Posted 03/08/2024, 8:35am; Updated 03/12/2024, 1:05pm; Updated 03/12/2024, 4:00pm

March 7, 2024

NOTICE OF MEETING

The following meetings of the Board of Directors of the Massachusetts Water Resources Authority will be held on **Wednesday, March 13, 2024** at MWRA's Administration Building, Conference Rooms 2C and 2D, at 2 Griffin Way, Chelsea, MA 02150.

10:00 a.m. (and running consecutively):

- Water Policy and Oversight Committee
- Administration, Finance and Audit Committee
- Wastewater Policy and Oversight Committee
- Personnel & Compensation Committee

1:00 p.m. Board of Directors meeting

A photo ID will be required for entry.

The meetings will also be available via Webex. The Webex meeting links, event numbers and passwords to attend virtually are below.

Webex Meeting Link for all Committee Meetings (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Event Number: 2341 033 0434 Password: 3132024

Webex Meeting Link for Board of Directors Meeting (Registration required):

https://mwra.webex.com/weblink/register/rb429e69d3870e59a6de1b6be8ed5dbc0

Event Number: 2345 226 6990 Password: 3132024

Topics expected to be discussed are listed on the following pages.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Deer Island
33 Tafts Avenue
Boston, MA 02128

Frederick A. Laskey
Executive Director
Chair: H. Vitale
Vice-Chair: L. Taverna
Committee Members:
J. Foti
P. Flanagan
J. Walsh
P. Walsh
J. Wolowicz

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

WATER POLICY & OVERSIGHT COMMITTEE MEETING

Date: Wednesday, March 13, 2024

Time: 10:00am

Location: MWRA Chelsea Administration Building, 2nd Floor, Rooms 2C and D
2 Griffin Way
Chelsea, MA 02150

A photo ID will be required for entry.

The meeting will also be available via Webex. The Webex meeting link and password to attend virtually are below:

Webex meeting link (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Meeting Number: 2341 033 0434 Password: 3132024

AGENDA

A. Information

1. Metropolitan Water Tunnel Program: Needs and Overview
2. Metropolitan Redundancy Interim Improvements Projects Update
3. Metropolitan Water Tunnel Program: Preliminary Design and Environmental Impact Report
4. Metropolitan Water Tunnel Program: Look Ahead
5. Metropolitan Water Tunnel Program: FY25 CIP Updated Program Cost Estimate and Cost Controls

B. Approvals

1. Metropolitan Water Tunnel Program: Contract Structure for Final Design Engineering Services, Contract 7556

C. Information (Continued)

1. Local Water System Assistance Program Annual Update

D. Contract Amendments/Change Orders

1. Section 101 Pipeline Extension (Waltham): Baltazar Contractors, Inc., Contract 7457, Change Order 4
2. Rehabilitation of WASM 3 Sections W11/W12/W16/51 (Medford, Somerville and Arlington): Albanese D&S, Inc., Contract 6544, Change Order 9

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Water Tunnel Program
Program Needs and Overview

COMMITTEE: Water Policy & Oversight

X INFORMATION
VOTE

Paul V. Savard, P.E., Director, Design and Construction
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

For information only. This staff summary provides a review of the needs for the Metropolitan Water Tunnel Program (Tunnel Program) and an overview of the Tunnel Program development to date.

DISCUSSION:

On February 5, 2017, the Board of Directors approved construction of northern and southern deep rock water supply tunnels to provide needed redundancy for the Metropolitan Tunnel system. The Board directed staff to proceed with preliminary design, geotechnical investigations and Massachusetts Environmental Policy Act review of the project.

This decision was the culmination of a series of meetings that started with a Special Meeting of the Board of Directors on October 6, 2016, at which staff provided a briefing on the status of the existing MWRA water transmission system and the lack of redundancy for the City Tunnel (1950), City Tunnel Extension (1963), and the Dorchester Tunnel (1976) with an accompanying binder of supporting materials.

Figure 1 – Condition of Some Existing Tunnel System Valves

The following is a summary of the briefing and staff recommendations.

- Staff concluded that the tunnels and shafts themselves require little or no maintenance and represent a low risk of failure. However, the cast iron, steel pipe and valves at the tops of the shafts are in poor condition and are in need of rehabilitation and maintenance.

- Staff noted that failure at the tops of shafts in the existing system could result in widespread outages of water service, impacting 60% of the service area, which would require activation of emergency backup sources of supply, water use restrictions, pressure swings, and a boil order. The economic impact, at that time, to the metropolitan region was determined through Federal Emergency Management Agency methodology to be on the order of $360 million per day (2024).

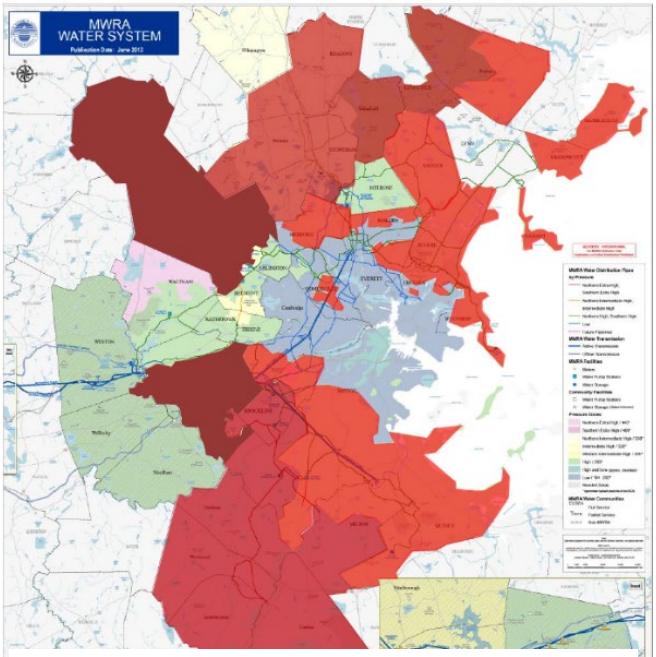

Figure 2 –Impact of Metropolitan Tunnel System Shutdown

- Staff presented financial considerations of advancing a capital program to address redundancy with the goals of preserving sustainable and predictable rates at the water utility level, ensuring adequate capital is available when necessary, and minimizing the cost of borrowing.

Following the 2016 Special Meeting, and at the direction of the Board of Directors, staff developed Metropolitan Redundancy Interim Improvements projects to mitigate the risk of a failure while proceeding with planning, design, construction and ultimately start-up of the new tunnels.

At the conclusion of the Special Meeting, staff were directed to brief member communities, and state and local officials in order to build consensus and support.

The MWRA Advisory Board hosted a Long-Term Redundancy Forum on December 8, 2016 at which staff presented the history of the MWRA waterworks system, the need for Metropolitan Tunnel redundancy and the challenges, both implementation and financial, of building redundancy. The Honorable Jeanette A. McCarthy, Mayor of Waltham, provided the perspective of local communities on the potential for impacts and disruption. On January 19, 2017, the MWRA Advisory Board met and voted to support moving forward with the deep rock, two-tunnel project, utilizing a Program Management Division Approach, similar to the model used for the Boston Harbor Project; and concurrent construction of both tunnels, rather than a phased approach. In February 2017, the Board of Directors approved construction of northern and southern deep rock tunnels and for staff to proceed with preliminary design.

In 2018, MWRA established the Metropolitan Tunnel Redundancy Department to develop and execute the Metropolitan Water Tunnel Program and lead its day-to-day operations, decision-

making and selection of implementation strategies as well as to manage all professional services and construction contracts for the Program.

Preliminary design began in 2020 and was completed in early 2024 and included preliminary geotechnical investigation (deep rock borings), evaluation of preliminary tunnel alignment and shaft site alternatives, preliminary design, preliminary contract packaging, preparation of the required MEPA filings and development of a comprehensive list of required environmental permits. In addition, an updated and comprehensive preliminary design level cost estimate and construction schedule was developed. Geotechnical investigations along the primary tunnel alignment are ongoing. Final design is anticipated to start later in 2024 with a target for the first tunnel construction contract bidding in 2027, and tunnel construction beginning in 2028. Tunnel Program completion is anticipated by 2040.

The Tunnel Program transition from preliminary to final design is an opportunity to review the Program's development over the last few years, current status, and path forward. Accordingly, staff summaries and presentations will be provided at this Board of Directors' meeting on the following topics:

- Update on Interim Improvements Projects;
- Preliminary Design and Environmental Impact Reviews;
- Program Schedule and Look Ahead (including critical path items, challenges and opportunities);
- Updated Program Cost Estimate, FY25 CIP, and Cost Controls; and
- Final Design Engineering Services Procurement and Contract Structure.

Finally, Figure 3 below shows the current preliminary tunnel alignment, limits of segments, and shaft sites.

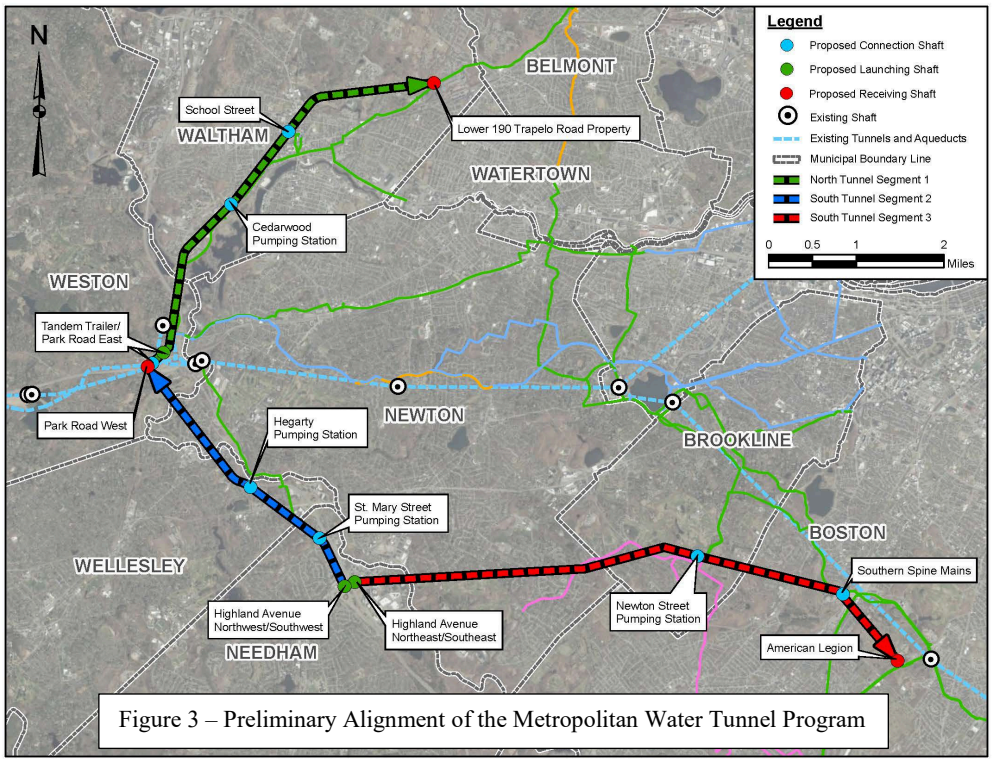

Figure 3 – Preliminary Alignment of the Metropolitan Water Tunnel Program

BUDGET/FISCAL IMPACTS:

The proposed FY25 CIP includes $2.1 billion for the Metropolitan Water Tunnel Program. This budget will be refined periodically during Final Design.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Redundancy Interim Improvements Projects Update

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COMMITTEE: Water Policy and Oversight

X INFORMATION
_____ VOTE

Valerie Moran, P.E., Director of Waterworks
Brian L. Kubaska, P.E., Chief Engineer
Lisa Hamilton, P.E., Assistant Director, Engineering
Preparer/Title

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

RECOMMENDATION:

For information only. This staff summary provides an update on the Metropolitan Redundancy Interim Improvements projects. These projects are being implemented to reduce the risk of failure of surface pipe components of the three Metropolitan Tunnels (City Tunnel, City Tunnel Extension and Dorchester Tunnel) and to improve MWRA's ability to respond in the event of a failure that requires an isolation of any part of the Metropolitan Tunnel system.

DISCUSSION:

Each of the existing Metropolitan Tunnels consists of concrete-lined deep rock tunnel sections linked to the surface through steel and concrete vertical shafts. The tunnels and shafts themselves require little or no maintenance and represent a low risk of failure. The shafts are located in Weston, Chestnut Hill, Allston, Somerville, Malden, West Roxbury, and Dorchester. At the top of each shaft, cast iron or steel pipe and valves connect to the MWRA surface pipe network. These pipes and valves are accessed through subterranean vaults and chambers. The piping and many of the valves are in poor condition. Interim improvements as detailed below are being implemented to strengthen the physical assets at top of shaft structures and to provide additional flow capacity and redundancy to the existing supply system in the event of an emergency due to a tunnel failure.

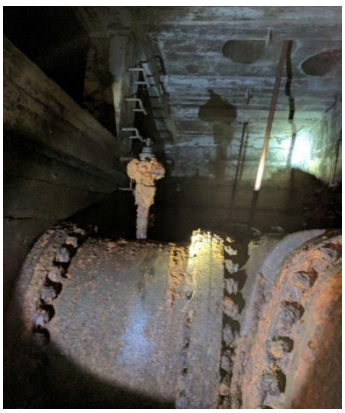
Commonwealth Avenue Pumping Station Improvements

This project provides a means for the Commonwealth Avenue pumping station, located in the City of Newton, to continue to operate, independent of the City Tunnel, by adding a pipeline connection to MWRA's Low Service system and two new pumps capable of pumping from the Low Service grade line. This project was completed in 2021 at a final cost of $8.0M.

New Pumps at Commonwealth Avenue

Tunnel-Shaft Pipeline Improvements

Modifications are being implemented to protect the valves and piping in the chambers at the tops of the tunnels shafts and to reduce water infiltration that is contributing to corrosion and can require significant pumping of ground water in order to access valves for operation. Construction was completed in 2020 at Shafts 6, 8, and 9A at a cost of $2.2M. This provided protection of all exposed piping, shaft caps, end caps, nuts, bolts, and valve bodies with corrosion protection tape or exterior carbon fiber wrapping; removed and replaced corroded nuts and bolts; and reduced or eliminated water infiltration in eight vaults through waterproofing and grouting.



Shaft 9A before improvements

After improvements

Construction of similar improvements in the Shaft 5 building for valve and piping was awarded at the February 2024 Board meeting at a cost of $5.4M. In addition to corrosion control, Shaft 5 work includes the abandonment of a pump room at the bottom of a 400-foot-deep shaft. Design of similar work at Shafts 7, 7B, 7C, and 7D is anticipated to start in 2026 is estimated to cost $8.6M.

Shaft 5 - Electrical Switchgear to be replaced

Improvements to the Shaft 5 building in Weston will upgrade and bring existing utilities to code, replace dewatering and sump pumps and upgrade instrumentation and control systems at an estimated of cost $3.3M. This will allow better access to valves and equipment and provide better remote monitoring. The design is currently underway with an anticipated construction award in April 2026. Similar upgrades to the Shaft 9 building in Somerville will be designed at a future date (2028) and is estimated to cost $13.6M.

Weston Aqueduct Supply Main (WASM) 3 Rehabilitation

This eleven-mile steel pipe, installed in the 1920s and 1930s, is a critical supply line to over 250,000 customers in the Northern High, Northern Extra High, and Intermediate High pressure zones. In the event of a loss of the City Tunnel or City Tunnel Extension, this large diameter pipe will be depended on to provide emergency flow to the Gillis Pump Station, which would serve the Northern High and Northern Intermediate High communities. The first of three contracts was substantially complete in May 2023 that rehabilitated over 2.5 miles of 56-inch and 60-inch pipe at an estimated

WASM 3 - cement-mortar lined steel pipe

WASM 3 – pipe replacement

cost of $20.5M. The second phase of the WASM 3 rehabilitation will repair 0.6 miles of 60-inch pipe in poor condition with a history of leaks. CP-2 is currently under design with an anticipated construction award in August 2025 and at an estimated cost of $13.8M.

Low Service Pressure Reducing Valve Improvements

This project is nearing the completion of construction at a cost of approximately $12.2M. The project has increased the size of existing pressure reducing valves (PRVs) on the WASM 4 pipe at Nonantum Road in Boston and the WASM 3 pipe at Mystic Valley Parkway in Medford, increasing the capacity of flow from the High Service pressure zone to the Northern Low pressure zone. They will ultimately supply the Spot Pond and Gillis Pumping Stations in an emergency condition with either the City Tunnel or the City Tunnel Extension out of service. With this increased capacity, these stations will be capable of supplying the Northern High and Northern Intermediate High pressure zones.

WASM 3 42-inch diameter PRVs

Section 101 Waltham Pipeline Extension

The project consists of installing 9,000 linear feet of new 36-inch diameter water main and appurtenances extending from Waltham's Meter 182 at the Waltham/Lexington town line down Lexington Street to Totten Pond Road, where it will connect to Waltham's existing water system. This new water main will provide redundancy for MWRA's Lexington Street pumping station during the anticipated isolation of MWRA's WASM 3 pipeline discussed for the construction projects mentioned above or in the event of a WASM 3/Lexington Street pumping station failure. This project is currently in construction and is approximately 40% complete at an approximate cost of $32.7M.

36" pipe & thrust block @ Lexington St & Totten Pond Rd

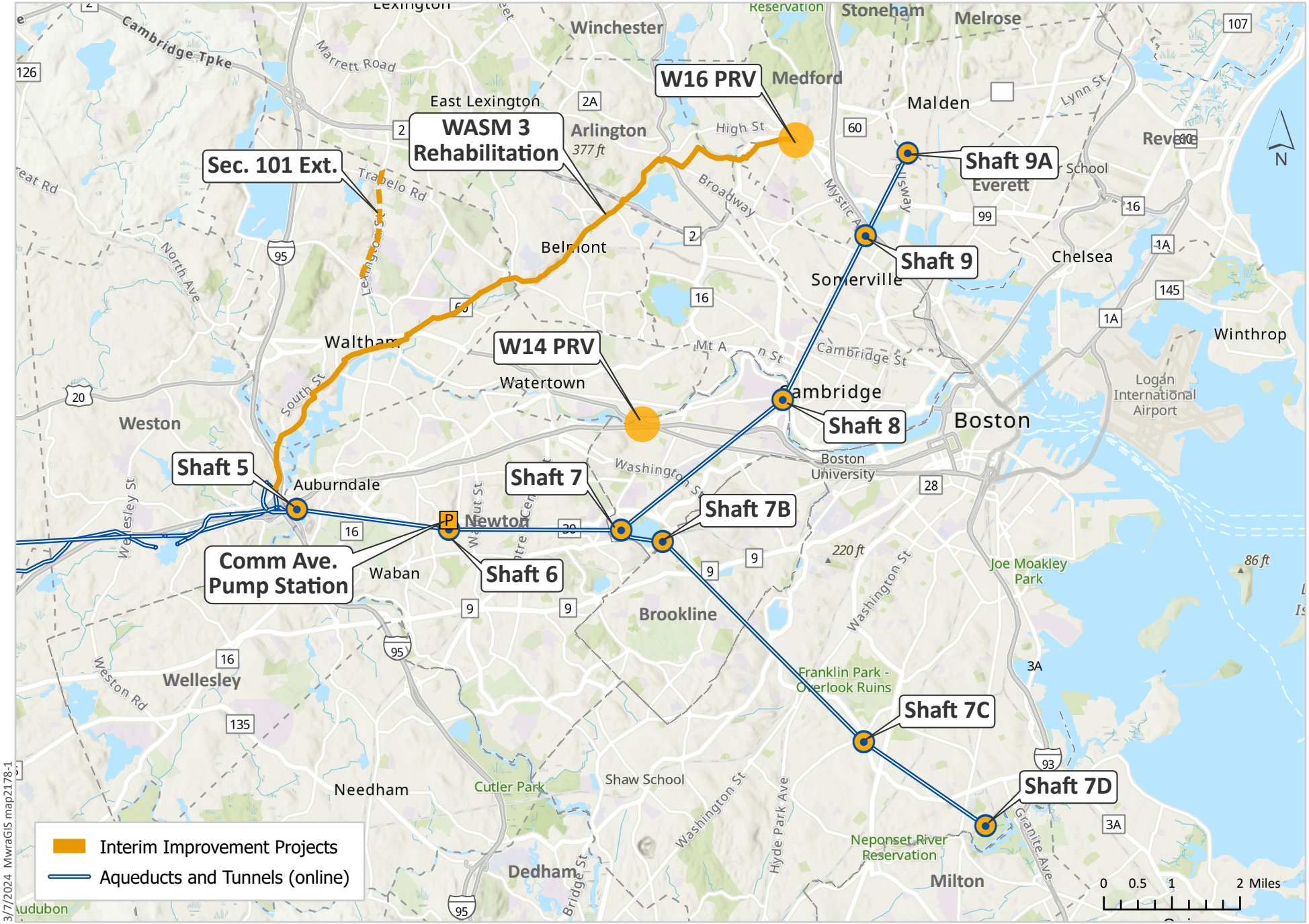
BUDGET/FISCAL IMPACT:

The cost of these projects is $120.3M and is included in the Capital Improvement Program budget.

ATTACHMENT:

Figure 1 - Metropolitan Interim Improvements Projects

FIGURE 1: Metropolitan Interim Improvement Projects



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Water Tunnel Program
Preliminary Design and Environmental Impact Report

COMMITTEE: Water Policy and Oversight

X INFORMATION
VOTE

Paul V. Savard, P.E., Director, Design and Construction
Colleen Rizzi, P.E., Director, Env. & Reg. Affairs
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:
For information only. This staff summary provides a summary of the preliminary design and Environmental Impact Report for the Metropolitan Water Tunnel Program (Tunnel Program).

DISCUSSION:

Preliminary Design and Environmental Impact Report Summary

On February 5, 2017, the Board of Directors approved construction of northern and southern deep rock water supply tunnels to provide needed redundancy for the Metropolitan Tunnel System. The Board directed staff to proceed with preliminary design, geotechnical investigations and Massachusetts Environmental Policy Act review of the project. These two tunnels and the related work of the Tunnel Program will provide the needed redundancy for the Metropolitan Tunnel System, which consists of the City Tunnel, the City Tunnel Extension, and the Dorchester Tunnel.

