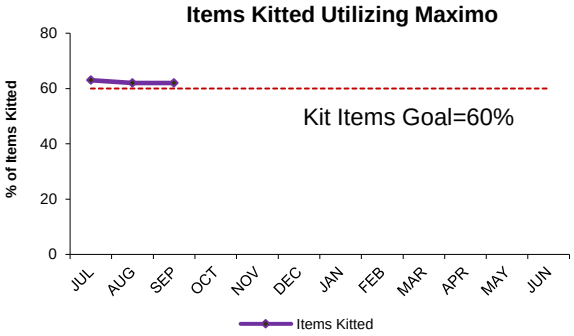
Field Operations' Metropolitan Equipment & Facility Maintenance

1st Quarter - FY21

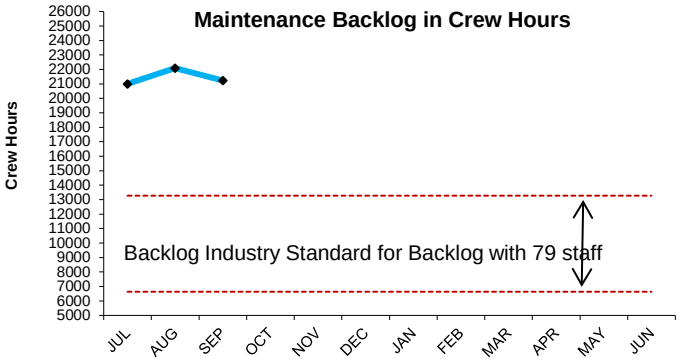
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus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



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

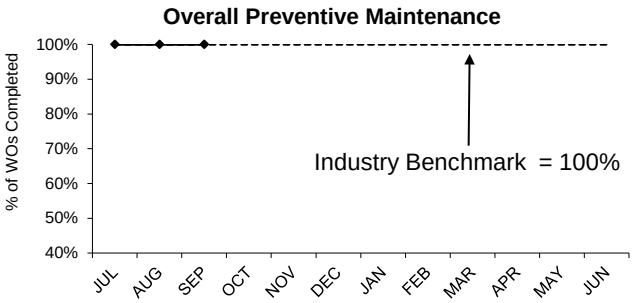


Operations' FY21 maintenance kitting goal has been set at 60% of all work orders to be kitted. Kitting is the staging of parts or material neccesary to complete maintenance work. In the 1st Quarter, 62% of all applicable work orders were kitted. This resulted in more wrench time and increased productivity.

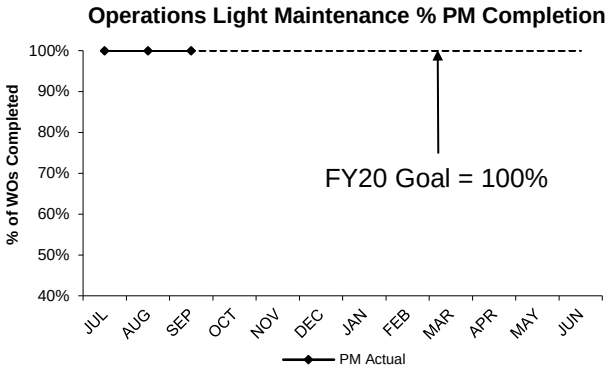


The 1st Quarter backlog average is 21,440 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6,636 to 13,275 hours.

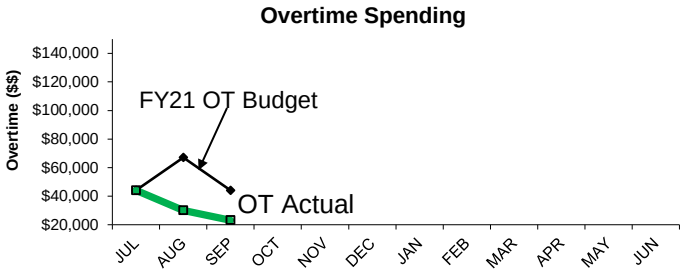
The increase is due to reduced staffing levels due to COVID19.



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



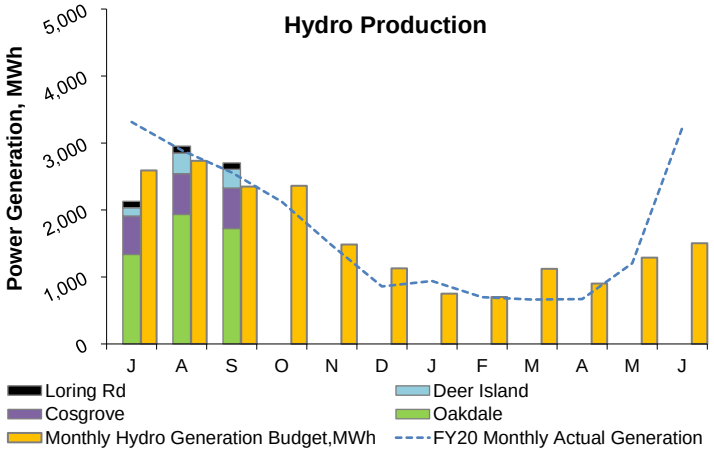
Wastewater Operations complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY21 PM goal is completion of 100% of all PM work orders assigned. Operations completed 100% of PM work orders in the 1st Quarter.



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

Renewable Electricity Generation: Savings and Revenue

Q1 - FY21



In the first quarter of FY21, the renewable energy produced from all hydro turbines totaled 7895 MWh; 10% above budget[3]. The total savings and revenue[2] to date in FY21 (actuals through August[1]) is $174,563; 13% above budget[3]. The savings and revenue value does not include RPS REC revenue (see next page).

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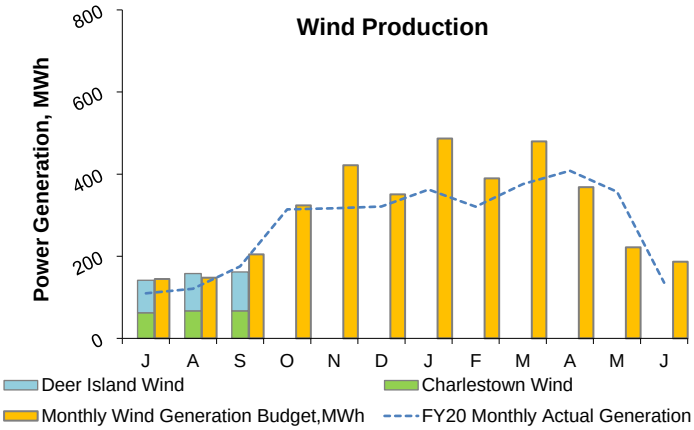
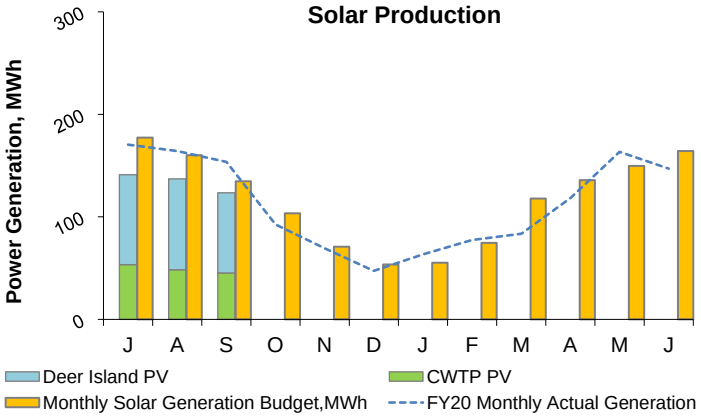
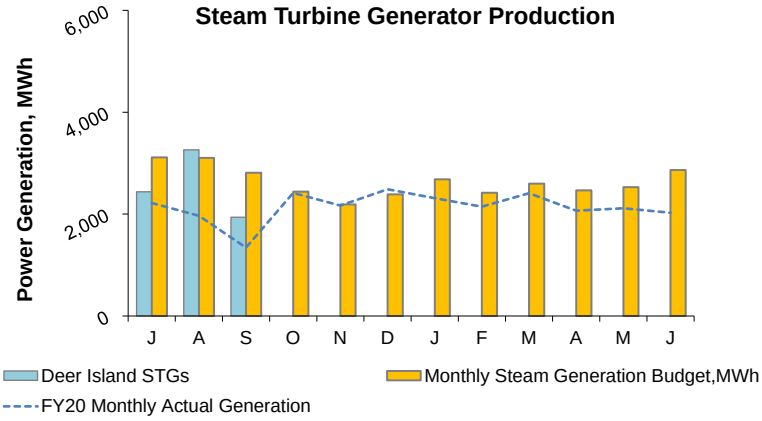


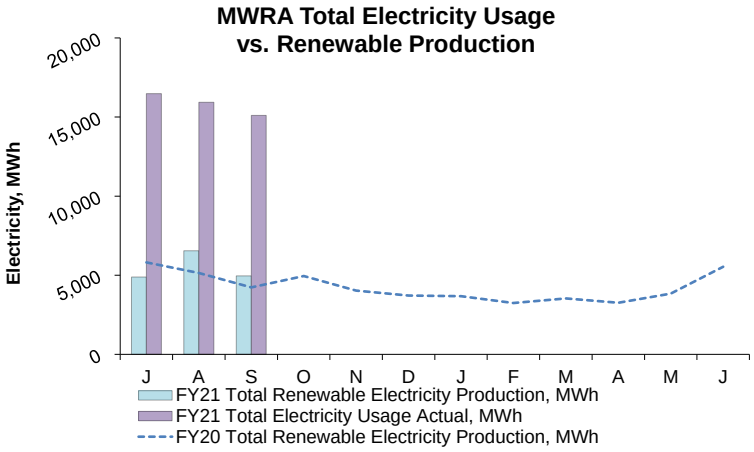
In the first quarter of FY21, the renewable energy produced from all wind turbines totaled 461 MWh; 7% below budget[3]. The total savings and revenue[2] to date in FY21 (actuals through August[1]) is $42,233, 6% below budget[3]. The savings and revenue value does not include RPS REC revenue (see next page).

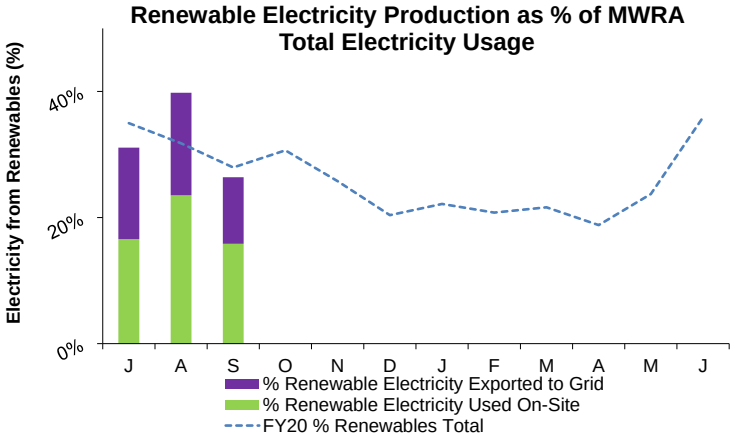


In the first quarter of FY21, the renewable energy produced from all solar PV systems totaled 402 MWh; 15% below budget[3]. The total savings and revenue[2] to date in FY21 (actuals through August[1]) is $32,114 , 26% below budget[3]. The savings and revenue value does not include RPS REC revenue (see next page).



In the first quarter of FY21, the renewable energy produced from all steam turbine generators totaled 7,638 MWh; 15% below budget[3]. The total savings and revenue[2] to date in FY21 (actuals through August[1]) is $270,331 , 10.2% below budget[3]. The savings and revenue value does not include RPS REC revenue (see next page).





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

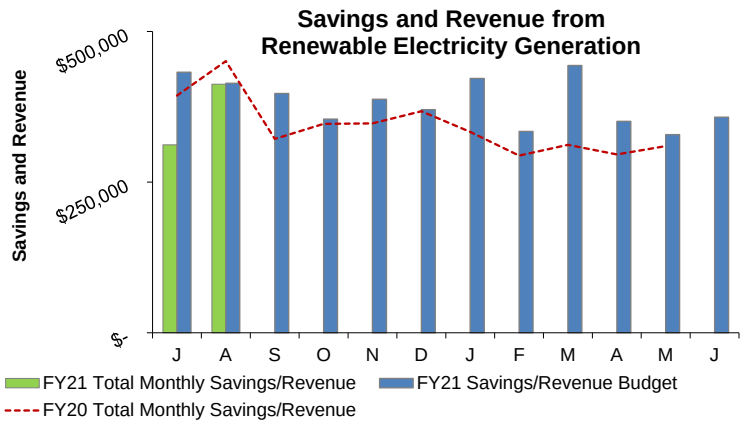
The MWRA total electricity usage is the sum of all electricity purchased for Deer Island and FOD plus electricity produced and used on-site at these facilities. Approximately 99% of FOD electrical accounts are accounted for by actual billing statements; minor accounts that are not tracked on a monthly basis such as meters and cathodic protection systems are estimated based on this year's budget.

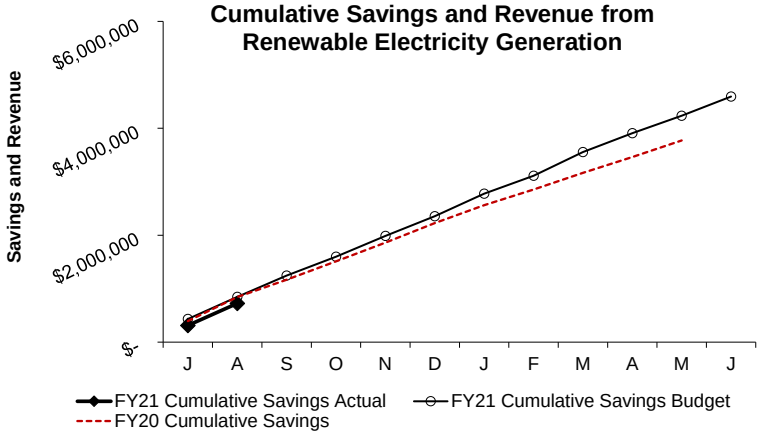
All renewable electricity generated on DI is used on-site (this accounts for more than 50% of MWRA renewable generation). Almost all renewable electricity generated off-DI is exported to the grid.

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

Renewable Electricity Generation: Savings and Revenue

Q1- FY21

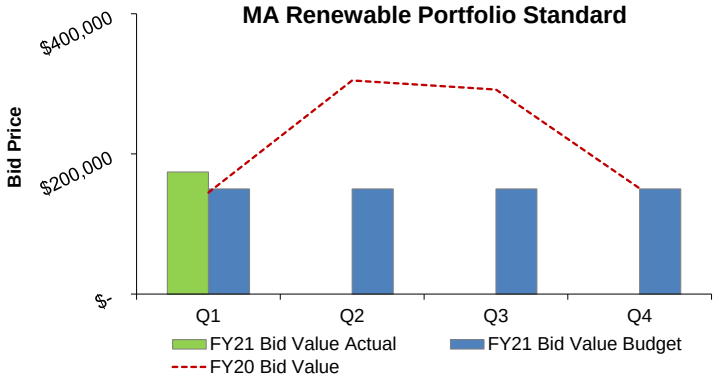


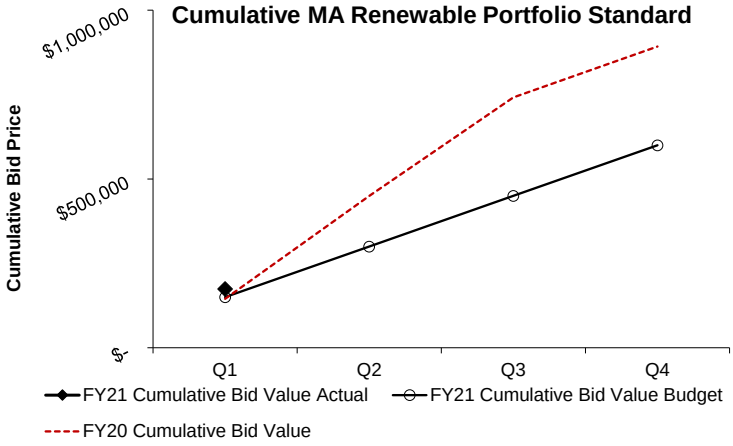


Savings and revenue from MWRA renewable electricity generation in the first two months of FY21 (actuals only through August[1]) is $724,460; which is 14% below the budget[3].

.

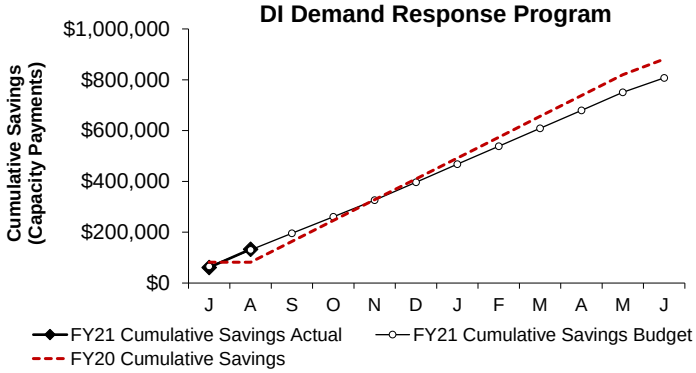
Savings and revenue[2] from all renewable energy sources include wind turbines, hydroelectric generators, solar panels, and steam turbines (DI). This includes savings and revenue due to electricity generation (does not include avoided fuel costs and RPS RECs).
The use of DITP digester gas as a fuel source provides the benefit of both electricity generation from the steam turbine generators, and provides thermal value

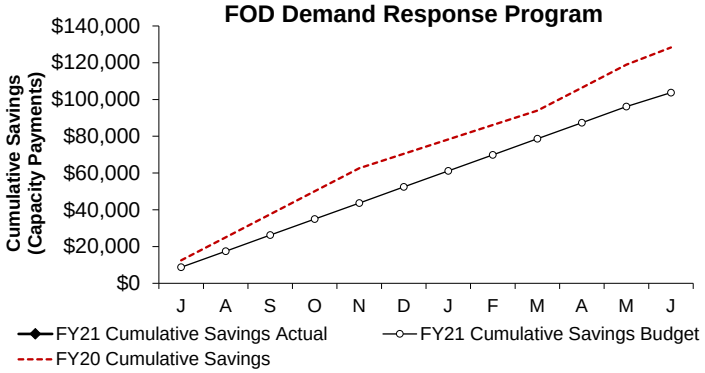




Bids were awarded during the 1st Quarter[1] from MWRA's renewable energy assets; 4,624 Q1 CY2020 Class I Renewable Energy Certificates (RECs) and 53 Q1 CY2020 Solar RECs were sold for a total value of $174,206 RPS revenue; which is 16% above budget[3] for the Quarter.
REC values reflect the bid value on the date that bids are accepted. Cumulative bid values reflects the total value of bids received to date.

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



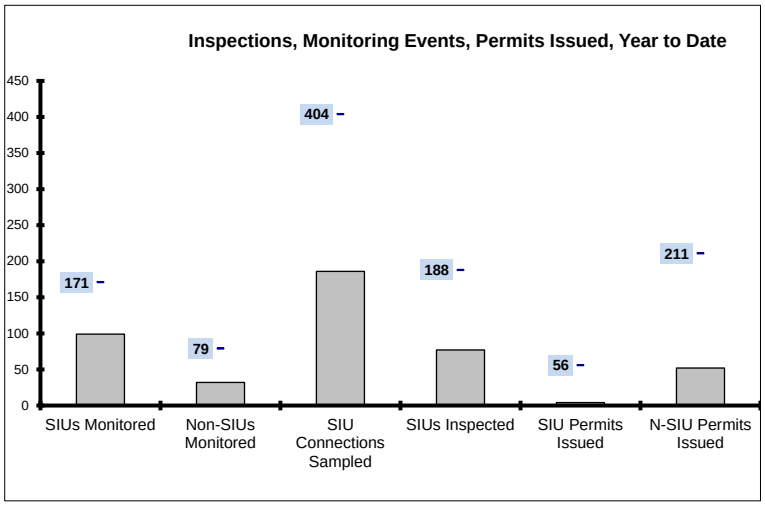


Currently Deer Island, JCWTP, and Loring Rd participate in the ISO-New England Demand Response Programs[4]. By agreeing to reduce demand and operate the facility generators to help reduce the ISO New England grid demand during periods of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates the generators during an ISO-NE called event, MWRA also receives energy payments from ISO-NE. FY21 Cumulative savings (Capacity Payments only) through August[1] total $133,085 for DI and payments for FOD have not yet been received for this reporting period[1].

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

Toxic Reduction and Control

1st Quarter - FY21



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

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

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

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

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

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

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

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

TRAC's annual monitoring and inspection goals are set at the beginning of each fiscal year but they can fluctuate due to the actual number of SIUs. Monitoring of SIUs and Non-SIUs is dynamic for several reasons, including: newly permitted facilities; sample site changes within the year requiring a permit change; non-discharging industries; a partial sample event is counted as an event even though not enough sample was taken due to the discharge rate at the time; and, increased inspections leading to permit category changes requiring additional monitoring events.

SIU and Non-SIU permits are issued with durations of two to five years, depending on the category of industry, varying the number of permits that expire in a given year.

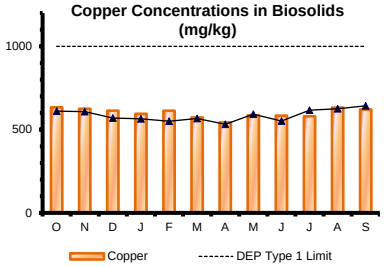
Number of Days to Issue a Permit

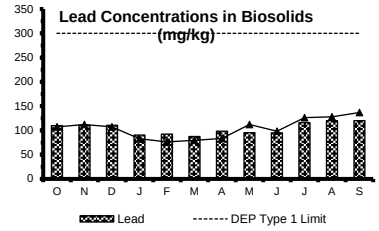
	0 to 120		121 to 180		181 or more		Permits Issued	
	SIU	Non-SIU	SIU	Non-SIU	SIU	Non-SIU	SIU	Non-SIU
Jul	1	4	0	4	0	3	1	11
Aug	2	15	0	1	0	1	2	17
Sep	1	20	0	3	0	1	1	24
Oct							0	0
Nov							0	0
Dec							0	0
Jan							0	0
Feb							0	0
Mar							0	0
Apr							0	0
May							0	0
Jun							0	0
% YTD	100%	75%	0%	15%	0%	10%	4	52

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

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

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





Copper, lead, and molybdenum are metals of concern for MWRA as their concentrations in its biosolids have, at times, exceeded regulatory standards for unrestricted use as fertilizer.

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

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

Field Operations Highlights
1st Quarter – FY21

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

Western Water Operations and Maintenance

- Carroll Water Treatment: Staff operated emergency generators for load shedding, vibration testing, and (at the request of ISO New England) for reduced power consumption. Staff worked with Calgon to install modified gas pressure UV lamps in the primary bank of lamps in each reactor.

- Staff began installation of lead pipe test coupons into the test stands.

- Aquatic Invasive Plants Control: Survey and removal efforts were completed or underway at Wachusett Reservoir, Sudbury Reservoir, Chestnut Hill and the Ware River/Shaft 8. Staff continued with weekly cyanobacteria monitoring at emergency reservoirs.

- Staff participated in State Drought Management Task Force meetings, and provided reservoir status reports.

Metro Water Operations and Maintenance

- Valve Program: Valve operations to support in-house work included providing isolations for valve installations on Sections 8, 37 and 48, and isolations to support two blow-off retrofits. Staff isolated, drained and refilled the Turkey Hill Storage Tank to improve water quality. Support of CIP work included isolations on the suction side of the East Pumping Station and portions of WASM 5 & 6 for the Commonwealth Avenue Pump Station contractor to tie in the new Section 113. Staff flushed segments of the new Section 111. Work to support communities included activation of Meter 145 to support Cambridge's test of the connection and disinfecting Marblehead's storage tank.

- Water Pipeline Program: Staff completed the replacement of ten mainline valves and two blow-off retrofit projects during the quarter. Six leaks were identified and repaired during the quarter. Leak detection was performed on over 48 miles of MWRA water main and assistance was provided to eight customer communities. Additional work included repairing an eroded area on Dam #8 at the High Fells open reservoir in Stoneham.

Operations Engineering

- Due to Covid-19 staffing restrictions there was a decrease in field activity support during the quarter. Technical support continued for design projects and active construction projects.

- Staff continued to provide technical support for Design and Construction Contracts including; SEH Section 111, Comm. Ave Pump Station, Chestnut Hill Emergency Pump. Station Upgrades, Sections 50/57, Braintree Weymouth Pump Station, Chelsea Creek Headworks, Nut Island Odor Control Improvements, NEH improvements, WASM3, Sections 21/22, and Section 89

- Staff continued providing management and coordinating with Arcadis to support design efforts on the Carroll Water Treatment Plant System Upgrades PLC.

Wastewater Operations & Maintenance

- CoVid-19: Wastewater Operations OCC staff rotate weekly and direct report to various wastewater facilities (Hayes PS, Quincy PS, and Prison Point CSO) in order to maintain social distancing. The limited staff in the OCC do a complete wipe down of phones, radios and touchable surfaces after every shift and also keep a log.

- Remote Headworks Upgrades: Staff continued to work with Engineering & Construction staff and the contractor on the Remote Headworks Upgrades Project Channels 1, 2 and 3 are now in service. Channel #4 has been turned over to the contractor for rehabilitation. The temporary chain for Channel 2 was put in service on 6/17/20 but will be used for emergencies only.

- CSO Metering and Public Notification Planning: Operations staff, along with various departments, remotely attended a virtual public notification meeting on July 14, where volume reporting, the use of the service Everbridge, data collection and more was discussed

Metering

- Metering staff continues to meet to support the ad-hoc CSO public notifications team. The CSO monitoring database for non-revenue meters went live in August to power the CSO Notification tool.

- The Wastewater Meter Upgrade Project was put out to bid in the 1st quarter of FY21 and was awarded to ADS Environmental Services at the October Board meeting. Meter installation should begin in early 2021 and be completed by the end of the year.

- The shutdown of Verizon's 3G network is scheduled for January 1, 2021. As of October 1, 2020, 387 of 400

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

Toxics Reduction and Control

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

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

Environmental Quality-Water

- Sampling staff continued UCMR4 cyanotoxin monitoring at 28 fully served, entry-point locations across the service area. Community sampling will continue through November.

- MWRA's algae monitoring season continued. DCR collected samples at Basin North and MWRA collected samples at Cosgrove Intake. Additionally, DCR collected samples weekly at Quabbin Reservoir. Levels of nuisance algae remained low at both reservoirs.

- Sampling staff worked with the standby reservoir inspection and sampling contractor during July. Cyanobacteria visual monitoring continued this quarter at all standby and active reservoir locations. Staff continued to use the web-based ESRI application to report field inspection results.

- Sampling staff performed algal toxin and taste and odor compound sampling at Cosgrove Intake Reservoir; Wachusett and Quabbin raw water inlet taps; and treated water taps at CWTP and Ludlow Monitoring Station. Algal toxin results were non-detect during the quarter.

- Staff continue to monitor disinfection byproduct levels within the CVA system. During Q3, there were no exceedances for any disinfection byproduct components at any of the CVA communities.

- Throughout the quarter, staff notified communities with low chlorine residuals, and provided guidance to Winthrop and Reading on coliform detections. Provided assistance to Marblehead to drain, disinfect, refill and test their Burkes Hill standpipe to improve water quality.

- In July and August, staff presented at MWRA's Community Emergency Response Planning Training on building flushing after lengthy shutdowns due to COVID19 and proper coliform sampling technique. Provided a virtual presentation to the Chelsea sampling staff on proper coliform sampling technique and chlorine residual measurement.

- Staff continued weekly updates on bulk chemical supply conditions. All bulk water and wastewater chemical inventories continue to be at acceptable levels and vendors are not experiencing any issues with manufacture, distribution or transport.

Environmental Quality-Wastewater

- Harbor/CSO Receiving Water Monitoring: Seasonal CSO Receiving Water monitoring in variance waters continues, at a reduced level of effort due to COVID-19 safety restrictions. Biweekly harbor wide monitoring continues. Annual water quality report for the Charles and Mystic Rivers required by the CSO variances submitted to EPA and DEP on July 15.

- Staff began sending out notifications shortly after MWRA CSO discharges, updating the revised website with times, and with post-storm volume estimates for most discharges. Staff briefed senior management on issues that may arise in a new DITP permit.

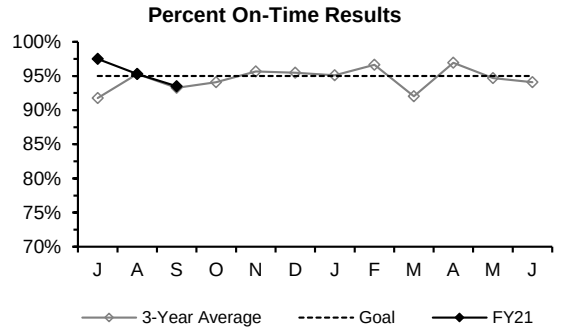
- Staff submitted comments on the draft NPDES permits for Hampton/Rye NH, and for Marlborough (the Carroll Water Treatment Plant is a significant industrial user of the Marlborough system.) Staff briefed senior management on issues that may arise in a new DITP permit.

- Staff continued work on the receiving water quality analysis portion of the CSO Post-Construction Monitoring & Performance Assessment project. Provided detailed review of draft receiving water model calibration report and submitted it the MassDEP and EPA. Participated in coordination meetings with Cambridge, Somerville, and BWSC.

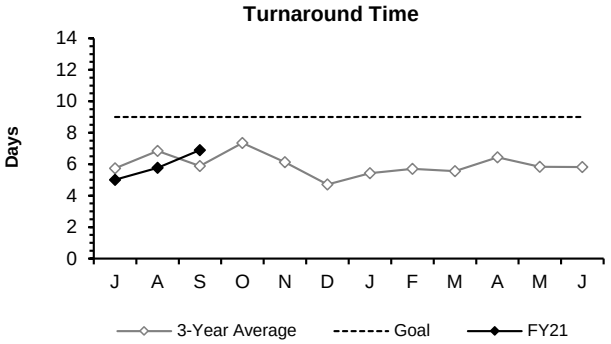
- Beach testing results from DCR's monitoring of Boston Harbor beaches were posted daily on MWRA's web site throughout the summer swimming season. Staff provided an analysis of the summer's beach postings Save the Harbor/Save the Bay.

Laboratory Services

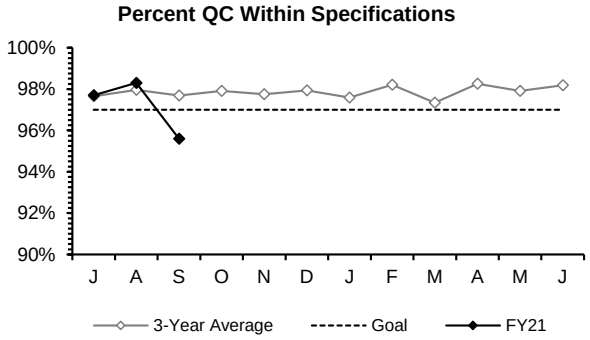
1st Quarter - FY21



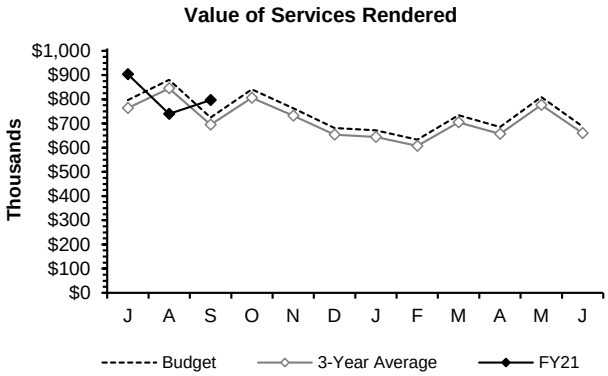
The Percent On-Time measurement met the 95% goal YTD.



Turnaround Time met the 9-day goal.



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



Value of Services Rendered met the annual budget projection YTD.

Highlights:

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

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

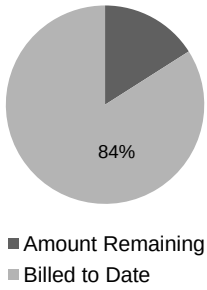
COVID-19 Testing: The wastewater pilot project continued throughout the 1st quarter. Sample results are posted on MWRA.com as they are received.

CONSTRUCTION PROGRAMS

Projects In Construction

1st Quarter – FY21

Money



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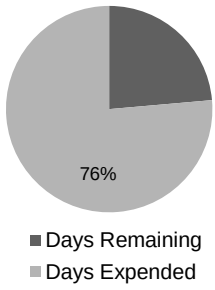


Southern Extra High Pipeline Section 111

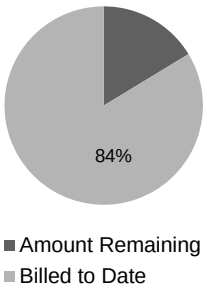
Project Summary: This project consists of 6,800 linear feet of 36-inch water main in Dedham and Westwood and includes pipe jackings at the Dedham Corporate MBTA Station and at the MassDOT Route 95 East Street Rotary.

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

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

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

Money



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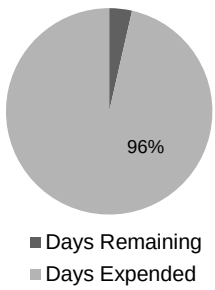


Chelsea Creek Headworks Upgrade

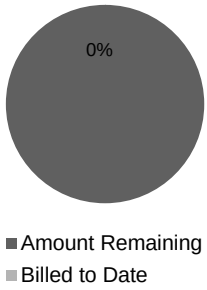
Project Summary: This project involves a major upgrade to the entire facility including: automation of screening collection & solids conveyance, replacement of the odor control, HVAC and electrical systems.

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

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

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

Money



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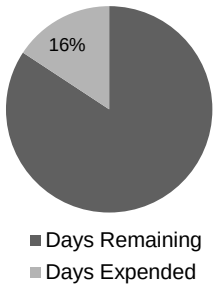


Dorchester Interceptor Sewer

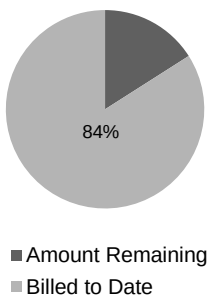
Project Summary: MWRA's Dorchester Interceptor conveys flows to MWRA's Columbus Park Connection and Headworks in South Boston

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

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

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

Money



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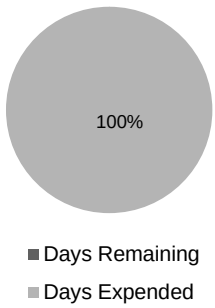


Commonwealth Ave Pump Station Improvements

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

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

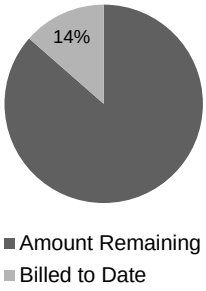
Notice to Proceed: 28-Feb-2019 *Contract Completion:* 30-Sep-2020

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

Projects In Construction

1st Quarter – FY21

Money



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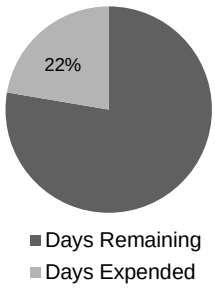


Nut Island Odor Control and HVAC

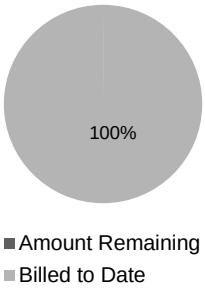
Project Summary: This project will provide upgrades to the odor control system, heating, ventilation and air conditioning system and other equipment.

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

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

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

Money



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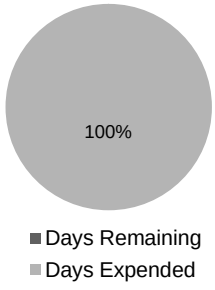


Capital Improvements at the Biosolids Facility

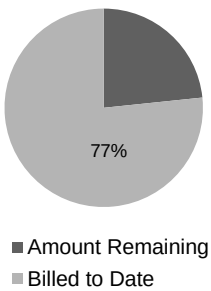
Project Summary: This project involves the replacement of nine mechanical conveyors and ancillary equipment, as well as three sludge processing rotary dryer drums.

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

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

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

Money



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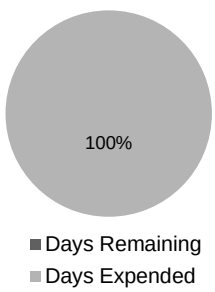


Winthrop Terminal VFD and Motor

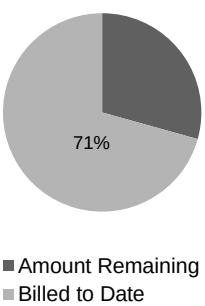
Project Summary: This project involves the replacement of 6, 600-HP motors, VFDs and associated electrical components in the Winthrop Terminal Facility.

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

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

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

Money



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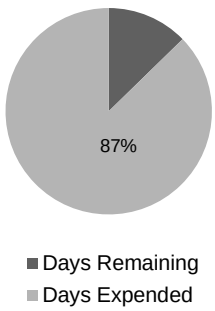


Gravity Thickener Rehabilitation

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

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

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

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

CSO CONTROL PROGRAM

1st Quarter – FY21

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

Project/Item	Status as of September 30, 2020
BWSC Dorchester Interceptor Inflow Removal	The CSO MOU/FAA with BWSC included $5.4 million for additional inflow removal from BWSC's Dorchester Interceptor system as part of the South Dorchester Bay Sewer Separation project, of which MWRA transferred $1.7 million to the BWSC CSO account and $1.6 million of that was withdrawn by BWSC to fund related design and construction work. On May 17, 2017, MWRA's Board of Directors authorized removing the remaining $3.76 million from the MOU/FAA (which ended on June 30, 2017) and including this funding amount in a separate, 4-year financial assistance agreement with BWSC effective July 1, 2017. The new agreement limits MWRA financial assistance to reimbursement of the eligible costs of BWSC construction work reviewed and approved by MWRA, up to $3.76 million. BWSC submitted construction plans and a related cost estimate and estimated I/I removal quantity to MWRA on May 27, 2020. MWRA sent a letter to BWSC on July 21, 2020, approving the eligibility of the construction contract. **BWSC awarded the contract to National Water Main in the amount of $1,581,387.** BWSC continues to evaluate additional I/I removal work it may pursue within the term of the agreement. The agreement is in effect through June 30, 2021.
City of Cambridge Memorandum of Understanding and Financial Assistance Agreement	The City of Cambridge attained substantial completion of its last project, CAM004 Sewer Separation, in December 2015 in compliance with Schedule Seven, and attained substantial completion of related surface restoration work by the end of 2017. MWRA made a final transfer of funds to the Cambridge CSO account in December 2017, in the amount of $1,254,551, to cover eligible costs through June 30, 2018, when the 22 year-old, $100.2 million MOU/FAA ended. Cambridge continues to support ongoing MWRA review of the construction contracts Cambridge managed under the CSO MOU and Financial Assistance Agreement. Staff expect to complete the review and issue a final eligibility certification by **December 31, 2020**.
City of Somerville Financial Assistance Agreement	By this agreement, MWRA will provide up to $1.4 million for Somerville's repair of its combined sewer trunk line upstream of the Somerville Marginal CSO Facility. Pursuant to the agreement, the repair work is intended to maintain the full in-system storage capacity of the trunk sewer to support CSO control. Somerville is in design and expects to award the construction contract in 2021.
MWRA CSO Performance Assessment – Contract 7572	MWRA issued the Notice to Proceed with the contract for CSO Post-Construction Monitoring and Performance Assessment to AECOM Technical Services, Inc., in November 2017. The contract includes CSO inspections, overflow metering, hydraulic modeling, system performance assessments and water quality impact assessments, culminating in the submission of a report to EPA and DEP in December 2021 verifying whether the court-ordered levels of CSO control are attained. Amendment 2 was executed on May 13, 2020, in the amount of $1,431,700, bringing the total contract not-to-exceed amount to $5,284,405. On August 30, 2019, DEP issued five-year CSO variances to water quality standards for the Lower Charles River/Charles Basin and the Alewife Brook/Upper Mystic River effective through August 31, 2024. The variance conditions include receiving water quality modeling and CSO and stormwater sampling; the evaluation of additional CSO controls; other requirements intended to minimize CSO discharges, their impacts and public health risk; and preparation of updated CSO control plans for these waters. • **AECOM updated the hydraulic model to mid-2020 system conditions and continued to utilize CSO meter data to quantify CSO discharges and compare them to model predicted discharges for storms in the period Jan 1 - Jun 30, 2020, which will be reported in Semiannual Progress Report No. 5 on October 30, 2020.** • **AECOM substantially completed the development and calibration of receiving water quality models for the Charles River Basin and the Alewife Brook/Upper Mystic River and issued a draft report for review by MWRA, EPA, DEP, Cambridge and Somerville.** • **AECOM is making progress with Amendment 2 work that includes CSO variance required project evaluations and other site-specific investigations to mitigate CSO discharges at locations where long-term levels of control are not yet attained. At some discharge locations, the CSO communities and/or MWRA are pursuing specific CSO reduction measures identified from these evaluations. In these efforts, MWRA is maintaining close coordination with the CSO communities.** • **In compliance with the CSO variances for the Charles River Basin and the Alewife Brook/Upper Mystic River, MWRA has implemented a subscriber-based system to notify the public of CSO discharges at its permitted outfalls within four hours of the start of discharge at each location, using meter readings. Cambridge and Somerville, also parties to the variances, are developing notification systems for their own outfalls.**

CIP Expenditures
1st Quarter – FY21

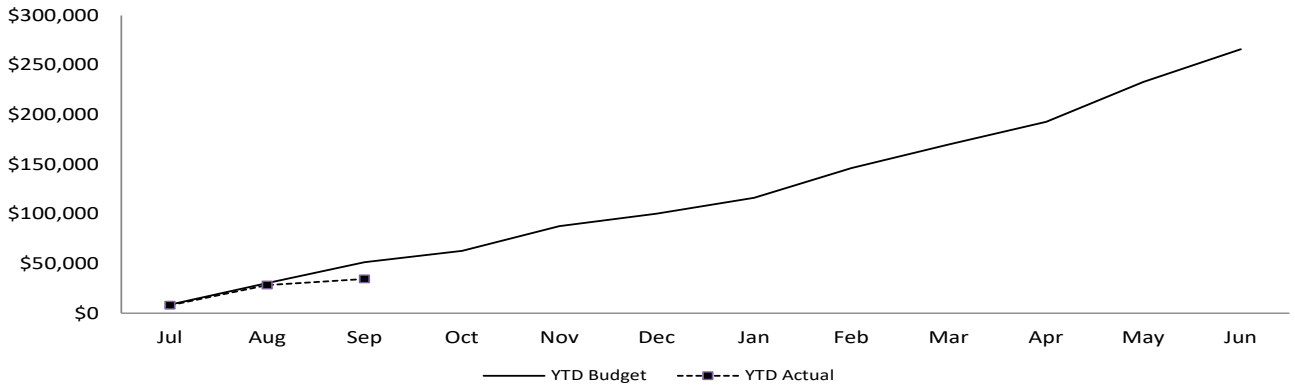
FY21 Capital Improvement Program Expenditure Variances through September by Program ($ in thousands)				
Program	FY21 Budget Through September	FY21 Actual Through September	Variance Amount	Variance Percent
Wastewater	25,904	19,638	(6,266)	-24%
Waterworks	22,966	13,905	(9,061)	-39%
Business and Operations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

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

Budget vs. Actual CIP Expenditures

($ in thousands)

Total FY21 CIP Budget of $265,774



Construction Fund Management

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

Cash Balance as of 9/26/20	$313.3 million
Unused capacity under the debt cap:	$1.59 billion
Estimated date for exhausting construction fund without new borrowing:	Aug-21
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper/Revolving loan outstanding: Commercial paper capacity / Revolving Loan	$128 million $350 million
Budgeted FY21 Cash Flow Expectancy*:	$203 million

* Cash based spending is discounted for construction retainage.

DRINKING WATER QUALITY AND SUPPLY

Source Water – Microbial Results and UV Absorbance

1st Quarter – FY21

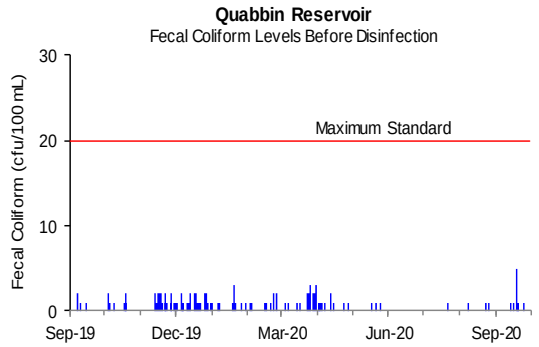
Source Water – Microbial Results

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

Sample Site: Quabbin Reservoir

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

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

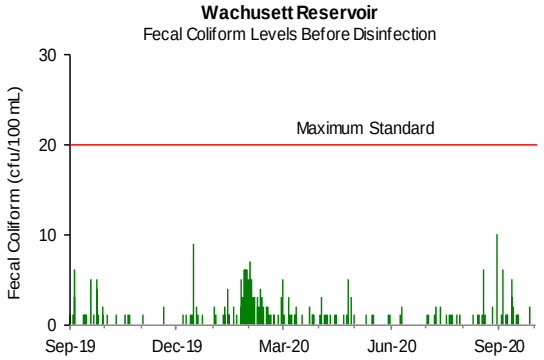


Sample Site: Wachusett Reservoir

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

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

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

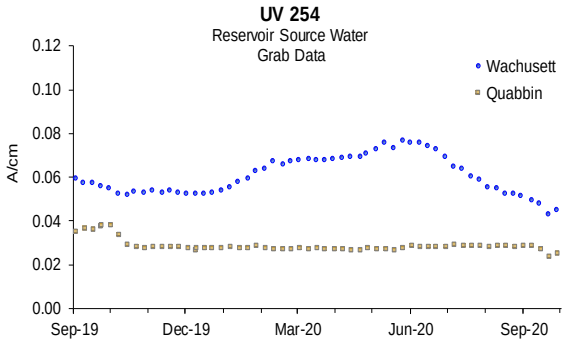


Source Water – UV Absorbance

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

Quabbin Reservoir UV-254 levels averaged 0.27 A/cm for the quarter.

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



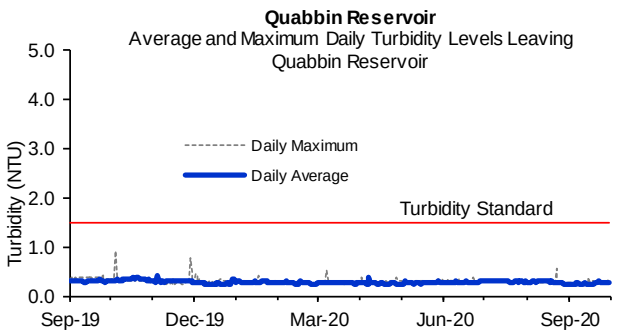
Source Water – Turbidity

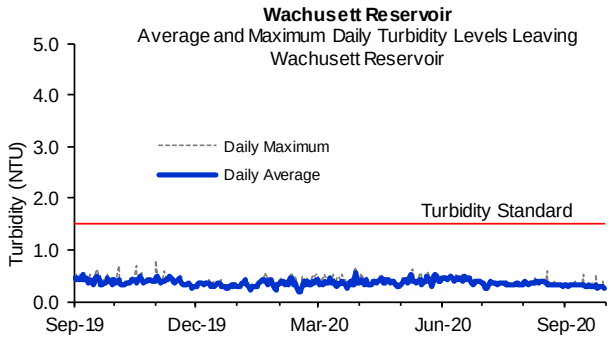
1st Quarter – FY21

Turbidity is a measure of suspended and colloidal particles including clay, silt, organic and inorganic matter, algae and microorganisms. The effects of turbidity depend on the nature of the matter that causes the turbidity. High levels of particulate matter may have a higher disinfectant demand or may protect bacteria from disinfection effects, thereby interfering with the disinfectant residual throughout the distribution system.

There are two standards for turbidity: all water must be below five NTU (Nephelometric Turbidity Units), and water only can be above one NTU if it does not interfere with effective disinfection.

Turbidity of Quabbin Reservoir water is monitored continuously at the Brutsch Water Treatment Facility (BWTF) before UV and chlorine disinfection. Turbidity of Wachusett Reservoir is monitored continuously at the Carroll Water Treatment Plant (CWTP) before ozonation and UV disinfection. Maximum turbidity results at Quabbin and Wachusett were within DEP standards for the quarter.



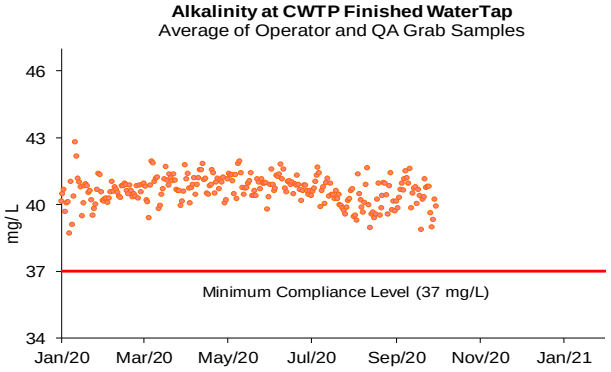


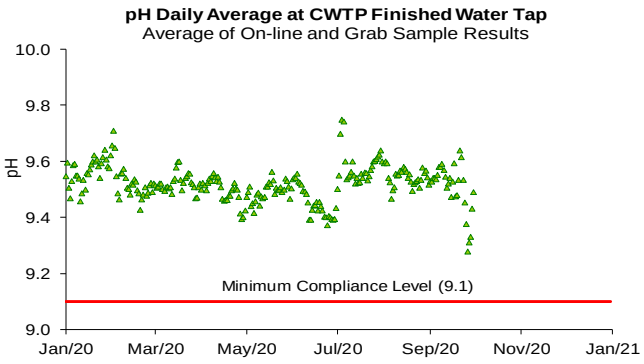
Treated Water – pH and Alkalinity Compliance

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

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

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





Treated Water – Disinfection Effectiveness

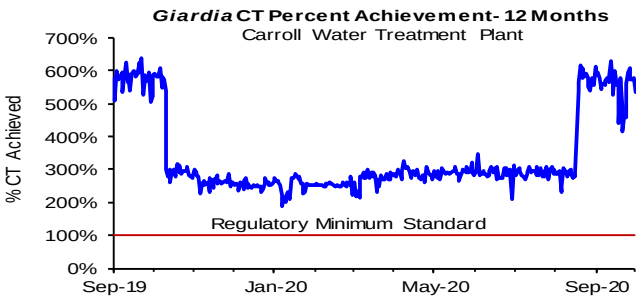
1st Quarter – FY21

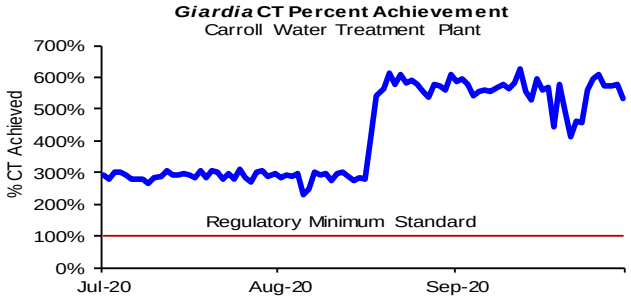
At the Carroll Water Treatment Plant (CWTP), MWRA meets the required 99.9% (3-log) inactivation of *Giardia* using ozone (reported as CT: concentration of disinfectant x contact time) and the required 99% (2-log) inactivation of *Cryptosporidium* using UV (reported as IT: intensity of UV x time). MWRA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

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

Wachusett Reservoir – MetroWest/Metro Boston Supply:

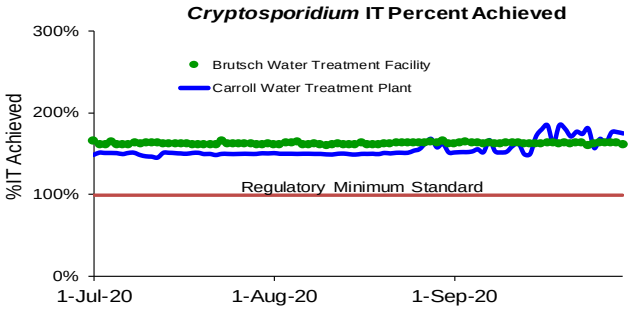
- Ozone dose at the CWTP varied between 1.8 to 2.4 mg/L for the quarter.
- *Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system this quarter, as well as every day for the last fiscal year.
- *Cryptosporidium* IT was maintained above 100% during the month. Off-spec water was less than 5%.
- The ozone dose was proactively increased from early September 2019 to mid October 2019 in response to a *Chrysosphaerella* algae bloom. This is visible in the top left graph.
- The ozone dose was proactively raised mid-August 2020 in response to elevated reservoir total coliform levels. This is visible in the top left graph.