On May 27, 2020, the Board approved the award of Contract 7159, Metropolitan Tunnel Redundancy Program Preliminary Design, Geotechnical Investigation and Environmental Impact Report. As part of this contract, the Preliminary Design Report (PDR) was completed. The PDR presents the plan for approximately 15 miles of tunnels that will be constructed in rock about 250 to 500 feet below ground.

Contract 7159 also included preparation of the required Massachusetts Environmental Policy Act (MEPA) filings, and development of a comprehensive list of the environmental permits needed. The MWRA submitted an Environmental Notification Form (ENF), Draft Environmental Impact Report (DEIR), Supplemental Draft Environmental Impact Report (SDEIR), and the Final Environmental Impact Report (FEIR). Contract 7159 was completed in January 2024.

Work associated with the preliminary design and MEPA filings was performed in parallel. Several key objectives of this phase of design that were accomplished include; selection of shaft sites that meet system hydraulic requirements and provide sufficient space for temporary staging areas and permanent infrastructure; establishment of a preliminary tunnel alignment (both horizontal and

vertical) that control costs associated with mining through difficult ground conditions or requiring costly permanent liner systems; establishment of tunnel segments and construction sequencing and packaging that will promote good competition by qualified bidders; and avoidance, minimization, and mitigation of damage to the environment and impacts to the communities to the maximum extent practicable.

As the preliminary design phase progressed, certain aspects of the FY17 concept evolved with differences incorporated into the current Tunnel Program as noted herein.

Geotechnical Investigation

Subsurface investigation of ground conditions is crucial for the design and construction of the Tunnel Program. The subsurface investigations for the Tunnel Program are being performed in multiple phases to suit the advancement of the design and future construction contract documents. During preliminary design, historical data was compiled and reviewed, bedrock outcrop mapping was completed and used to inform the preliminary design of the tunnels and shafts. Given the length of the tunnels and their depth, a substantial amount of geological samples, including tens of thousands of feet of rock cores, will be collected as part of the Tunnel Program. Contract 7159 collected approximately 7,000 feet of rock core from 18 borings. Over 30,000 feet of rock core as well as other geotechnical sample data are expected to be collected for the Tunnel Program.

The proposed tunnel alignments will cross multiple major regional faults. The locations of the faults were first identified by a desktop study of geologic maps and construction records for several of MWRA's past tunnel projects. They were refined based on bedrock outcrop mapping and the geotechnical investigations. In subsequent stages of the subsurface investigations, additional work will further refine the locations and limits of the faults, as well as investigate the faults' characteristics and ultimately help control the costs of construction.

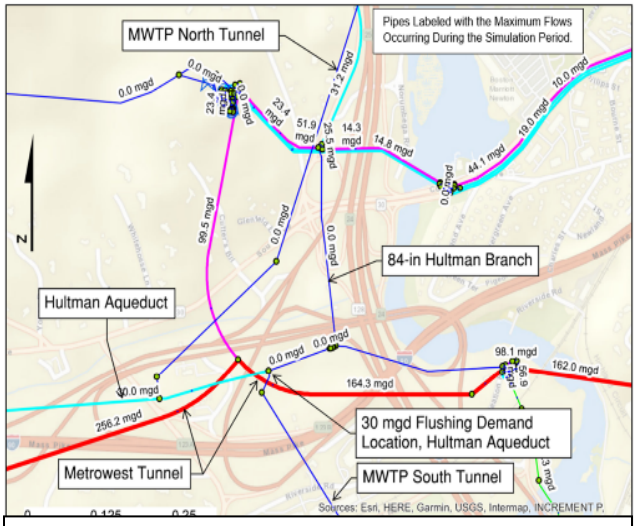
On November 16, 2022, the Board approved a lease of approximately 19,000 square feet of warehouse and office space for rock core storage at 110-116 Gould Street in Needham, Massachusetts. The Core Storage Facility provides the space needed for core storage and logging, photographing, reviewing, and processing the large amount of data in an accelerated manner.


Core Storage Facility (Needham)

Hydraulic Analysis

Hydraulic modeling was performed to support the evaluation and development of the preliminary design for the North and South Tunnel alignments that will provide a fully redundant tunnel system. The primary objective of the hydraulic modeling was to determine the required finished tunnel diameter and appropriate configurations of shafts

and connecting pipes from the new deep rock tunnels to MWRA's system and community systems. Hydraulic performance parameters included meeting target system hydraulic grade line (HGL) elevations while supplying projected design flows to customer meters (revenue meters), control valves, storage facilities, pumping stations and at other key locations in the water system. Modeling was also used to ensure the new tunnels, when in service, would not affect water age and that water quality would be maintained throughout the Metropolitan System. Hydraulic modeling confirmed that the tunnels should be sized between 10-foot to 12-foot diameter to meet the Authority's hydraulic performance goals to supply sufficient flow and pressures to its customers with the existing Metropolitan Tunnels out of service.



MWRA Hydraulic Model Near Shaft 5A

Hydraulic modeling also considered whether there would be appreciable differences in system operation considering the construction sequence of the two tunnels. As a result it was determined that early beneficial use of the South Tunnel is preferred because the South Tunnel could support greater system wide demand without requiring activation and control of the Authority's Chestnut Hill Emergency Pumping Station.

Shaft Sites and Tunnel Alignment

The tunnels will be integrated into the existing water transmission and distribution system by installing pipelines between shafts on the new tunnels and existing system infrastructure. The location of shafts was based in part on the required hydraulic connections to the existing water transmission and distribution system and the availability of land suitable for shaft sites.

Four shafts provide connections to the Hultman Aqueduct in Weston, the WASM 3 pipeline in Waltham, and the surface pipelines near the Dorchester Tunnel in Boston. These four shafts are required as they are the terminus of each tunnel and include:

- Lower 190 Trapelo Road Property, Waverley Oaks Road Entrance (North Tunnel, Segment 1) for connection to the Weston Aqueduct Supply Main 3 (WASM 3) pipeline;
- Park Road East (North Tunnel, Segment 1) for connection to the Hultman Aqueduct;
- Park Road West (South Tunnel, Segment 2) for connection to the Hultman Aqueduct; and
- American Legion (South Tunnel, Segment 3) for connection to surface piping and the stub at Shaft 7C of the Dorchester Tunnel.

Three shafts are required on sites with sufficient space for launching of the Tunnel Boring Machines (TBMs). The three launching shafts include:

- Tandem Trailer (North Tunnel, Segment 1);
- Highland Avenue Northwest (South Tunnel, Segment 2); and
- Highland Avenue Northeast (South Tunnel, Segment 3).

This presents one additional launching shaft than envisioned in the FY17 concept. The two shafts located at Highland Avenue break up the long South Tunnel into two shorter segments allowing flexibility in the construction sequencing and mitigating schedule risk associated with potential delays during construction of a single longer tunnel heading. Notwithstanding the benefits of bisecting the long South Tunnel, shaft sites large enough to accommodate TBM launching at either end of the South Tunnel were not readily available.

Six intermediate connections along the two tunnels provide redundancy to the existing system and provide benefit to MWRA's customers by reinforcing the water system network, and to meet hydraulic and water quality performance goals. The intermediate connections connect from the deep rock tunnel through a connection shaft and surface piping to existing pumping stations or existing water mains. Intermediate connections include:

MWRA School Street Parcel (connection to Lexington St Pumping Station)

- School Street (North Tunnel, Segment 1);
- Cedarwood Pumping Station (North Tunnel, Segment 1);
- Hegarty Pumping Station (South Tunnel, Segment 2);
- St. Mary Street Pumping Station (South Tunnel, Segment 2);
- Newton Street Pumping Station (South Tunnel, Segment 3); and
- Southern Spine Mains (South Tunnel, Segment 3).

The intermediate connections to Cedarwood Pumping Station in Waltham, Hegarty Pumping Station in Wellesley, and St. Mary Street Pumping Station in Needham were not part of the original FY17 concept but they provide meaningful redundancy that would not otherwise be provided to the local communities and can be most cost effectively constructed as part of the Tunnel Program. The Cedarwood Pumping Station currently relies solely on the WASM 3 pipeline for its supply. An intermediate shaft and connection at Cedarwood Pumping Station includes provisions for a second direct connection from the North Tunnel to feed WASM 3. Both the Hegarty Pumping Station and the St. Mary Street Pumping Station intermediate connections will provide a significant operational benefit for the communities of Wellesley and Needham, respectively, as these connections will ease concern of service disruption due to the age and condition of the Section 80 pipeline, which currently supplies these two community pumping stations.

The intermediate shafts are planned to be constructed primarily using the raise bore method. This method has the advantages of requiring a small construction staging footprint as well as limiting excavated material hauling from the shaft site since most of the shaft excavate material will fall into the tunnel below and be transported to and removed at the launching shaft sites.

One additional valve chamber, the Hultman Aqueduct Isolation Valve, was also not part of the FY17 concept, but it was identified as a recommended feature in the preliminary design. It will provide additional redundancy, resiliency and security, allowing MWRA to isolate an important section of the Hultman Aqueduct that will feed the two tunnels from the Shaft 5/5A area where the MWWST, the Hultman Aqueduct and the City Tunnel all interconnect within short distances.

The preliminary design also provides permanent tunnel dewatering points to allow future draining of the North Tunnel at Tandem Trailer and draining of the South Tunnel at Highland Avenue Northeast.

Overall, the preliminary design identifies the 13 shafts required for a complete tunnel system. Although six of these shafts were not identified in the FY17 concept, they are needed to achieve required redundancy, provide benefits, or mitigate risks as described herein. Once the shaft sites were established, the primary driver for the tunnel horizontal alignment is to have the shortest tunnel length possible between shafts. However, deviations from a simple straight-line alignment between shafts are needed to facilitate construction via appropriate horizontal curves and consideration of geologic conditions, including minimizing exposure to depressions in the top of rock elevation and avoiding crossing of major faults which can result in slower and more expensive tunnel mining and necessitate construction of a steel permanent liner.

The FY17 concept generally assumed that geologic conditions would result in tunnel construction and a tunnel liner system that is consistent with the MWWST project. The geologic data collected during the preliminary design better defined those geologic conditions. The data exhibits some important differences from that of the MWWST and provides a clearer understanding of the numerous faults, such as the Northern Boundary Fault, the Western Boundary Fault and others that cannot be avoided entirely along the tunnel alignments. The additional data collected during preliminary design was used to better estimate the tunnel excavation productivity rates for mining through the variable geologic conditions. The preliminary design tunnel excavation productivity rates are lower than what was anticipated in the FY17 concept, but are reasonable, considering the geologic conditions that are now better understood.

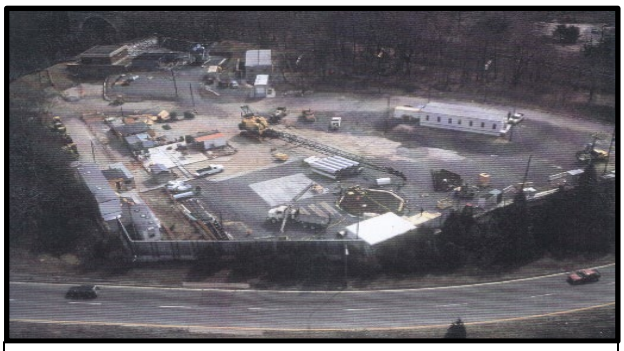
In addition to connecting to the shaft sites, the tunnel alignment avoids, to the extent possible, tunneling long distances within the influence of faults and overly variable geologic conditions. This results in an increase in the overall tunnel length by about one mile from what was anticipated in the FY17 concept, but reduces risks associated with mining through such challenging geology. The preliminary design alignment provides a net benefit to the Tunnel Program when considering the likely costs associated with tunneling through long lengths of faulted ground, and the increased contingency and potential schedule impacts.

Construction Staging Considerations

The staging area requirements for tunnel and shaft construction were factored into shaft site selection and preliminary design site layouts. Primary staging areas for tunnel construction will be at the TBM launching shaft sites. The Tunnel Program requires three TBM launching shafts as described above. Secondary staging areas will be needed at the receiving shafts at the Lower 190 Trapelo Road Property, at the west side of Park Road, and at the American Legion site. These launching and receiving shaft staging areas include space for construction activities for groundwater treatment, excavated material stockpiles, possible onsite concrete batch plants, and contractor workshops, equipment storage areas, field trailers, and construction worker parking areas. Larger staging areas are required at TBM launching shaft sites as compared to receiving shaft sites.

TBMs require a significant power supply. Selection of launching shaft sites considered the existing availability or ability to provide the required power supply to the site.

Informed by the MWWST, each TBM launching shaft site was selected in part to provide direct access to the nearest Interstate Highway System. Since each site has limited space for temporary excavated material storage, the direct highway access allows loading excavated material onto trucks with immediate access to the highway system for reuse or disposal offsite. This will greatly reduce vehicle traffic and avoid haul routes through most adjacent neighborhoods.



MWWST Shaft 5A with Highway Access

During the preliminary design, working closely with Massachusetts Department of Transportation (MassDOT) and other property owners, staff determined that several shaft sites needed alternative locations to those anticipated in the FY17 conceptual plan due to land availability. These alternative sites are equally, if not more favorably, suited for tunnel construction. For example, locating two launching shafts at the Highland Avenue interchange area complies with MassDOT's utility accommodation policy making effective use of the land that would otherwise remain underutilized. It avoids taking of other open space land that has more beneficial uses, and it has fewer community impacts during construction.

Tunnel Segments

The tunnels will be constructed in three segments (Figure 1). The North Tunnel comprises Segment 1 and extends from a connection to the Hultman Aqueduct on the east side of Park Road near a MassDOT maintenance facility building within the I-90/I-95 interchange in Weston. It will be approximately 4.8 miles long through Weston and Waltham. It will end at the Lower 190 Trapelo Road Property in Waltham where a connection to WASM 3 will be made.

The South Tunnel comprises two segments, Segment 2 and Segment 3. Segment 2 extends from a connection to the Hultman Aqueduct on the west side of Park Road in Weston. It will be approximately 3.4 miles long through Weston, Newton, Wellesley, and Needham. It will end at the northwest cloverleaf of the Highland Avenue/I-95 interchange. Approximately 0.1 miles of connector tunnel will extend to the northeast cloverleaf at the Highland Avenue/I95 interchange to connect to Segment 3.

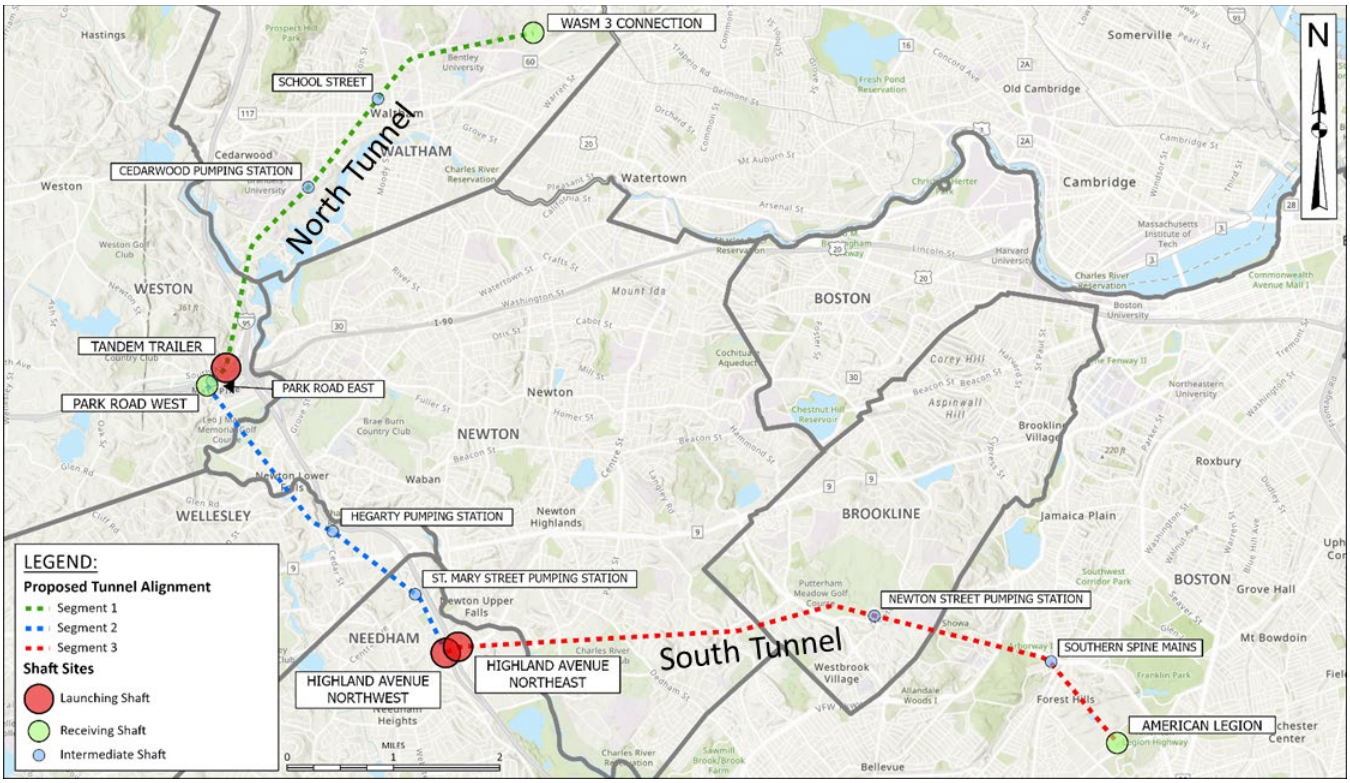


Figure 1 - North and South Tunnels

Segment 3 extends from the northeast cloverleaf of the Highland Avenue/I-95 interchange in Needham. It will be approximately 6.8 miles long through Needham, Newton, Brookline, and Boston to the proposed receiving shaft located on the north side of American Legion Highway (between Walk Hill Street and Morton Street) where connections to surface piping near Shaft 7C will be made.

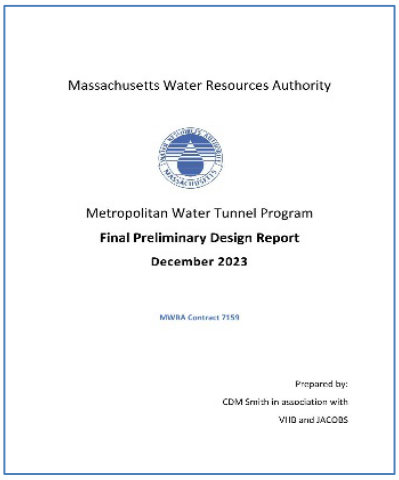
When put into service, the North Tunnel and the South Tunnel may be operated independently from each other and from the Metropolitan Tunnel System and still achieve required system redundancy. Water from the Norumbega Covered Storage Facility to the west can be delivered into the North Tunnel, the South Tunnel, and the Metropolitan Tunnels. Either of these tunnel systems could be taken off-line for maintenance without interrupting service. The two segments of the South Tunnel must both be put into service together in order to provide system redundancy when the Metropolitan Tunnel System is off-line.

Tunnel Design

The tunnel design and construction approach is based on a deep rock pressure tunnel with a cast-in-place concrete lining; otherwise referred to as two-pass tunnel construction. The first pass refers to construction of the tunnel primarily using a TBM for excavation of the tunnel along with installation of temporary initial ground support. The second pass refers to installation of concrete or steel permanent final lining. The horizontal and vertical alignment of the tunnel is set to allow for a plain (unreinforced) concrete lining for most of the tunnel length taking into consideration the rock strength and rock cover along the tunnel alignments. This tunnel design and construction approach is consistent with the MWWST.

Two Pass Tunnel - Cast in Place Concrete Liner

Preliminary Design Report



The PDR documents the basis of design and summarizes field investigations, engineering analyses, preliminary design decisions and preliminary design drawings. It includes information gathered from geotechnical investigations, field surveys, hydraulic analyses, environmental evaluations, tunnel design and construction approaches, site staging for tunnel construction, operation and maintenance, land availability, permit approach, and construction cost estimate and schedules among other initial design considerations.

The PDR presents the preliminary tunnel alignment and profile, design of the valve chambers and surface pipeline connections at the shaft sites, a construction contract packaging and sequence approach, and an updated construction cost estimate and construction schedule based on the recommended contract packaging.

During the final design stage the design will progress to 100% and construction bid documents. Although some aspects of the design will evolve throughout final design (i.e., shaft site layout, valve chamber details, pipe sizes, some construction methods, limited sections of tunnel alignment), shaft site locations and functions (i.e., launching, receiving, intermediate connection), connections, dewatering and isolation points, tunnel segments, and contract packaging are not expected to change during the final design stage.

Environmental Impact Report Status

Staff submitted an ENF to the MEPA Office for public comment in March of 2021. The ENF included an Alternatives Screening Report that documented the comparison and selection of the preferred two tunnel concept to other surface pipe and tunnel alternatives. The Secretary of Energy and Environmental Affairs (EEA) issued a certificate on the ENF that required the submittal of a mandatory DEIR.

Staff submitted a DEIR to the MEPA Office for public comment on October 22, 2022. The DEIR evaluated a preferred alternative and two backup alternatives. The purpose of evaluating three alternatives equally was to help maintain the Tunnel Program schedule should aspects of the preferred alternative become not viable at a later stage of design.

The DEIR included information on the following topics for the three DEIR Alternatives:

- Project Description and Permitting;
- Public Outreach;
- Environmental Justice;
- Alternatives Analysis;
- Land Alteration, Open Space, Wetlands, Rare Species Habitat, Cultural and Historical Resources;
- Water Management Act/Water Supply;
- Climate Change (adaption and resiliency, greenhouse gas emissions);
- Construction Period Impacts; and
- Responses to ENF Comments.

Through detailed analysis performed in parallel with the preliminary design, staff determined that the temporary construction impacts were very similar across the three remaining alternatives. The preferred alternative that will be advance to final design was selected in part because it provides the most flexibility to optimize packaging and configuration and the shortest overall construction schedule. The DEIR also included Mitigation and Draft Section 61 Findings, as required by MEPA.

EEA issued a certificate on the DEIR that required the submittal of a SDEIR before the Tunnel Program could proceed to the FEIR phase. Specifically, the SDEIR was to address the availability of the proposed North Tunnel receiving shaft site at the Fernald Property in Waltham, which was common to all three alternatives included in the DEIR, and to analyze and present any potential alternative receiving shaft locations. In addition, the SDEIR was to respond to comments on the DEIR received as part of the public comment and to supplement environmental justice and greenhouse gas analysis presented in the DEIR.