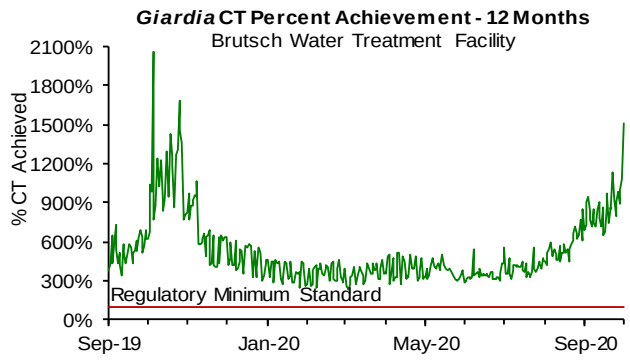


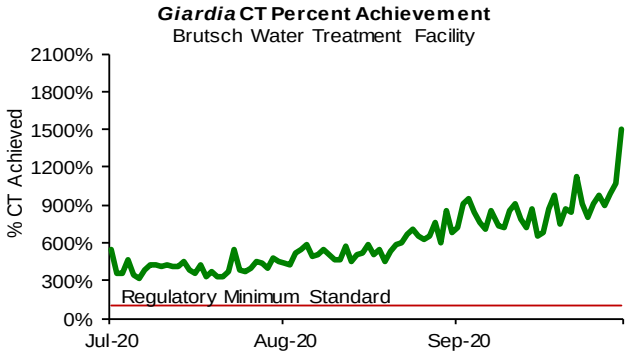


Quabbin Reservoir (CVA Supply) at: Brutsch Water Treatment Facility

- The chlorine dose at BWTF is adjusted in order to achieve MWRA's seasonal target of 0.75 - 0.85 mg/L (November 1 – May 31) and 0.85 - 1.05 mg/L (June 1 – October 31) at Ludlow Monitoring Station.
- The chlorine dose at BWTF varied between 1.3 to 1.5 mg/L for the quarter.
- *Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system for the quarter.
- *Cryptosporidium* IT was maintained above 100% during the month. Off-spec water was less than 5%.







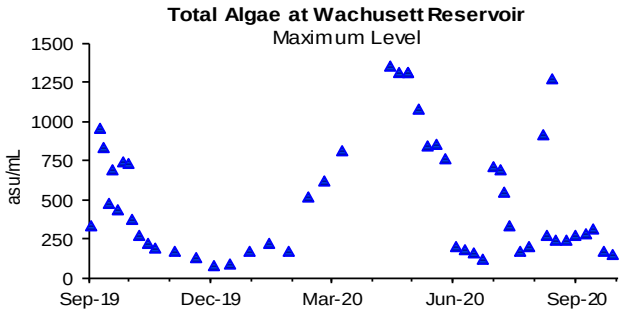
Source Water - Algae

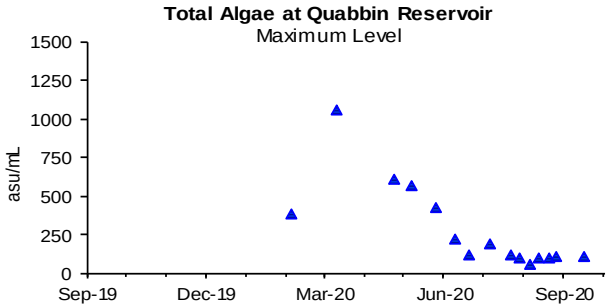
1st Quarter – FY21

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

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

In the 1st quarter, no taste and odor complaints which may be related to algae were reported from the local water departments.



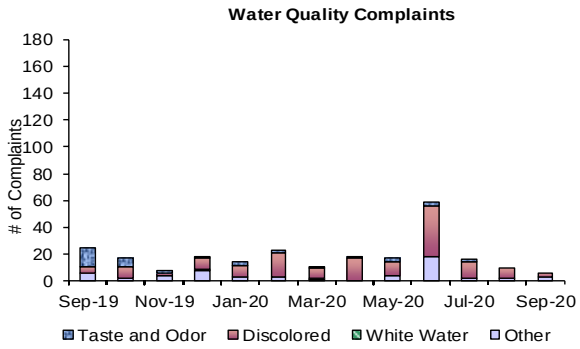


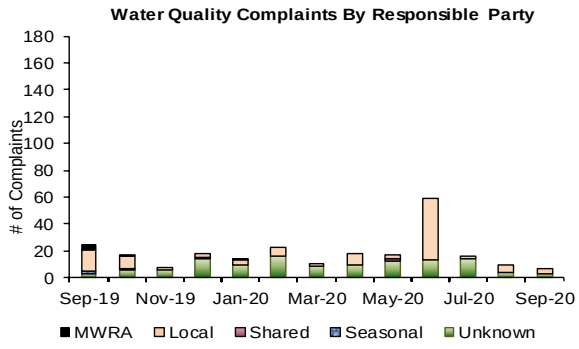
Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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

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

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





Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

1st Quarter – FY21

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

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

Samples are tested for total coliform and *Escherichia coli (E.coli*). *E.coli* is a specific coliform species whose presence likely indicates potential contamination of fecal origin.

If *E.coli* are detected in a drinking water sample, this is considered evidence of a potential public health concern. Public notification is required if repeat tests confirm the presence of *E.coli* or total coliform.

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

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

Highlights

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

NOTES:

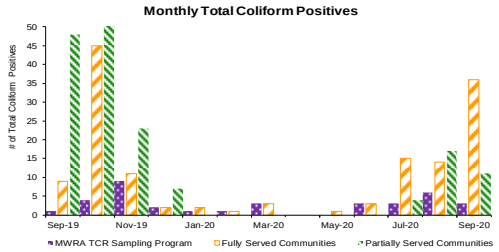
a) MWRA total coliform and chlorine residual results include data from community locations. In most cases these community results are indicative of MWRA water as it enters the community system; however, some are strongly influenced by local pipe conditions. Residuals in the MWRA system are typically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

e) MADEP determined that five Somerville total coliform samples collected from one routine sample site (sampling period from October through November) were invalid and not representative of the distribution system. Therefore, they are not represented in the table.



			Total Coliform # Samples (b)	Total Coliform # (%) Positive	*E.coli* # Positive	Assessment Required
MWRA	a	MWRA Locations	407	9 (2.21%)	0	
		Shared Community/MWRA sites	1596	3 (0.19%)	0	
		Total: MWRA	2003	12 (0.60%)	0	No
Fully Served		ARLINGTON	169	0 (0%)	0	
		BELMONT	104	0 (0%)	0	
		BOSTON	807	6 (0.74%)	0	No
		BROOKLINE	223	1 (0.45%)	0	No
		CHELSEA	172	1 (0.58%)	0	No
		DEER ISLAND	52	0 (0%)	0	
		EVERETT	169	0 (0%)	0	
		FRAMINGHAM	238	1 (0.42%)	0	No
		LEXINGTON	126	0 (0%)	0	
		LYNNFIELD	18	0 (0%)	0	
		MALDEN	234	0 (0%)	0	
		MARBLEHEAD	72	0 (0%)	0	
		MARLBOROUGH	126	0 (0%)	0	
		MEDFORD	198	0 (0%)	0	
		MELROSE	117	0 (0%)	0	
		MILTON	102	0 (0%)	0	
		NAHANT	30	0 (0%)	0	
		NEWTON	276	0 (0%)	0	
		NORTHBOROUGH	48	0 (0%)	0	
		NORWOOD	99	0 (0%)	0	
		QUINCY	364	0 (0%)	0	
		READING	146	5 (3.42%)	0	Yes
		REVERE	180	0 (0%)	0	
		SAUGUS	104	0 (0%)	0	
		SOMERVILLE	288	8 (2.78%)	0	
		SOUTHBOROUGH	30	0 (0%)	0	
		STONEHAM	94	1 (1.06%)	0	No
		SWAMPSCOTT	55	0 (0%)	0	
		WALTHAM	222	2 (0.90%)	0	No
		WATERTOWN	143	1 (0.70%)	0	No
		WESTON	45	0 (0%)	0	
		WINTHROP	111	39 (35.14%)	0	Yes
		Total: Fully Served	*5162*	*65 (1.26%)*		
Partially Served	c	BEDFORD	63	4 (6.35%)	0	Yes
		CANTON	94	1 (1.06%)	0	No
		HANSCOM AFB	39	6 (15.38%)	0	Yes
		NEEDHAM	123	0 (0%)	0	
		PEABODY	211	1 (0.47%)	0	No
		WAKEFIELD	144	5 (3.47%)	0	Yes
		WELLESLEY	114	0 (0%)	0	
		WILMINGTON	90	1 (1.11%)	0	
		WINCHESTER	98	0 (0%)	0	
		WOBURN	204	3 (1.47%)	0	
CVA	d	SOUTH HADLEY FD1	92	11 (11.96%)	0	Yes
		Total: CVA & Partially Served	*1272*	*32 (2.52%)*		
		Total: Community Samples	*6434*	*97 (1.51%)*		

Chlorine Residuals in Fully Served Communities

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

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

1st Quarter – FY21

Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5s) are by-products of disinfection treatment with chlorine. TTHMs and HAA5s are of concern due to their potential adverse health effects at high levels. EPA's locational running annual average (LRAA) standard is 80 µg/L for TTHMs and 60 µg/L for HAA5s.

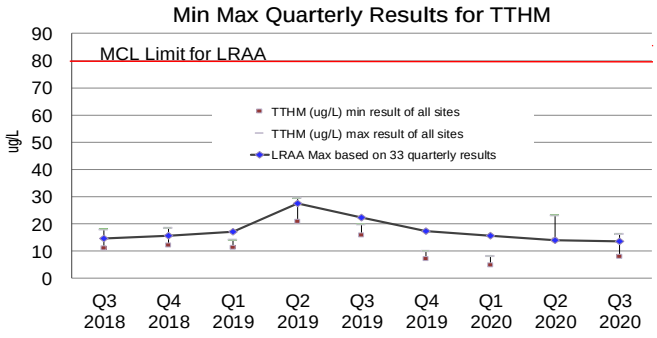
The locational running annual average calculated quarterly at each individual sampling location must be below the Total HAA5 or Total TTHM MCL standard. The charts below show the highest and lowest single values for all sites, and the LRAA of the highest location each quarter.

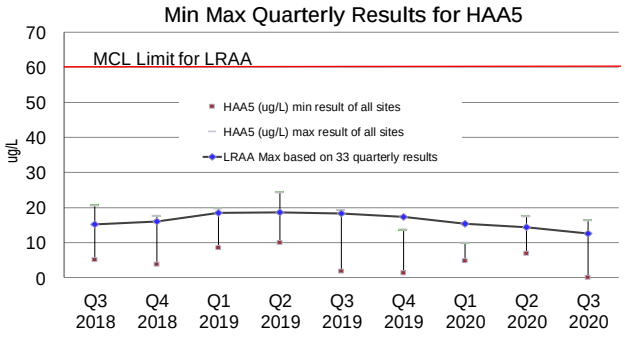
Partially served and CVA communities are responsible for their own compliance monitoring and reporting, and must be contacted directly for their individual results. The chart below combines data for all three CVA communities data (Chicopee, Wilbraham and South Hadley FD1). Each community is regulated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

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

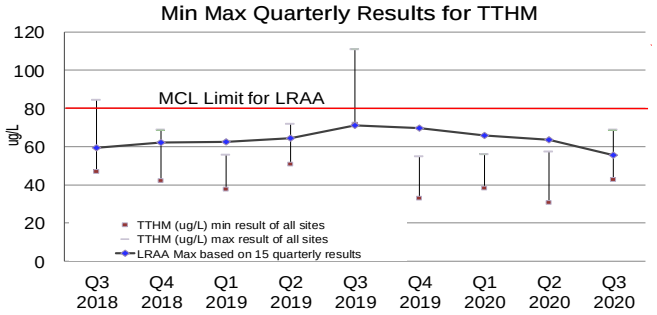
The LRAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remain below current standards. The Max LRAA in the quarter for TTHMs = 13.6 ug/L; HAA5s = 12.6 ug/L. The current RAA for Bromate = 0.0 µg/L. During the Q4 2019 sampling, one CVA location exceeded an HAA5 Operational Evaluation Level. While this does not result in a violation this requires an analysis and review of their water system and a report to MADEP. No LRAA exceedances or violations occurred for Q1, Q2, and Q3 of 2020 for any of the CVA communities. MWRA and the CVA communities continue to closely monitor and manage the disinfection process to minimize DBP production.

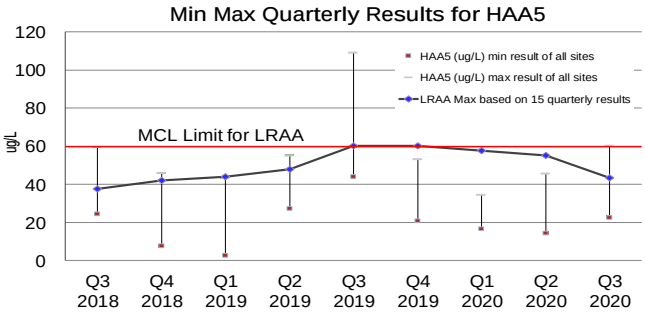
MetroBoston Disinfection By-Products





CVA Disinfection By-Products (Combined Results)





Water Supply and Source Water Management

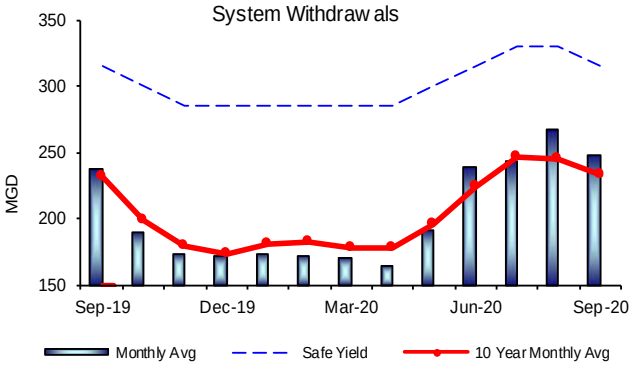
1st Quarter – FY21

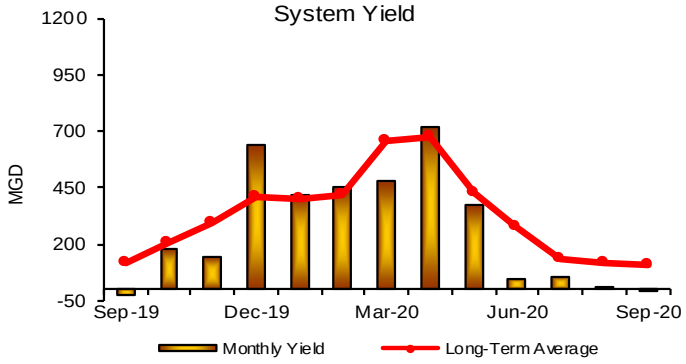
Background

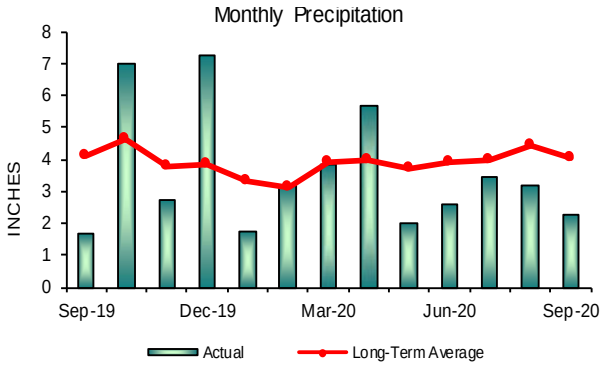
A reliable supply of water in MWRA's reservoirs depends on adequate precipitation during the year and seasonal hydrologic inputs from watersheds that surround the reservoirs. Demand for water typically increases with higher summer temperatures and then decreases as temperatures decline. Quabbin Reservoir was designed to effectively supply water to the service areas under a range of climatic conditions and has the ability to endure a range of fluctuations. Wachusett Reservoir serves as a terminal reservoir to meet the daily demands of the Greater Boston area. A key component to this reservoir's operation is the seasonal transfer of Quabbin Reservoir water to enhance water quality during high demand periods. On an annual basis, Quabbin Reservoir accounts for nearly 50% of the water supplied to Greater Boston. The water quality of both reservoirs (as well as the Ware River, which is also part of the System Safe Yield) depend upon implementation of DCR's DEP-approved Watershed Protection Plans. System Yield is defined as the water produced by its sources, and is reported as the net change in water available for water supply and operating requirements.

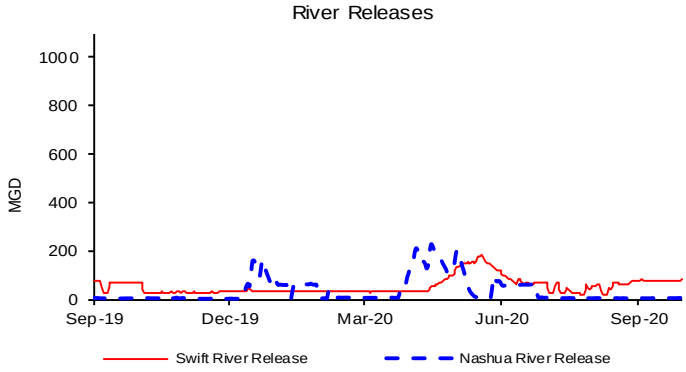
Outcome

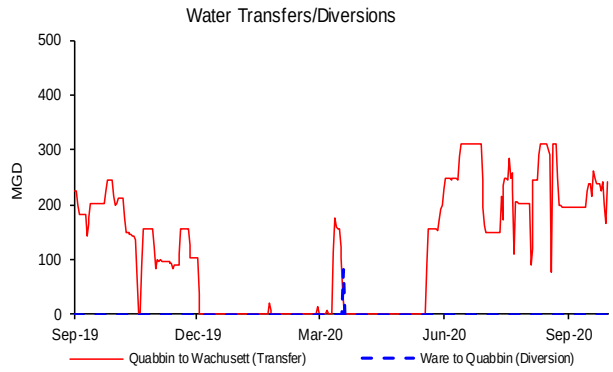
The volume of the Quabbin Reservoir was at 90.2% as of September 30, 2020; a 6.6% decrease for the quarter, which represents a loss of more than 27.4 billion gallons of storage and a decrease in elevation of 3.64' for the quarter. System withdrawal, precipitation and yield were below their respective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

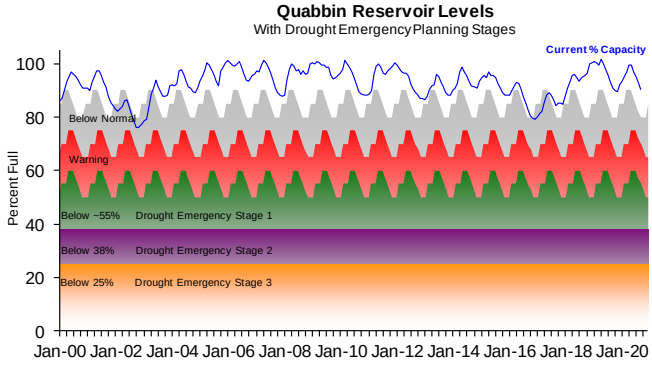












WASTEWATER QUALITY

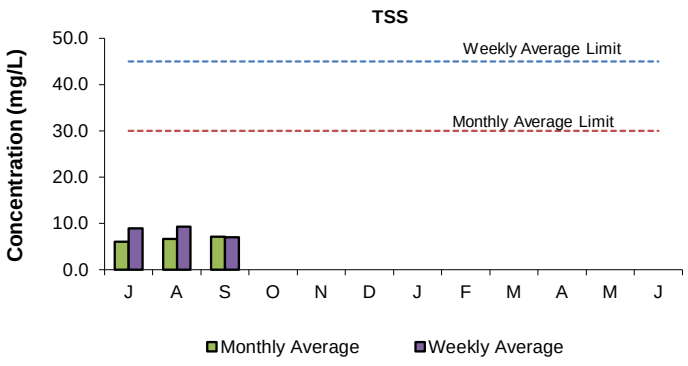
NPDES Permit Compliance: Deer Island Treatment Plant

1st Quarter - FY21

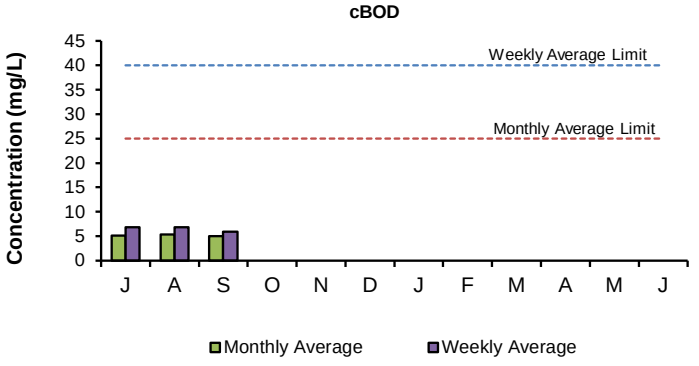
NPDES Permit Limits

Effluent Characteristics		*Units*	*Limits*	*July*	*August*	*September*	*1st Quarter Violations*	*FY21 YTD Violations*
Dry Day Flow (365 Day Average):		mgd	436	277.9	273.2	268.6	0	0
cBOD:	Monthly Average	mg/L	25	5.1	5.4	5.0	0	0
	Weekly Average	mg/L	40	6.9	6.8	5.9	0	0
TSS:	Monthly Average	mg/L	30	6.1	6.6	7.1	0	0
	Weekly Average	mg/L	45	8.9	9.3	7.0	0	0
TCR:	Monthly Average	ug/L	456	0.0	0.0	0.0	0	0
	Daily Maximum	ug/L	631	0.0	0.0	0.0	0	0
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	9.0	9.0	45.0	0	0
	Weekly Geometric Mean	col/100mL	14000	5.0	5.0	5.0	0	0
	% of Samples >14000	%	10	0.0	0.0	0.0	0	0
	Consecutive Samples >14000	#	3	0.0	0.0	0.0	0	0
pH:		SU	6.0-9.0	6.3-6.9	6.4-6.9	6.6-6.9	0	0
PCB, Aroclors:	Monthly Average	ug/L	0.000045	UNDETECTED			0	0
Acute Toxicity:	Mysid Shrimp	%	≥50	>100	>100	>100	0	0
	Inland Silverside	%	≥50	>100	>100	>100	0	0
Chronic Toxicity:	Sea Urchin	%	≥1.5	100	100	100	0	0
	Inland Silverside	%	≥1.5	50	50	50	0	0

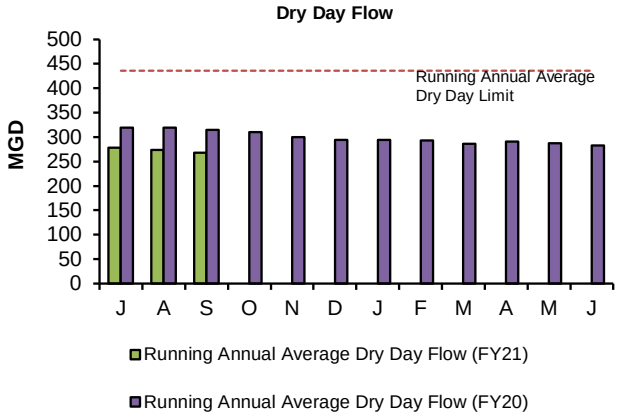
There have been no permit violations in FY21 to date at the Deer Island Treatment Plant (DITP).



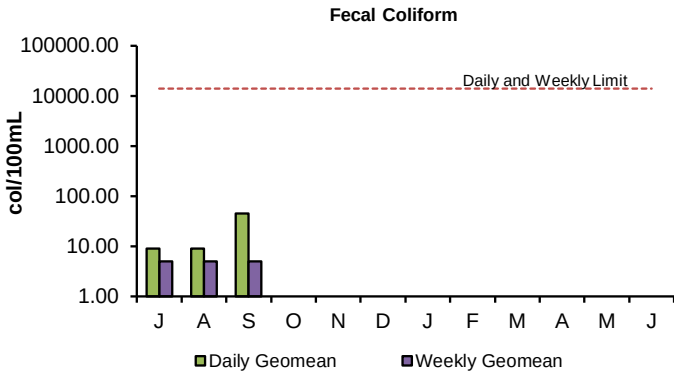
Total Suspended Solids (TSS) in the effluent is a measure of the amount of solids that remain suspended after treatment. All TSS measurements for the 1st Quarter were within permit limits.