Staff submitted a SDEIR to the MEPA Office for public comment on July 31, 2023, which presented two alternative shaft sites in Waltham for the end of the North Tunnel. Two alternatives included a parcel on Beaver Street owned by the University of Massachusetts and one alternative included a different area on the Lower 190 Trapelo Road Property (referred to as the Lower Fernald Property in the SDEIR filing). The SDEIR evaluated the two new sites consistent with the methodology and criteria used in the DEIR.

EEA issued a certificate on the SDEIR that allowed the Tunnel Program to proceed to the FEIR phase and required that the FEIR address all comments received on the SDEIR. Staff submitted the FEIR to MEPA on February 15, 2024, notified nearly 200 stakeholders of its availability, and delivered hard copies to ten public libraries. Public comments are due to MEPA by March 25, 2024 and a certificate is expected in early April. The FEIR included Alternative 4B as the preferred alternative. This alternative is very similar to the preferred alternatives in the DEIR and SDEIR, with the most significant change being the terminus of the North Tunnel. The FEIR preferred

alternative, and the one that will be carried into final design includes a receiving shaft at the Lower 190 Trapelo Road Property in Waltham.

Community and Stakeholder Outreach

Staff have implemented a communication plan to ensure that communities and stakeholders are informed as to the importance of this effort and what can be expected in the years ahead. Staff have been coordinating with a working group that includes representatives of each of the ten communities in the Tunnel Program study area, the MWRA Advisory Board, the Water Supply Citizens Advisory Committee and the Metropolitan Area Planning Council. This working group was particularly active in the planning phases of the Tunnel Program and the environmental review process as staff were evaluating shaft sites and tunnel alignments. Ongoing coordination with the working group members has been primarily to provide Tunnel Program updates with a focus on field work and other Tunnel Program related activities planned in the communities. Staff will continue to collaborate with the working group members as the Tunnel Program moves through final design.

Further, staff are holding additional meetings with community representatives from the seven municipalities where the tunnel will be constructed. Staff have been meeting with individual property owners in support of the geotechnical exploration program. Coordination meetings with public safety personnel from several communities has begun and will continue through design and construction to ensure the safety of the public as well as the workers who will construct the tunnels. To date, staff have held over 140 meetings with various community representatives, state agencies, stakeholders, and property owners.

Staff will hold broader public information sessions starting in 2024 with a variety of topics to keep the sessions to a reasonable timeframe. Topics may include a Tunnel Program overview, an overview of tunneling methods (i.e. “Tunneling 101”) and associated construction period impacts such as traffic, noise and vibration, and other topics of interest to stakeholders. As design and/or construction progresses, these public sessions may be split to focus on the North Tunnel and the South Tunnel, given the geographic area and the schedules associated with each tunnel. Additionally, staff will continue to hold public information sessions and/or workshops as requested by communities or other stakeholders. Staff are also looking at opportunities to engage local schools and other community-based organizations as the Tunnel Program moves forward.

A key goal of the public outreach plan is ensuring participation of members of environmental justice populations throughout all phases of the Tunnel Program. This includes improving the accessibility of information within the communities through appropriate public notices ahead of public meetings, dissemination of fact sheets, hosting relevant information on the Tunnel Program website, providing translation and interpretation services in the prevalent languages within the communities, and utilizing non-traditional media sources. Staff will employ additional methods of engagement as the Tunnel Program progresses with feedback from stakeholders and in alignment with MWRA’s overall environmental justice strategy. Moreover, staff will work with community representatives and community-based organizations to determine the most effective means of communication and notification to environmental justice populations.

BUDGET/FISCAL IMPACTS:

The proposed FY25 CIP includes $2.1 billion for the Metropolitan Water Tunnel Program. This budget will be refined periodically during Final Design.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Water Tunnel Program
Program Look Ahead

COMMITTEE: Water Policy and Oversight

X INFORMATION
VOTE

Paul V. Savard, P.E., Director, Design and Construction
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

For information only. This staff summary provides a summary of ongoing and future activities for the Metropolitan Water Tunnel Program (Tunnel Program).

DISCUSSION:

Program Schedule

The Tunnel Program is a multi-decade effort with planning, permitting, design, and construction each taking significant time to complete. Early Tunnel Program planning began in 2015 with preliminary design and environmental review. Geotechnical investigations began in 2020. Preliminary design is now complete, environmental review is nearing completion, and final design is anticipated to begin in fall 2024. Tunnel system construction is targeted to begin in 2028 and is estimated to be completed with the new tunnel systems in service by 2040.

Completed, Ongoing and Future Contracts

To date, three professional services contracts have been approved by the Board, executed in support of the Tunnel Program and are managed by the Metropolitan Water Tunnel Department. The professional services contracts include the following:

- Program Support Services, which provides general consulting, submittal review, risk management support, constructability reviews, cost estimating/validation, schedule support, staff augmentation, and Expert Review Panel engagement support. This contract was for an initial term of five years for $10,247,877. The initial term will end in April 2024 and the first of two optional two-year terms at $7,000,000 was approved by the Board in December 2023;

- Preliminary Design, which consists of early geotechnical investigations, preparation of Environmental Impact Reports and preparation of a Preliminary Design Report, drawings, schedule and cost estimate. This contract was for $15,692,527 and ended in January 2024;

- Geotechnical Support Services, which focuses on the collection of extensive geotechnical/geological data to support final design, bidding and construction of the Tunnel Program. This contract is for $12,789,889 and is scheduled to end in January 2026.

One real estate lease was approved by the Board in November 2022 and executed for approximately 19,000 square feet of warehouse/flex space in Needham, Massachusetts for the processing and storage of geotechnical samples (primarily rock core) that are needed for the Tunnel Program. The warehouse/flex space includes offices for Tunnel Program use. More details on the overall Tunnel Real Estate Program are included later in this staff summary.

Additional professional services contracts are planned in support of the Tunnel Program. These include Final Design Engineering Services and Construction Management. The Final Design Engineering Services contract procurement is ongoing with an anticipated recommendation for award at the September 2024 Board meeting. This contract is the subject of a separate staff summary.

The Construction Management (CM) contract(s) procurement is anticipated to begin in 2025. However, provided the overall Tunnel Program schedule is maintained, it is anticipated that one CM contract will be awarded for both tunnel construction packages, similar to the approach used for the MetroWest Water Supply Tunnel (MWWST).

Two tunnel construction contracts are planned; one for the North Tunnel and one for the South Tunnel. Bidding of the South Tunnel construction contract is targeted for 2027 with tunnel construction starting in 2028. Bidding and start of construction of the North Tunnel is targeted for 2028 and 2029 respectively. Tunnel construction, including surface work and commissioning, is estimated to take 8 to 12 years to complete. It is expected that two or three smaller construction contracts will be procured and completed prior to the start of tunnel construction to remove early enabling works from the tunnel contracts' critical paths. These enabling contracts are related to demolition of existing buildings, site reconfiguration to allow continuity of current use, and dewatering drain line work at or near future launching shaft sites.

Project Labor Agreement

MWRA has begun the process of evaluating the use of a Project Labor Agreement for the Tunnel Program and intends to secure counsel to assist in these efforts. Staff will return to the Board for further updates on this item.

Tunnel Department

In 2018, the Authority established the Metropolitan Tunnel Redundancy Department (Tunnel Department) to develop and execute the Tunnel Program and lead its day-to-day management, decision-making and selection of implementation strategies as well as be responsible for the management of all professional services and construction contracts for the Tunnel Program. In addition, the Tunnel Department oversees aspects of the Tunnel Program that MWRA will self-perform (land acquisition, outreach, and stakeholder agreements) and program level controls (schedule, budget, and change management).

The Tunnel Department is leading the Tunnel Program in all respects noted above and is currently focused on executing critical path activities, to control both Tunnel Program schedule and budget,

as discussed below. These include systematic monitoring of budget expenditures and schedule milestones of the various consultants. The Tunnel Department has integrated the MWRA self-performed work into the Tunnel Program schedule and is managing this work to meet schedule milestones. Reorganization of the Tunnel Department to align staffing for the next phase of the Tunnel Program was the subject of a staff summary and presentation at the December 2023 meeting of the Board of Directors.

Critical Path

As the Tunnel Program transitions from preliminary to final design, the focus of the work will shift to completing a detailed final design and permitting for each construction contract, acquiring land, expanding outreach efforts, achieving stakeholder agreements and preparing for tunnel construction. The planned overall schedule for the Tunnel Program is similar to the overall schedule achieved for the MetroWest Water Supply Tunnel (MWWST). This schedule is considered achievable, provided several critical path activities, such as geotechnical investigations, land acquisition, stakeholder agreements, and Tunnel Boring Machine (TBM) power supply are not significantly delayed. Extending the Program schedule beyond that currently planned will add inflationary and other costs to the overall Tunnel Program. Depending on the actual rate of inflation, the number of unawarded contracts, and impact on awarded contracts at the time, a six-month schedule slippage could add between $15 million to over $100 million to the total Tunnel Program cost. Accordingly, staff continue to focus on critical path items without sacrificing quality of work, stakeholder engagement, or adding unnecessary costs to the Tunnel Program.

Current critical path activities, including those that will involve Board approvals are as follows:

Geotechnical Investigations: Completion of deep rock test borings throughout the tunnel alignments has been on the critical path for some time. The Geotechnical Support Services contract was implemented to assist in collecting the geotechnical and geological data necessary for design, bidding and construction of the tunnel contracts. Upwards of 100 test borings were planned with over 40 borings drilled to date, however, progress in completing this work has been slower than originally anticipated. The boring locations have proved to be difficult to site, due in part to the dense urban nature of the Tunnel Program area, property access limitations and restrictions, and the complexity of the local geology. In addition, there are resource constraints (locally and nationally) in the industry to execute this work (e.g., skilled drillers, testing labs, geophysical survey firms, experienced field staff, qualified geologists, etc.). A similar size investigation program has not been conducted in the Boston area since the Central Artery/Tunnel, the Boston Harbor Project and MWWST, over 20 years ago. The quality and completeness of this data will serve as a key foundational basis for final designs, future engineers' cost estimates, contractors' bids, and claims mitigation. Therefore, successfully completing this work without affecting the Tunnel Program schedule is a high priority. Staff are leveraging the current Geotechnical Support Services contract to prioritize geotechnical data collection in areas that could have a material impact on the tunnel alignment, construction methods, construction duration, or costs in an effort to mitigate potential schedule impacts.

Land Acquisition: Much of the land on which the Tunnel Program will be constructed is not currently owned by MWRA. Land associated with three launching shaft sites, three receiving shaft sites, one large connection shaft site, and three of the six connection shaft sites will need to be acquired. All three launching shaft sites, one receiving shaft site, and the large connection shaft site are under the care and control of Massachusetts Department of Transporatation (MassDOT)

with the right-of-way for the Hultman Aqueduct under the care and control of MWRA. One receiving shaft site and one connection shaft site are owned by the City of Waltham. The third receiving shaft site and one connection shaft site are under the care and control of DCR and will require Article 97 legislation and must meet the obligations of the Public Lands Preservation Act (PLPA), including the identification and dedication of replacement land. One connection shaft site is owned by the Town of Wellesley and may also require Article 97 legislation.

MWRA currently owns the land associated with three connection shaft sites: School Street (Waltham), St. Mary Street Pumping Station (Needham), and Newton Street Pumping Station (Brookline). In July 2021, the Board approved the purchase of a parcel of land on School Street in Waltham for the purposes of constructing a connection shaft for the Tunnel Program. In September 2021, the School Street parcel was purchased for $1,850,000. The St. Mary Street Pumping Station connection shaft site is located within an existing easement for the Sudbury Aqueduct over which MWRA has care and control. The Newton Street Pumping Station connection shaft site is located within the limits of the existing MWRA station and will require no new land acquisition.

MWRA plans to acquire most new land and shaft sites in fee with the exception of MassDOT-controlled sites which will be acquired by permanent easement. In addition to land currently owned by MWRA, approximately nine acres of land will be permanently acquired for shaft sites, of which approximately 3.8 acres require Article 97 legislation. Temporary easements for approximately 38 acres of construction staging areas will also be needed in addition to the permanent land acquired at various shaft sites.

Easements in roadways or on public land for new water and drain pipelines will be required at eight sites involving approximately 6,000 feet of new pipeline easement. Permanent access easements will be needed at approximately nine sites to allow for long term operations and maintenance of the future valve vaults and top of shaft structures where the planned permanent site limits do not extend to a public way.

Subterranean easements will be required for each property below which the new tunnels will be constructed. The subterranean easements will run the entire length of the new tunnels and dimensionally extend 50 feet wide by 50 feet high centered on the tunnel axis. The subterranean easements will be 200 to 450 feet below ground and will not allow for surface access, and thus will not affect property usage above the tunnel. Subterranean easements that extend below protected and recreational open space will require Article 97 Legislation to acquire, however, since these easements will not affect property usage above, replacement land obligations of the PLPA are not anticipated. The number of subterranean easements to be acquired will depend on the final tunnel alignments; however, it is estimated that approximately 160 subterranean easements will be required for the North Tunnel and approximately 440 subterranean easements for the South Tunnel.

Figure 1 shows shaft site locations with current ownership as well as land (both shaft sites and subterranean easements) that may require Article 97 legislation to acquire.

For shaft sites that will need to be purchased, costs are expected to be based on negotiations and an appraised value consistent with MWRA's Real Property Acquisition Policy. Costs for subterranean easements will also be based on appraised values but because the easements are 200 to 450 feet below ground and do not impact surface use or development, the subterranean easements are typically acquired at nominal cost.

All property acquisitions will be coordinated and in compliance with MWRA's Real Property Acquisition Policy and approval requirements. Of significance, many of the current landowners are state agencies and municipalities, and they too have their own multi-step requirements and approval processes for property dispositions. Recommended property acquisitions will be presented in detail to the Board for authorization.
Applicable acquisitions will need to be completed prior to bidding of each tunnel construction package, preferable by the 90% design stage. The design details necessary to prepare acquisition documents will likely not be finalized until after the 60% design stage. The expected time period between 60% and 90% design is around 12 months, leaving a significant number of acquisitions to be executed in a relatively short amount of time. Therefore, land acquisition will be on the critical path in the future. Staff have already begun coordinating the shaft site acquisitions, pipeline easements, and access easements with landowners in order to mitigate a potential schedule impact.

Community/Stakeholder Agreements: Memoranda of Understanding (MOUs) will need to be executed with each community in which the tunnel alignment crosses. These memoranda typically address a wide range of topics including land acquisition, permitting and local regulations, public safety, public communications, water supply contingency, work hours, hauling hours and routes, traffic management, dust and noise control, blasting and vibration control, connections to community water systems, mitigations, and final site conditions (fencing, lighting, landscaping, etc.). These topics will need to be resolved with each of the seven communities in which the tunnels and shafts will be located. Although discussions with communities have already begun, similar to land acquisition, sufficient design details at 60% design stage are needed to include in the MOUs.

MWRA is coordinating with local fire and emergency management entities from multiple communities to support the Tunnel Program with emergency response to the Tunnel Program sites. As has been done on past MWRA tunnel projects and consistent with industry practice, advance coordination during the design phase is necessary to ensure a proper framework is established for local fire and emergency response during construction. The framework will include local fire and EMS personnel receiving specialized training, procuring necessary equipment and establishing a coordinated response by the various communities. Staff have been working with emergency personnel from the seven communities who have indicated they will have to rely on mutual aid agreements between communities as no one community in the Tunnel Program area is large enough to be the sole emergency responder during construction. Community emergency personnel have indicated that significant advance coordination will be required to obtain the necessary equipment and train sufficient numbers of emergency personnel to ensure that enough properly trained staff can be available to respond to emergencies at multiple active shaft sites, if needed, over the course of construction, without affecting their emergency readiness. Resource commitments by MWRA will be required and included in each community MOU.

All recommended MOUs will be presented to the Board for authorization. Each MOU will need to be executed prior to construction, ideally by the 90% design stage, and will be included in the contract documents for the respective construction bid packages. Thus, MOUs will be on the critical path in the future.

Tunnel Boring Machine Power Supply: High voltage power for the Tunnel Boring Machines (TBM) is not readily available at the three launch sites. It is estimated that approximately 9,000kVA is required at each site. Power supply is often a long lead work activity for tunnel projects. Staff have been working with Eversource since 2021 to develop a plan to have high

voltage power brought to each launch site prior to the start of construction. This work will involve installation of approximately 1.7 miles of new and reused duct bank and cable through Needham for the two South Tunnel launch shaft sites at Highland Avenue in Needham. Approximately 3.2 miles of new duct bank and cable through Waltham, Newton, and Weston will be needed for the North Tunnel launch shaft site at the Tandem Trailer site in Weston. The work, including a power supply assessment and routing study, the design of the new duct banks and construction, would be undertaken by Eversource. It is anticipated that MWRA and Eversource will enter into an agreement, which will address the required schedule and compensation for this work. When the Tunnel Program is complete, the added power supply will remain and provide further resilience to the power grid. The full details of an agreement with Eversource to supply power for the Tunnel Program will be presented to the Board for authorization.

Figure 2 shows a conceptual Tunnel Program Critical Path Schedule with the items noted above.

Challenges and Opportunities

The Tunnel Program is considered a "megaproject" in that it is a large scale, complex project that will take many years to design, permit and build and it involves multiple private and public stakeholders, with a total cost of over one billion dollars. MWRA has a history of successfully completing large complicated projects and understands that with any big endeavor, challenges will arise along with opportunities to address those challenges. A few items that staff have identified as challenges and opportunities are as follows.

Resources: Completion of the Tunnel Program within the currently planned schedule will require the collaboration and coordination of a number of parties including, but not limited to, the MWRA Board of Directors, the MWRA Advisory Board, and multiple MWRA Departments, numerous federal and state agencies, seven host communities, key stakeholders, design and construction consultants, construction contractors and subcontractors, labor groups, and a small army of talented construction workers. It is estimated that during the construction period, approximately 200 people will be directly employed at one time in some form by the Tunnel Program. The specialty nature of this work will require people both locally available but will also draw from national talent. This influx of quality jobs provides an opportunity for MWRA to continue to support certified minority-owned and women-owned businesses.

Given the number of parties involved, with many experiencing resource challenges currently, resource constraints will inevitably occur over the course of the Tunnel Program. Some level of resource constraint is anticipated on any large project but the current labor and economic climate makes the potential occurrence and possible consequence greater. In an effort toward early identification that should allow time to mitigate some of these challenges, staff have developed an initial program schedule, extending into construction and with sufficient granular detail, to identify required sequential activities and overlapping resource needs. For example, community representatives and MWRA staff (Tunnel Department, Law Division and Public Affairs) are involved in both finalizing land acquisitions and executing community agreements, which preferably occur between the completion of 60% and 90% design. Staff have already begun coordinating acquisitions and MOU development in order to mitigate a potential schedule impact; however, it is expected that this resource constraint will require continued monitoring and mitigation.

In addition, tunneling is a highly specialized, national and international market with significant tunnel work ongoing worldwide and closer to home, as well as in the North American pipeline. As a result, this may lead to impacts related to the availability of contractors, labor workforce, and longer lead times for materials and equipment. MWRA cannot control national and international market conditions. However, staff continue to monitor the conditions that influence the tunneling industry for the purposes of identifying potential increases and/or decreases in the cost of commodities and resources to be able to most accurately reflect current climates that may influence Tunnel Program costs.

Geologic Conditions: A tunnel project is unique in that most, if not all, of the project is constructed below ground. The largest costs and often the greatest risks to cost increases, schedule delays, and safety are related to the geologic conditions. Although MWRA has a long history of tunneling in the Boston area, each project is unique due to the geologic conditions in which it is constructed. These conditions are challenging in part due to the wide range of rock types that will be mined (hard granites and volcanic rocks, conglomerates to soft shales; abrasive rocks that can be faulted, fractured, and water bearing). In addition, at least four known fault zones will need to be crossed along the tunnel alignments. Fortunately, many of these rock conditions are relatively well understood and have been successfully mined in past projects. However, the geotechnical investigations conducted to date for the Tunnel Program have identified some previously unknown geologic conditions.

Along the North Tunnel alignment in Waltham, where the Northern Boundary Fault was anticipated but no previous test borings had been drilled to sufficient depth to confirm its presence or geometry, multiple fault zones, deep soil overburden, and some low-quality sedimentary rock have been identified. Although these ground conditions do not impact the overall constructability of a rock tunnel with a modern TBM, areas of poor quality rock can add to construction durations and cost impacts, as mining production can be slower and require more dewatering, stabilization grouting and/or additional ground support. Accordingly, staff are focused on conducting geotechnical explorations at target locations in Waltham to better understand these conditions, where they occur, as well as to look at means to avoid, minimize or mitigate the impact (e.g., shift the alignment between shaft sites to avoid them, shorten tunnel lengths in challenging rock formations to minimize encountering them, and specify stabilization methods rather than allow a contractor to select certain construction methods to mitigate them).

Along portions of the South Tunnel alignment, naturally occurring asbestos has been found within thin veins in some rock types. Naturally occurring asbestos refers to a family of very thin and fibrous minerals that are formed as a result of natural geologic processes and is present in many rock types in over 30 states. However, it is not prevalent in Massachusetts. It is expected that, where present in the Tunnel Program area, only trace levels occur but the exact limits and amount along the South Tunnel alignment are unclear at this time. Naturally occurring asbestos does not dissolve in water or evaporate, and, if left undisturbed, is not a health risk. However, it can become a health risk if it is released from its bound, crystalline form in the rock during construction, potentially becoming airborne and inhaled. The presence of naturally occurring asbestos may require additional engineering controls during tunnel construction (i.e., ventilation, dust control, etc.) as well as added management of excavated rock handling and disposal. Massachusetts has no regulations specific to handling or disposal of rock with naturally occurring asbestos. Staff have been working with MassDEP to develop safe work protocols for the current geotechnical exploration program. In addition, staff are currently focused on conducting explorations at target locations to better understand the limits, occurrences and concentrations of naturally occurring

asbestos in suspect rock types. The presence of naturally occurring asbestos in the rock in which the tunnel will be constructed will not impact the long term safety or performance of the tunnel system.

BUDGET/FISCAL IMPACTS:

The proposed FY25 CIP includes $2.1 billion for the Tunnel Program. This budget will be refined during final design.

ATTACHMENT:

Figure 1 – Shaft Site Locations, Current Ownership Land Requiring Article 97 Legislation
Figure 2 – Conceptual Tunnel Program Critical Path Schedule

Figure 1 – Shaft Site Locations, Current Ownership, and Land Requiring Article 97 Legislation

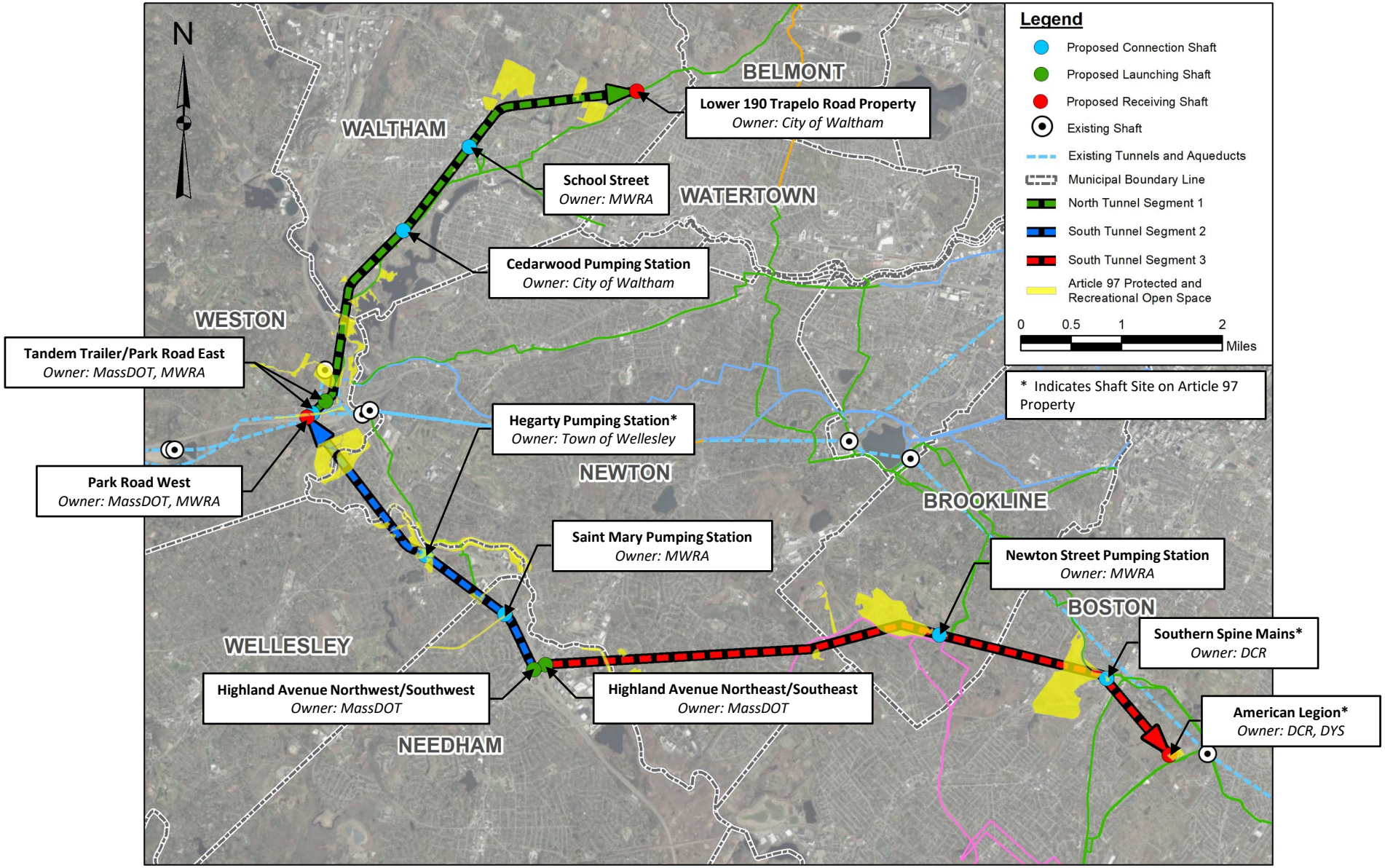
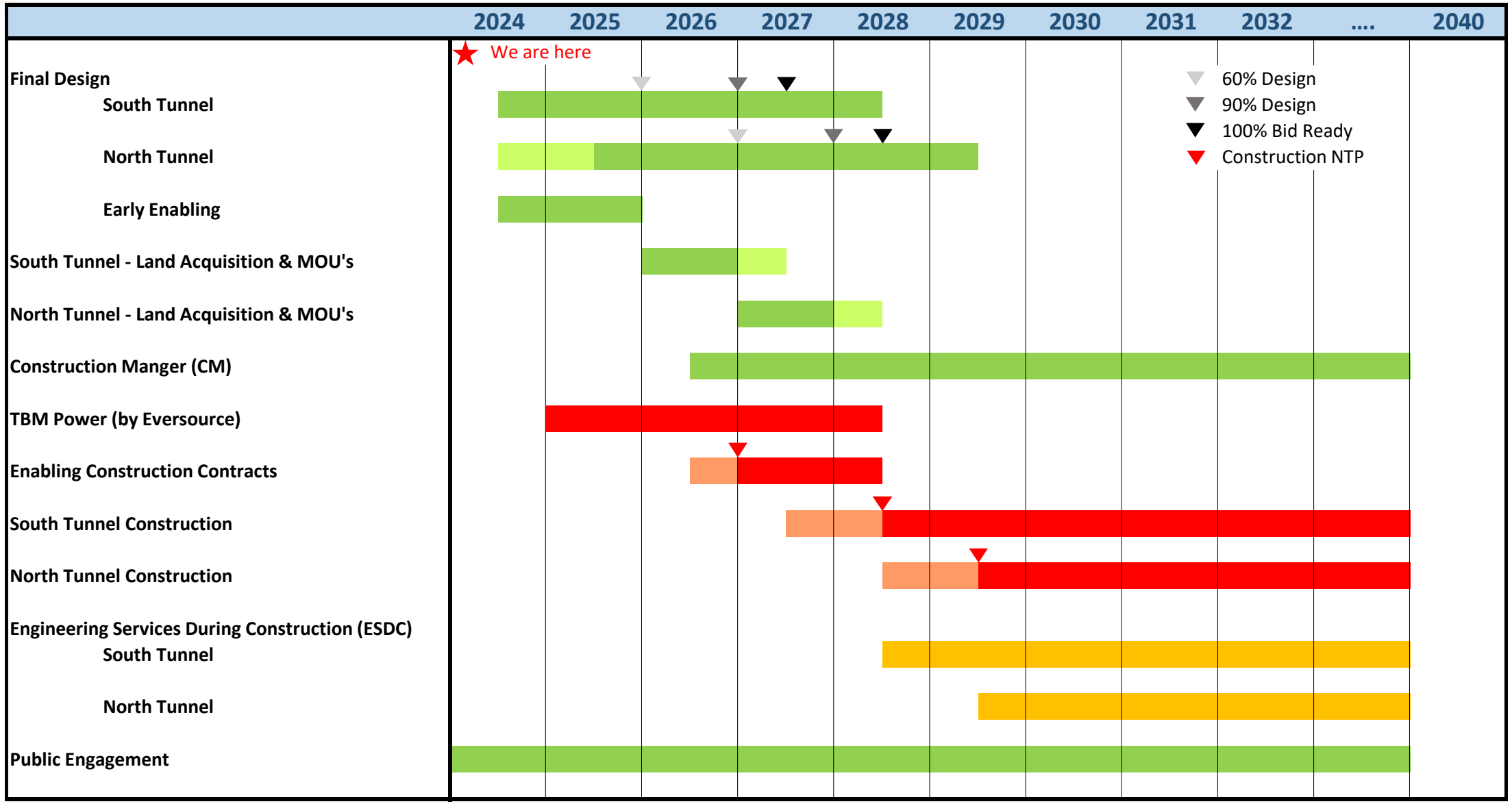


Figure 2 - Conceptual Tunnel Program Critical Path Schedule



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Water Tunnel Program
FY25 CIP Updated Program Cost Estimate and Cost Controls

COMMITTEE: Water Policy and Oversight

__X__ INFORMATION
_____ VOTE

Thomas J. Durkin, Director, Finance
Paul V. Savard, P.E., Director, Design and Construction
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

For information only. This staff summary provides an update on the cost estimates for the Metropolitan Water Tunnel Program (Tunnel Program) as reflected in the proposed FY25 Capital Improvement Plan and summarizes cost control measures for the Tunnel Program.

DISCUSSION:

The Tunnel Program was originally added to the Capital Improvement Plan (CIP) in 2017 as item "625 Long Term Redundancy" with an estimated program cost of approximately $1.47 billion (value date of December 2016). This estimate was a planning level estimate and included a 30 percent contingency and a four percent contractor escalation.

Modifications to this original CIP item occurred in FY18 CIP with some sub-phases moved out to other CIP items and annual inflation added to future contracts. The FY18 CIP for 625 Metro Tunnel Redundancy was $1.36 billion. Between the FY18 and FY24 CIPs, modifications to 625 Metro Tunnel Redundancy have been limited to the addition of annual inflation, award of three professional services contracts, and purchase of one parcel of land. The FY24 CIP was $1.8 billion. The difference between the FY18 and FY24 CIPs (approximately $438 million) is due to annual inflation added each year to bring the CIP value consistent with the mid-point of each fiscal year. Base costs to plan, design and construct the Tunnel Program have not been updated since 2016.

Proposed FY 25 CIP

With the completion of preliminary design, which included the development of the first bottom-up cost estimate for the Tunnel Program, CIP Project 625 can be updated to accurately reflect the preliminary design documents, likely construction methods, ground conditions as currently understood, planned construction packaging, schedule, and current market conditions (among other factors).

The proposed FY25 CIP for 625 Metro Tunnel Redundancy includes an estimated program cost of approximately $2.1 billion (value date of December 2024). This estimate includes an increase for annual inflation to unawarded construction contracts ($130 million) and an increase to the base

construction cost ($200 million). Design, construction management, land acquisition, legal, and administrative costs were increased for annual inflation only ($17 million). The proposed FY25 CIP 625 Metro Tunnel Redundancy also includes modifications to several sub-phases to reflect the Tunnel Program contracts as they are currently envisioned to be executed (i.e., two tunnel construction pacakges) as well as updates to the expenditure forecast to better reflect the projected cash flow. These changes are important, as projected spending for the Tunnel Program will become a large part of near term spending as well as upcoming five-year Cap Periods.

The following table summarizes the CIP for 625 Metro Tunnel Redundancy from FY17 to FY25 ($ in millions).

	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Other Projects	$191.4	$4.8[1]	$3.5	$3.5	$3.5	$3.5	$3.5	$3.5	$3.5
Design/CM	$204.5	$216.8	$210.4	$240.3	$257.5	$256.4	$274.5	$310.4	$324.8
Construction	$919.4	$963.1	$997.6	$1,024.5	$1,046.7	$1,041.6	$1,083	$1,306.7	$1,636.8[2]
Adm/Legal/PR	$153.4	$160.7	$163.7	$140.3	$140.5	$140.1	$135.9	$157.3	$159.3
Future Projects	$5.9	$12.3	$12.8	$13.1	$14.6	$14.6	$15.1	$17.5	$18.0
Total FY CIP	**$1,474**	**$1,358**	**$1,388**	**$1,422**	**$1,507**	**$1,500**	**$1,558**	**$1,795**	**$2,142**
Annual Inflation Added[3]	N/A	$69.6	$30.2	$33.8	$85.2	($6.7)	$57.5	$237.6	$147.1
Cumulative Inflation Added Since 2017	N/A	$69.6	$99.8	$133.6	$218.8	$212.1	$269.6	$507.2	$654.3

1. FY18 Other Projects item reflects ~$186M in costs moved out of 625 Metro Tunnel Redundancy and into other CIP items.
2. FY25 construction item includes $200M cost increase and $130M in annual inflation over FY24.
3. Annual Inflation is included in the Total FY CIP amount for each FY.

The increase in construction cost reflects the first change to the Tunnel Program's base construction cost estimate since FY17. The FY25 proposed construction cost is based on two detailed cost estimates: one prepared by the Preliminary Design Engineer; and a second independent cost estimate prepared by the Program Support Services consultant. Both estimates were detailed "bottom-up" cost estimates developed in early 2023 (January 2023 value date) reflecting current market conditions and the recently completed preliminary design. Each involved detailed cost and schedule analysis, at an in-depth level, that consider quantity take-offs for materials, labor and equipment for anticipated construction means and methods, anticipated construction sequencing, and construction contract packaging (among other factors). A 25 percent design contingency is recommended, and included in the construction estimate, to reflect the current level of design definition. The 25 percent design contingency is consistent with the standard contingency factor for preliminary design provided in MWRA's Guidelines for Life Cycle Cost Estimating.

The increase in base construction cost is primarily attributable to a few factors as further detailed below.

- There are Program configuration differences between the FY17 conceptual design and the FY24 preliminary design.
    - Three additional intermediate shafts were added to provide improved redundancy to the Cedarwood Pumping Station in Waltham, Hegarty Pumping Station in Wellesley, and the St. Mary Street Pumping Station in Needham

- Two new launch shafts at Highland Avenue in Needham were added to facilitate construction of the 10 mile long South Tunnel

- One large connection shaft was added at the Park Road East site in Weston which allows for a connection to the Hultman Aqueduct as the Tandem Trailer shaft site, which is of sufficient size for a launching shaft site, does not allow for a direct connection to the Hultman Aqueduct on that site

- An additional one mile of tunnel was added to connect to the additional shafts and to reduce risk of constructing along better defined boundary faults and geologic conditions

- There were adjustments to tunnel mining production rates (slower) due to better understanding of geologic conditions.

- The preliminary design cost estimates reflect a volatility in the market that was not present during 2017. The current-day quotes and pricing for material, equipment and labor received from vendors and specialty contractors reflect a particularly volatile market with global influence on commodities including steel, cement and fuel costs. While difficult to quantify, such volatility likely contributed to the increase in base construction cost estimates. This volatility will be monitored as design advances and cost estimates are updated.

Although the 2017 planning level cost estimate included a 30 percent contingency in accordance with the MWRA's Guidelines for Life Cycle Cost Estimating, which was intended to account for advancement of the design (number of connections, shaft site availability, ground conditions, etc.), this contingency was not sufficient to accommodate compounding of the influences described above plus recent market volatility.

While the 2023 construction cost estimates reflect the factors discussed above, the cost estimates do not consider factors that cannot be accurately forecasted such as market conditions more severe or unpredictable than recent experience, new or changes to regulations, and stakeholder mitigations that could have a material influence on construction methods or schedule.

The cost estimates do not include MWRA's allocation for construction contingency (7% for non-tunnel projects and 15% for tunnel projects) which is included in the FY CIP, but outside item 625 Metro Tunnel Redundancy. This construction contingency is intended to cover potential change orders.

Future Cost Updates

Updated construction cost estimates will be performed throughout final design. Cost estimates will be updated at the 60%, 90%, and 100% design stage for each construction package. These future cost estimates will also be bottom-up estimates, with increased level of detail, and will account for design advancement, additional understanding of geologic conditions, refined material quantities, updated construction means and methods, risk allocation, some stakeholder mitigations, annual inflation, and market conditions. Future cost estimates will include a design contingency that is reduced in consideration of the stage of design advancement. The next

bottom-up cost estimate will be available at the completion of 60% design for the first tunnel construction package, which is projected to be approximately 18 months after the final design notice to proceed. This cost estimate will be reflected in the subsequent CIP update.

Cost Controls

Staff are implementing a number of cost control measures, including managing to a Program schedule to reduce the influence of inflation on the Program and robust project controls processes to manage expenditures. Monthly monitoring of the Program schedule and detailed dashboards to monitor consultant costs are two key project control measures that help Staff manage to the budgets established in the CIP.

Cost control measures are being incorporated in the design of the Program as well. Measures to reduce risks and increase efficiency in construction are considered throughout the design development. As part of the design development, staff are implementing a risk management process to identify and mitigate risk, qualitatively and quantitatively. As a result, staff and Program consultants are actively incorporating mitigations into the design of the Program. These include:

- Suitably locating and sizing launching shaft sites that reduce impacts on the environment and third parties, which could result in costly mitigation, such as locating them adjacent to highways for ease of material/equipment transport and near water bodies for simplified groundwater treatment and discharge;

- Shifting tunnel alignments to reduce risk presented by key geologic features, such as the Northern Border Fault;

- Developing a contract packaging approach that reduces construction contract interface risks, and controlling contract sizes to ensure a maximum number of qualified bidders;

- Planning for early enabling works packages in order to prepare shaft sites for the tunnel contractors and reduce the risk of delaying the start of tunnel construction;

- Selecting consultants with sufficient expertise and resources to complete quality work on time and maintain schedule; and

- Implementing construction contract practices that will promote good competition by qualified bidders and reduce the amount of contingency included in the bids. These practices include risk allocation tools such as Geotechnical Baseline Reports, commodity escalation clauses (per Massachusetts Law), and potentially prequalifying tunnel contractors.

Program Financial Considerations

The estimated cost of the Tunnel Program has evolved as information and time have progressed. During the early presentations to the Board, the Advisory Board, and stakeholder groups, staff used an estimate of $1.341 billion, representing the average of two possible alternatives: Alternative 2A - two tunnels, one to the north and one to the south, totaling 14 miles with an

estimated cost of $1.183 billion; and Alternative 3D – also, two tunnels, though further north to Shaft 9A in Malden and south to Shaft 7C, totaling 18.2 miles with an estimated cost of $1.499 billion (value date of October 2015).

The Tunnel Program was first included as Project 625 Metro Tunnel Redundancy in the Proposed FY17 CIP. Project 625 as proposed was revised from earlier alternatives to include additional sub-phase work on the WASMs, the Wachusett Aqueduct Pumping Station and other improvements. In the FY17 CIP, Project 625 included an estimated project cost of $1.429 billion plus $41 million related to inflation. For the FY18 CIP, the additional sub-phases were moved from Project 625 to a different project, reducing the cost to $1.259 billion plus $99 million for inflation. Annually, the Project cost estimate is revised to reflect updated amounts due to contract awards, design progress, revised estimates and inflation.

Staff continue to assume the Tunnel Program will be financed with long-term tax exempt bonds and funding from the Massachusetts Clean Water Trust[1] through State Revolving Funds. The debt service for these bonds is modeled based on the current CIP estimated cost, conservative estimated interest rates and a thirty-year level amortization. The water utility assessment projections included with the Proposed FY25 Current Expense Budget (CEB) include this additional debt service.

As Tunnel Program spending increases with the commencement of construction, MWRA will likely utilize short-term borrowings for the construction in progress. Staff will structure the long-term borrowing to permanently finance the Tunnel Program around existing water debt service. The utilization of short-term borrowings for construction in progress and structured long-term debt will help mitigate the impact on the Water Utility's assessments. Each fiscal year as the CEB recommendation is developed, staff iteratively monitor the necessary revenue from community assessments. All additions, deletions and revisions to the CEB are evaluated for the impacts to the rate of increase to the assessments. The Proposed FY25 CEB resulted in a 3.9% increase to the Water Utility assessment and the model projected a 3.9% increase for Fiscal Years 2025-2029. This proposed increase, and the projected increases, includes the impact of the modeled debt service associated with the Tunnel Program included in the Proposed FY25 CIP.

BUDGET/FISCAL IMPACTS:

The proposed FY25 CIP includes $2.1 billion for the Metropolitan Water Tunnel Program. This budget will be refined during and at the completion of Final Design.

[1] The Trust provides low-interest loans and grants to water utilities through the Massachusetts State Revolving Funds to assist in financing water infrastructure projects.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Water Tunnel Program
Contract Structure for Final Design Engineering Services, Contract 7556

COMMITTEE: Water Policy and Oversight

_____ INFORMATION
__X__ VOTE

Michele S. Gillen
Director of Administration

Rita Mercado, Deputy Director, Procurement
Paul V. Savard, P.E., Director, Design and Construction
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

To approve staff's recommended contract structure for Engineering Services During Construction under Contract 7556, Final Design Engineering Services for the Metropolitan Water Tunnel Program (Tunnel Program) where the cost for Engineering Services During Construction during tunnel construction, if approved by the Board of Directors, will be authorized and added by amendment(s) to the Final Design Engineering Services Contract 7556, as further detailed in this staff summary.

DISCUSSION:

The Tunnel Program is on schedule to achieve a significant milestone with the completion of preliminary design and environmental reviews in early 2024. Passing this milestone will shift the focus of work to final designs with additional emphasis on completing land acquisition, expanding outreach efforts, achieving stakeholder agreements, and preparing for tunnel construction. Based on the proposed FY25 Capital Improvement Plan (CIP), it is projected that, in the coming years, over $270 million in professional services contracts will be awarded to support the Tunnel Program. These include Final Design Engineering Services (FDES), Construction Management (CM), and a possible second extension to the Program Support Services (PSS) contract.

Ongoing and completed professional services contracts for the Tunnel Program include the following:

- Program Support Services – The Board authorized the Executive Director to exercise the contract's first optional 24-month renewal during the December 13, 2023 meeting. This contract provides assistance with program-wide activities, such as risk management, quality management, design and construction package planning, independent technical reviews, construction practices review and implementation, independent cost estimates, critical path scheduling, and budget tracking. This contract was for an initial award of $10,247,877 with an increase of $7,000,000 to $17,247,877 and 24-month contract extension approved by the Board of Directors at the December 2023 meeting.

- Preliminary Design Engineering Services – This contract's scope of services consisted of initial geotechnical investigations, preparation of Environmental Impact Reports, and preparation of a Preliminary Design Report, drawings, schedule and cost estimate. This contract was for $15,692,527 and ended in January 2024.

- Geotechnical Support Services – This contract focuses on the collection of geotechnical/geological data to support final design, bidding and construction of the Program. This contract is for $12,789,889 and will end in January 2026.

Additional professional services contracts may be required over the course of the Tunnel Program to support legal matters, land acquisition, insurance, labor agreements, and community technical assistance.

The FDES procurement is ongoing with an anticipated recommendation for award at the September 2024 Board meeting. The procurement of Construction Management contract(s) is anticipated to begin in 2025.

Final Design Engineering Services

One FDES contract is planned. A single FDES contract provides a number of advantages over multiple contracts and is consistent with the approach used for the MetroWest Water Supply Tunnel. One FDES engineer provides efficiency in executing the designs, consistency between construction packages, a simplified development of common specifications and standards, a consistent application of risk management, and flexibility in construction procurement if needed. It also requires less MWRA staff to support and manage. The FDES engineer will be precluded from any other future role on the Tunnel Program.