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



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



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

NPDES Permit Compliance: Clinton Wastewater Treatment Plant

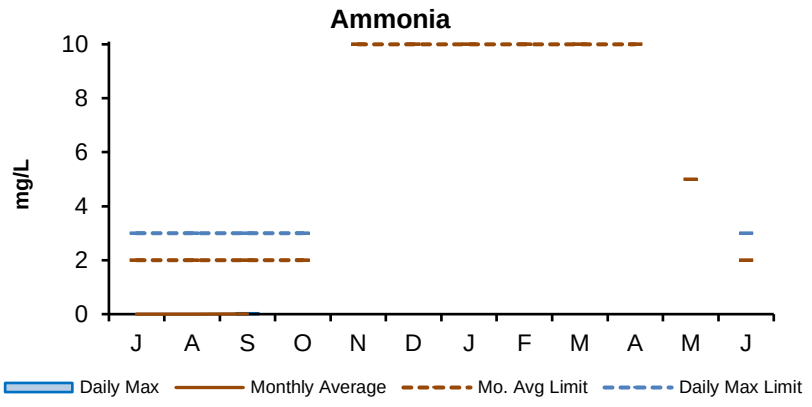
1st Quarter - FY21

NPDES Permit Limits

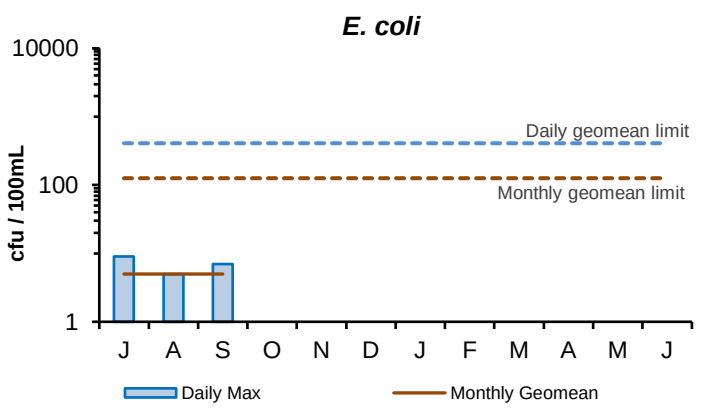
Effluent Characteristics		*Units*	*Limits*	*July*	*August*	*September*	*1st Quarter Violations*	*FY21 YTD Violations*
Flow:	12-month Rolling Average:	mgd	3.01	2.35	2.34	2.34	0	0
BOD:	Monthly Average:	mg/L	20	1.80	1.40	1.80	0	0
	Weekly Average:	mg/L	20	1.60	3.20	2.10	0	0
TSS:	Monthly Average:	mg/L	20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

There has been one permit violation in FY21 at the Clinton Treatment Plant.
1st Quarter: There was one permit violation in the first quarter. The quarterly chronic toxicity result of 25% was below the minimum permit limit of 62.5%.

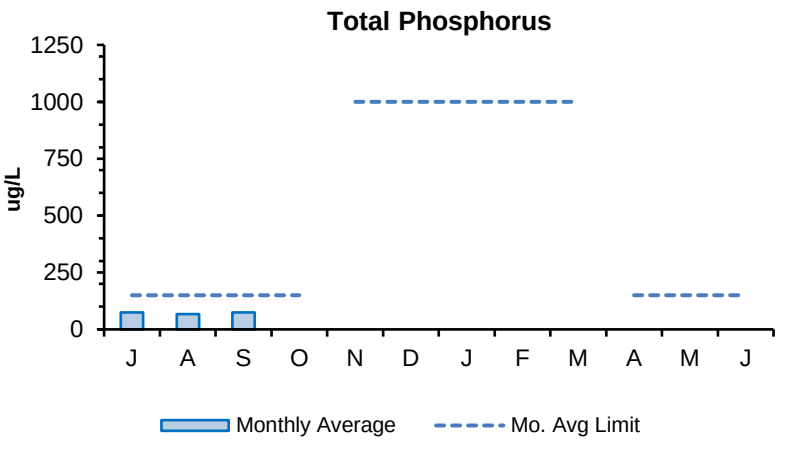
+ Toxicity testing at the Clinton Treatment Plant is conducted on a quarterly basis.



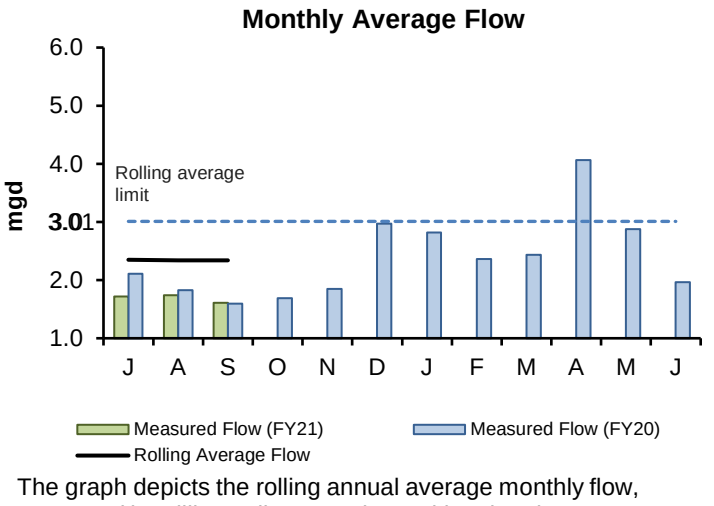
The 1st Quarter's monthly average and daily maximum concentrations of ammonia were below the permit limits. The monthly average and daily maximum limits for the 1st Quarter are 2.0 and 3.0 mg/L respectively. The permit limits are most stringent from June to October when warm weather conditions are most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



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



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

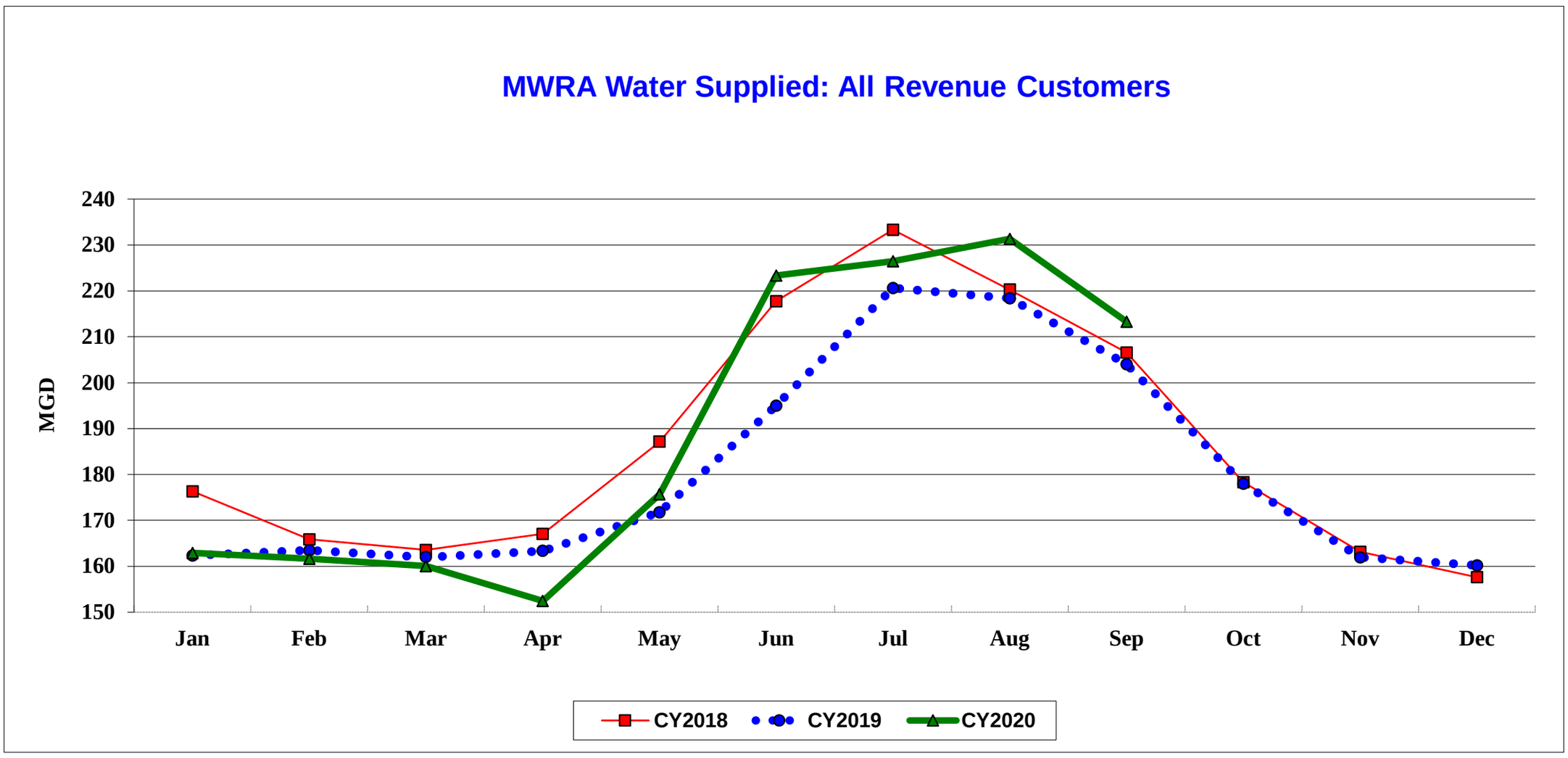


The graph depicts the rolling annual average monthly flow, measured in million gallons per day, exiting the plant.
The 12-month rolling average flows during the 1st Quarter were below the permit limit.

COMMUNITY FLOWS AND PROGRAMS

Customer Water Use

1st Quarter - FY21



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

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

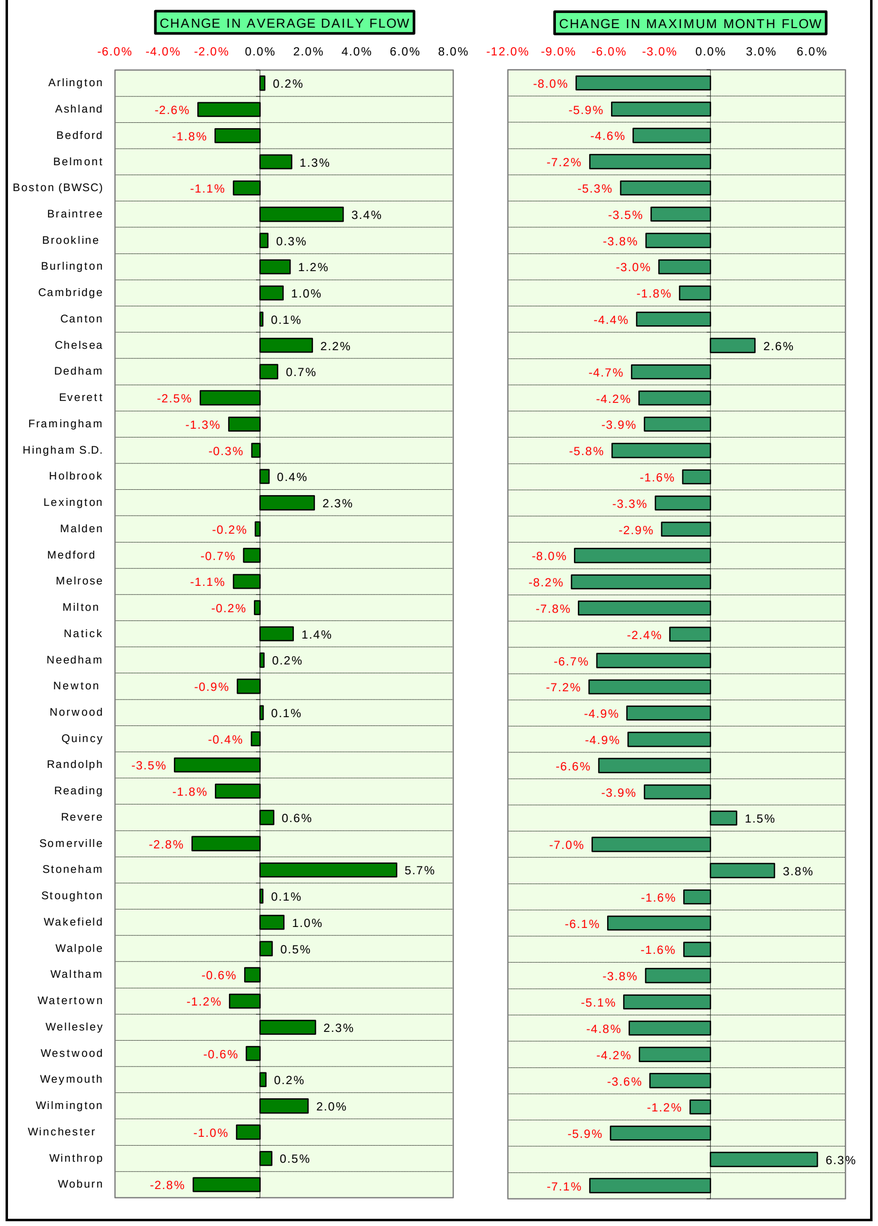
The September 2020 Community Water Use Report was recently distributed to communities served by the MWRA Metropolitan and Chicopee Valley waterworks systems. Each community's annual water use relative to the system as a whole is the primary factor in allocating the annual water rate revenue requirement to MWRA water communities. Calendar year 2020 water use will be used to allocate the FY2022 water utility rate revenue requirement.

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

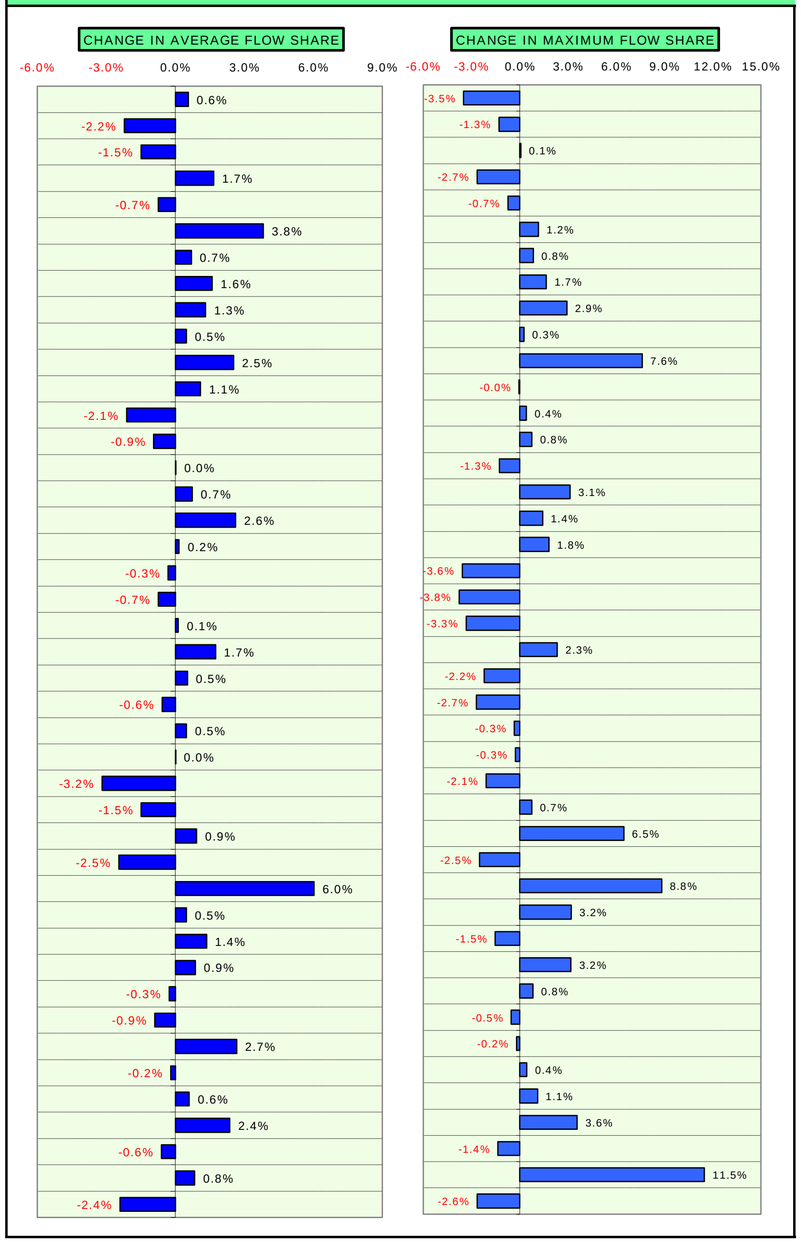
Community Wastewater Flows
1st Quarter - FY21

How Projected CY2020 Community Wastewater Flows Could Effect FY2022 Sewer Assessments [1,2,3]

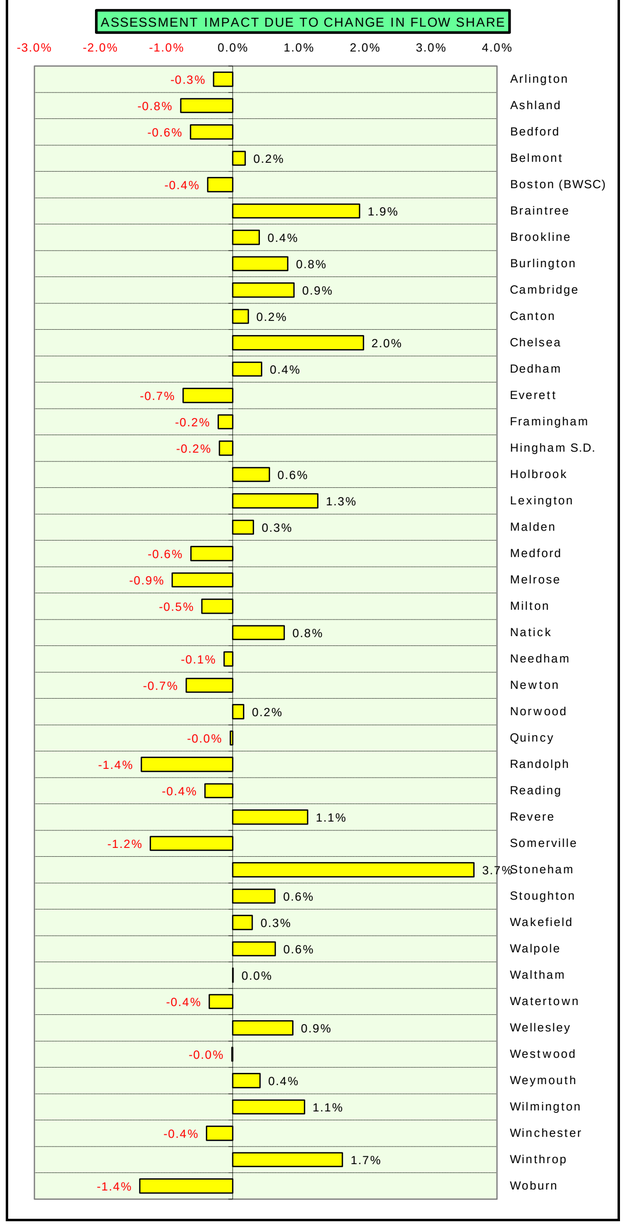
The flow components of FY2022 sewer assessments will be calculated using a 3-year average of CY2018 to CY2020 wastewater flows compared to FY2021 assessments that used a 3-year average of CY2017 to CY2019 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2018 to CY2020 flow share compared to CY2017 to CY2019 flow share, compared to all other communities in the system.



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



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

[2] Based on actual flows for 2017 to 2019, and January to March, and June to August 2020 (as of 10/15/20). April & May 2020 based on the average of three prior years, adjusted for 2020 water use. September-December 2020 based on the average of the three prior years.

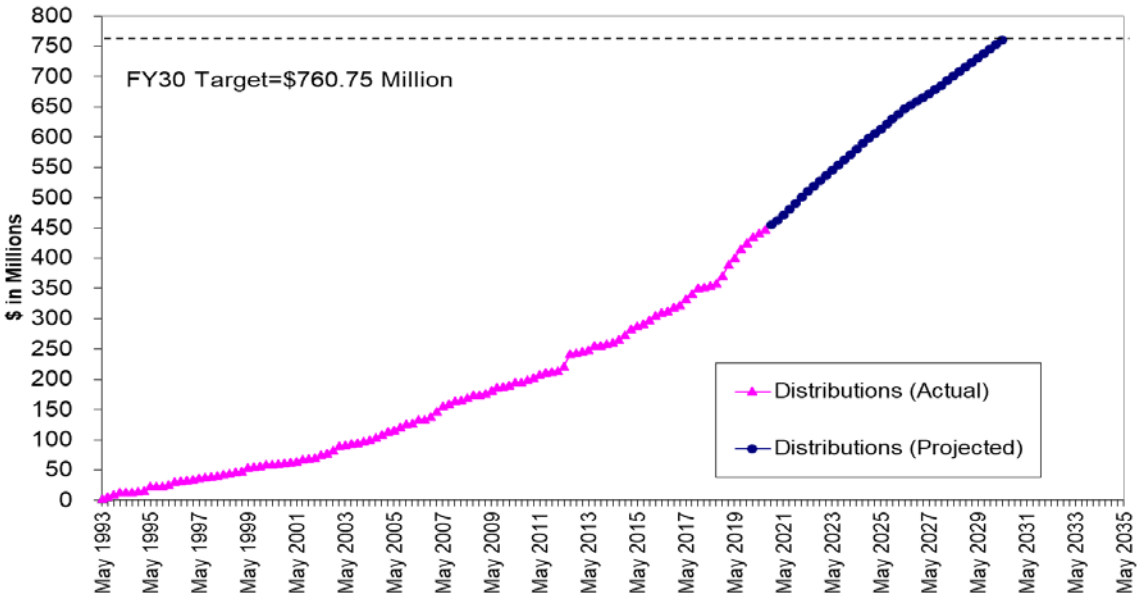
[3] Flow data is preliminary and subject to change pending additional MWRA and community review.

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

Infiltration/Inflow Local Financial Assistance Program

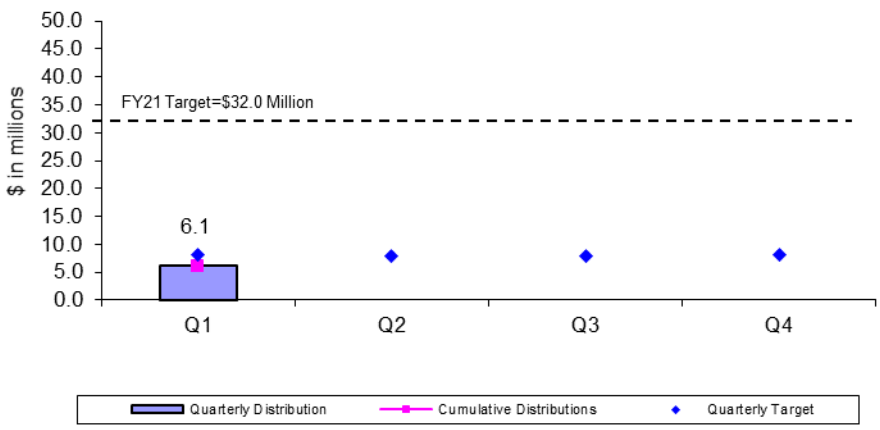
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides $760.75 million in grants and interest-free loans (average of about $20 million per year from FY93 through FY30) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Eligible project costs include: sewer rehabilitation construction, pipeline replacement, removal of public and private inflow sources, I/I reduction planning, engineering design, engineering services during construction, etc. I/I Local Financial Assistance Program funds are allocated to member sewer communities based on their percent share of MWRA's wholesale sewer charge. Phase 1-8 funds (total $300.75 million) were distributed as 45% grants and 55% loans with interest-free loans repaid to MWRA over a five-year period. Phase 9 through 12 funds (total $360 million) are distributed as 75% grants and 25% loans with interest-free loans repaid to MWRA over a ten-year period. Phase 13 provides an additional $100 million in loan-only funds.

I/I Local Financial Assistance Program Distribution FY93-FY30



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

FY21 Quarterly Distributions of Sewer Grant/Loans

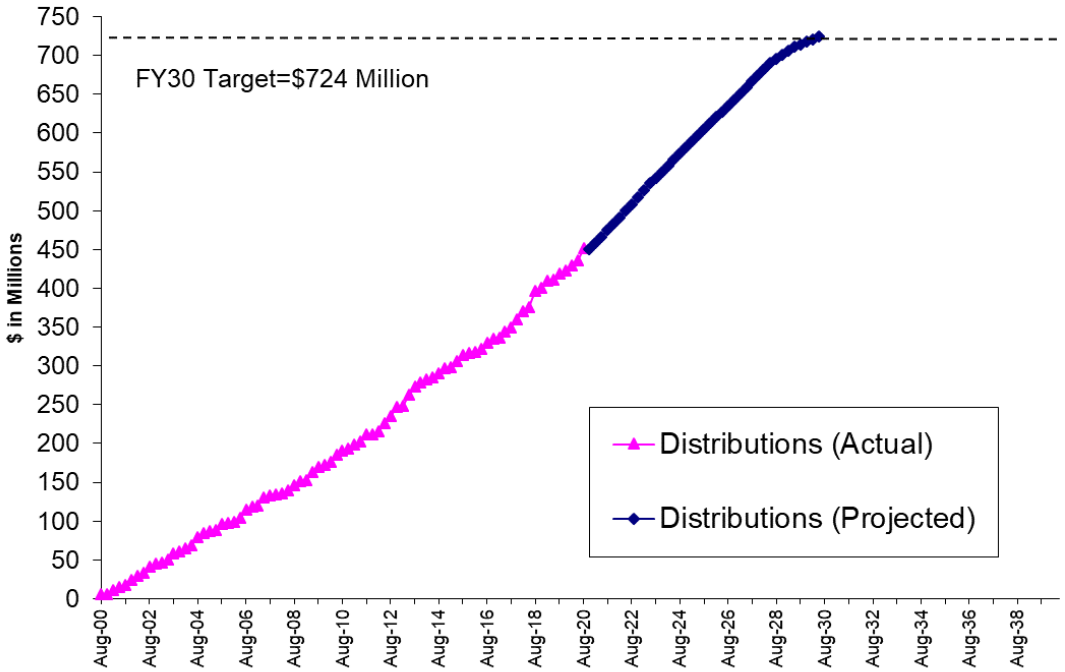


Community Support Programs
1st Quarter – FY21

Local Water System Assistance Program

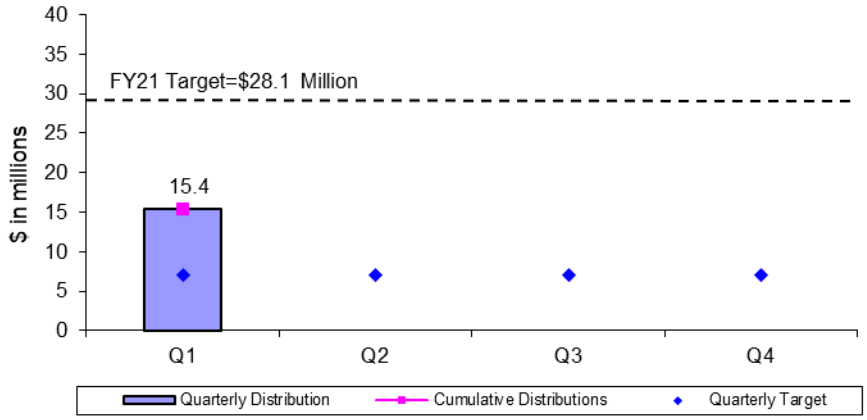
MWRA's Local Water System Assistance Programs (LWSAP) provides $724 million in interest-free loans (an average of about $24 million per year from FY01 through FY30) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. There have been 3 phases: Phase 1 at $222 Million, Phase 2 at $210 Million, and Phase 3 at $292 Million. Eligible project costs include: water main cleaning/lining, replacement of unlined water mains, lead service replacements, valve, hydrant, water meter, tank work, engineering design, engineering services during construction, etc. MWRA partially-supplied communities receive pro-rated funding allocations based on their percentage use of MWRA water. Interest-free loans are repaid to MWRA over a ten-year period beginning one year after distribution of the funds. The Phase 1 water loan program concluded in FY13 with $222 million in loan distributions. The Phase 2 - LWSAP continues distributions through FY23. The Phase 3 Water Loan Program is authorized for distributions FY18 through FY30.

Local Water System Assistance Program Distribution FY01-FY30



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

FY21 Quarterly Distributions of Water Loans



Community Support Programs

1st Quarter – FY21

Lead Service Line Replacement Loan Program

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

FY17 was the first year of the Lead Service Line Replacement Loan Program – MWRA made three Lead Loans.

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

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

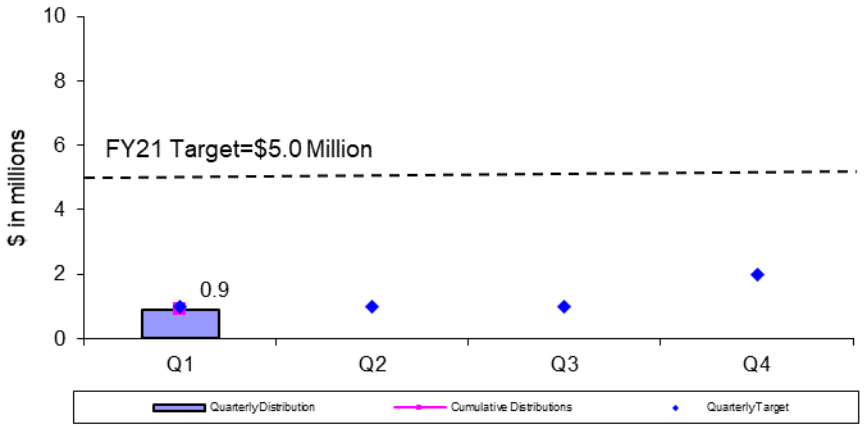
FY20 was the fourth year of the Lead Loan Program - MWRA made eight Lead Loans.

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

Summary of Lead Loans:

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

FY21 Quarterly Distributions of Lead Service Line Replacement Loans

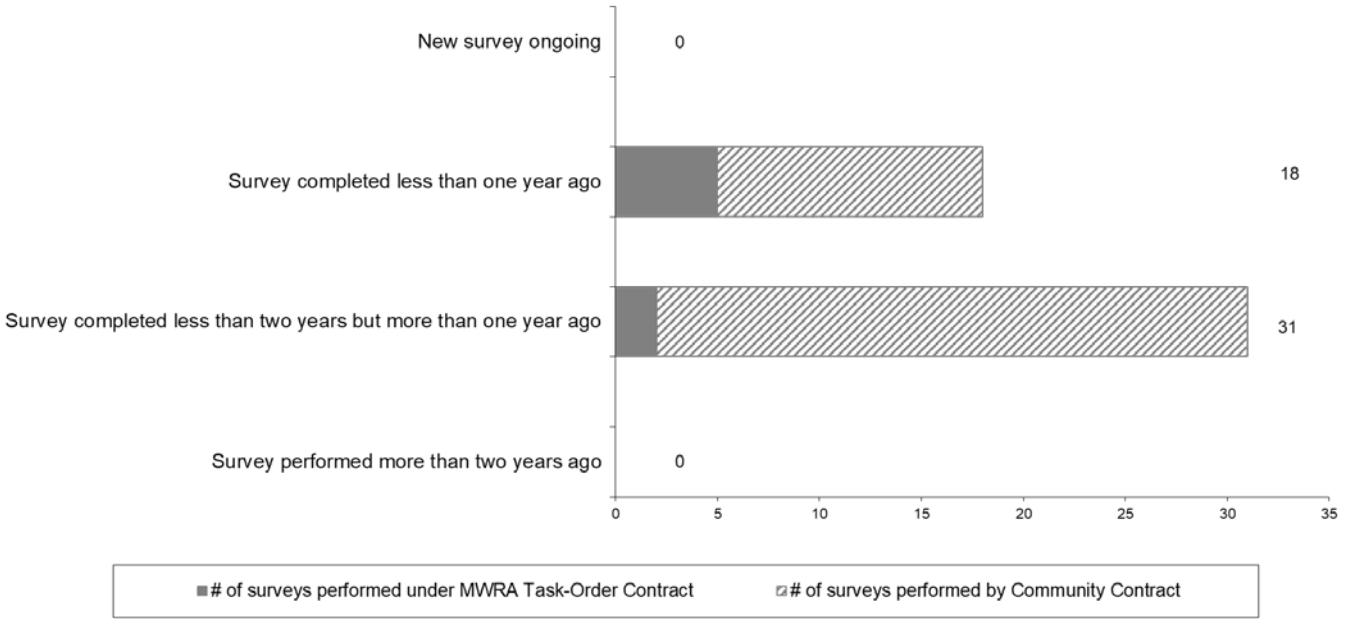


Community Support Programs

1st Quarter – FY21

Community Water System Leak Detection

To ensure member water communities identify and repair leaks in locally-owned distribution systems, MWRA developed leak detection regulations that went into effect in July 1991. Communities purchasing water from MWRA are required to complete a leak detection survey of their entire distribution system at least once every two years. Communities can accomplish the survey using their own contractors or municipal crews; or alternatively, using MWRA's task order leak detection contract. MWRA's task order contract provides leak detection services at a reasonable cost that has been competitively procured (3-year, low-bid contract) taking advantage of the large volume of work anticipated throughout the regional system. Leak detection services performed under the task order contract are paid for by MWRA and the costs are billed to the community the following year. During the 1st Quarter of FY21, all member water communities were in compliance with MWRA's Leak Detection Regulation.



Community Water Conservation Outreach

MWRA's Community Water Conservation Program helps to maintain average water demand below the regional water system's safe yield of 300 mgd. Current 5-year average water demand is approximately 200 mgd. The local Water Conservation Program includes distribution of water conservation education brochures (indoor - outdoor bill-stuffers) and low-flow water fixtures and related materials (shower heads, faucet aerators, toilet leak detection dye tabs, and instructions), all at no cost to member communities or individual customers. The Program's annual budget is $25,000 for printing and purchase of materials. Annual distribution targets and totals are provided in the table below. Distributions of water conservation materials are made based on requests from member communities and individual customers.

	Annual Target	Q1	Q2	Q3	Q4	Annual Total
Educational Brochures	100,000	30,614				30,614
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	408				408
Toilet Leak Detection Dye Tablets	_____	761				761

BUSINESS SERVICES

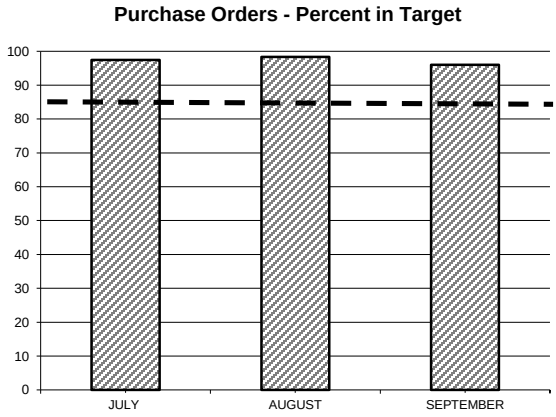
Procurement: Purchasing and Contracts

1st Quarter - FY21

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

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

Purchasing



	No.	TARGET	PERCENT IN TARGET
$0 - $500	769	3 DAYS	93.2%
$500 - $2K	712	7 DAYS	97.4%
$2K - $5K	492	10 DAYS	98.7%
$5K - $10K	40	25 DAYS	95.0%
$10K - $25K	47	30 DAYS	91.4%
$25K - $50K	6	60 DAYS	33.3%
Over $50K	27	90 DAYS	85.1%

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

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

Contracts, Change Orders and Amendments

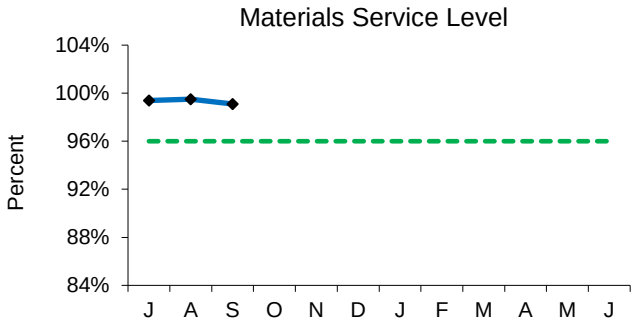
Procurement processed ten contracts with a value of $20,193,024 and five amendments with a value of $1,570,325. Twenty nine change orders were executed during the period. The dollar value of all non-credit change orders during Q1 FY21 was $747,206 and the value of credit change orders was ($399,163).

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

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

Materials Management

1st Quarter - FY21



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

Inventory Value - All Sites

Inventory goals focus on:

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

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

Items added to inventory this quarter include:

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

Property Pass Program:

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

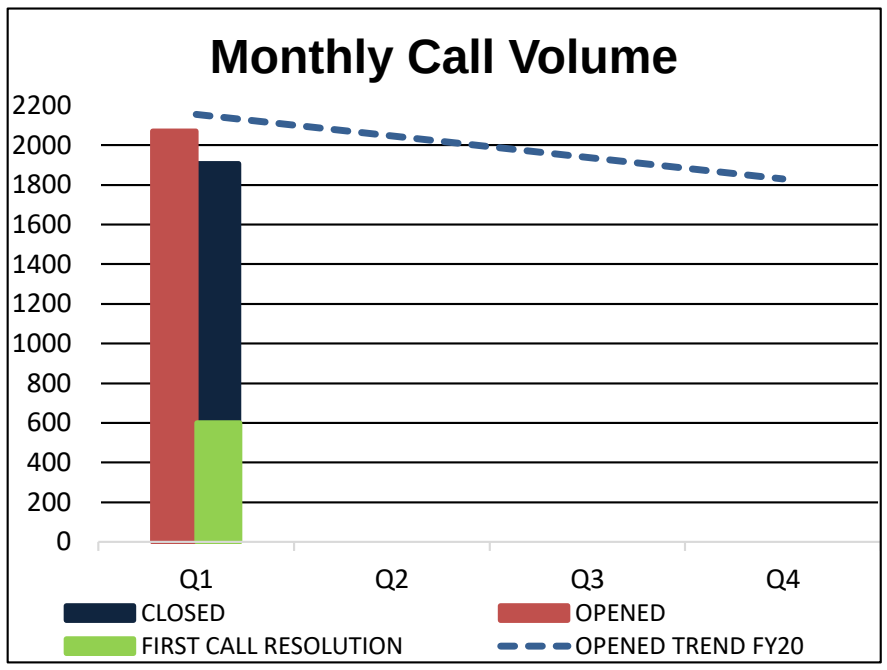
Items	Base Value July-20	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	8,818,459	8,936,746	118,287
Spare Parts Inventory Value	8,797,946	9,162,137	364,191
Total Inventory Value	17,616,405	18,098,883	482,478

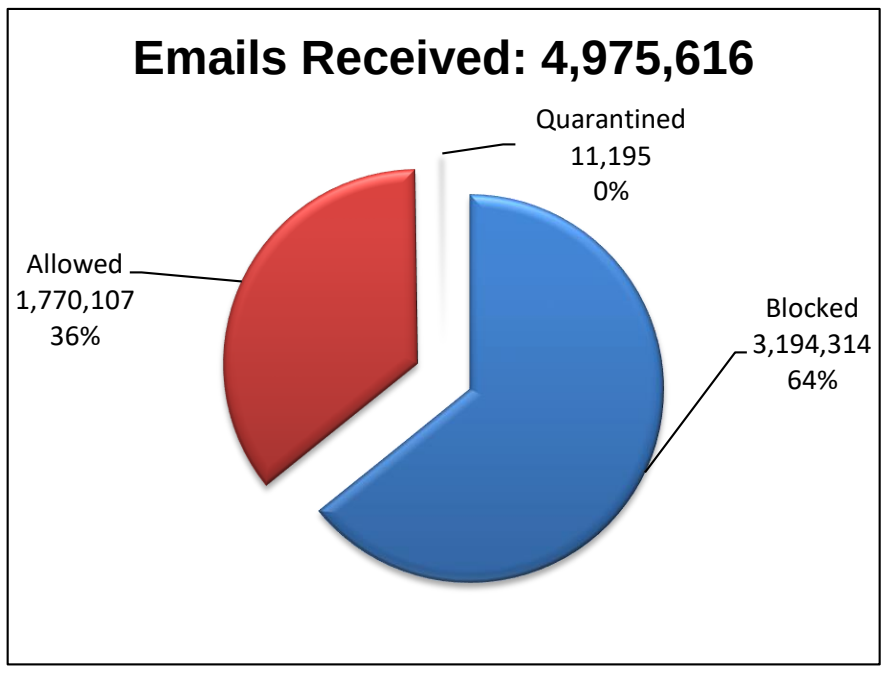
Note: New adds are items added at an inventory location for the first time for the purpose of servicing a group/department to meet their business needs/objectives.

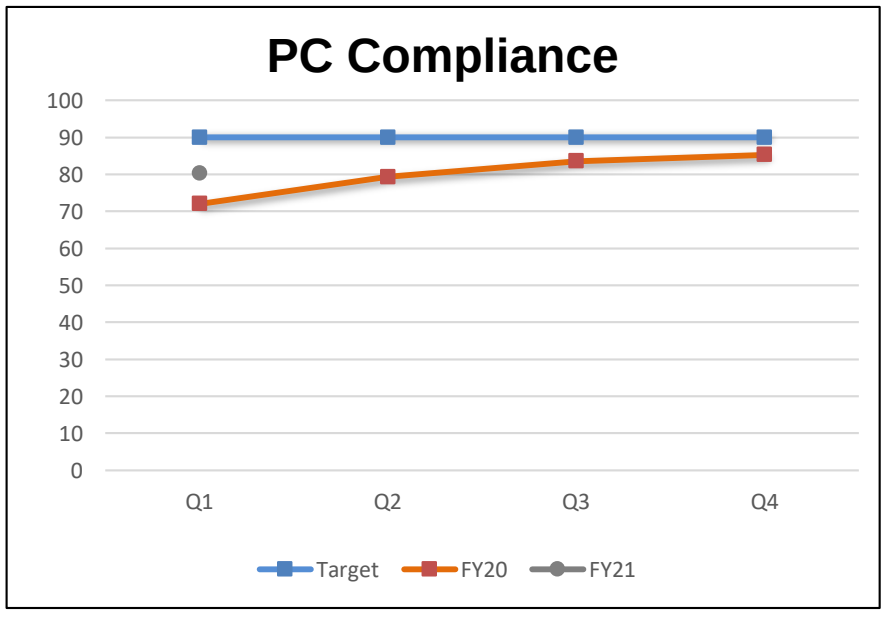
MIS Program

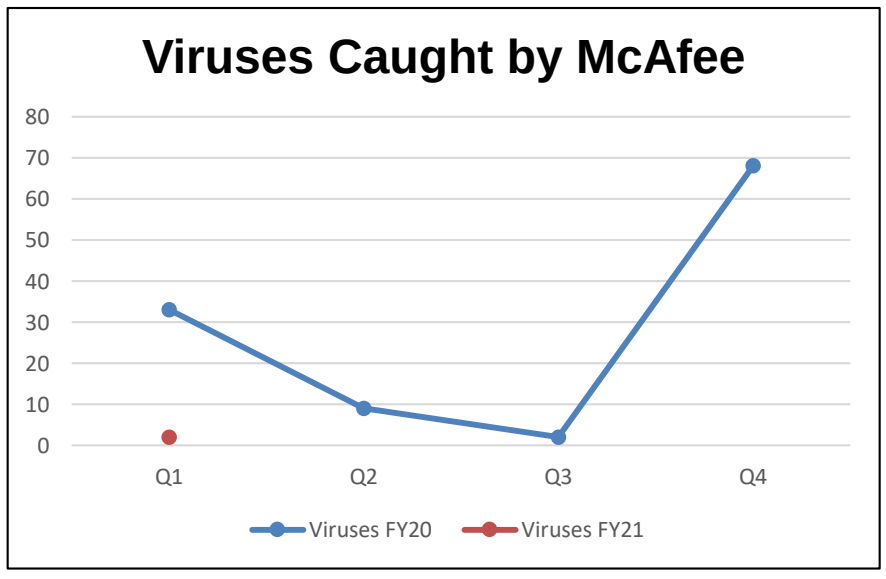
First Quarter – FY21

Numbers & Statistics









Project Updates

Infrastructure & Security

Telework: Continued to support a diversely located workforce.

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

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

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

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

Chelsea Environmental Controls Monitoring System: Installation complete.

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

Maximo & Lawson

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

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

Other Software & Custom Applications

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

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

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

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

Library, Record Center, & Training

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

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

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

Legal Matters
1st Quarter FY 2021

PROJECT ASSISTANCE

Real Estate, Contract, Environmental and Other Support:

- **8(m) Permits**: Reviewed seventy-three (73) 8(m) permits. Reviewed Newton Public Access 8(m) for a portion of Sudbury Aqueduct.

- **Sewer Connections**: Reviewed and finalized Direct Connect Permit 20-01-183DC for 466 River Street, Boston.

- **Real Property:** Reviewed final draft, readied document for execution and coordinated return to 23 & 27 Production Road, LLC of MWRA's executed lease agreement for its new records center building located at 153 Production Road, Walpole, MA 02081. Confirmed with developer's attorney for the proposed Montvale project in Woburn, no further pursuit of release of hammerhead sewer easements as the developer seeks to relocate its buildings and avoid conflict with existing MWRA sewer easements. Recorded extension permit for Order of Conditions 141-0509 for Southern Extra High Water Pipeline Section 111 - MWRA Contract 7505. Drafted document for the release of certain easements burdening MWRA's Spot Pond covered storage parcel of property in Stoneham and prepared document for MWRA's release of easements burdening an adjacent parcel of land owned by Alta Langwood, LLC. Reviewed proposed land acquisitions for MWRA Contract 7540/7541 – Water Sections 57 & 50 Rehabilitation and Sewer Sections 19/20/21 Rehabilitation – Medford, MA. Drafted legislation relative to the release of an access easement by MWRA at 777 Dedham Street in Canton. Reviewed MWRA's property rights for its Wachusett Aqueduct near Bartlett Street in Northborough and MWRA's property rights related to a water main on a pipe bridge, which runs along the side of the Walnut Hill Bridge in Somerville.

- **Environmental**: Reviewed and advised on community solar agreement relative to Deer Island Wastewater Treatment Plant; reviewed and advised on draft DITP NPDES permit correspondence relative to combined sewer overflow; reviewed draft 2019 Outfall Monitoring Report; reviewed an Activity and Use Limitation Notice related to Cottage Farm CSO facility parcel of land; and reviewed TRAC municipal permit terms.

- **Legislation**: Reviewed House Bill 1732 regarding the transfer of parcel of land in Chelsea from DCAMM to the City of Chelsea with respect to MWRA's existing water and sewer property interests and infrastructure in the parcel.

- **Wireless Agreements**: Reviewed wireless cell permit agreement with New Cingular Wireless for the use of MWRA Fells Reservoir Tower in Stoneham, MA.

- **Miscellaneous:** Reviewed and advised on orders and guidance related to COVID-19 pandemic.

- **Public Records Requests:** During the first quarter of FY 2021, MWRA received and responded to one hundred forty five (145) public records requests.

LABOR, EMPLOYMENT AND ADMINISTRATIVE

New Matters

Five demands for arbitration were filed.

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

Matters Concluded

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

LITIGATION/CLAIMS

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

Significant Developments

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

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

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

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

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

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

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

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

Closed Cases: Bennett v. MWRA, C.A. No. 1984-CV-02670.
This matter was reported closed in June. A Stipulation of Dismissal was filed with the court on July 23, 2020.

Closed Claims: There are no closed claims to report.

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

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

SUMMARY OF PENDING LITIGATION MATTERS

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

TRAC/MISC.

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

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

Stipulation of Dismissal No Joint Stipulation of Dismissals filed.

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

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

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

INTERNAL AUDIT AND CONTRACT AUDIT ACTIVITIES
1st Quarter FY21

Highlights

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

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

Status of Recommendations

During FY21, five recommendations were closed.