It is expected that the FDES contract will extend from fall 2024 (assuming award in September 2024) through the duration of the tunnel construction projects (currently anticipated before 2040). Two tunnel construction contracts are planned, as well as two or three smaller construction contracts that will be procured and completed prior to the start of tunnel construction. These smaller construction contracts will remove early enabling construction works from the critical path of the tunnel construction contracts.

The proposed FY25 CIP includes $77.8 million for FDE. This figure does not include ESDC (discussed below). The FDES firm will require a multi-discipline design team with expertise in pressurized water tunnel design and construction, rock engineering, geotechnical engineering, water systems and hydraulics, mechanical systems design, site-civil works, permitting, risk management, construction, cost estimating and scheduling. The team must be efficiently managed so that time critical design submittals are aligned with the targeted Tunnel Program construction schedule. This team will also support the Authority in outreach, land acquisitions, and memoranda of understanding. The FDES engineer will serve as the Engineer of Record for all designs for the Tunnel Program.

ESDC are those services provided by the Engineer of Record during construction that are necessary to maintain the integrity of the design. These services include construction advice, interpretation and clarification through Request for Information responses, review of contractors' submittals, review of contractors' value engineering proposals, onsite meetings and observations,

change order and dispute assistance, structural geology mapping for final tunnel lining, development of record drawings, startup assistance, operations and maintenance training, and certification reporting.

While ESDC involves technical reviews and technical inspections by the Engineer of Record to ensure the construction contractor's approach is in conformance with the technical requirements of the design, the CM consultant is responsible for overall administration of the construction contracts. CM services include resident inspection to ensure the work conforms with the contract documents, document control, project controls, change management, and the point of contact between the construction contractors, the Authority and its consultants (including the FDES staff).

ESDC will begin upon the start of the first tunnel construction contract, targeted for 2028, and extend through all tunnel construction contracts. The proposed FY25 CIP includes $40 million for ESDC with an estimated duration of approximately ten years.

Procurement Process

On November 15, 2023, MWRA commenced a two-step procurement process for FDES. A Request for Qualifications (RFQ) was publicly advertised, and a Request for Proposals (RFP) will be issued to the firms that were shortlisted after the RFQ phase.

On December 15, 2024, four firms submitted statements of qualifications (SOQs) in response to the RFQ. A Selection Committee reviewed the SOQs, and shortlisted the following three firms: Jacobs Associates d/b/a Delve Underground; Mott MacDonald, LLC; and WSP USA, Inc. The RFP will be made available to those firms once the development of the Scope of Services is completed and the final structure of the FDES contract is determined.

Recommended Contract Award Structure for ESDC

Historically, for professional design engineering service contracts the Authority's Request for Qualifications Statements/Proposals contains a detailed scope of services that includes specific tasks to perform during the full design phase including preliminary and final design, the preparation of bid documents and bid-related services through the award of the construction contract, and specific tasks for ESDC. Proposals for these contracts typically include costs for this entire scope of work, including ESDC. Proposed costs for ESDC are based on the specified scope and anticipated level of effort required during construction. This results in a total contract award/amount that includes both full design services and ESDC.

For the Tunnel Program's FDES contract, staff recommend that proposals be received, and the initial contract scope and price include, final design services through the construction contract award and ESDC for the smaller enabling works construction packages. Staff recommend that the detailed ESDC scope of work for the tunnel construction be prepared by staff after completion of the final design for each tunnel construction package and that the cost for those services be negotiated with the FDES firm and, if approved by the Board of Directions, authorized and added by amendment(s) to the FDES contract. Importantly, key financial parameters (i.e., maximum overhead rate and fee) that will be utilized for ESDC will be submitted by proposers and evaluated as part of the initial contract award.

Staff recommend this alternative approach of not receiving detailed cost proposals for specific ESDC tasks for tunnel construction because of the challenges associated with accurately developing a scope and the level of effort required to support future significant and long-term tunnel construction work. Additionally, staff propose to include ESDC for the smaller enabling works as part of the initial FDES contract award as these services are more straight forward, can be scoped and priced at the proposal stage, and will mostly likely be performed during the first five years of the contract (during the design of the tunnel construction package).

It is industry best practice on large tunnel projects to defer negotiations the cost for ESDC services until late in the final design phase when construction scope, phasing, and duration are better defined. Several public agencies, such as the New York City Department of Environmental Protection, Naragansett Bay Commission (Providence, RI), DC Water, ALCOSAN (Pittsburgh, PA), and Metropolitan District Commission (Hartford, CT) negotiate the level of effort for ESDC services after award of the design contract, closer to 90% or 100% design stage.

Conclusion

For FDES , staff are recommending that proposals be received (including labor rates, maximum overhead, fee and level of effort) and an initial contract executed for specific design development tasks, including development of the Basis of Design reports, performance of subsurface investigations, and design development of two tunnel construction packages and two or three enabling works construction projects along with risk management, quality management, cost estimating, and construction scheduling. Given the complexity and scope of the Tunnel Program, the performance of these design services will be critical to determine the duration of each tunnel construction package, and the schedule and level of effort required for ESDC. Accordingly, staff recommend that the Authority prepare the detailed scope of ESDC for the tunnel construction work after the preparation of the final design for such work.[1] Staff will thereafter negotiate the cost for ESDC and seek the authorization for such services from the Board of Directors, which if approved will be implemented through a contract amendment(s) of the FDES contract. The FDES contractual maximum overhead rate and fee for ESDC for the tunnel construction packages will apply to this amendment(s).

BUDGET/FISCAL IMPACTS:

The proposed FY25 CIP includes $77.8 million for Final Design services and $40 million for ESDC.

MBE/WBE PARTICIPATION:

The minimum MBE and WBE participation requirements for this contract are established at 7.18% and 5.77%, respectively.

[1] The Authority may seek separate ESDC authorizations as tunnel construction packages are completed by the FDES firm.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Local Water System Assistance Program Annual Update

COMMITTEE: Water Policy & Oversight

X INFORMATION
VOTE

Kristen M. Hall, Senior Program Manager, Planning
Claudia F. Baptista, Project Manager, Planning
David A. Granados, P.E., Project Manager, Planning
Preparer/Title

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

RECOMMENDATION:

For information only.

DISCUSSION:

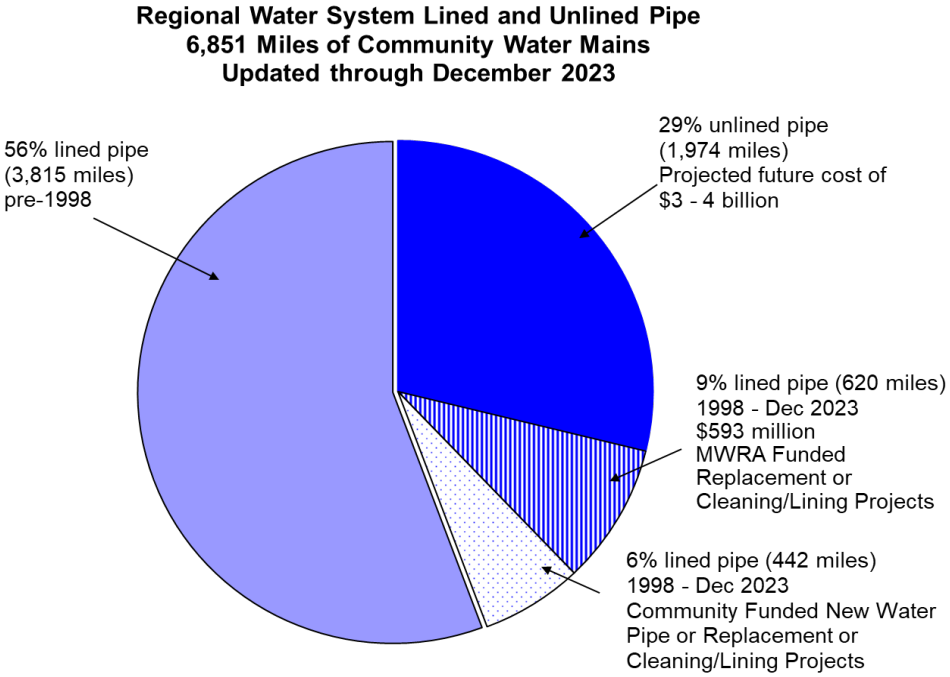
MWRA's goal in providing financial assistance to member communities is to improve local water systems' ability to maintain high water quality as it passes from MWRA facilities through local pipelines to customers' taps. Older water mains, particularly those constructed of unlined cast iron pipe, need to be replaced or cleaned and lined to prevent tuberculation (rust buildup), loss of disinfectant residual and potential bacteria growth. Replacement of lead service lines improves water quality by reducing the risk that lead can leach into the water consumed in customers' homes.

Unlined Cast Iron | Tuberculated Pipe | Cement Lined Pipe

Prior to 1998, 3,815 miles (56%) of the 6,851-mile regional distribution system consisted of lined water pipe. Since 1998, MWRA's community financial assistance programs (including the $30 million pilot program in FY98-99) have invested $593 million in local water distribution systems and resulted in the replacement or cleaning and lining of 620 miles of water mains. Additional community-only funded rehabilitation or new pipeline projects have added 442 miles of lined water mains. Approximately 1,974 miles (29%) of locally-owned water distribution systems

remain unlined, representing a regional need of about three to four billion dollars for future water main rehabilitation. Attachment 1 provides individual statistics for the total miles of lined and unlined water mains in each member community's water system.

Water Loan Funds Distribution Update



Under the Local Water System Assistance Program (LWSAP), the Board has authorized a total of $725 million for community water loans from FY01 through FY30. Loan funds are allocated to member water communities based on a combination of their percent share of unlined pipe and wholesale water charge. MWRA's partially supplied communities receive pro-rated shares based on their percentage use of MWRA water[1]. Through December 2023, $563 million[2] in ten-year interest-free loans have been distributed to member communities to finance 529 projects that will help maintain high water quality in local distribution systems. Of the 529 total projects, 457 have been completed and 72 are in construction. Community loans are repaid to MWRA over a ten-year period. All scheduled community loan repayments have been made, a total of $384 million to date. A total of 43 of the 47 eligible member water communities[3] have participated in the Program. Two communities (Medford and Waltham) are scheduled to receive water loans (totaling $9.64 million) during the February/March 2024 LWSAP funding distribution cycle.

The photos below detail local water system rehabilitation construction work funded through the

[1] In December 2020, Ashland and Burlington received LWSAP loan allocations when they were approved as partially supplied member communities.

[2] This does not include MWRA's $30 million pilot distribution rehabilitation program (FY98-99).

[3] MWRA has a total of 52 water communities (with Dedham/Westwood Water District counted as one). Under MWRA's Local Water System Assistance Program, 47 communities are allocated loan funds. The five water communities that are ineligible to receive funding assistance have special case considerations: Cambridge receives water on an emergency-only basis; Lynn receives water only for the GE Plant; and Clinton, Leominster and Worcester (also on an emergency-only basis) receive untreated water from the Wachusett Reservoir. The three Chicopee Valley Aqueduct (CVA) communities (Chicopee, South Hadley FD#1 and Wilbraham) were allocated funds under Phases 2 and 3 of the Loan Program.

LWSAP.

Water Main Replacement Construction

Cleaning and Lining Old Cast Iron Water Main

Rehabilitated Water Storage Tank

The Phase 1 LWSAP began in FY01 and was completed at the end of FY13. It provided $222.3 million in ten-year interest-free loans to finance 257 water main replacement, cleaning and lining and lead service line replacements projects.

The Phase 2 LWSAP was established in FY11. The Phase 2 expansion of the water loan program added $210 million in interest-free loans for member water communities (including a $10 million allocation for the three Chicopee Valley Aqueduct (CVA) communities: Chicopee, South Hadley Fire District #1 and Wilbraham. LWSAP Phase 2 loan funds will sunset at the end of FY25. Through December 2023, $200 million in Phase 2 funds has been distributed. Thirty-nine communities have received their entire Phase 2 funding allocation. (See Attachment 2 - Allocation and Fund Utilization by Community.) As part of the upcoming February/March 2024 LWSAP funding distribution cycle, two additional communities (Medford and Waltham) will reach their Phase 2 funding allocation limit.

The Phase 3 LWSAP was established in FY18. The Phase 3 expansion of the water loan program added $293.3 million in interest-free loans (including a $14 million allocation for the three CVA communities). Phase 3 funding distributions are approved through FY30. Through December 2023, $140.8 million in Phase 3 funds have been distributed and $152.5 million remain to be distributed. Eight communities have used all of their allocated Phase 3 funds. (See Attachment 2 - Allocation and Fund Utilization by Community). Through December 2023, Program Phases 2 and 3 have financed 272 projects.

The majority of financial assistance water loans (93%) under Program Phases 2 and 3 have funded replacement/rehabilitation of unlined water mains, lead service line replacements, water tank rehabilitation and other water quality projects. Some communities have also utilized a portion of their funding allocations on water system efficiency, or “Tier Two.” projects, such as water meter replacements, automated meter reading systems and booster pump station rehabilitation.

Lead Service Line Replacement Loan Program Update


Lead Service Line

In March 2016, the Board approved an enhancement to the LWSAP to provide up to an additional $100 million in ten-year interest-free loans to communities solely for efforts to fully replace lead service lines from the water main all the way to the house. Under MWRA's Lead Service Line Replacement Loan Program, each community can develop its own program tailored to its local circumstances. Some communities are implementing a phased approach, with multiple loans financing lead service replacements over a number of construction seasons. Lead line inventories are also eligible for financing under the Lead Loan Program. To date, MWRA has distributed $41 million in lead loans (via 44 separate distributions) to 17 communities to replace 4,270 lead service lines and 1,001 lead goosenecks, and perform four lead line inventories:

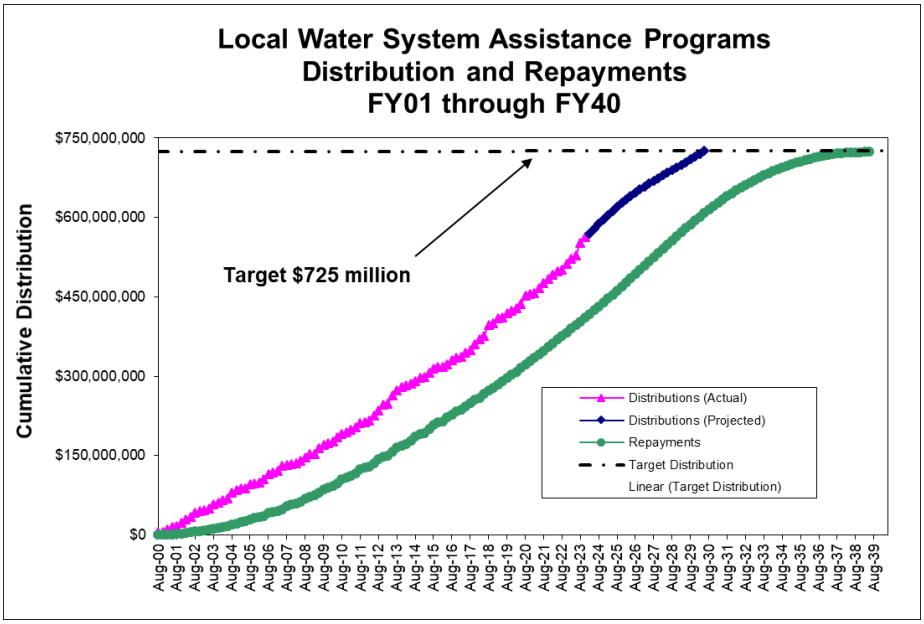
- BWSC: $2,602,419 in FY21 and $862,500 in FY22 ($3.5 million total);
- Chelsea: $100,000 in FY19, $300,000 in FY20, $300,000 in FY21, $300,000 in FY22, $500,000 in FY23 and $300,000 in FY24 ($1.8 million total);
- Everett: $1.0 million in FY19, $1.0 million in FY20, $500,000 in FY20, $1.5 million in FY21 and $1.5 million in FY22 ($5.5 million total);
- Lexington: $3.9 million in FY24;
- Malden: $500,000 in FY24;
- Marlborough: $1.0 million in FY18, $1.0 million in FY19, $1.0 million in FY20 and $2.0 million in FY21 ($5.0 million total);
- Melrose: $1,035,000 in FY24;
- Needham: $1.0 million in FY18;
- Newton: $4.0 million in FY17;
- Quincy: $1.5 million in FY17;
- Reading: $1.5 million in FY23;
- Revere: $195,000 in FY18 and $1,300,000 in FY22 ($1.5 million total);
- Somerville: $900,000 in FY20 and $1,555,000 in FY22 ($2.5 million total);
- Watertown: $600,000 in FY21, $300,000 in FY23, an additional $300,000 in FY23, and $300,000 in FY24 ($1.5 million total);
- Weston: $160,000 in FY20;
- Winchester: $500,000 in FY17, $500,000 in FY18, $600,000 in FY20, $600,000 in FY21 and $600,000 in FY23 ($2.8 million total); and
- Winthrop: $284,000 in FY18, $487,850 in FY19, $690,000 in FY20, $750,000 in FY21, $750,000 in FY22 and $750,125 in FY23 ($3.7 million total).

Most communities have elected to fully fund replacement of the portion of the service line on private property, while others offer a variety of incentive programs to encourage participation. With the MassDEP Lead Service Line Inventory deadline on the horizon (October 16, 2024), staff have increased communication with member communities to gauge overall interest in program participation and included discussions of the program in all training sessions on the Lead and Copper Rule Revisions. Staff have also revised and implemented new program funding application and financial assistance agreement execution parameters to facilitate the filing and reporting process for member communities.

BUDGET/FISCAL IMPACTS:

The FY24 CIP includes an overall net budget of zero dollars for both the LWSAP and the Lead Service Line Replacement Loan Program because community loans are offset by repayments over time. However, depending on the timing and level of community loan requests, loan distributions can fluctuate, sometimes causing overspending or underspending (versus budget projections) for any particular quarter or year. The LWSAP Guidelines restrict each community's annual allocation to the larger of: (1) 10% of their total allocation; or (2) $500,000. If not utilized in a given year, annual allocations roll over and accumulate up to the community's total allocation. The annual allocation restrictions are intended to limit MWRA's annual financial exposure.

The program budget target is $725 million for water system rehabilitation loan distributions and repayments (not including the $100 million for additional lead service line replacement loans). Through December 2023, $563 million [4] in water project loans have been distributed. Community loan repayments total $384 million. An additional $41.3 million in lead service line project loans have also been distributed. Lead project loan repayments total $11 million. As community loans are repaid, the funds are deposited into MWRA's construction fund. The FY24 CEB budget includes $7.7 million for the cost of loan interest as a separate line item under Debt Service. The graph below presents loan funding distributions (actual and projected) and corresponding repayments for the LWSAP (FY01 through FY40).



At the MWRA Advisory Board's Operations Committee January 5, 2024 meeting, committee members developed and discussed an additional program funding phase (Phase 4) to the existing LWSAP (Phases 2 and 3). The additional program funding phase was approved and will be advanced to the full Advisory Board as part of its CIP comments. The Operations Committee recommended that proposed LWSAP Phase 4 consist of a $300 million interest-free loan funding phase. Community funding allocations would become available in FY25. Zero-interest loan repayments would occur over ten years.

[4] This does not include MWRA's $30 million pilot distribution water rehabilitation program (FY98-99).

MBE/WBE PARTICIPATION:

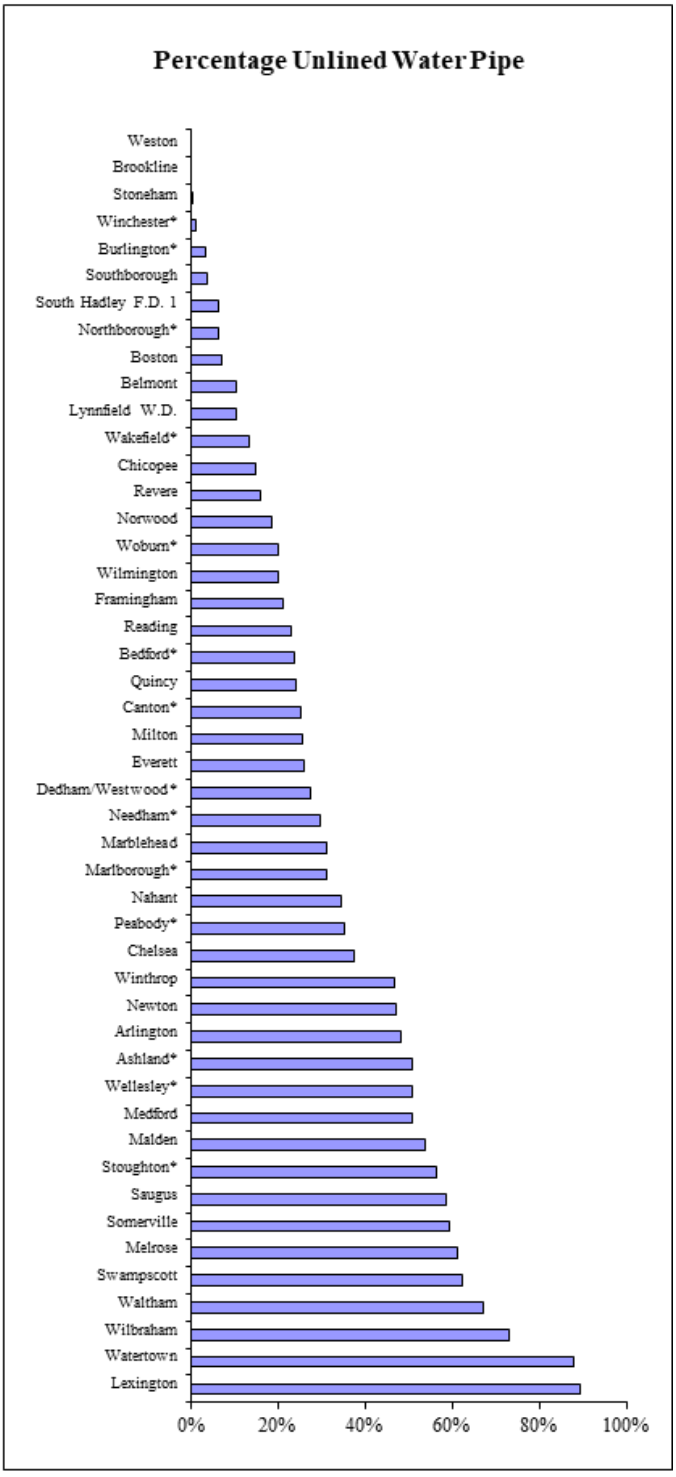
MBE/WBE goals for community projects are outlined in the Program Guidelines.