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

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

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

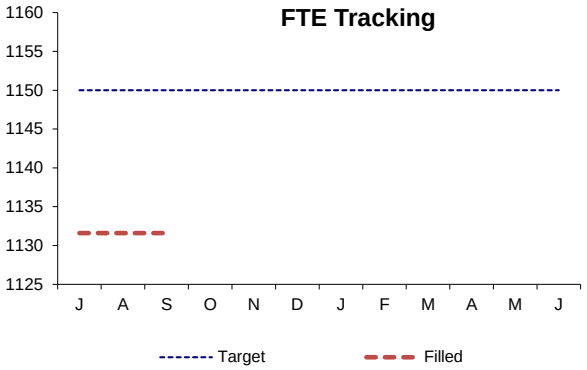
Cost Savings

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

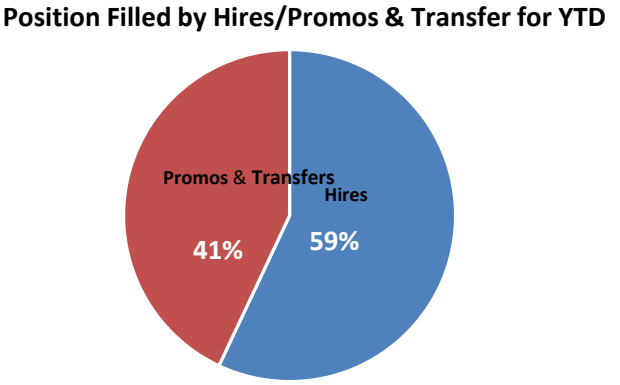
Cost Savings	FY17	FY18	FY19	FY20	FY21 Q1	TOTALS
Consultants	$272,431	$118,782	$262,384	$643,845	$167,303	$1,464,745
Contractors & Vendors	$3,037,712	$1,323,156	$3,152,884	$2,097,729	$757,261	$10,368,742
Internal Audits	$224,178	$204,202	$210,063	$212,517	$54,287	$905,247
Total	**$3,534,321**	**$1,646,140**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

OTHER MANAGEMENT

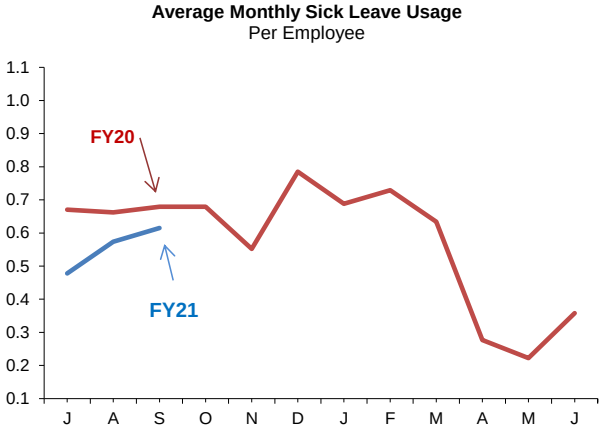
Workforce Management
1st Quarter - FY21



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



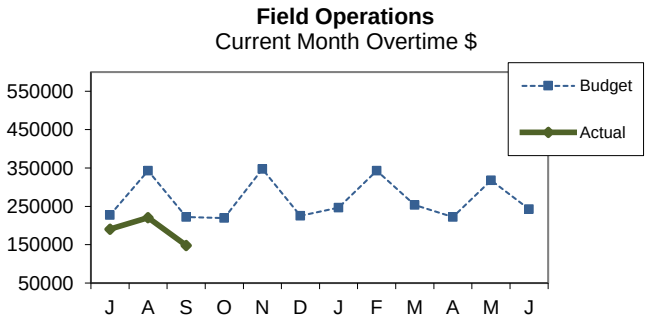
	Pr/Trns	Hires	Total
FY19	112 (60%)	76 (40%)	188
FY20	84 (59%)	58 (41%)	142
FY21	14 (41%)	20 (59%)	34



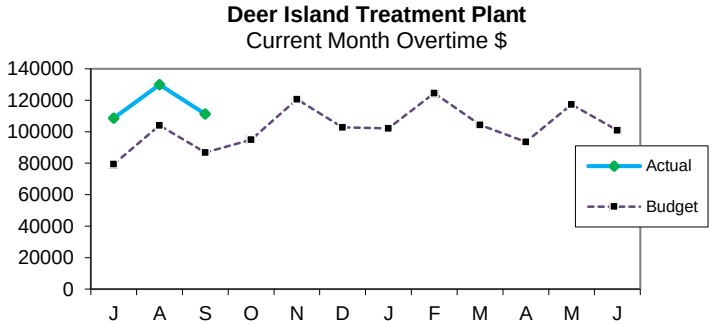
	Number of Employees	YTD (usage to date)	Annualized Total	Annual FMLA %	FY20
Admin	136	1.02	4.06	21.3%	6.48
Aff. Action	6	1.10	4.40	0.0%	6.42
Executive	4	0.05	0.19	0.0%	1.81
Finance	33	0.83	3.30	0.0%	4.09
Int. Audit	6	0.18	0.71	0.0%	5.08
Law	13	2.02	8.08	3.8%	6.71
OEP	4	0.00	0.00	0.0%	1.00
Operations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

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

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



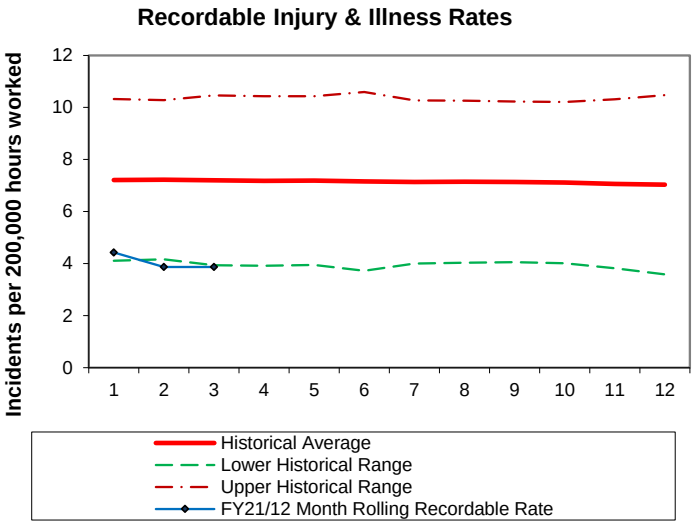
Total Overtime for Field Operations for the first quarter of FY21 was $559k which is ($233k) under budget. Emergency overtime was $250k, which is ($150k) under budget. Rain events totaled $208k and Emergency Maintenance was $29k. Coverage overtime was $190k which is $5k over budget, reflecting the month's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

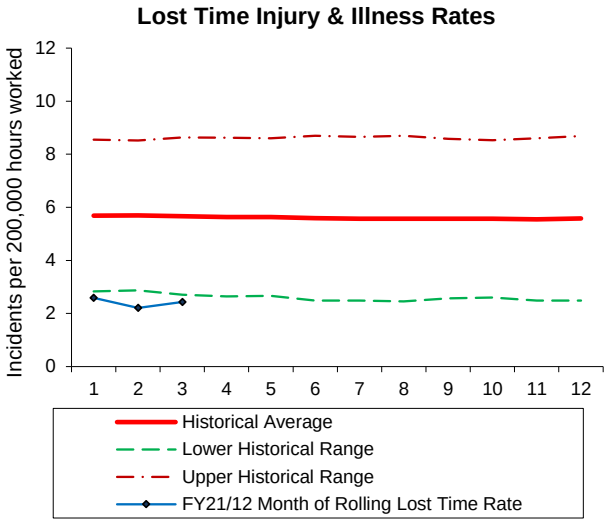


Deer Island's total overtime expenditure first quarter was $350K, which was $80K or 29.5% over budget. In the first quarter, Deer Island experienced higher than anticipated shift coverage of $70K and planned/unplanned overtime of $13K. This is offset by lower storm coverage of ($3k).

Workplace Safety

1st Quarter - FY21





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

2 "Lost-time" incidents, a subset of the recordable incidents, are only those incidents resulting in any days away from work, days of restricted work activity or both - beyond the first day of injury or onset of illness. Each month this rate is calculated using the previous 12 months of injury data.

3 The "Historical Average" is computed using the actual MWRA monthly incident rates for FY99 through FY21. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively.

4 With Changes in state law, in February 1, 2019, MWRA began record keeping and reporting according to Federal OSHA standards for injury and illness record keeping. Strictly adhering to the federal OSHA reporting regulation has caused an increase in recorded injuries and illnesses. This increase is causing both the Recordable injury and illness Rate and the Lost TIme Injury and Illness rate to trend higher than in past years but does not necessarily mean there is an increase in injuries or illnesses. OSHA injuries and illnesses, and lost time are recorded differently than the Massachusetts Workers' Compensation standards and could result in an increase in the OSHA rate while the Workers' Compensation claims are decreasing. Over time, the rise on the charts should stabilize as new data replaces the older data..

WORKERS COMPENSATION HIGHLIGHTS

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

COMMENTS:

Regular Duty Returns

JULY 1 Employees returned to full duty/no restrictions

AUG 2 Employees returned to full duty/no restrictions

SEPT 1 Employees returned to full duty/no restrictions

Light Duty Returns

JULY N/A

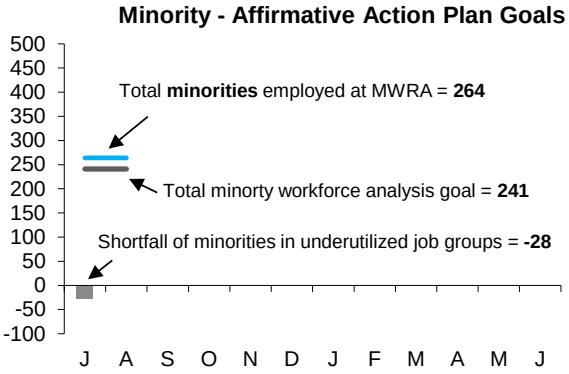
AUG N/A

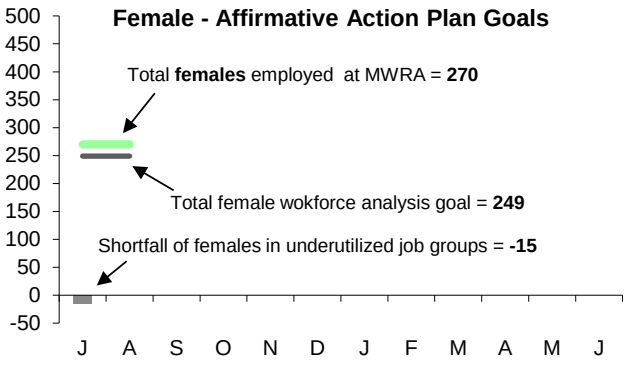
SEPT N/A

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

MWRA Job Group Representation

1st Quarter - FY21





Highlights:

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

Underutilized Job Groups - Workforce Representation

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

AACU Candidate Referrals for Underutilized Positions

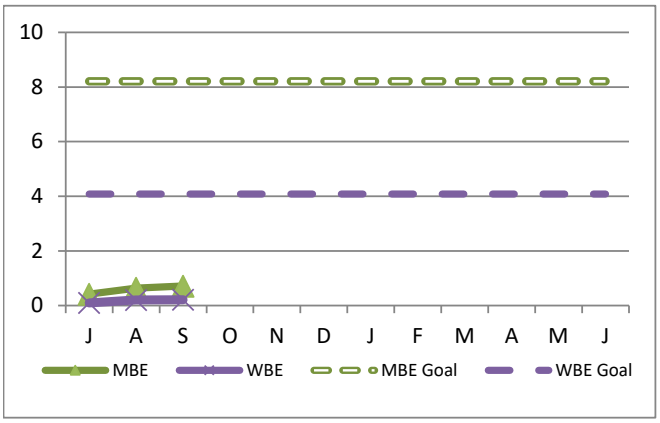
Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions /Transfers	AACU Ref. External	Position Status
Administrative B	Superintendent, Clinton	1	Ext.	1	0	Promo = WM
Craft A	Unit Supervisor	1	Int.	1	0	Promo = WM
Craft B	Facilities Specialist	2	Int/Ext	1	0	NH = WM Promo = WM
Craft B	Electrician	2	Ext.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

MBE/WBE Expenditures
1st Quarter– FY21

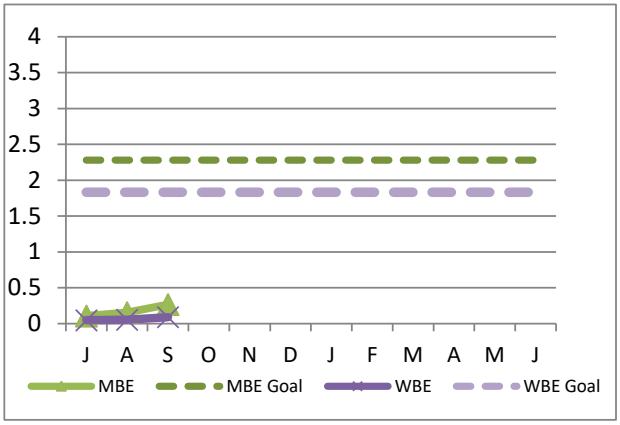
MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. The goals for FY21 are based on 85% of the total construction and 75% of the total professional projected spending for the year. Certain projects have been excluded from the goals as they have no MBE/WBE spending goals.

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

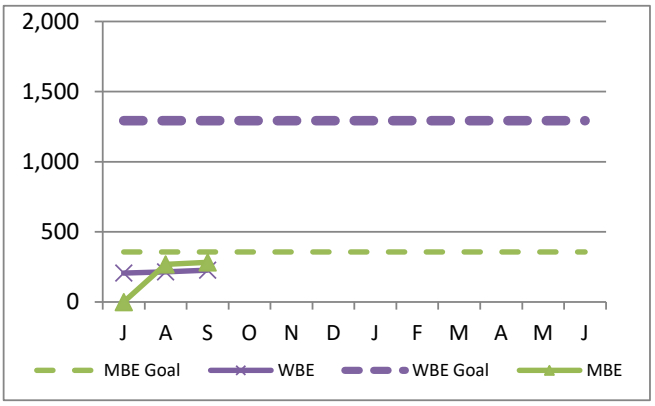
Construction



Professional Services



Goods/Services



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

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

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

MWRA FY21 CEB Expenses
1st Quarter – FY21

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

Expenses –

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

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

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

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

Revenue and Income –

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

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

Cost of Debt

1st Quarter– FY21

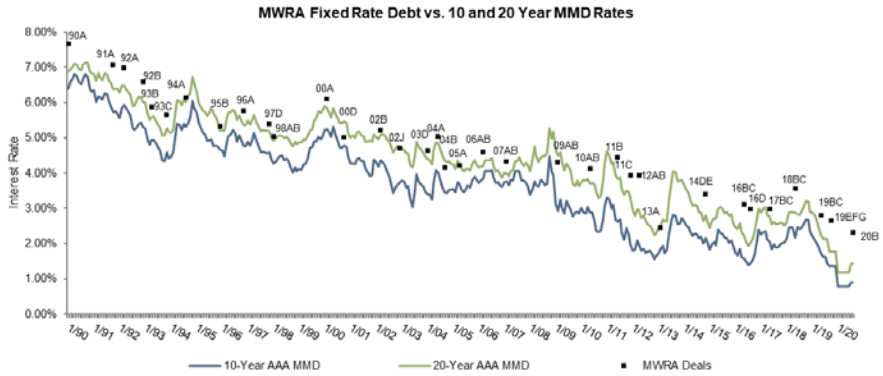
MWRA borrowing costs are a function of the fixed and variable tax exempt interest rate environment, the level of MWRA's variable interest rate exposure and the perceived creditworthiness of MWRA. Each of these factors has contributed to decreased MWRA borrowing costs since 1990.

Average Cost of MWRA Debt FYTD

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

Most Recent Senior Fixed Debt Issue
August 2020

2020 Series B ($160.0 million)	2.33 %

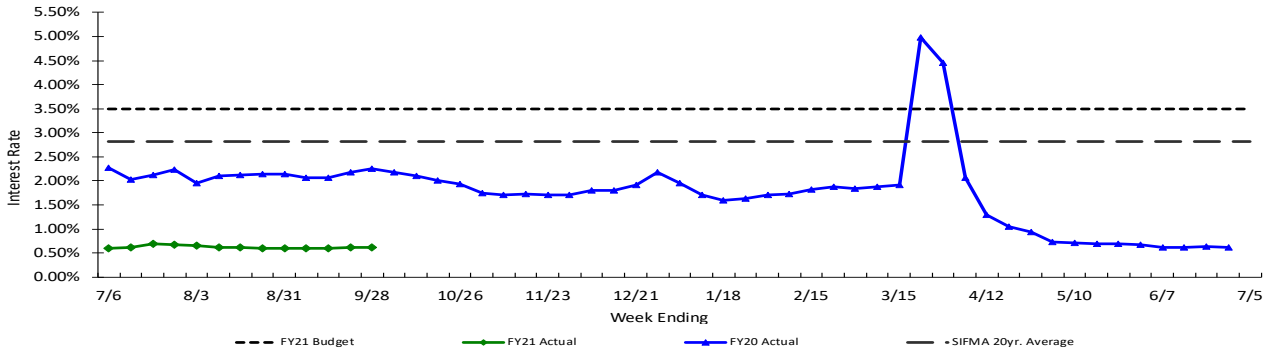


Bond Deal	1995B	1996A	1997D	1998AB	2000A	2000D	2002B	2002J	2003D	2004A	2004B	2005A	2006AB	2007AB
Rate	5.34%	5.78%	5.40%	5.04%	6.11%	5.03%	5.23%	4.71%	4.64%	5.05%	4.17%	4.22%	4.61%	4.34%
Avg Life	20.5 yrs	19.5 yrs	21.6 yrs	24.4 yrs	26.3 yrs	9.8 yrs	19.9 yrs	19.6 yrs	18.4 yrs	19.6 yrs	13.5 yrs	18.4 yrs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

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

Weekly Average Variable Interest Rates vs. Budget

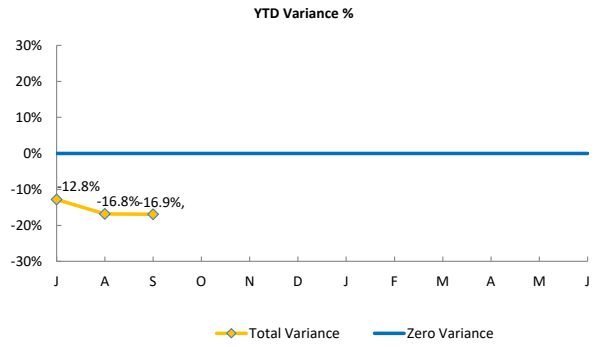
MWRA currently has ten variable rate debt issues with $613.9 million outstanding, excluding commercial paper. Of the ten outstanding series, four have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have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



Investment Income

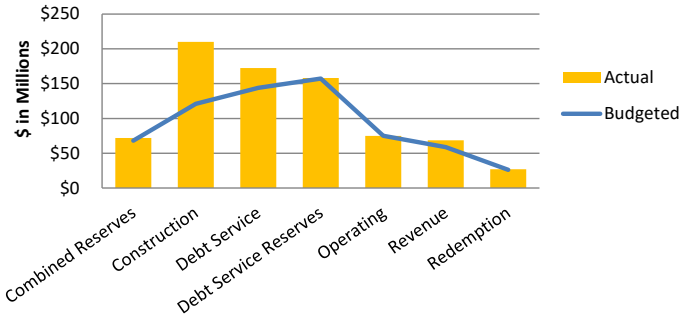
1st Quarter– FY21

Year To Date



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

YTD Average Balances Budgeted vs. Actual

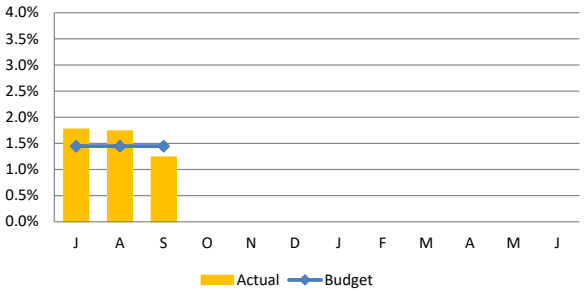


YTD Average Interest Rate Budgeted vs. Actual

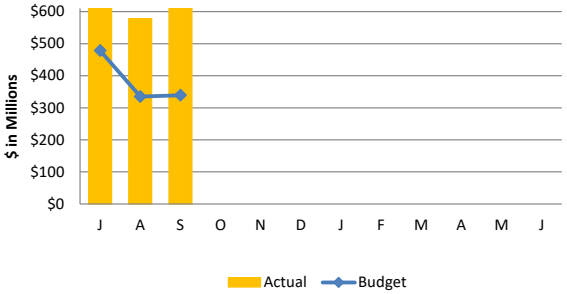
Monthly

Short -Term Interest Rates

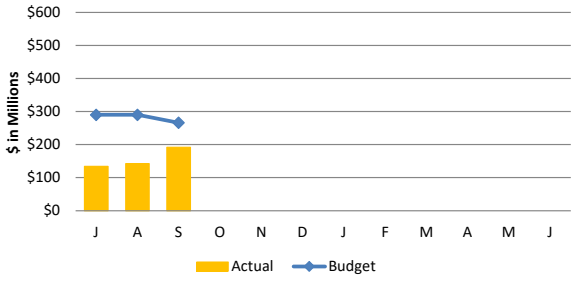
Long -Term Interest Rates



Short-Term Average Balances



Long-Term Average Balances



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Delegated Authority Report – October 2020

COMMITTEE: Administration, Finance & Audit

X INFORMATION
___ VOTE

Michele S. Gillen
Director, Administration

Linda Grasso, Admin. Systems Coordinator
Barbara Aylward, Administrator A & F
Preparer/Title

Douglas J. Rice
Director of Procurement

RECOMMENDATION:

For information only. Attached is a listing of actions taken by the Executive Director under delegated authority for the period October 1 – 31, 2020.

This report is broken down into three sections:

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

DISCUSSION:

The Board of Directors' Management Policies and Procedures, as amended by the Board's vote on February 21, 2018, delegate authority to the Executive Director to approve the following:

Construction Contract Awards:

Up to $1 million if the award is to the lowest bidder.

Change Orders:

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

Professional Service Contract Awards:

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

Non-Professional Service Contract Awards:

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

Purchase or Lease of Equipment, Materials or Supplies:

Up to $1 million if the award is to the lowest bidder.

Amendments:

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

Amendments to the Position Control Register:

Amendments which result only in a change in cost center.

BUDGET/FISCAL IMPACT:

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

CONSTRUCTION/PROFESSIONAL SERVICES DELEGATED AUTHORITY ITEMS OCTOBER 1 - 31, 2020

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMEND/CO	COMPANY	FINANCIAL IMPACT
C-1.	10/07/20	**QUABBIN PARK CEMETERY BUILDINGS DEMOLITION AND HAZARDOUS MATERIALS ABATEMENT** AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE QUABBIN PARK CEMETERY BUILDINGS DEMOLITION AND HAZARDOUS MATERIALS ABATEMENT FOR A TERM OF 270 CALENDAR DAYS.	W329	AWARD	ASSOCIATED BUILDING WRECKERS, INC.	$104,633.00

PURCHASING DELEGATED AUTHORITY ITEMS OCTOBER 1 - 31, 2020

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	COMPANY	FINANCIAL IMPACT
P-1.	10/19/20	**SUPPLY AND DELIVERY OF SUB-BASE GRAVEL BORROW (STATE MIX)** AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF SUB-BASE GRAVEL BORROW (STATE MIX).	WRA-4893Q	MARIO SUSI AND SON, INC.	$25,470.00
P-2	10/19/20	**PURCHASE OF ONE HEWLETT PACKARD TECH VENDING MACHINE AND SMART LOCKER** AWARD OF A PURCHASE ORDER UNDER STATE CONTRACT ITC47 TO THE LOWEST RESPONSIVE BIDDER FOR ONE HEWLETT PACKARD TECH VENDING MACHINE AND SMART LOCKER.	4894Q	HEWLETT PACKARD, INC.	$71,653.63
P-3	10/19/20	**SUPPLY AND DELIVERY OF FERRIC CHLORIDE** AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF FERRIC CHLORIDE TO THE CLINTON WASTEWATER TREATMENT PLANT.	WRA-4883	KEMIRA WATER SOLUTIONS, INC.	$88,830.00
P-4	10/19/20	**PURCHASE FOR 325 SHELVING UNITS** AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR 325 SHELVING UNITS FOR THE NEW RECORDS CENTER	WRA-4886	SDG STORAGE PRODUCTS, INC.	$102,290.50
P-5	10/21/20	**SUPPLY AND DELIVERY OF DRY POLYMER** AWARD OF A THREE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF DRY POLYMER TO THE CLINTON WASTEWATER TREATMENT PLANT.	WRA-4884Q	ATLANTIC COAST POLYMER, INC.	$25,900.00
P-6	10/26/20	**PURCHASE OF TWO FLYGT PUMPS** AWARD OF A SOLE SOURCE PURCHASE ORDER FOR TWO FLYGT PUMPS FOR THE BOS 019 COMBINED SEWER OVERFLOW FACILITY.		XYLEM WATER SOLUTIONS USA, INC.	$30,517.76
P-7	10/26/20	**MAINTENANCE AND SUPPORT OF SAP BUSIINESSOBJECTS' BUSINESS INTELLIGENCE SUITE** AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR MAINTENANCE AND SUPPORT OF THE SYSTEMS, APPLICATIONS AND PRODUCTS OF THE BUSINESSOBJECTS' BUSINESS INTELLIGENCE SUITE.	WRA-4892Q	CARAHSOFT TECHNOLOGY CORPORATION	$45,213.89
P-8	10/26/20	**REBUILD FOUR HYDRAULIC CYLINDERS** AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER TO REBUILD FOUR HYDRAULIC CYLINDERS AT THE WACHUSETT RESERVOIR CREST GATE.	WRA-4873	R. ZOPPO CORPORATION	$72,100.00
P-9	10/26/20	**TEMPORARY FLOW MONITORING AND DATA COLLECTION** AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR TEMPORARY FLOW MONITORING AND DATA COLLECTION AT VARIOUS MWRA WASTEWATER SITES.	WRA-4895	EST ASSOCIATES, INC.	$157,100.00
P-10	10/30/20	**PURCHASE OF TWO REPLACEMENT INTAKE AIR FANS** AWARD OF A PURCHASE ORDER FOR TWO REPLACEMENT INTAKE AIR FANS FOR THE DEER ISLAND HYDRO FACILITY.	WRA-4888Q	HARTZELL AIR MOVEMENT, INC.	$45,586.00

STAFF SUMMARY

VII AF&A A.4
11/18/20

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: FY21 Financial Update and Summary Through October 2020

COMMITTEE: Administration, Finance & Audit

_X_ INFORMATION
___ VOTE

Michael J. Cole, Budget Director
James J. Coyne, Budget Manager
Preparer/Title

Thomas J. Durkin
Director, Finance

RECOMMENDATION:

For information only. This staff summary provides the financial results and variance highlights for Fiscal Year 2021 through October 2020, comparing actual spending to the budget.

DISCUSSION:

The total Year-to-Date variance for the FY21 CEB is $8.4 million, due to lower direct expenses of $4.9 million, indirect expenses of $1.0 million, and debt service costs of $2.8 million, and offset by lower revenue of $0.3 million.

FY21 Current Expense Budget

The CEB expense variances through October 2020 by major budget category were:

- Lower Direct Expenses of $4.9 million or 6.1% under budget. Spending was lower for Wages & Salaries, Other Services, Professional Services, Utilities, Worker's Compensation, Fringe Benefits, Overtime, Chemicals, Maintenance, and Training and Meetings. Spending was higher than budget for Other Materials.

- Lower Indirect Expenses of $1.0 million or 4.6% under budget due primarily to lower Pension expense and Watershed reimbursements, partially offset by HEEC capacity and service charge.

FY21 Budget and FY21 Actual Variance by Expenditure Category
(in millions)

	FY21 Budget YTD	FY21 Actual YTD	$ Variance	% Variance
Direct Expenses	$79.8	$75.0	-$4.9	-6.1%
Indirect Expenses	$21.1	$20.1	-$1.0	-4.6%
Capital Financing	$145.1	$142.3	-$2.8	-1.9%
Total	**$246.0**	**$237.4**	**-$8.6**	**-3.5%**

Totals may not add due to rounding

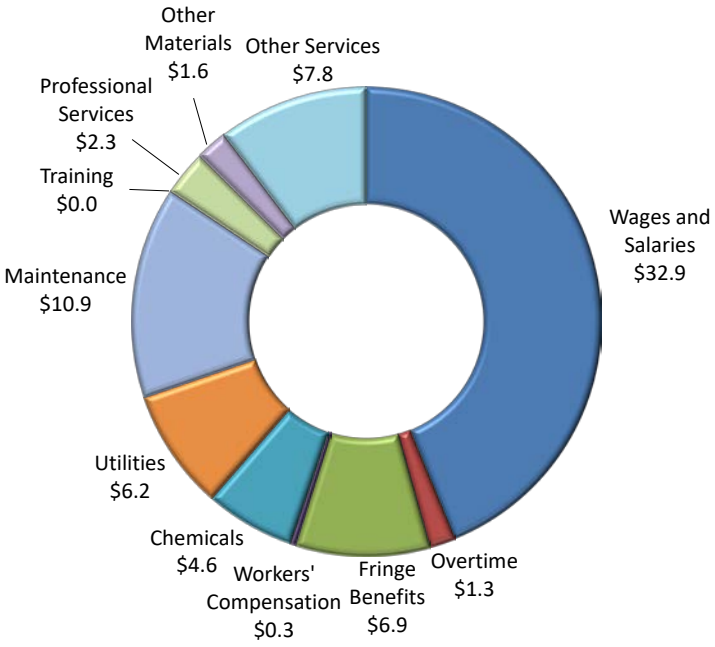
Total Revenues of $258.5 million were $251,000 or 0.1% under budget due to lower Investment Income, partially offset by Other User Charges.

Please refer to Attachment 1 for a more detailed comparison by line item of the budget variances for FY21.

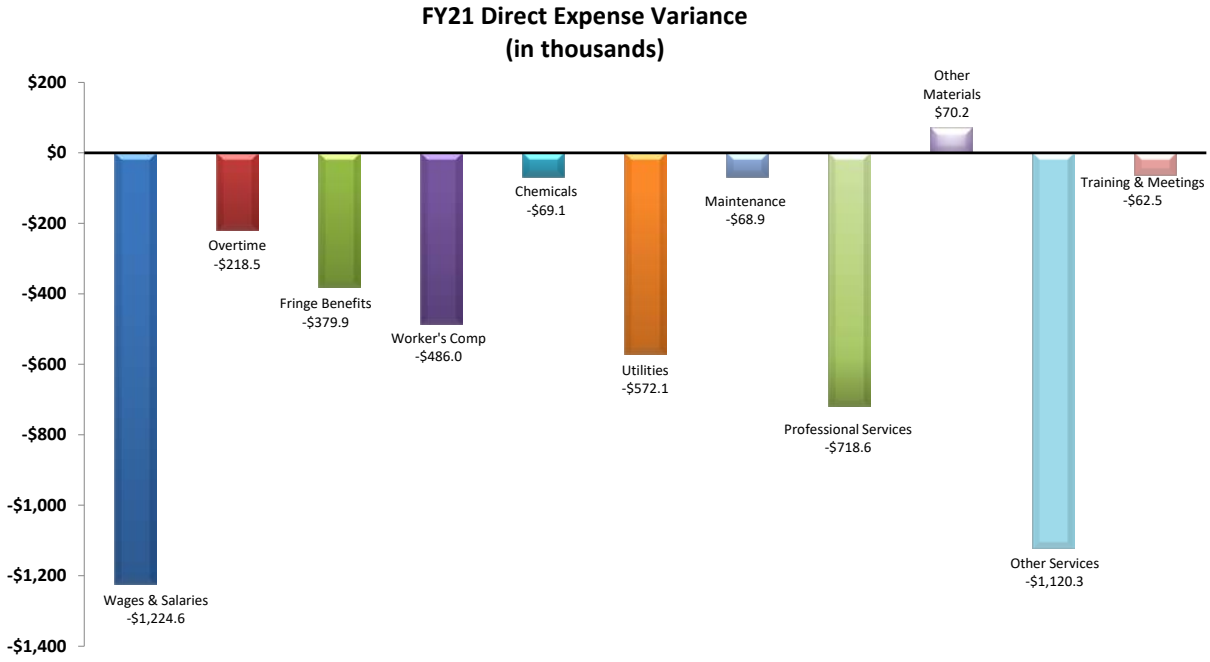
Direct Expenses

FY21 direct expenses through October totaled $75.0 million, which was $4.9 million or 6.1% less than budgeted.

FY21 Direct Expenses
(in millions)

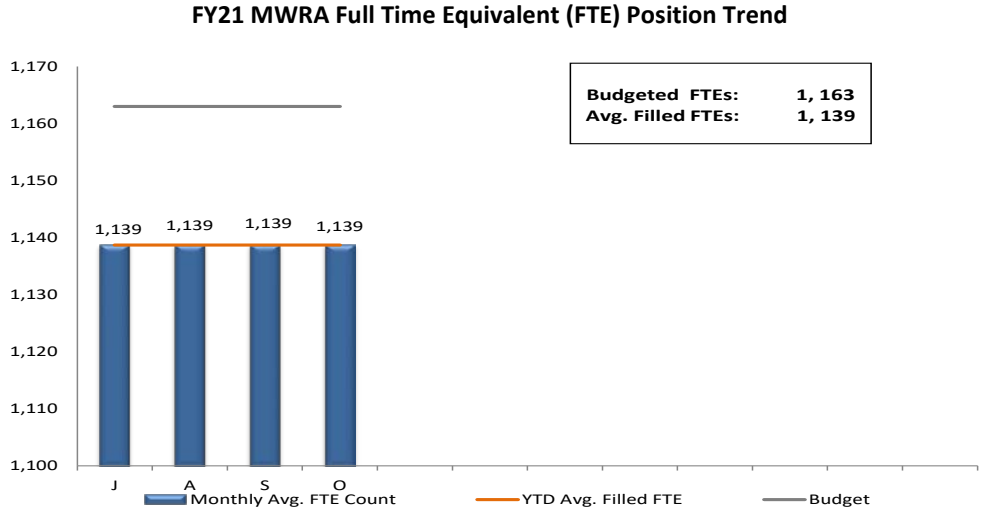


The budget variance is due to lower spending for Wages & Salaries, Other Services, Professional Services, Utilities, Worker's Compensation, Fringe Benefits, Overtime, Maintenance, Chemicals, and Training and Meetings, offset by greater than budgeted spending in Other Materials.



Wages and Salaries

Wages and Salaries are under budget by $1.2 million or 3.6%. Through October, there were 24 fewer average FTEs (1,139 versus 1,163 budget) or 2.1% and lower average salaries for new hires versus retirees. The timing of backfilling vacant positions also contributed to Regular Pay being under budget.



Other Services

Other Services were lower than budget by $1.1 million or 12.6%. The budget variance is due to lower than budgeted spending for Sludge Pelletization of $482,000 due to lower year-to-date quantities, Memberships/Dues/Subscriptions of $426,000 primarily in Operations, and Grit and Screening Removal of $109,000 due to lower quantities.

Professional Services

Professional Services were lower than budget by $0.7 million or 23.6%. The overall underspending is due to lower than budgeted spending in Computer Systems Consultant of $440,000 in MIS, Engineering of $289,000 primarily in Field Operations, Other Professional Services of $152,000 in Administration, Finance, and Law, and Legal Services of $95,000 in Law and Administration. This is partially offset by Lab and Testing Analysis of $324,000 in Operations due to the Biobot contract.

Utilities

Utilities were less than budget by $0.6 million or 8.4%. The budget variance is due to underspending in Electricity of $518,000 primarily at Deer Island ($509,000) driven primarily by power demand charges being less than budgeted based on flows, new pricing, and real time market prices for the non-block purchases under the Direct Energy contract. Diesel Fuel is underspent by $32,000 driven by Field Operations due to timing of deliveries.

Worker's Compensation

Worker's Compensation expenses were lower than budget by $0.5 million or 60.0%. The lower expenses were primarily due to favorable variances in compensation payments ($330,000), medical payments ($110,000), and administrative expenses ($46,000). This reflects fewer accidents and reduced severity of those accidents. Due to the uncertainties of when spending will happen, the budget is spread evenly throughout the year.

Fringe Benefits

Fringe Benefit spending was lower than budget by $0.4 million or 5.2%. This is primarily driven by lower Health Insurance costs of $383,000, due to fewer than budgeted participants in health insurance plans, increased contribution by external new hires vs. lower contribution rates of staff retiring, and the shift from family to individual plans that are less expensive.

Overtime

Overtime expenses were lower than budget by $0.2 million or 14.0% mainly in Metro Maintenance ($118,000), Water Operations & Maintenance ($58,000), Wastewater Operations ($49,000), Engineering & Construction ($42,000), and partially offset by higher spending for Deer Island ($115,000) due to shift coverage and unplanned maintenance.

Chemicals

Chemicals were lower than budget by $69,000 or 1.5%. Lower than budgeted spending on Polymer of $83,000 driven by Deer Island for less usage for centrifuge operations; Sodium Hypochlorite of $76,000 driven by Water Operations due to lower use and timing of deliveries; and Soda Ash of $71,000 driven by Water Operations due to timing of deliveries. This is offset by higher than budgeted spending on Ferric Chloride of $105,000 driven by Deer Island to keep the orthophosphate levels in the digesters at the desired target level and Hydrogen Peroxide of $52,000 driven by Deer Island due to higher H2S gas levels. DITP flows are 12.7% lower than the budget and Carroll Plant flows are 0.6% greater than budget through October. 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.

Maintenance

Maintenance was lower than budget by $69,000 or 0.6%, largely driven by the timing of projects. Maintenance Services were under budget by $137,000 or 1.8% driven by Building & Grounds Services ($497,000) and partially offset by higher spending for Computer Software Licenses ($290,000) and Plant and Machinery Services ($83,000). Maintenance Materials were over budget by ($0.1 million) or 2.1% driven by Plant and Machine Materials ($161,000) and Automotive Materials ($46,000) and partially offset by lower spending on HVAC Materials ($139,000).

Training & Meetings

Training & Meetings expenses were lower than budget by $63,000 or 67.9% driven by the timing of spending as well as conferences that were postponed or cancelled.

Other Materials

Other Materials were greater than budget by $70,000 or 4.5%, driven by greater than budgeted spending for Computer Hardware of $317,000 in MIS primarily due to timing and necessary purchases due to Covid-19, partially offset by $116,000 for Equipment/Furniture, $109,000 for Other Materials, and $88,000 for Vehicle Expenses primarily due to timing.

Indirect Expenses

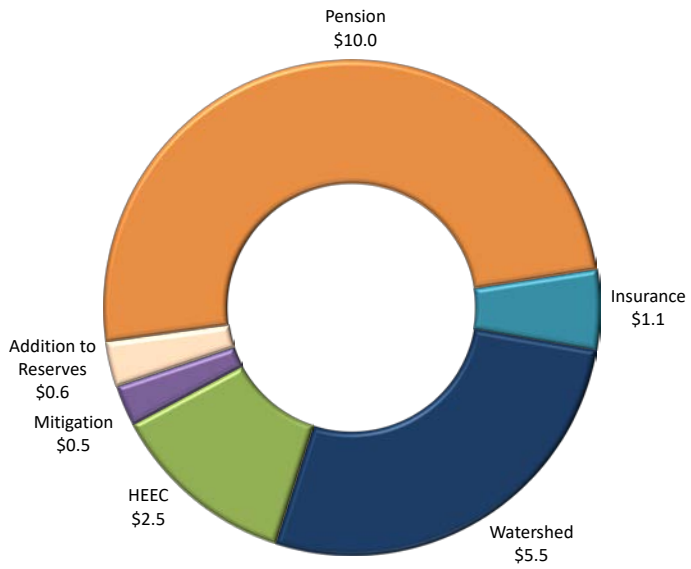
Indirect Expenses totaled $20.1 million, which is $1.0 million or 4.6% lower than budget. The variance is primarily driven by lower Pension expense ($1.0 million). After approval of the FY21 Current Expense Budget, the retirement system received a new Public Employee Retirement Administration Commission approved required contribution. The required contribution was reduced from $11.0 million to $10.0 million. Watershed costs are lower than budget by $113,000 due to lower costs associated with Maintenance, Equipment, Wages and Salaries, Professional Services, and Utilities, offset by a prior period adjustment.

FY21 Watershed Protection Variance

$ in millions	YTD Budget	YTD Actual	YTD $ Variance	YTD % Variance
Operating Expenses	6.0	4.9	-1.0	-17.4%
PILOT	0.0	0.0	0.0	0.0%
Subtotal	6.0	4.9	-1.0	-17.4%
Revenue offset	0.4	0.4	0.0	9.4%
Current Fiscal Year Net Total Budget	**5.6**	**4.5**	**-1.1**	**-19.2%**
DCR Balance Forward (FY20 4th quarter accrual true-up)	0.0	1.0	1.0	
Total Budget	**5.6**	**5.5**	**-0.1**	**-2.0%**

MWRA reimburses the Commonwealth of Massachusetts Department of Conservation (DCR) and Recreation - Division of Water Supply Protection – Office of Watershed Management for expenses. The reimbursements are presented for payment quarterly in arears. Accruals are being made monthly based on estimated expenses provided by DCR and trued-up quarterly based on the quarterly invoice. MWRA's budget is based on the annual Fiscal Year Work Plan approved by the Massachusetts Water Supply Protection Trust. The FTE count at the end of October was 132 (and 132.5 on a year-to-date basis) vs. a budget of 150.

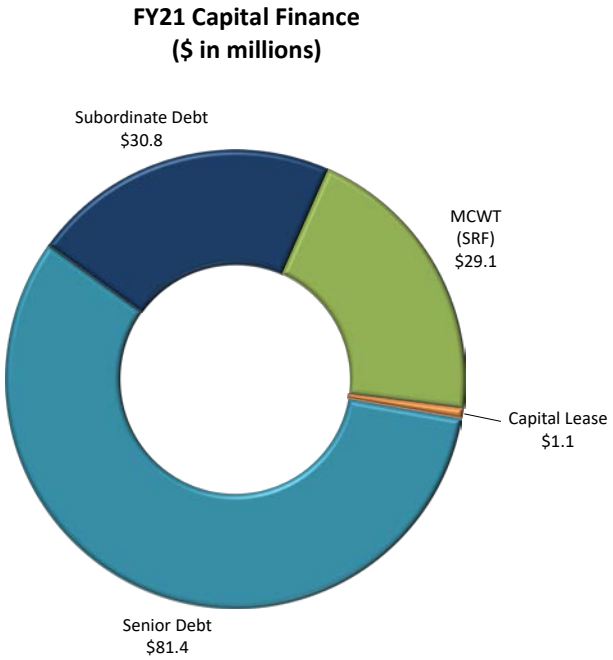
FY21 Indirect Expenses (in millions)



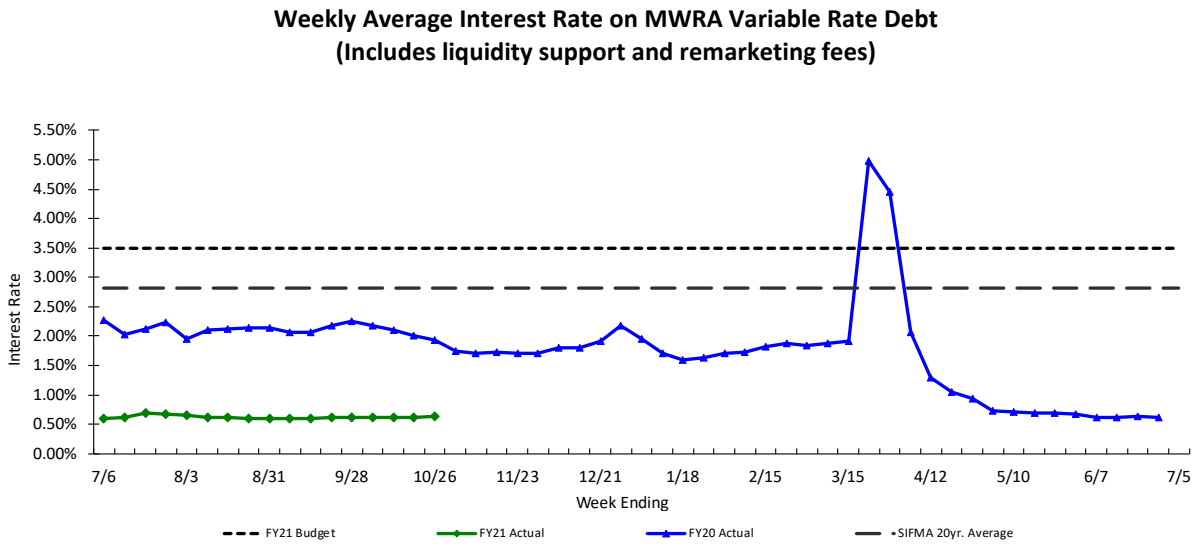
Capital Financing

Capital Financing expenses include the principal and interest payments for fixed senior debt, the variable subordinate debt, the Massachusetts Clean Water Trust (SRF) obligation, the commercial paper program for the local water pipeline projects, current revenue for capital, Optional Debt Prepayment, and the Chelsea Facility lease payment.

Capital Financing expenses for FY21 through October totaled $142.3 million, which is $2.8 million less than budget. This favorable variance is the result of lower than budgeted variable interest rates.



The graph below reflects the FY21 actual variable rate trend by week against the FY21 Budget.



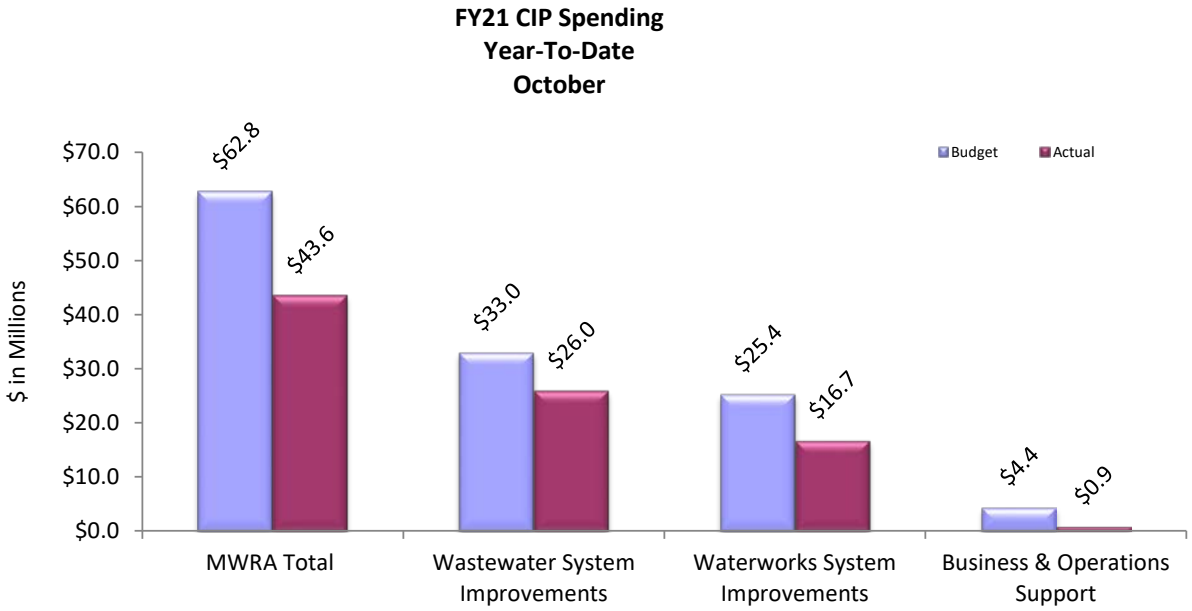
Revenue & Income

Revenues of $258.5 million were $251,000 or 0.1% under budget. Investment Income was $300,000 or 18.8% under budget due to lower than budgeted interest rates (0.51% vs. 0.75%) partially offset by higher than budgeted average balances. In addition, Other User Charges were over the budgeted estimate by $48,000 due to the entrance fee payment from the Rivers School in Weston.

FY21 Capital Improvement Program

Capital expenditures in Fiscal Year 2021 through October total $43.6 million, $19.3 million or 30.6% under budget.

After accounting for programs which are not directly under MWRA's control, most notably the Inflow and Infiltration (I/I) grant/loan program, the Local Water System Assistance loan program, and the community managed Combined Sewer Overflow (CSOs) projects, capital spending totaled $30.5 million, $9.2 million or 23.2% under budget.



Overall, CIP spending reflects the underspending in Wastewater Improvements ($7.1 million), Waterworks (8.6 million) and Business and Operations Support ($3.5 million). Major variances in Wastewater are primarily due to Channel 4 work being behind schedule for the Chelsea Headworks Upgreades Construction, delay in equipment delivery for Nut Island Odor Control HVAC Improvements, updated schedule for the Dorchester Infiltration/Inflow Removal, timing of community repayments for the I/I Local Financial Assistance Program due to less than anticipated communities deferring their loan repayments, work anticipated in FY21 that was completed in FY20 for the Pellet Conveyance Piping project, and delay in NTP and bypass pumping system for the Dorchester Interceptor Sewer. This was partially offset by timing of work for Deer Island Chemical Tank and Digester Pipe and contractor progress for the Gas Protection System Replacement Phase 1.

Waterworks variances are primarily due to less than anticipated communities deferring their loan repayments for the Water Loan Program, delay in award of CP-1 Shafts 6, 8, and 9A, timing of consultant work for the Tunnel Preliminary Design and MEPA Review and Program Support Services contracts. This was partially offset by contractor progress on the Southern Extra High Section 111 Construction 2 and 3, Commonwealth Avenue Pumping Station Construction, and FY20 planned work completed in FY21 for the Cosgrove Intake Roof Replacement.

FY21 Budget and FY21 Actual Variance by Program
(in millions)

$ in Millions	Budget	Actuals	$ Var.	% Var.
Wastewater System Improvements				
Interception & Pumping	18.1	13.2	(4.9)	-27.2%
Treatment	5.7	5.8	0.0	0.8%
Residuals	1.9	1.0	(0.8)	-44.5%
CSO	1.2	0.5	(0.7)	-55.3%
Other	6.1	5.4	(0.7)	-11.5%
Total Wastewater System Improvements	**$33.0**	**$26.0**	**($7.1)**	**-21.4%**
Waterworks System Improvements				
Drinking Water Quality Improvements	0.4	0.2	(0.2)	-54.0%
Transmission	3.9	2.3	(1.6)	-40.8%
Distribution & Pumping	4.5	5.9	1.5	32.5%
Other	16.7	8.4	(8.3)	-49.8%
Total Waterworks System Improvements	**$25.4**	**$16.7**	**($8.6)**	**-34.0%**
Business & Operations Support	**$4.4**	**$0.9**	**($3.5)**	**-80.1%**
Total MWRA	**$62.8**	**$43.6**	**($19.3)**	**-30.6%**

Totals may not add due to rounding

FY21 Spending by Program:

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

Other Waterworks: Net underspending of $8.3 million

- $8.6 million for Local Financial Assistance due to timing of community repayments due to less than anticipated communities deferring their loan repayments.
- $0.3 million for Carroll Water Treatment Plant SCADA Design due to updated schedule for the SCADA Construction
- This underspending was partially offset by overspending of $0.3 million for Cosgrove Intake Roof Replacement, $0.2 million for Bellevue 2/Turkey Hill Tanks Painting, and $0.1 million for Gillis Pumping Station/Cottage Farm CSO Roof Replacement due to FY20 planned work that was completed in FY21.

Interception & Pumping: Net underspending of $4.9 million

- $2.8 million for Chelsea Creek Upgrade Construction and Resident Engineering Inspection due to Channel 4 work behind schedule (pending time extension).
- $1.4 million for Nut Island Odor Control and HVAC Construction due to delays in equipment delivery.
- $0.5 million for Dorchester Interceptor Sewer Construction due to delay in Notice to Proceed.
- $0.3 million for Prison Point Design/CA/REI due to delay in construction award.
- $0.2 million for Wastewater Metering Planning/Design due to pending time extension through construction installation and warranty period.
- This underspending was partially offset by overspending of $0.1 million for Siphon Structure Rehabilitation Design due to consultant progress.

Business & Operations Support: Net underspending of $3.5 million

- $1.2 million for As-Needed Technical Assistance and Resident Engineering and Inspection Services due to lower than projected task order work, $0.5 million for Vehicle Purchases due to timing, $0.4 million for Security Equipment & Installation due to timing of physical security initiatives, and $0.6 million for Enterprise Content Management, and $0.5 million for Lawson Upgrade due to schedule changes.

Waterworks Transmission: Net underspending of $1.6 million

- $0.7 million for CP-1 Shafts 6, 8, and 9A due to delay in award of contract.
- $0.5 million for Tunnel Preliminary Design & MEPA Review and $0.2 million for Program Support Services due to timing of consultant work.
- $0.3 million for Weston Aqueduct Supply Mains due to updated schedule.
- $0.1 million for Weston Aqueduct Supply Mains/Spot Pond Supply Mains Design/CA due to delays in final design.
- This underspending was partially offset by overspending of $0.4 million for Commonwealth Avenue Pumping Station Construction due to contractor progress.

Water Distribution and Pumping: Net overspending of $1.5 million

- $1.7 million for Southern Extra High Section 111 Construction 2 and 3 due to contractor progress.
- $0.1 million for NIH Section 89 & 29 Redundancy due to final work completed.

- This overspending was partially offset by underspending of $0.2 million for Sections 25, 75, 59, and 60 Design/CA due to delay in getting field testing started, $0.1 million for Sections 50/57 Water and Sections 21/20/19 Sewer Design due to contract scope reduction, and $0.1 million for NIH Section 89 and 29 Design/CA/RI due to less than anticipated contract administration/resident inspection budgeted spending.