ATTACHMENTS:

Attachment 1 - Lined and Unlined Pipe by Community (through December 2023)
Attachment 2 - Phases 2 and 3 - Local Water System Assistance Program Allocation and Fund Utilization by Community

MWRA LOCAL WATER SYSTEM ASSISTANCE PROGRAM
LINED AND UNLINED PIPE BY COMMUNITY
THROUGH DECEMBER 2023

Community	Total Miles of Pipe	Miles of Lined Pipe	Miles of Unlined Pipe	Percent Unlined
Arlington	129	67	62	48%
Ashland*	85	42	43	51%
Bedford*	85	65	20	24%
Belmont	92	83	9	10%
Boston	1009	941	68	7%
Brookline	140	140	0	0%
Burlington*	124	120	4	3%
Canton*	128	96	32	25%
Chelsea	59	37	22	37%
Chicopee	275	235	40	15%
Dedham/Westwood*	208	151	57	27%
Everett	70	52	18	26%
Framingham	282	223	59	21%
Lexington	157	17	140	89%
Lynnfield W.D.	29	26	3	10%
Malden	121	56	65	54%
Marblehead	97	67	30	31%
Marlborough*	183	126	57	31%
Medford	144	71	73	51%
Melrose	82	32	50	61%
Milton	140	104	36	26%
Nahant	25	16	9	34%
Needham*	135	95	40	30%
Newton	329	175	154	47%
Northborough*	65	61	4	6%
Norwood	119	97	22	18%
Peabody*	208	135	73	35%
Quincy	240	183	58	24%
Reading	115	89	26	23%
Revere	108	91	17	16%
Saugus	125	52	73	58%
Somerville	110	45	65	59%
South Hadley F.D. 1	83	78	5	6%
Southborough	87	84	3	3%
Stoneham	80	80	0	0%
Stoughton*	151	66	85	56%
Swampscott	58	22	36	62%
Wakefield*	114	99	15	13%
Waltham	170	56	114	67%
Watertown	82	10	72	88%
Wellesley*	150	74	76	51%
Weston	111	111	0	0%
Wilbraham	74	20	54	73%
Wilmington	126	101	25	20%
Winchester*	112	111	1	1%
Winthrop	45	24	21	47%
Woburn*	190.40	152.70	38	20%
TOTAL	**6,851**	**4,878**	**1,974**	**29%**



* Partially Served Communities

MWRA LOCAL WATER SYSTEM ASSISTANCE PROGRAM
ALLOCATION AND FUND UTILIZATION BY COMMUNITY
THROUGH DECEMBER 2023

Community	Community Total Phase 2 Allocation	Phase 2 Funds Distributed thru December 2023	Total Remaining Phase 2 Funds	Community Total Phase 3 Allocation	Community Phase 3 Annual Allocation	Phase 3 Allocation To Date (Year 7)	Phase 3 Funds Distributed thru December 2023	Phase 3 Funds Currently Available	Total Phase 2 and 3 Funds Available
Arlington	$6,225,000	$6,225,000	$0	$8,687,000	$868,700	$6,080,900	$3,275,000	$2,805,900	$2,805,900
Ashland*¶	$0	$0	$0	$519,400	N/A	$519,400	$0	$519,400	$519,400
Bedford *	$2,418,000	$2,418,000	$0	$3,649,000	$500,000	$3,500,000	$0	$3,500,000	$3,500,000
Belmont	$3,477,000	$3,477,000	$0	$3,852,000	$500,000	$3,500,000	$3,500,000	$0	$0
Boston	$38,754,000	$38,754,000	$0	$52,787,000	$5,278,700	$36,950,900	$30,267,364	$6,683,536	$6,683,536
Brookline	$3,426,000	$3,426,000	$0	$4,585,000	$500,000	$3,500,000	$1,234,000	$2,266,000	$2,266,000
Burlington*¶	$0	$0	$0	$827,400	N/A	$827,400	$0	$827,400	$827,400
Canton *	$3,216,000	$3,216,000	$0	$2,971,000	N/A	$2,971,000	$2,500,000	$471,000	$471,000
Chelsea	$3,814,000	$3,814,000	$0	$5,039,000	$503,900	$3,527,300	$2,511,700	$1,015,600	$1,015,600
Dedham/Westwood *	$503,000	$503,000	$0	$849,000	N/A	$849,000	$849,000	$0	$0
Everett	$4,672,000	$4,672,000	$0	$6,298,000	$629,800	$4,408,600	$3,319,200	$1,089,400	$1,089,400
Framingham	$7,357,000	$7,357,000	$0	$9,003,000	$900,300	$6,302,100	$2,700,900	$3,601,200	$3,601,200
Lexington	$3,024,000	$3,024,000	$0	$3,777,000	$500,000	$3,500,000	$1,891,015	$1,608,985	$1,608,985
Lynnfield Water Dist.	$1,396,000	$1,396,000	$0	$1,678,000	N/A	$1,678,000	$1,530,800	$147,200	$147,200
Malden	$7,272,000	$7,272,000	$0	$10,605,000	$1,060,500	$7,423,500	$7,423,500	$0	$0
Marblehead	$4,237,000	$4,237,000	$0	$5,112,000	$511,200	$3,578,400	$1,022,400	$2,556,000	$2,556,000
Marlborough *	$1,917,000	$1,283,800	$633,200	$3,512,000	$500,000	$3,500,000	$0	$3,500,000	$4,133,200
Medford	$6,959,000	$5,815,006	$1,143,994	$10,800,000	$1,080,000	$7,560,000	$5,281,994	$2,278,006	$3,422,000
Melrose	$3,988,000	$3,988,000	$0	$6,865,000	$686,500	$4,805,500	$4,119,000	$686,500	$686,500
Milton	$4,123,000	$4,123,000	$0	$5,967,000	$596,700	$4,176,900	$641,000	$3,535,900	$3,535,900
Nahant	$1,490,000	$1,490,000	$0	$1,835,000	N/A	$1,835,000	$745,550	$1,089,450	$1,089,450
Needham *	$794,000	$794,000	$0	$1,894,000	N/A	$1,894,000	$337,265	$1,556,735	$1,556,735
Newton	$13,602,000	$13,602,000	$0	$20,837,000	$2,083,700	$14,585,900	$6,251,100	$8,334,800	$8,334,800
Northborough *	$1,048,000	$986,053	$61,947	$1,450,000	N/A	$1,450,000	$0	$1,450,000	$1,511,947
Norwood	$4,395,000	$4,395,000	$0	$6,296,000	$629,600	$4,407,200	$4,407,200	$0	$0
Peabody *	$1,089,000	$1,089,000	$0	$2,756,000	N/A	$2,756,000	$2,756,000	$0	$0
Quincy**	$10,505,000	$10,505,000	$0	$14,252,000	$1,425,200	$12,826,800	$12,826,800	$0	$0
Reading	$4,146,000	$4,146,000	$0	$5,073,000	$507,300	$3,551,100	$3,043,800	$507,300	$507,300
Revere	$5,034,000	$5,034,000	$0	$5,315,000	$531,500	$3,720,500	$2,126,000	$1,594,500	$1,594,500
Saugus	$6,621,000	$6,621,000	$0	$9,688,000	$968,800	$6,781,600	$3,502,414	$3,279,186	$3,279,186
Somerville	$7,419,000	$7,419,000	$0	$10,791,000	$1,079,100	$7,553,700	$5,589,234	$1,964,466	$1,964,466
Southborough	$1,512,000	$0	$1,512,000	$1,920,000	N/A	$1,920,000	$0	$1,920,000	$3,432,000
Stoneham	$2,339,000	$2,339,000	$0	$2,742,000	N/A	$2,742,000	$2,500,000	$242,000	$242,000
Stoughton*	$2,506,000	$2,506,000	$0	$3,547,000	$500,000	$3,500,000	$1,622,000	$1,878,000	$1,878,000
Swampscott	$3,755,000	$3,755,000	$0	$5,276,000	$527,600	$3,693,200	$2,294,468	$1,398,732	$1,398,732
Wakefield *	$2,325,000	$2,325,000	$0	$3,356,000	N/A	$3,356,000	$3,000,000	$356,000	$356,000
Waltham	$10,293,000	$5,520,201	$4,772,799	$14,904,000	$1,490,400	$10,432,800	$0	$10,432,800	$15,205,599
Watertown	$2,978,000	$2,978,000	$0	$3,745,000	$500,000	$3,500,000	$2,683,000	$817,000	$817,000
Wellesley *	$2,350,000	$1,813,569	$536,431	$3,268,000	N/A	$3,268,000	$0	$3,268,000	$3,804,431
Weston	$1,625,000	$1,625,000	$0	$2,295,000	N/A	$2,295,000	$1,767,997	$527,003	$527,003
Wilmington *	$611,000	$611,000	$0	$1,306,000	N/A	$1,306,000	$0	$1,306,000	$1,306,000
Winchester *	$882,000	$775,000	$107,000	$1,394,000	N/A	$1,394,000	$0	$1,394,000	$1,501,000
Winthrop^	$3,312,000	$3,312,000	$0	$4,119,000	N/A	$4,119,000	$4,119,000	$0	$0
Woburn *	$2,591,000	$2,591,000	$0	$3,905,000	$500,000	$3,500,000	$3,500,000	$0	$0
SUBTOTAL	**$200,000,000**	**$191,232,629**	**$8,767,371**	**$279,346,800**	**$25,359,500**	**$215,546,700**	**$135,138,701**	**$80,407,999**	**$89,175,370**
Chicopee	$7,153,000	$7,153,000	$0	$9,774,000	$977,400	$6,841,800	$5,186,400	$1,655,400	$1,655,400
South Hadley F.D. 1	$1,538,000	$1,538,000	$0	$2,026,000	N/A	$2,026,000	$500,000	$1,526,000	$1,526,000
Wilbraham	$1,309,000	$0	$1,309,000	$2,200,000	N/A	$2,200,000	$0	$2,200,000	$3,509,000
SUBTOTAL	**$10,000,000**	**$8,691,000**	**$1,309,000**	**$14,000,000**	**$977,400**	**$11,067,800**	**$5,686,400**	**$5,381,400**	**$6,690,400**
TOTAL	**$210,000,000**	**$199,923,629**	**$10,076,371**	**$293,346,800**	**$26,336,900**	**$226,614,500**	**$140,825,101**	**$85,789,399**	**$95,865,770**

Phase 2 funds will sunset on FY25

* Partially Served Communities

¶ Ashland and Burlington: Partial Water Communities Beginning in FY21

^ Exempt per Board Approval

** Per Board Approval, years 4, 9 and 10 allocations were distributed in June 2020

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Section 101 Pipeline Extension (Waltham)
Baltazar Contractors, Inc.
Contract 7457, Change Order 4

COMMITTEE: Water Policy & Oversight

____ INFORMATION
__X__ VOTE

Martin E. McGowan, Director, Construction
Terrence Flynn, P.E., 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 4 to Contract 7457, Section 101 Pipeline Extension, with Baltazar Contractors, Inc., for a not-to-exceed amount of $500,000, increasing the contract amount from $32,735,976.89 to $33,235,976.89, and extending the contract term by 540 calendar days from April 7, 2024 to September 29, 2025.

Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 7457 in an amount not to exceed the aggregate of $1,000,000 and 180 days in accordance with the Management Policies and Procedures of the Board of Directors.

DISCUSSION:

The Section 101 Pipeline Extension project consists of a new 36-inch diameter water main and appurtenances extending from MWRA's Meter 182 at the Waltham/Lexington town line down Lexington Street to Totten Pond Road, where it will connect to Waltham's water system. This connection will provide a new redundant water supply to Waltham's Prospect Hill Service area from the Northern Extra High (NEH) pressure zone and to MWRA's Lexington Street Pumping Station. The contract documents also include water, sewer and drain utility replacement work in the project area for the City of Waltham that needs to be completed concurrently with the MWRA work and prior to completion of construction of the City's new high school, which is anticipated in 2024. At its December 15, 2021 meeting the Board authorized the execution of a Memorandum of Agreement (MOA) with the City of Waltham to cover the City's reimbursement to MWRA for the design and construction of the City's portions of work. Despite staff's efforts, ultimately Waltham did not execute an MOA; but it did, however, agree that it would reimburse the Authority for Waltham's work. Thus far, Waltham has paid $1,931,826.95 to the Authority, which is the amount, to date, MWRA has requested from Waltham for its work.

This Change Order consists of the following item:

Extend the Contract Time by 540 Days — Not-to-exceed $500,000

A Notice to Proceed was issued in July 2022. This contract was bid with tight timeline constraints due to the City's new high school project. After commencement of the contract, the Contractor notified the Authority that new pipe and pipe materials had long lead times resulting from global supply chain issues. Fabrication and delivery of pipe materials required to commence work was approximately eight months, delaying the start of work until the following construction season. Since the supply chain issues were beyond the reasonable control of the Contractor, a time extension is now warranted. The delays resulting from the supply chain issues, however, will be at no additional cost to the Authority.

Once work began in the spring of 2023, the City of Waltham reduced the Contractor's work hours to mitigate traffic impacts on Lexington Street and required that portions of work be performed during night shifts instead of the day. These new constraints added by the City after bid resulted in significant delays to the progress of the work by having shorter work days and performing work at night instead of the day. Change Order 1 was executed on June 30, 2023 for an amount not to exceed $500,000 to reimburse the Contractor for compensable costs pursuant to the contract documents directly related to the new constraints added by the City. These compensable costs include shift differential, idle time for labor and equipment and additional roadway lighting. Approximately $425,000 has been spent to date. When Change Order 1 was executed, the actual time impacts were unknown, so it did not include additional time. This Change Order 4, if approved, will add additional time to the contract as a result of the delays associated with these constraints.

Traffic Impact

Night Work

The Contractor encountered a greater amount of ledge along the proposed pipe alignments than identified during the design investigations. This increase in ledge has significantly reduced production further delaying the Contractor in completing the work. Staff estimate an additional 450 cubic yards of ledge will need to be removed during the 540 day extension. The additional time required to remove the unforeseen ledge is included in this time extension, however, the additional costs to remove this ledge will be negotiated with the Contractor and included in a future change order.

The unforeseen conditions listed above have impacted the critical path. The current project schedule indicates that the pipe replacement work will be completed in late spring of 2025, with

final paving being completed in early fall 2025. Staff reviewed the latest schedule and agreed that the total duration being requested is fair and reasonable. As a result of these delays to the critical path, the Contract Time must now be extended by an additional 540 calendar days from April 7, 2024 to September 29, 2025.

With exception to the delays attributed to the supply chain issues, the Contractor is requesting additional compensation for certain recoverable costs allowed per Article 13 of the General Conditions. As an example, other direct costs may include rental for office space, staging areas, utilities, bonds and insurance. Staff will carefully review all these requested costs to determine what is compensable under the terms of the Contract.

Ledge Encountered

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to amount not to exceed $500,000. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

CONTRACT SUMMARY:

	AMOUNT	TIME	DATED
Original Contract:	$31,900,000.00	635 Days	07/12/22
CHANGE ORDERS:			
Change Order 1*	$500,000.00	0 Days	06/28/23
Change Order 2*	$126,454.82	0 Days	12/08/23
Change Order 3*	$209,522.07	0 Days	02/07/24
Change Order 4	$500,000.00	540 Days	Pending
Total Change Orders:	$1,335,976.89	540 Days	
Adjusted Contract:	$33,235,976.89	1,175 Days	

*Approved under delegated authority

If Change Order 4 is approved, the cumulative value of all change orders to this contract will be $1,335,976.89 or 4.2% of the original contract amount. Work on this contract is approximately 45% complete.

BUDGET/FISCAL IMPACT:

The FY24 CIP includes $27,552,619 for Contract 7457 which includes the reimbursement to MWRA of $4,347,381 in accordance with the terms of the MOA between MWRA and the City of Waltham. Including this change order for $500,000, the adjusted subphase total including the MOA reimbursement will be $28,888,595.89, or $1,335,976.89 over the CIP amount. This amount will be absorbed within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

The MBE and WBE participation requirements for this contract were established at 7.24% and 3.6%, respectively. The Contractor will be notified that these requirements are still expected to be met.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Rehabilitation of WASM 3 Sections W11/W12/W16/51
(Medford, Somerville and Arlington)
Albanese D&S, Inc.
Contract 6544, Change Order 9

COMMITTEE: Water Policy & Oversight

____ INFORMATION
__X__ VOTE

Martin E. McGowan, Director, Construction
Jeremiah P. Sheehan, 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 9 to Contract 6544, Rehabilitation of WASM 3 Sections W11/W12/W16/51 (Medford, Somerville and Arlington), with Albanese D&S, Inc. for a lump sum amount of $374,297.01, increasing the contract amount from $20,175,619.60 to $20,549,916.61, with no increase in contract term.

DISCUSSION:

MWRA's Weston Aqueduct Supply Main 3 (WASM 3) consists of approximately ten miles of steel pipe installed in the 1920s and 1930s. The pipe is a critical supply to over 250,000 customers in the Northern High, Northern Extra High and Intermediate High supply systems, serving Waltham, Watertown, Belmont, Lexington, Bedford, Arlington, Somerville and Medford. It also can provide emergency supply to the Gillis Pumping Station, serving communities of the North Shore and Northern Intermediate High if the City Tunnel were to fail.

Contract 6544 included rehabilitation of approximately 13,800 feet of 56-inch and 60-inch diameter water main in Medford, Arlington and Somerville. The rehabilitation consisted of cleaning and internal cement mortar lining and adding valves for better operational flexibility. This project was declared substantially complete in May 2023, 15 months ahead of the original contract completion date. The Contractor will be finishing the final punch list items in the coming weeks. The Contractor and Authority recently completed negotiations and finalized costs for the remaining change order items for the project and such are presented below. Aside from the final balancing change order for unspent quantities and allowances, this change order is expected to be the last.

This Change Order consists of the following six items:

Additional Work at Meter 171 $230,098.68

The Contractor was required to perform work at Meter 171 serving the Town of Arlington. Work included removal of the existing meter vault roof to replace the internal piping and valves located within the vault and installation of a new precast removable roof section. Following the isolation of WASM 3 pipeline in Arlington to perform the cement mortar lining rehabilitation, significant leakage was encountered that prevented the Contractor from starting this work. Field investigation with the Arlington Water Department identified two existing 12-inch gate valves at the Meter 171 interconnection leaking and did not provide the necessary isolation. These two valves were not included in the contract scope for replacement. To eliminate these leaks and proceed with the cement mortar lining, the Contractor temporarily capped the 12-inch connection from WASM pipeline to Meter 171. To ensure a tight shutdown for future work in this location and eliminate impacts to MWRA or the Town of Arlington, the Contractor was directed to replace the two leaking 12-inch gate valves along with the associated pipe, fittings and manholes.

Cutting Concrete Walls at Meter 171

Without any available as-built information on the buried Meter 171 structure, the design required the Contractor to excavate a test pit to determine the thickness of the existing roof slab before ordering a new roof slab. At that time, the Contractor discovered the walls and roof slab were poured as a monolithic concrete structure without any means for removal of the top slab. To perform the contract work inside the vault, the Contractor had to expand the excavation around the perimeter of the meter structure to saw cut the concrete walls to allow removal of the roof slab. A concrete ring wall was constructed and doweled into the existing walls to provide a tight seal for installation of a new removable roof slab in the event removal is necessary in the future.

As a result of the additional valve replacement and vault work described above, the limits of disturbance in the vicinity of Meter 171 increased significantly. This required the Contractor to place temporary trench pavement over additional trenches and to a greater extent around the vault structure. Finally, the Town of Arlington requested that the milling and overlay paving limits be extended to incorporate all the additional work, including restoration of the pavement markings and crosswalks.

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of $230,098.68 for this additional work, with no increase in contract term. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Install ADA Compliant Ramps $43,299.12

During design, the Consultant met with the Town of Arlington to provide construction information about the WASM 3 pipeline rehabilitation project, including the construction timeline, limits of

work, and the need to identify locations for access pits over the pipe to get equipment and materials inside the pipeline. Because these access pits occupy a significant portion of the roadway over extended periods of time, the Consultant requested the Town provide a list of high traffic areas and intersections where access pits would adversely impact local traffic. Based on the information provided by the Town, the Consultant included restrictions in the contract documents for approved access pit locations.

Once construction began, the actual traffic impacts were greater than originally anticipated. There was significant congestion during the morning and evening commutes that created delays for MBTA and local school bus routes. In addition, the local police and fire departments voiced concerns with access for emergency vehicles for public safety. To alleviate these concerns, the Town of Arlington requested that one of the access pits be relocated to the intersection of Pleasant Street and Irving Street. This new location allowed the Contractor to place its equipment and materials along Irving Street instead of Pleasant Street, which is one of the main roads through town. While this new location mitigated the traffic and safety concerns, it created the need for the Contractor to replace the existing sidewalk with new ADA compliant sidewalks and ramps in this location.

Cement Lining Equipment at Pipeline Access Pits

ADA Compliant Ramps at Pleasant Street

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of $43,299.12. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Relocate 10-inch Insertion Valve $33,428.66

As part of the operational upgrade to the WASM 3 pipeline, additional butterfly valves and structures were included at key locations. In order to install the large valve chamber at Pleasant Street and Maple Street, the Contractor was required to relocate the adjacent Town of Arlington water main. To minimize interruptions in water supply to numerous blocks of downtown Arlington businesses and residents, the design included two insertion valves and replacement piping for the Town's water line. During placement for one of the insertion valves, a crack was discovered in the

existing ten-inch cast iron water pipe, preventing installation of the valve in this location. As a result of this unforeseen condition, the Contractor was required to relocate the insertion valve by approximately 20 feet and extend replacement water piping to eliminate the section of pipe that was cracked.