Residuals: Net underspending of $0.8 million

- $0.6 million for Pellet Conveyance Piping Relocation and $0.2 million for Residuals Mechanical/Electrical/Dryer Drum Replacements due to work anticipated in FY21 that was completed in FY20.

Other Wastewater: Net underspending of $0.7 million

- $0.7 million for Community I/I due to timing of community repayments as a result of less than anticipated communities deferring their loan repayments.

Combined Sewer Overflow: Net underspending of $0.7 million

- $0.8 million for Dorchester Inflow Removal Construction due to updated schedules partially offset by $0.1 million for CSO Performance Assessment due to greater than anticipated consultant progress.

Drinking Water Quality Improvements: Net underspending of $0.2 million

- $0.1 for Carroll Water Treatment Plant Technical Assistance due to less than anticipated as-needed technical assistance, and $0.1 million for updated schedule for CP-7 Existing Facilities Modifications.

Wastewater Treatment: Net overspending of $0.05 million

- $0.7 million for Chemical Tank Relining and Digester Pipe Construction and $0.2 million for Gas Protection System Replacement Phase 1 due to contractor progress.
- $0.1 million for Radio Repeater System Upgrade Phase 1 due to work anticipated in FY20 that was completed in FY21.
- This overspending was partially offset by underspending of $0.4 million for less than anticipated as-needed task order work, $0.3 million for Gravity Thickener Rehabilitation and $0.1 million for Winthrop Terminal Facility VFD and Motors Replacements due to contractor progress is behind schedule, and $0.1 million for Eastern Seawall Design/ESDC due to updated notice-to-proceed.

Construction Fund Balance

The construction fund balance was $306.4 million as of the end of October. Commercial Paper/Revolving Loan available capacity was $222 million.

FY20 Restatement

The FY20 CIP year-end spending that was presented to the Board of Directors on September 16, 2020 was overstated by $8,667,782. The cause of this overstatement was due to the May 2020 (FY20) community loan repayments that, while accurately reflected in the general ledger, were not in included in the Lawson Activity Management Module. This module is used for generating the monthly budget variance reports and is the data source for the Monthly Financial Update and Summary presented to the Board.

This issue was identified when the August 2020 (FY21) loan repayments were entered into the Activity Management Module, and it was then determined the May FY20 loan repayments had not been. While the FY20 year-end audited financial statements were correct, the FY20 Activity Report was overstated. The FY20 Activity Management Module has since been restated to include the May repayments.

Historically, loan distributions and repayments are posted to the general ledger, the Activity Management Module, as well as Treasury's Community Loan Program database each month. On a quarterly basis, the Community Loan Program Database is reconciled to the Lawson General Ledger and Activity Management Module.

The table below shows the reported vs. restated FY20 year-end spending figures:

FY20 Actuals as Reported

FY20 CIP	Budget	Actual	Variance	%
Total Spending	**$ 199,146,715**	**$ 159,021,253**	**$ (40,125,462)**	**-20.1%**
Less I/I Program	*$ 25,699,914*	*$ 35,238,737*	*$ 9,538,823*	*37.1%*
Less Local Water Assist Loan Program	*$ 9,697,680*	*$ 11,440,988*	*$ 1,743,308*	*18.0%*
Community Managed CSO	*$ 1,881,527*	*$ -*	*$ (1,881,527)*	*-100.0%*
Total Net Spending	**$ 161,867,594**	**$ 112,341,528**	**$ (49,526,066)**	**-30.6%**

FY20 Actuals Restated

FY20 CIP	Budget	Actual	Variance	%
Total Spending	**$ 199,146,715**	**$ 150,353,471**	**$ (48,793,244)**	**-24.5%**
Less I/I Program	*$ 25,699,914*	*$ 33,686,967*	*$ 7,987,053*	*31.1%*
Less Local Water Assist Loan Program	*$ 9,697,680*	*$ 4,324,975*	*$ (5,372,705)*	*-55.4%*
Community Managed CSO	*$ 1,881,527*	*$ -*	*$ (1,881,527)*	*-100.0%*
Total Net Spending	**$ 161,867,594**	**$ 112,341,529**	**$ (49,526,065)**	**-30.6%**

Total FY20 Spending Difference	**$ -**	**$ (8,667,782)**	**$ (8,667,782)**

ATTACHMENTS:

Attachment 1 – Variance Summary October 2020
Attachment 2 – Current Expense Variance Explanations
Attachment 3 – Capital Improvement Program Variance Explanations

ATTACHMENT 1
FY21 Actuals vs. FY21 Budget

	Oct 2020 Year-to-Date				
	Period 4 YTD Budget	Period 4 YTD Actual	Period 4 YTD Variance	%	FY21 Approved
EXPENSES					
WAGES AND SALARIES	$ 34,079,491	$ 32,854,880	$ (1,224,611)	-3.6%	$ 112,919,298
OVERTIME	1,562,367	1,343,828	(218,539)	-14.0%	5,019,295
FRINGE BENEFITS	7,273,690	6,893,764	(379,926)	-5.2%	22,402,224
WORKERS' COMPENSATION	809,676	323,708	(485,968)	-60.0%	2,476,655
CHEMICALS	4,698,210	4,629,086	(69,124)	-1.5%	12,091,255
ENERGY AND UTILITIES	6,796,055	6,223,930	(572,125)	-8.4%	24,200,847
MAINTENANCE	11,004,899	10,935,953	(68,946)	-0.6%	32,618,569
TRAINING AND MEETINGS	92,078	29,540	(62,538)	-67.9%	405,264
PROFESSIONAL SERVICES	3,040,334	2,321,716	(718,618)	-23.6%	8,377,283
OTHER MATERIALS	1,569,483	1,639,721	70,238	4.5%	6,706,916
OTHER SERVICES	8,875,150	7,754,825	(1,120,325)	-12.6%	24,983,777
TOTAL DIRECT EXPENSES	**$ 79,801,433**	**$ 74,950,951**	**$ (4,850,482)**	**-6.1%**	**$ 252,201,383**
INSURANCE	$ 1,000,129	$ 1,057,591	$ 57,462	5.7%	$ 3,059,218
WATERSHED/PILOT	5,590,202	5,476,793	(113,409)	-2.0%	26,422,138
HEEC PAYMENT	2,358,815	2,459,242	100,427	4.3%	7,215,200
MITIGATION	553,266	540,096	(13,170)	-2.4%	1,692,344
ADDITIONS TO RESERVES	593,390	593,390	-	0.0%	1,815,077
RETIREMENT FUND	11,000,000	10,000,000	(1,000,000)	-9.1%	11,000,000
POST EMPLOYEE BENEFITS	-	-	-	---	6,065,490
TOTAL INDIRECT EXPENSES	**$ 21,095,802**	**$ 20,127,112**	**$ (968,690)**	**-4.6%**	**$ 57,269,467**
STATE REVOLVING FUND	$ 29,083,283	$ 29,083,283	$ -	0.0%	$ 97,811,162
SENIOR DEBT	81,358,740	81,358,740	-	0.0%	258,730,904
DEBT SERVICE ASSISTANCE	-	-	-	---	-
CURRENT REVENUE/CAPITAL	-	-	-	---	16,200,000
SUBORDINATE MWRA DEBT	33,641,216	33,641,216	-	0.0%	96,339,598
LOCAL WATER PIPELINE CP	-	-	-	---	5,686,864
CAPITAL LEASE	1,051,731	1,051,731	-	0.0%	3,217,060
VARIABLE DEBT	-	(2,814,121)	(2,814,121)	---	-
DEFEASANCE ACCOUNT	-	-	-	---	3,900,000
DEBT PREPAYMENT	-	-	-	---	-
TOTAL DEBT SERVICE	**$ 145,134,970**	**$ 142,320,849**	**$ (2,814,121)**	**-1.9%**	**$ 481,885,588**
TOTAL EXPENSES	**$ 246,032,205**	**$ 237,398,912**	**$ (8,633,292)**	**-3.5%**	**$ 791,356,438**
REVENUE & INCOME					
RATE REVENUE	$ 251,529,712	$ 251,529,712	$ -	0.0%	$ 769,385,000
OTHER USER CHARGES	3,939,215	3,987,534	48,319	1.2%	9,208,367
OTHER REVENUE	1,165,456	1,165,928	472	0.0%	6,095,403
RATE STABILIZATION	490,385	490,385	-	0.0%	1,500,000
INVESTMENT INCOME	1,595,155	1,295,059	(300,096)	-18.8%	5,167,668
TOTAL REVENUE & INCOME	**$ 258,719,923**	**$ 258,468,618**	**$ (251,304)**	**-0.1%**	**$ 791,356,438**

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY21 Budget YTD October	FY21 Actuals October	FY21 YTD Actual vs. FY21 Budget		Explanations
			$	%	
Direct Expenses					
Wages & Salaries	34,079,491	32,854,880	(1,224,611)	-3.6%	Wages and Salaries are under budget by $1.0 million. Year to date, there have been 24 fewer average FTEs (1,139 versus 1,163 budget), lower average new hire salaries versus retirees, the timing of backfilling vacant positions.
Overtime	1,562,367	1,343,828	(218,539)	-14.0%	Lower spending mainly in Metro Maintenance ($118,000), Water Operations & Maintenance ($58,000), Wastewater Operations ($49,000), Engineering & Construction ($42,000), offset by higher spending for Deer Island ($115,000) for shift coverage and unplanned maintenance.
Fringe Benefits	7,273,690	6,893,764	(379,926)	-5.2%	Lower than budget in **Health Insurance** of $383,000, due to fewer than budgeted participants in health insurance plans, increased contribution by external new hires vs. lower contribution rates of staff retiring, and the shift from family to individual plans which are less expensive. In addition, **Medicare** was under budget by $18,000, partially offset by **Unemployment Insurance** which is over budget by $41,000.
Worker's Compensation	809,676	323,708	(485,968)	-60.0%	The lower expenses were due to favorable variances in **Compensation Payments** of $330,000, **Medical Payments** of $110,000, and **Administrative Expenses** of $46,000. These lower payments reflect fewer accidents to date. Due to uncertainties of when spending will happen, the budget is spread evenly throughout the year.
Chemicals	4,698,210	4,629,086	(69,124)	-1.5%	Lower than budget spending on **Polymer** of $83,000 driven by DITP due to less usage for centrifuge operations; **Sodium Hypochlorite** of $76,000 driven by Water Operations due to lower use and timing of deliveries; and **Soda Ash** of $71,000 driven by Water Operations due to timing of deliveries. This is offset by higher than budget spending on **Ferric Chloride** of $105,000 driven by DITP to keep the orthophosphate levels in the digesters at the desired target level and **Hydrogen Peroxide** of $52,000 driven by DI due to higher H2S gas levels. DITP flows are 12.7% lower than the budget and CWTP flows are 0.6**%** greater than the budget through October. 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.
Utilities	6,796,055	6,223,930	(572,125)	-8.4%	Underspending in **Electricity** of $0.5 million primarily at DITP ($0.3 million) driven primarily by power demand charges being less than budgeted based on flows, new pricing, and real time market prices for the non-block purchases under the Direct Energy contract. Also, Water Operations ($0.1 million) is under budget primarily due to lower rates and quantity. **Diesel Fuel** is underspent by $32,000 driven by Wastewater Operations of ($32,000) due to timing of deliveries.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY21 Budget YTD October	FY21 Actuals October	FY21 YTD Actual vs. FY21 Budget		Explanations
			$	%	
Maintenance	11,004,899	10,935,953	(68,946)	-0.6%	Underspending in **Ongoing Maintenance** by $0.1 million is largely driven by the timing of projects. *Maintenance Services* are under budget by $0.1 million driven by **Building & Grounds Services** ($0.5 million) and **HVAC Services** ($0.1 million), partially offset by **Computer Software Licenses** ($0.3 million), **Plant and Machinery Services** ($0.1 million), and **Pipe Services** ($0.1 million). Also, *Maintenance Materials* which are over budget by ($0.1 million), driven by **Plant and Machine Materials** ($0.2 million), partially offset by lower spending on **HVAC Materials** ($0.1 million) and **Building & Grounds Materials** ($0.1 million).
Training & Meetings	92,078	29,540	(62,538)	-67.9%	Lower than budget spending on **Training & Meetings** by $63,000 is driven by Field Operations ($20,000) and MIS (18,000).
Professional Services	3,040,334	2,321,716	(718,618)	-23.6%	Lower than budget spending in **Computer Systems Consultant** of 440,000 in MIS; **Engineering** of $289,000 primarily in Field Operations; **Other Professional Services** of $152,000 in Administration, Law, and Finance; **Legal Services** of $95,000 in Law and Administration; partially offset by **Lab and Testing Analysis** of $324,000 in Operations due to the Biobot contract.
Other Materials	1,569,483	1,639,721	70,238	4.5%	Driven by greater than budgeted spending **Computer Hardware** of $317,000 in MIS primarily due to timing and necessary purchases due to Covid, partially offset by $116,000 for **Equipment/Furniture**, $109,000 for **Other Materials**, and $88,000 for **Vehicle Expense** primarily due to timing.
Other Services	8,875,150	7,754,825	(1,120,325)	-12.6%	Lower than budgeted spending for **Sludge Pelletization** of $482,000 due to lower year-to-date quantities **Memberships/Dues/Subscriptions** of $426,000 primarily in Operations, **Grit & Screening Removal** of $109,000 due to lower quantitie, **Telecommunication Services** of $92,000 primarily in MIS, and **Police Details** of $24,000, partially offset by higher than budgeted spending for **Other Services** of $40,000.
Total Direct Expenses	**79,801,433**	**74,950,951**	**(4,850,482)**	**-6.1%**	

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY21 Budget YTD October	FY21 Actuals October	FY21 YTD Actual vs. FY21 Budget		Explanations
			$	%	
Indirect Expenses					
Insurance	1,000,129	1,057,591	57,462	5.7%	Higher premiums ($117,000) offset by Lower Payments/Claims ($59,000) than budgeted.
Watershed/PILOT	5,590,202	5,476,793	(113,409)	-2.0%	Watershed costs are lower than budget by $113,000 due to lower costs associated with Maintenance, Equipment, Wages and Salaries, Professional Services, and Utilities, offset by a prior period adjustment.
HEEC Payment	2,358,815	2,459,242	100,427	4.3%	Increase is due to the proposed tariff that is being negotiated with HEEC.
Mitigation	553,266	540,096	(13,170)	-2.4%	
Addition to Reserves	593,390	593,390	-	0.0%	
Pension Expense	11,000,000	10,000,000	(1,000,000)	-9.1%	After approval of the FY21 CEB, the retirement system received a new PERAC approved required contribution. The required deposit was reduced from $11.0 million to $10.0 million.
Post Employee Benefits	-	-	-		
Total Indirect Expenses	**21,095,802**	**20,127,112**	**(968,690)**	**-4.6%**	
Debt Service					
Debt Service	145,134,970	142,320,849	(2,814,121)	-1.9%	Debt service is $2.8 million under budget due to lower than budgeted variable interest rates.
Debt Service Assistance	-	-	-		
Total Debt Service Expenses	**145,134,970**	**142,320,849**	**(2,814,121)**	**-1.9%**	
Total Expenses	**246,032,205**	**237,398,912**	**(8,633,293)**	**-3.5%**	

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY21 Budget YTD October	FY21 Actuals October	FY21 YTD Actual vs. FY21 Budget		Explanations
			$	%	
Revenue & Income					
Rate Revenue	251,529,712	251,529,712	-	0.0%	
Other User Charges	3,939,215	3,987,534	48,319	1.2%	Rivers School in Weston entrance fee of $42,000.
Other Revenue	1,165,456	1,165,928	472	0.0%	Miscellaneous Revenue of (-$145,000) primarily associated with worker's compensation reimbursement for older claims; Disposal of surplus materials of $97,000; $68,000 in grant money, and Energy Revenue (-$61,000).
Rate Stabilization	490,385	490,385	-	0.0%	HEEC Reserve.
Investment Income	1,595,155	1,295,059	(300,096)	-18.8%	Investment Income is under budget due to lower than budgeted interest rates (0.51% actual vs. 0.75% budget) partially offset by higher than budgeted average balances.
Total Revenue	**258,719,923**	**258,468,618**	**(251,305)**	**-0.10%**	
Net Revenue in Excess of Expenses	**12,687,718**	**21,069,706**	**8,381,988**		

ATTACHMENT 3
FY20 CIP Year-to-Date Variance Report ($000's)

	FY21 Budget YTD October	FY21 Actuals YTD October	YTD Actuals vs. Budget		Explanations
			$	%	
Wastewater					
Interception & Pumping (I&P)	$18,140	$13,208	($4,932)	-27.2%	Underspending Chelsea Creek Headworks Upgrades - Construction and REI: $2.8M (delay in work on Channel 4, pending time extension) Nut Island Odor Control & HVAC Improvements Phase 2 - Construction: $1.4M (delays in equipment delivery) Interceptor Renewal No. 3, Dorchester Interceptor Sewer - Construction: $505k (delay in notice-to-proceed) Prison Point Rehabilitation - Design/CA/RI: $275k (delay in construction award) Wastewater Meter System Planning/Study/Design: $190k (pending time extension through construction installation and warranty period) Offset Overspending Siphon Structure Rehabilitation Design: $133k (consultant progress)
Treatment	$5,727	$5,773	$46	0.8%	Overspending Chemical Tank and Digester Pipe: $723k, and Gas Protection System Replacement - Phase 1: $184k (contractor progress) Radio Repeater System Upgrade - Phase 1: $138k (work anticipated in FY20 completed in FY21) Offset Underspending Gravity Thickener Rehabilitation: $324k, and Winthrop Terminal Facility VFD and Motors Replacements: $110k (contractor behind schedule) As-Needed Design: $379k (less than anticipated task order work)
Residuals	$1,893	$1,050	($843)	-44.5%	Underspending Pellet Conveyance Relocation: $615k, and Residuals Mechanical/Electrical/Dryer Drum Replacements: $228k (work anticipated in FY21 completed in FY20)
CSO	$1,191	$532	($659)	-55.3%	Underspending Dorchester Inflow Removal Construction: $770k (updated schedules) Offset Overspending CSO Performance Assessment: $131K (greater than anticipated consultant progress)
Other Wastewater	$6,087	$5,389	($698)	-11.5%	Overspending I/I Local Financial Assistance: $698k (timing of community repayments as a result of less than anticipated communities deferring loan repayments)
Total Wastewater	**$33,038**	**$25,951**	**($7,087)**	**-21.4%**	

ATTACHMENT 3
FY20 CIP Year-to-Date Variance Report ($000's)

	FY21 Budget YTD October	FY21 Actuals YTD October	YTD Actuals vs. Budget		Explanations
			$	%	
Waterworks					
Drinking Water Quality Improvements	$385	$177	($208)	-54.0%	Underspending Carroll Water Treatment Plant Technical Assistance 9 & 10: $85k (timing of task order work) CP-7 Existing Facilities Modifications: $75k (updated schedule)
Transmission	$3,851	$2,279	($1,573)	-40.8%	Underspending CP-1 Shafts 6, 8, and 9A: $659k (delay in award of contract) Metropolitan Tunnel Redundancy Preliminary Design & MEPA Review: $502k, and Program Support Services: $184k (timing of consultants work) Weston Aqueduct Sluice Gates - Construction: $336k (updated schedule) Weston Aqueduct Supply Mains/Spot Pond Supply Mains - Design/CA: $113k (delays in final design) Offset Overspending Commonwealth Ave Pump Station Improvements - Construction: $385k (contractor progress)
Distribution & Pumping	$4,474	$5,929	$1,455	32.5%	Overspending Section 89/29 Redundancy Construction Phase 2: $87k (final work completed) SEH Redundancy Pipeline Section 111 - Construction Phase 2 & 3: $1.8M (contractor progress) Offset Underspending Section 89/29 Redundancy -Design/CA/RI: $62k (Construction Administration and Resident Inspection services less than anticipated budgeted spending) Sections 25, 75, 59 & 60 Replacement - Design/CA: $163k (delay in commencement of field testing) Sections 50 & 57 Water Rehabilitation - Design/ESDC; $68k (contract scope reduction)

ATTACHMENT 3
FY20 CIP Year-to-Date Variance Report ($000's)

	FY21 Budget YTD October	FY21 Actuals YTD October	YTD Actuals vs. Budget		Explanations
			$	%	
Other Waterworks	$16,668	$8,365	($8,303)	-49.8%	Underspending Local Water Pipeline Financial Assistance Program: $8.6M (timing of community repayments due to less than anticipated communities deferring their loan repayments) CWTP SCADA Upgrades - Design Programming RE: $302k (updated schedule for SCADA Construction) Offset Overspending Cosgrove Intake Roof Replacement: $266k, Bellevue 2/Turkey Hill Tanks Painting: $177k, and Gillis Pump Station/Cottage Farm CSO Roof Replacements: $141k (FY20 planned work completed in FY21)
Total Waterworks	**$25,378**	**$16,749**	**($8,629)**	**-34.0%**	

ATTACHMENT 3
FY20 CIP Year-to-Date Variance Report ($000's)

	FY21 Budget YTD October	FY21 Actuals YTD October	YTD Actuals vs. Budget		Explanations
			$	%	
Business & Operations Support					
Total Business & Operations Support	**$4,419**	**$880**	**($3,538)**	**-80.1%**	Underspending As-Needed Technical Assistance and CS/REI Services: $1.2M (lower than projected task order work) Enterprise Content Management: $600k, and Lawson Upgrade: $500k (schedule changes) FY19-23 Vehicle Purchases: $525k (due to timing) Security Equipment & Installation: $393k, (timing of physical security initiatives)
Total MWRA	**$62,834**	**$43,580**	**($19,254)**	**-30.6%**	

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: November 18, 2020
SUBJECT: Automated Vehicle Locator Tracking System
Verizon Connect NWF, Inc.
Contract A606, Amendment 2

COMMITTEE: Administration, Finance & Audit

_____ INFORMATION
__X__ VOTE

Michele S. Gillen
Director of Administration

Carolyn Fiore, Deputy COO, Operations Administration
Paula Weadick, Director MIS
Ronald S. Zizza, Manager C&C
Preparer/Title

David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Amendment 2 to Contract A606, Automated Vehicle Locator Tracking System with Verizon Connect NWF, Inc., in the amount of $93,708, exercising the second option to renew and increasing the contract amount from $521,188 to an amount not to exceed $614,906, and increasing the contract term by 12 months from December 28, 2020 to December 28, 2021.

DISCUSSION:

On October 12, 2016, the Board approved the award of Contract A606 to Networkfleet, Inc. (now Verizon Connect NWF, Inc.) to provide automated vehicle location equipment and services to MWRA. The original contract, in the amount of $427,490, was for 36 months and included two 12-month options to extend, subject to the Board's approval. The Board approved the first amendment in the amount of $93,708 on November 20, 2019. Staff now recommend approval of the second 12-month extension option, for the reasons described below.

For this contract, MWRA issued a one-step Request for Qualifications, Statements/Proposals with the following selection criteria: cost; technical approach/organization/management approach and qualifications of firms/key personnel; similar experience/past performance; and schedule and capacity. The Selection Committee unanimously ranked Verizon Connect NWF, Inc. first, as the firm presented the lowest cost proposal, a technically sound approach to addressing Automated Vehicle Locator (AVL) functionality including the ability to easily establish alerts, and offered both a reporting function and live mapping function that were among the best presented at the live demonstration to the Selection Committee.

Verizon Connect NWF, Inc. included pricing for two optional 12-month extensions as part of the original procurement process, and offered a significant price reduction to the unit price (from $24/device per month to $19/device per month) for the optional 12-month extensions for Year 4 and Year 5.

This Amendment

The COVID-19 pandemic has had no material impact on the number of AVL transponders required to support MWRA's daily operations and maintenance activities, due in part to maintaining an adequate supply of spare units. However, MWRA continues to maximize the day-to-day use of its fleet to minimize the number of passengers per vehicle as part of its COVID-19 safety response. So, while the number of transponders remains the same, the use of transponders, like the fleet, have been maximized for the COVID-19 safety response. As previously reported in pandemic updates, MWRA is limiting close contact by having some staff report to remote MWRA sites for mustering prior to dispatch to field assignments rather than reporting to the Chelsea facility. As a result, the ability to monitor assets and staff with the AVL system has been particularly critical during this time period. Managers can easily confirm that the correct number and type of vehicle assets are located at the correct facilities prior to dispatch.

Staff continue to be pleased with the quality of services provided by Verizon Connect NWF, Inc. The system performs as expected and provides MWRA with the ability to accurately pinpoint and track the location of its vehicles at any time; respond more quickly to emergencies; enhance vehicle maintenance through electronic engine diagnostics; track odometer readings and mileage electronically; and capture driving statistics. The recommended amendment includes continued access to Verizon Connect NWF's live mapping and reporting functions; vehicle alerts and diagnostics; historical routes and driving activities; and customer support. The AVL system also provides a number of reports that are used to audit work crews assigned to perform work in the field and operations staff that perform facility rounds.

The software and equipment provided by Verizon Connect NWF, Inc. has not yet reached the end of its useful life and continue to meet MWRA's fleet tracking requirements. The system and the reports that it generates are user-friendly and provide valuable information to management. Therefore, staff recommend the 12-month extension of this contract for an amount not to exceed $93,708.

CONTRACT SUMMARY:

	Amount	Time	Dated
Original Contract	$427,490	36 months	12/28/2016
Amendment 1	$93,708	12 months	11/20/2019
Amendment 2	$93,708	12 months	11/18/2020
Adjusted Contract Amount	$614,906	60 months	12/28/2020

BUDGET/FISCAL IMPACTS:

The FY21 Current Expense Budget contains $100,000 for this contract. The original contract award for hardware, software and support for three years was $427,490. The cost of Amendment 1 was $93,708, and the cost of proposed Amendment 2 is $93,708.

MBE/WBE PARTICIPATION:

There were no MBE/WBE participation requirements established for this contract due to the limited opportunities for subcontracting.