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of $33,428.66 for this additional work with no increase in contract term. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Additional Welding $25,822.91

The Contractor is required to clean and cement mortar line the 56-inch steel WASM 3 pipeline. This pipeline was constructed in the 1930s utilizing a combination of Lock-Bar pipe for straight sections and riveted sections for bends. In the early 1930s, the fabrication method for steel pipes consisted of rolling steel sheets or plates and riveting the pipeline together at the horizontal and end seams. The riveted seams were not effective at keeping the pipeline from distorting to an oval shape. By the late 1930s, Lock-Bar pipe, which consisted of H-shaped bars to hold the circular steel pieces in place, supplanted riveted pipe and was more effective at maintaining the circular steel shape of the pipeline. However, Lock-Bar was made in 30-foot straight lengths and thus could not be utilized for bends. Both these pipe construction methods have been replaced by today's standard of fully welded steel pipe, which holds it shape better.

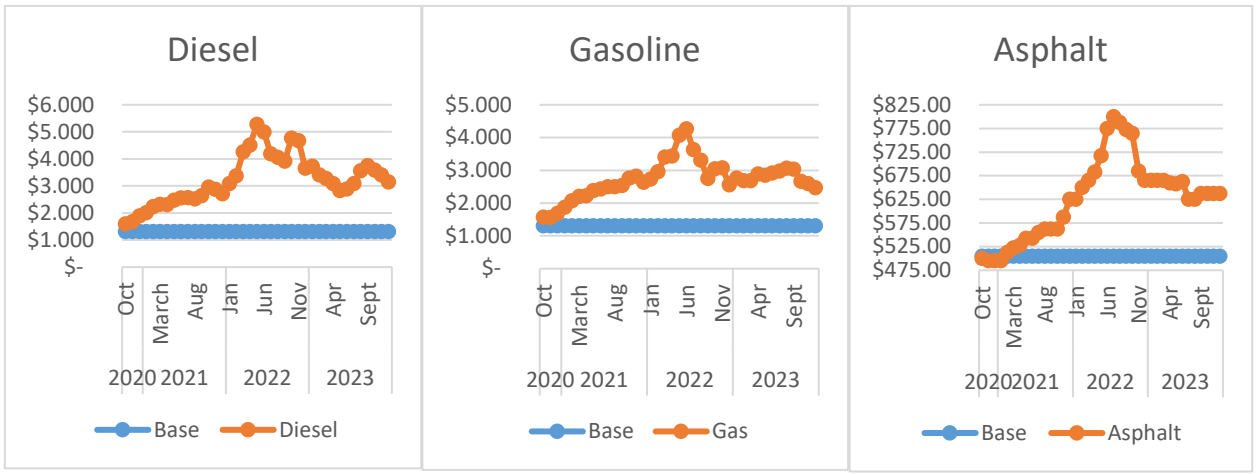
Differences in Diameter at Welding Connections

During final fit-up for the closure pieces at the access pits, it was discovered that several sections of the existing 56-inch steel pipe were significantly out of round. The weld details included in the contract documents accounted for some expected out-of-round areas, but would not seal the larger gaps encountered at some locations between the new and existing pipes. It is critical that these interfaces are tight and properly welded to withstand the pipeline operating pressure. The Design Engineer developed additional welding details to ensure proper fit-up between the existing out-of-round steel pipe and the new round steel pipe sections. As a result of this unforeseen condition, the Contractor performed additional welding at locations where the existing 56-inch steel pipe is out of round and must connect to the new 56-inch circular steel pipe.

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of $25,822.91 for this additional work with no increase in contract term. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Increase Commodity Allowance $23,723.74

In accordance with the requirements of M.G.L. Chapter 30, Section 38A, construction contracts include an allowance for fluctuation of certain commodity prices at the time the work is performed. This contract had an allowance for price adjustments of diesel fuel, gasoline, liquid asphalt and Portland cement in the amount of $30,000. The contract was awarded in October 2020 and included a cost of $1.312 per gallon for diesel fuel oil, $1.305 per gallon for gasoline and $505 per ton for liquid asphalt. Since the contract award, the price of diesel fuel, gasoline and liquid asphalt have dramatically increased and stayed well above the award contract amount. As of February 2024, the rates for diesel fuel oil have fluctuated as high as $5.279 to the current period price of $3.167, the rates for gasoline have fluctuated as high as $4.265 to the current period price of $2.483 and liquid asphalt has fluctuated as high as $800 to the current period price of $637.50, resulting in a significant overrun to the allowance. Change Orders 5 and 8 were previously executed to increase the original allowance by $65,000 to offset costs above the original stated prices. To date, the Contractor has been reimbursed $95,000 for commodity escalation. Now that the contract work is complete, staff reviewed the Contractor's final documentation confirming that an additional $23,723.74 is needed to adjust these commodities.



This item was identified by MWRA staff as an overrun. MWRA staff, the Consultant, and the Contractor have agreed to an amount of $23,723.74. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Temporarily Relocate Pedestrian Traffic Signal $17,923.90

During design, the Design Engineer collected all the available record information on utilities from the Town of Arlington. These records did not include any information on traffic signal conduit or wiring. Prior to the start of work, the Contractor requested that DigSafe mark out all local utilities on the roadway surface. While excavating to install a temporary access pit at Pleasant Street and Irving Street, an unmarked electric line for a local traffic light was accidentally damaged. As the traffic light controls vehicle flow from a local school exit, the Contractor was required to

temporarily relocate and restore the traffic fixture to maintain traffic flow and reinstall the traffic light after completion of the work.

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of $17,923.90 for this additional work with no increase in contract term. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

CONTRACT SUMMARY:

	Amount	**Time**	**Dated**
Original Contract:	$19,487,850.00	1,383 Days	10/28/20
Change Orders:			
Change Order 1*	$50,000.00	0 Days	05/25/21
Change Order 2*	$17,503.06	0 Days	07/16/21
Change Order 3*	$13,053.55	0 Days	10/13/21
Change Order 4*	$88,020.62	0 Days	11/08/21
Change Order 5*	$107,782.50	0 Days	09/23/22
Change Order 6*	$57,062.16	0 Days	02/28/23
Change Order 7*	$339,347.71	0 Days	04/10/23
Change Order 8*	$15,000.00	0 Days	06/24/23
Change Order 9	$374,297.01	0 Days	Pending
Total of Change Orders:	$1,062,066.61	0 Days	
Adjusted Contract:	$20,549,916.61	1,383 Days	

*Approved under delegated authority

If Change Order 9 is approved, the cumulative value of all change orders to this contract will be $1,062,066.61 or 5.4% of the original contract amount. Work on this contract is 100% complete.

BUDGET/FISCAL IMPACT:

The FY24 CIP includes a budget of $20,256,272 for Contract 6544. Including this change order for $374,297.01, the adjusted contract total is $20,549,916.61, or $293,644.61 over budget. This amount will be absorbed within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

Contract 6544 will receive funding through the Clean Water State Revolving Fund, which is administered by the Massachusetts Clean Water Trust. The D/MBE and D/WBE participation requirements for this project were established by the Department of Environmental Protection at 4.2% and 4.5%, respectively. The Contractor has met these requirements.

MASSACHUSETTS WATER RESOURCES AUTHORITY
Deer Island
33 Tafts Avenue
Boston, MA 02128

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

ADMINISTRATION, FINANCE & AUDIT COMMITTEE MEETING

Date: Wednesday, March 13, 2024

Time: Immediately following the Water Policy & Oversight Committee

Location: MWRA Chelsea Administration Building, 2nd Floor, Rooms 2C and D
2 Griffin Way
Chelsea, MA 02150

A photo ID will be required for entry.

The meeting will also be available via Webex. The Webex meeting link and password to attend virtually are below:

Webex meeting link (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Meeting Number: 2341 033 0434 Password: 3132024

AGENDA

A. Information

1. Delegated Authority Report – February 2024
2. FY2024 Financial Update and Summary through February 2024

B. Contract Amendments/Change Orders

1. Enterprise Content Management System Purchase and Implementation: Cadence Solutions Inc., Contract 7438, Amendment 2

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Delegated Authority Report – February 2024

COMMITTEE: Administration, Finance & Audit

X INFORMATION
___ VOTE

Michele S. Gillen
Director, Administration

Barbara Aylward, Administrator A & F
Karen Smith, Administrative Systems Coor.
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 February 1 - 29, 2024.

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 16, 2022, delegate authority to the Executive Director to approve the following:

Construction Contract Awards:

Up to $3.5 million if the award is to the lowest bidder.

Change Orders:

Up to 25% of the original contract amount or $1,000,000.00, 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 $1,000,000 and three years with a firm; or up to $200,000 and two years with an individual.

Non-Professional Service Contract Awards:

Up to $1,000,000 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 $3.5 million if the award is to the lowest bidder.

Amendments:

Up to 25% of the original contract amount or $500,000, whichever is less, and for a term not exceeding an aggregate of six months.

Amendments to the Position Control Register:

Amendments which result only in a change in cost center.

BUDGET/FISCAL IMPACT:

Recommendations for delegated authority approval include information on the budget/fiscal impact related to the action. For items funded through the capital budget, dollars are measured against the approved capital budget. If the dollars are in excess of the amount authorized in the budget, the amount will be covered within the five-year CIP spending cap. For items funded through the Current Expense Budget, variances are reported monthly and year-end projections are prepared at least twice per year. Staff review all variances and projections so that appropriate measures may be taken to ensure that overall spending is within the MWRA budget.

Purchasing Delegated Authority Items February 1-29, 2024

No.	Date of Award	Title and Explanation	Company	Value
P-1	02/01/2024	**Sole Source Purchase Order for 15 Trimble, Inc. RU-35 Data Recorders** The MWRA Metering Department uses Badger, Inc., data recorders throughout the MWRA water and wastewater systems at more than 500 sites. The data recorders collect flow meter data and periodically send the data back to the proprietary Badger database located at the Chelsea Facility via cellular communication. Only the Badger data recorders are able to communicate with the existing Badger software. These new data recorders to be keep in stock in the Chelsea Warehouse for replacement as necessary.	**Badger, Inc**.	**$52,717.50**
P-2	02/05/2024	**Purchase Order for One R-134a Refrigerant Compressor** The Deer Island Treatment Plant has a network of Air Handling Units (AHUs) that heat and cool personnel work areas, electric equipment rooms and other process areas. During a recent maintenance check, staff determined that Module 1 compressor failed and could not be refurbished. This purchase is for a replacement compressor for Module 1. MWRA staff will perform all tasks related to the removal and replacement of the compressors.	**MECS, Inc.**	**$57,888.00**
P-3	01/30/2024	**One-Year Purchase Order Contract for the Analysis of Perfluoroalkyl and Polyfluoroalkyl Substances in Wastewater Samples** MWRA has been collecting samples for the analysis of perfluoroalkyl and polyfluoroalkyl substances (PFAS) in wastewater samples since October 2020. The new Clinton NPDES permit added additional testing requirements and imposes a change in methods from EPA Methods 533 to draft EPA Method 1633. The proposed Deer Island permit includes the same requirements. This represents a substantial increase in the number of samples requiring analysis. The Department of Laboratory Services has received certification for testing PFAS in drinking water samples however; the laboratory is still in the process of preparing for testing for PFAS in wastewater samples, which requires a different method than that used for drinking water samples. This contract will provide for wastewater PFAS analysis for up to 400 wastewater samples, 250 field quality control samples and ten sludge cakes.	**Pace Analytical Services, LLC**	**$243,540.00**
P-4	02/14/2024	**Sole Source Purchase Order for Programming Modifications of a Replacement Inverter at the John J. Carroll Water Treatment Plant** The John J. Carroll Water Treatment Plant uses ozone gas as one of its primary treatment processes. The manufacturing of this gas is performed by a FUJI Ozone System. This system has been online for over 20 years and is critical for water treatment. Repair parts and some service for the ozone system are provided exclusively from Aqua-Aerobic Systems, Inc. Ozone Generator #1 developed power output problems which caused it to shut down. Aqua-Aerobic	**Aqua-Aerobic Systems, Inc**.	**$34,930.00**

No.	Date of Award	Title and Explanation	Company	Value
		Systems, Inc. provide the equipment and field service technicians needed for the programing and commissioning of the replacement inverter.		
P-5	**02/16/2024**	**Sole Source Purchase Order for Professional Services to Provide an Assessment of the Laboratory Information Management System** The current version of the Laboratory Information management System (LIMS) application is no longer supported, and must be upgraded to maintain support, mitigate performance issues, provide additional features and functionality, as well as, address compatibility and security vulnerabilities that are generally associated with operating older versions of software. Because LabWare, Inc. is the developer of LIMS, no other firm has the knowledge or ability to provide MWRA with the comprehensive assessment that is needed for MWRA to make an informed decision to determine the best approach to upgrade of the LIMS system.	**Labware, Inc.**	**$29,040.00**
P-6	**02/15/2024**	**Purchase Order for 50 Split Idler Sprockets for the Deer Island Treatment Plant** There are 48 Primary Clarifiers at Deer Island. Each Primary clarifier has two longitudinal drive sprockets and one cross collector drive sprocket for a total of 144 drive sprockets. There are 54 Secondary Clarifiers at Deer Island. Each Secondary clarifier has two longitudinal drive sprockets and two cross collector drive sprocket for a total of 216 drive sprockets. Drive sprockets can become worn or damaged for a number of reasons, including misalignments, excessive sludge and/or scum build-up in the collector, and / or wear shoe failures. The drive sprockets are stocked as inventory items in Deer Island's warehouse.	**Garland Manufacturing Company**	**$32,500.00**
P-7	**2/16/2024**	**Purchase Order for Two 36-Inch Butterfly Valves** As a part of its overall maintenance and operation of the Metropolitan water system, Field Operations' Water Pipeline Unit replaces approximately 20 main line valves of varying sizes each year. To ensure that the proper sized valve is always available to minimize down time and to be able to immediately respond in the event of a sudden break in service, valves of various dimensions are maintained at the Chelsea Facility. These valves are used as needed by MWRA staff to complete pipeline projects.	**Everett J. Prescott, Inc.**	**$33,318.00**
P-8	**02/16/2024**	**Sole Source Purchase Order Contract for One-Year of Roadway Worker Protection Training** The MWRA's Wastewater/Water System has assets at various locations that require employees to access them on or near commuter railroad property. Keolis requires all personnel working near and/or on commuter rail property to complete the Keolis Roadway Worker Protection Training. The MWRA has 250 employees who work near and/or on commuter rail property. Keolis Commuter Rail Service contracts the Roadway Worker	**Railpros Field Services, Inc**	**$35,000.00**

No.	Date of Award	Title and Explanation	Company	Value
		Protection Training with vendor Rail Pros. Rail Pros is a safety services company to America's rail and transit industry. TRailPros is the only vendor capable of providing this training.		
P-9	**02/15/2024**	**Purchase Order for Two Portable Air Compressors** The Wastewater Pipeline Unit currently utilizes two aging pieces of equipment that provide compressed air to a variety jobsites and facilities. The two pieces of equipment to be replaced are a 2001 and a 2004 Ingersoll-rand air compressors. The two compressors being replaced will immediately be declared surplus and disposed of in accordance with MWRA's Surplus Property Policy via a publicly advertised bid or auction.	**Houston Compression & Services, dba Texas Compression Services**	**$52,614.00**
P-10	**02/07/2024**	**Purchase Order for Three Oracle Database Appliances (X10-L), Five Years of Maintenance and Support, and Installation Services** An Oracle Database Appliance (ODA) is a fully integrated system with software, servers, storage and networking in a single enclosure, which combines the benefits of virtualization with hardware redundancy to provide high availability in a single box. The Authority's ODAs support the following applications: Lawson, Maximo, LIMS, PIMS, GIS and PI. This procurement replaces the two existing ODA X5-2 with three next generation ODA X10-L appliances and provides installation services to configure and migrate.	**Mythics LLC**	**$396,095.70.**
P-11	**02/21/2024**	**Sole Source Purchase Order Two Jerome Hydrogen Sulfide Gas Meters** Hydrogen sulfide meters are used to measure the level being exhausted from wastewater facilities. Department of Environmental Protection permitting requires extremely low hydrogen sulfide levels at certain facilities water facilities. The Jerome 631-X meter, manufactured by Ametek Arizona Instrument, LLC is one hydrogen sulfide gas monitor uniquely capable of registering the levels. This purchase provides two of the four meters that MWRA plans to replace over the next three years.	**Ametek Arizona Instrument, LLC**	**$32,522.00**
P-12	**02/26/2024**	**Purchase Order for Audiovisual Equipment Upgrade for the Southborough Facility and a One-Year Service Contract – *State Contract OFF50*** This procurement is to provide the necessary equipment to upgrade the Common Room located at the Southborough Facility with video conferencing capabilities. The room will be outfitted with the necessary tools to have hybrid meetings, training sessions, and other events. The new equipment below will be integrated with the existing equipment other conference rooms throughout the MWRA. This procurement also includes a one-year service agreement, which will provide preventative maintenance and any necessary repairs to the equipment installed.	**RenVisioning Technology LLC**	**$27,758.41**

No.	Date of Award	Title and Explanation	Company	Value
P-13	**02/27/2024**	**Sole Source Purchase Order for One Year of Maintenance and Support for the InfoWater Suite, InfoSurge, and InfoWorks Sewer Software** All hydraulic modeling of the Authority's water and wastewater distribution systems are performed using Infowater Suite, InfoSurge, and Infoworks Sewer software by staff in the Process Control group, and Planning, Engineering and Construction, and Tunnel Redundancy Departments. Maintenance and support of this software provides for technical support, patches, bug fixes and access to the newest versions of the software.	**Autodesk Inc., dba Innovyze, LLC**	**$31,348**
P-14	**02/28/2024**	**One-Year Purchase Order Contract for Maintenance and Support of CrowdStrike Endpoint and Server licenses – State Contract ITC73** In 2022, MWRA replaced its McAfee Secure Endpoint, Cisco AMP for Endpoints, and FireEye HX software products with CrowdStrike's Falcon Complete software and managed service, which provided next generation endpoint protection in a comprehensive solution that includes antivirus protection, anti-malware protection, proactive threat hunting, 24/7 monitoring, and the capability to automate containment and remediation, if needed. This procurement extends the maintenance and support of the software for another year, while dropping the managed service component, which has been transferred to the new Managed Security Service Provider, NWN Carousel.	**IntraSystems, Inc.**	**$67,754.08**

Construction & Professional Services Delegated Authority Items February 1 – 29, 2024

No.	Date of Award	Title and Explanation	Contract	Amend/CO	Company	Value
C-1	**02/01/24**	**SCADA Network Monitoring Solution** Award of a contract to the lowest responsive bidder to supply, install and configure a network monitoring solution for the SCADA network for a term of 365 calendar days.	**OP-467**	**Award**	**Dragos, Inc.**	**$77,896.00**
C-2	**02/01/24**	**Emergency Replacement of Make-Up Air Handling Units Columbus Park Headworks Facility** Award of an emergency contract to the lowest responsive solicited bidder for the replacement of Make-Up Air Handling Units located at the Columbus Park Headworks Facility for a term 365 calendar days.	**8100**	**Award**	**CAM HVAC & Construction, Inc.**	**$1,055,000.00**
C-3	**02/07/24**	**HVAC Systems Maintenance** Award of a contract to the lowest responsive bidder to provide preventive maintenance and repair services for the entire HVAC systems for a term of 730 calendar days.	**OP-469**	**Award**	**ENE Systems, Inc.**	**$948,566.00**
C-4	**02/12/24**	**Screw Pump Replacement, Phase 1, Clinton Wastewater Treatment Plant** Delete the requirement to perform concrete repairs, demolish and install flow meters.	**7704**	**2**	**IPC Lydon, LLC**	**($54,419.52)**
C-5	**02/14/24**	**John J. Carroll Water Treatment Plant SCADA System Improvements** Furnish and install individually configured and prefabricated backplane assemblies in selected control panels.	**7582**	**10**	**LeVangie Electric Company, Inc.**	**$163,496.23**
C-6	**02/16/24**	**Western Operations Facilities Groundskeeping Services** Award of a contract to the lowest responsive bidder for groundskeeping services at the Western Operations Facilities for a term of 1,095 calendar days.	**OP-470**	**Award**	**JAM Corporation**	**$257,770.00**
C-7	**02/22/24**	**Nut Island Headworks Odor Control Facility and HVAC Improvements** Furnish and install individually configured and prefabricated backplane assemblies in selected control panels.	**7548**	**16**	**Walsh Construction Company, Inc.**	**$491,644.21**

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: FY24 Financial Update and Summary through February 2024

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 2024 through February 2024, comparing actual spending to the budget, and includes a projection to June 30, 2024.

DISCUSSION:

MWRA is continuing the practice of setting aside favorable Capital Finance variances into the Defeasance Account with the intention of recommending Board approval to use these funds to defease debt and provide rate relief in future years. Targeted defeasances are a critical component of the Authority's multi-year rate management strategy. As such, in February the year-to-date debt related savings of $2.2 million was transferred to the Defeasance Account. This variance is primarily due to lower than budgeted variable interest expense.

The total Year-to-Date variance for the FY24 CEB is $23.2 million, due to lower direct expenses of $15.9 million, indirect expenses of $1.2 million, and higher revenue of $6.1 million. The year-end favorable variance is projected at $47.2 million, of which $13.0 million is related to debt service. Beyond debt service savings, staff project a favorable variance of approximately $34.1 million at year-end of which $24.8 million would be from lower direct expenses, $1.3 million from lower indirect expenses, and $7.9 million from greater than budgeted revenues.

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

FY24 Current Expense Budget

The CEB expense variances through February 2024 by major budget category were:

- Lower Direct Expenses of $15.9 million or 7.9% under budget. Spending was lower for Wages & Salaries, Chemicals, Other Services, Professional Services, Fringe Benefits,

Utilities, and Training & Meetings. Spending was higher than budget for Maintenance, Other Materials, Workers' Compensation, and Overtime.

- Lower Indirect Expenses of $1.2 million or 2.2% under budget due primarily to lower Watershed Reimbursement and PILOT.

- Debt Service expenses were on budget after the transfer of $2.2 million to the defeasance account.

- Revenue was $6.1 million or 1.0% over budget driven by higher Investment Income of $5.7 million due to higher than budgeted interest rates and higher average balances.

FY24 Budget and FY24 Actual Variance by Expenditure Category
(in millions)

	FY24 Budget	FY24 Actual	$ Variance	% Variance
Direct Expenses	$202.7	$186.8	-$15.9	-7.9%
Indirect Expenses	$52.7	$51.5	-$1.2	-2.2%
Capital Financing	$299.4	$299.4	$0.0	0.0%
Total	**$554.8**	**$537.7**	**-$17.1**	**-3.1%**

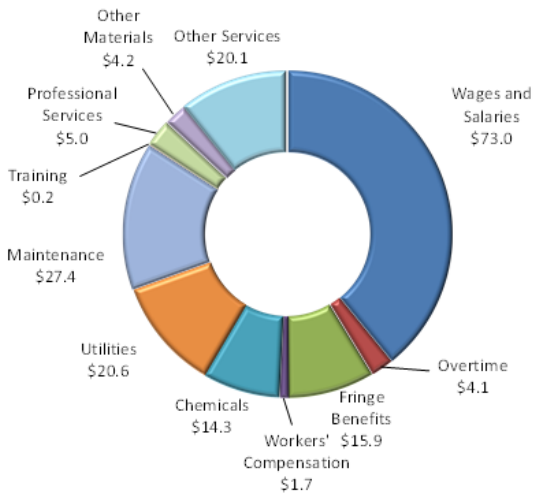
Totals may not add due to rounding

Please refer to Attachment 1 for a more detailed comparison by line item of the budget variances for FY24.

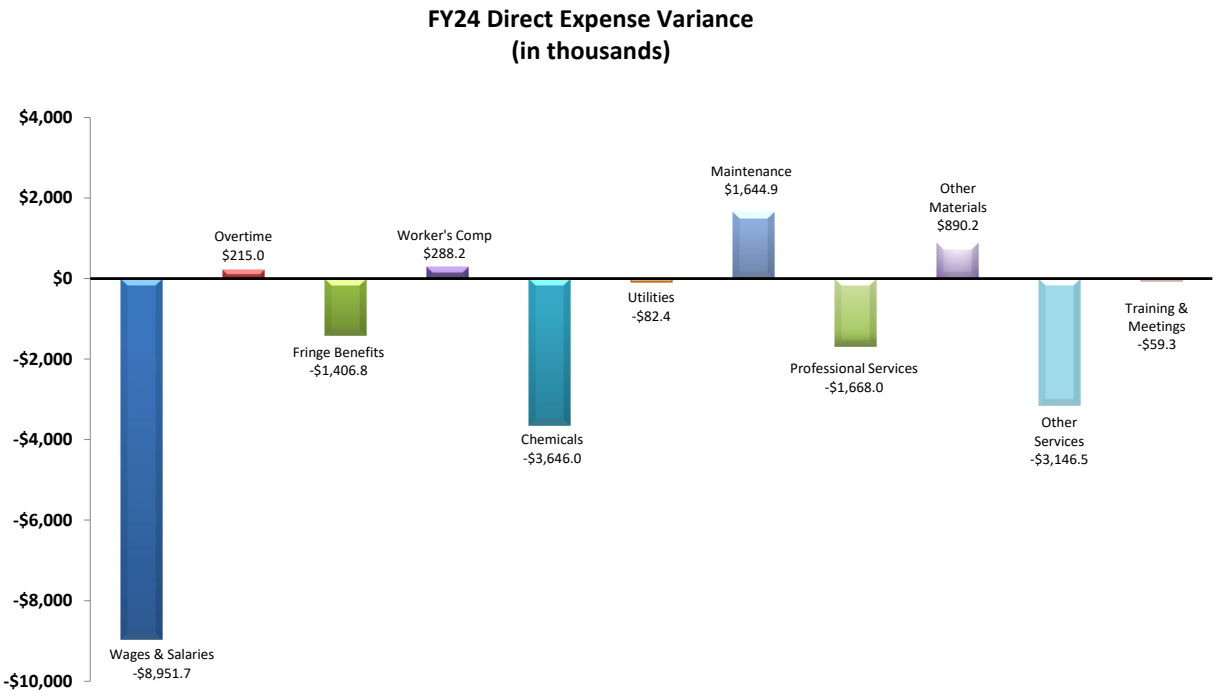
Direct Expenses

FY24 Direct Expenses through February totaled $186.8 million, which was $15.9 million or 7.9% less than budgeted.

FY24 Direct Expenses
(in millions)

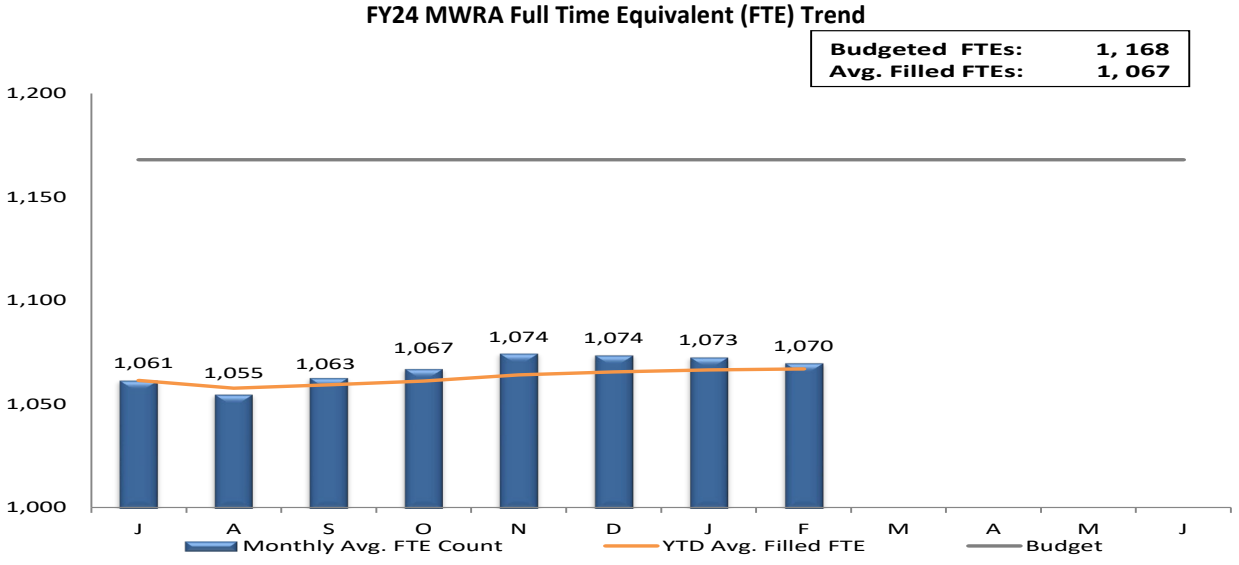


Spending was lower than budget for Wages & Salaries, Chemicals, Other Services, Professional Services, Fringe Benefits, Utilities, and Training & Meetings. These were partially offset by higher than budgeted spending for Maintenance, Other Materials, Workers' Compensation, and Overtime.



Wages and Salaries

Wages and Salaries were under budget by $9.0 million or 10.9%. Through February, there were 101 fewer average FTEs (1,067 versus 1,168 budget) or 8.6% and lower average salaries for new hires versus retirees. The timing of backfilling vacant positions also contributed to Regular Pay being under budget.



Chemicals

Chemicals were lower than budget by $3.6 million or 20.3%. Lower than budget spending on Sodium Hypochlorite of $2.0 million driven by Water Operations of $1.3 million and Wastewater Operations of $152,000 primarily due to contract pricing, and D of $474,000 due to lower pricing for new contract, which is partially offset by additional usage for disinfection due to higher flows earlier in the fiscal year, Ferric Chloride of $665,000 due to decreased usage to maintain digested sludge orthophosphate levels within the target range, Carbon Dioxide was lower than budget by $471,000 primarily due to lower contract price and lower dose required to meet target residual levels in finished water, Aqua Ammonia of $235,000 due to lower price and lower flows, Sodium Bisulfite of $182,000 primarily driven by Water Operations of $108,000 due to lower dose and volume due to lower flows and DITP of $43,000 due to lower quantities to dechlorinate the effluent, and Other Oxidizers (Bioxide) at Framingham PS was lower than budget by $118,000 due to lower price and less deliveries. These are partially offset by higher Hydrogen Peroxide of $230,000 which is added to the DITP influent to reduce elevated H2S levels for odor pretreatment and corrosion control, and allows staff to perform maintenance activities more safely within the tanks. DITP flows are 11.0% greater than the budget and the JCWTP preliminary flows are 3.1% less than the budget through February. 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.

Other Services

Other Services were lower than budget by $3.1 million or 13.5% driven by lower Sludge Pelletization of $2.0 million primarily due to $1.9 million of the $6.2 million of potential landfill costs due to anticipated PFAS regulations that were budgeted in the second half of FY24 as well as lower quantities, Grit & Screenings Removal of $132,000 due to lower quantities, Telecommunications of $750,000 due to updated and less than anticipated costs.

Professional Services

Professional Services were less than budget by $1.7 million or 24.8% driven by lower Other Services of $615,000 due to timing of services including the Disparity Study, Computer Systems Consultant of $343,000, Legal Services of $277,000, and Lab & Testing Analysis of $246,000 all due to the timing of spending.

Maintenance

Maintenance was greater than budget by $1.6 million or 6.4%, largely driven by the timing of projects. Maintenance Services were higher than budget by $889,000 driven by Plant & Machinery Services of $2.0 million primarily due to timing of Combustion Turbine Generator control system upgrade payment to order parts, Computer Software-Licenses/Upgrades of $509,000 due primarily to timing of licenses/upgrades including SQL Server Enterprise and updated cost for Oracle Maintenance, This higher than budgeted spending was partially offset by lower Electrical Services of $988,000 due to timing of work including JCWTP Ozone generator PLC replacement, JCWTP emergency generator emissions monitoring PLC repair, and JCWTP Switchgear PLC Replacement, Building & Grounds Services of $350,000 and HVAC Services of $108,000, also due to timing of work. Maintenance Materials are over budget by $756,000 driven

by Plant & Machinery Materials of $796,000 due to timing and higher spending for glass lined pipe/fittings, seals, and grinder cartridges, and Warehouse Inventory of $669,000 due to need for spare parts as well as purchasing of materials early due to supply chain issues, partially offset by lower Special Equipment Materials of $463,000 due to timing including the purchase of hatch covers at Loring Road, HVAC Materials of $215,000 and Computer Materials of $126,000, due to timing.

Fringe Benefits

Fringe Benefit spending was lower than budget by $1.4 million or 8.1%. Spending was lower than budget for Health Insurance of $1.4 million, 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.

Other Materials

Other Materials were greater than budget by $890,000 or 27.1% driven by higher Computer Hardware of $724,000 primarily due to timing of equipment purchases including printers and additional purchases for audiovisual equipment and equipment kiosks and Vehicle Purchases of $314,000 due to timing of purchases. These were partially offset by lower than budgeted spending for Equipment/Furniture of $200,000 due to timing of purchases related to Phase 3 of the Office Consolidation to Chelsea and DITP, as well as Other Materials of $199,000 due to timing.

Worker's Compensation

Worker's Compensation expenses were greater than budget by $288,000 or 20.2%. The higher than budgeted expenses were due to Compensation Payments of $191,000 and Medical Payments of $134,000 and, partially offset by lower Administrative Expenses of $37,000. Due to uncertainties of when spending will happen, the budget is spread evenly throughout the year.

Overtime

Overtime expenses were greater than budget by $215,000 or 5.5%. Greater than budgeted spending at Deer Island of $369,000 was due to shift coverage as well as rain and snow removal events, partially offset by lower Engineering & Construction of $43,000, and Field Operations of $40,000 due to vacancies resulting in less scheduled overtime. Year-to-date rainfall was a major contributor for the increased overtime.

Utilities

Utilities were lower than budget by $82,000 or 0.4%. Underspending in Diesel Fuel of $1.7 million primarily due to timing of purchasing at Deer Island Treatment Plant (DITP). Deliveries for the most recent purchase of Diesel Fuel began on March 6th. Overspending in Electricity of $1.6 million primarily at DITP of $808,000 is driven by new pass through costs associated with the Mystic Power Station and higher demand usage due to the many rain events. Electricity in Field Operations was greater than budget by $798,000 primarily due to higher use as a result of the many rain events for pumping and fan use for odor control.

Training & Meetings

Training & Meetings was lower than budget by $59,000 or 20.0% primarily due to timing of spending.

Indirect Expenses

Indirect Expenses totaled $51.5 million, which is $1.2 million or 2.2% lower than budget. The variance is driven by lower Watershed Reimbursements and PILOT.

Based on FY24 operating activity only, the Watershed Division is $1.1 million or 8.0% under budget. Lower spending on Wages and Salaries, Fringe Benefits, and Maintenance are driving the variance. When factoring in the FY23 balance forward of $157,000 which was a credit towards FY24, Watershed Reimbursement is $1.2 million or 9.2% below budget through February 2024.

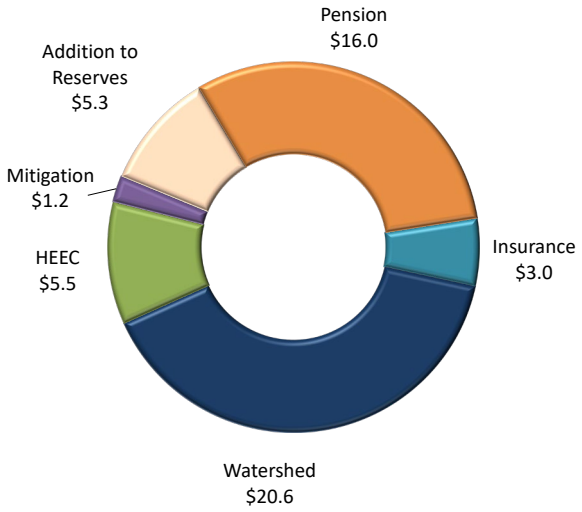
FY24 Watershed Protection Variance

$ in millions	YTD Budget	YTD Actual	YTD $ Variance	YTD % Variance
Operating Expenses	14.1	12.9	-1.2	-8.7%
Operating Revenues - Offset	0.8	0.6	-0.2	-19.2%
FY24 Operating Totals	**13.3**	**12.2**	**-1.1**	**-8.0%**
DCR Balance Forward (FY23 year-end accrual true-up)	0.0	-0.2	-0.2	
FY24 Adjusted Operating Totals	**13.3**	**12.1**	**-1.2**	**-9.2%**
PILOT	8.9	8.5	-0.4	-4.6%
Total Watershed Reimbursement	**22.2**	**20.6**	**-1.6**	**-7.4%**

Totals may not add due to rounding

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 monthly in arears. Accruals are being made monthly based on estimates provided by DCR and trued-up monthly based on the monthly invoice. MWRA's budget is based on the annual Fiscal Year Work Plan approved by the Massachusetts Water Supply Protection Trust (with a vacancy adjustment applied). The FTE count at the end of February was 147 (and 145.1 on a year-to-date basis) vs. a budget of 150.

FY24 Indirect Expenses
(in millions)

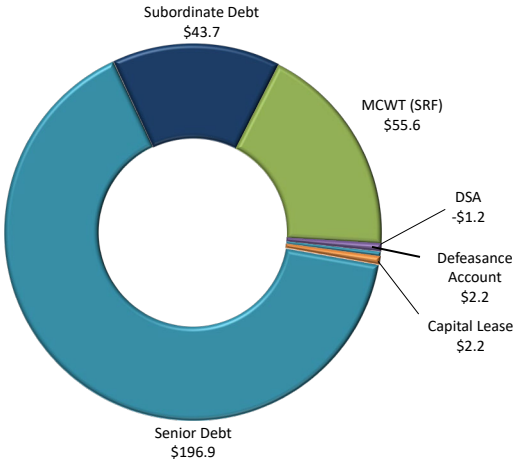


Capital Financing

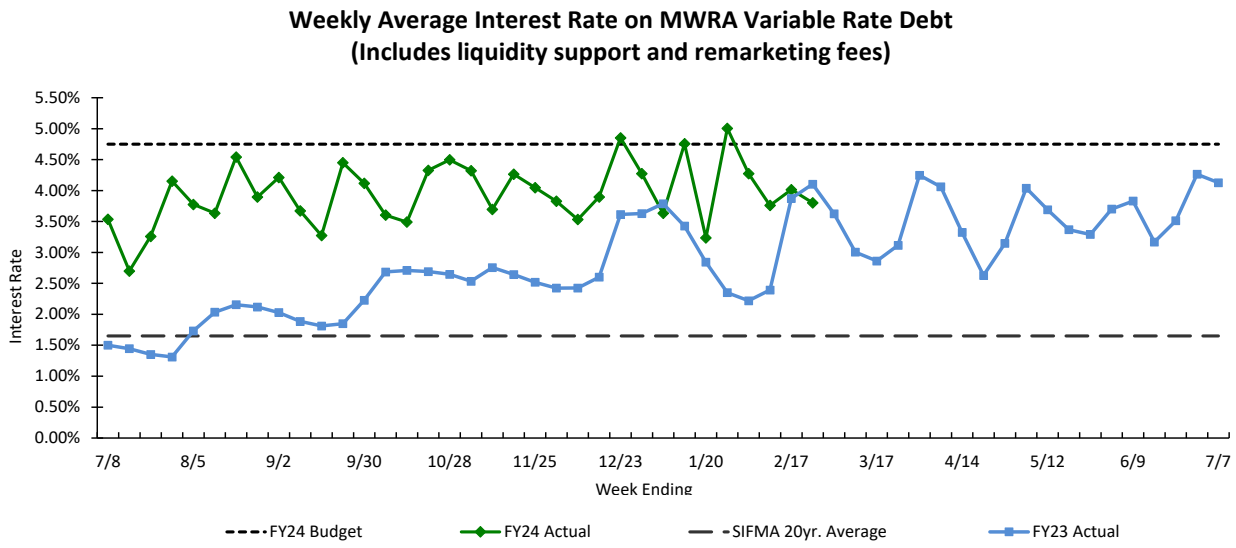
Capital Financing expenses include the principal and interest payments for fixed senior debt, the variable subordinate debt, the Massachusetts Clean Water Trust (SRF) obligation, the commercial paper program for the local water pipeline projects, current revenue for capital, Optional Debt Prepayment, and the Chelsea Facility lease payment.

Capital Financing expenses for FY24 through February totaled $299.4 million, which is at budget after the transfer of $2.2 million year-to-date to the Defeasance account. The transfer reflects lower variable rate debt expense due to lower than anticipated interest rates, partially offset by higher SRF spending due to timing.

FY24 Capital Finance
($ in millions)



The graph below reflects the FY24 actual variable rate trend by week against the FY24 Budget.



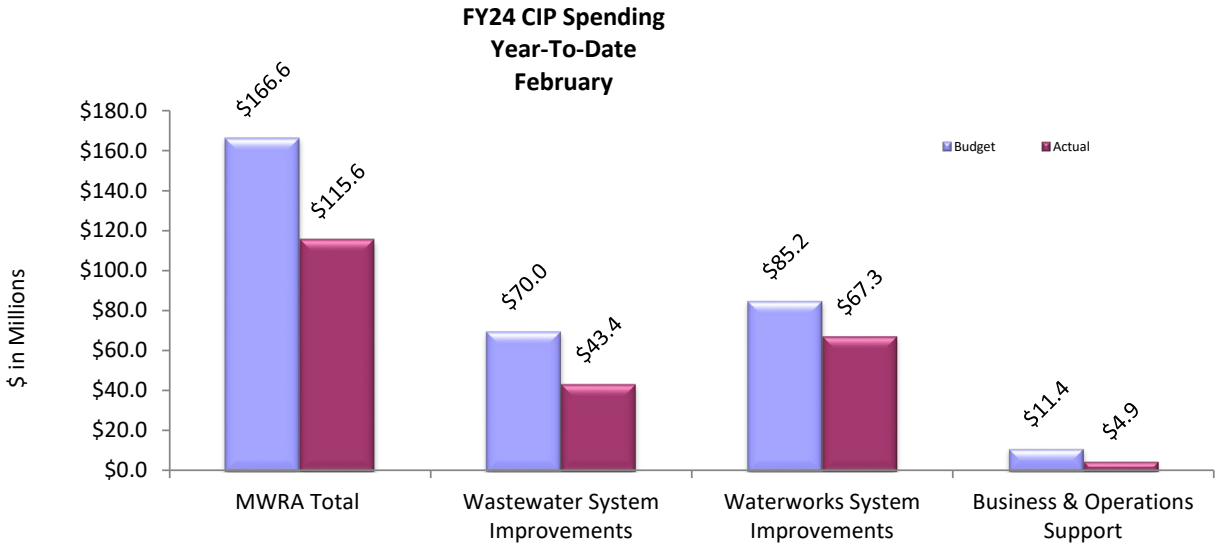
Revenue & Income

Revenues of $594.3 million were $6.1 million or 1.0% over the estimate driven by Investment Income which was $5.7 million or 39.7% over the estimate due to higher than anticipated interest rates and higher average balances.

FY24 Capital Improvement Program

Capital expenditures in Fiscal Year 2024 through February total $115.6 million, $51.0 million or 30.6% under planned spending.

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 $80.1 million, $37.5 million or 31.9% under planned spending.



Overall, CIP spending reflects under planned spending in Wastewater Improvements ($26.5 million), Waterworks ($17.9 million) and Business and Operations Support ($6.5 million). Major variances in Wastewater are primarily due to timing of community grants and loans for the I/I Local Financial Assistance Program, timing of work and construction delays for Braintree/Weymouth Improvements – Construction, delay in performing shaft inspections and issuing NTP for Final Design for the Ward Street & Columbus Park Headworks Upgrades - Design/CA contract, schedule change for DITP Roofing Replacement, lower than projected task order work for DITP As-Needed Design contracts, and work scheduled for FY24 that was completed in FY23 for Chelsea 008 Pipe Replacement. This was partially offset by equipment received ahead of schedule for the Clarifier Rehabilitation Phase 2 – Construction contract, claim settlements for Chelsea Creek Upgrades, and contractor progress for DITP Radio Repeater System Upgrade.

Waterworks variances are primarily due to timing of consultant's work for Tunnel Redundancy Preliminary Design and Massachusetts Environmental Policy Act (MEPA) Review, timing of work for Section 89/29 Replacement – Construction and CP-1 NEH Improvements, schedule change for Section 75 Extension, and timing of services for Geotechnical Support. This was partially offset by timing of community loan distributions for the Water Loan Program, timing of work for Waltham Water Pipeline, work scheduled in FY23 that was completed in FY24 for the CWTP Chemical Feed System Improvements – Construction, and contractor progress for CP-2, Sections 25 & 24 – Construction contracts.

$ in Millions	Budget	Actuals	$ Var.	% Var.
Wastewater System Improvements				
Interception & Pumping	19.1	13.2	(5.9)	-30.8%
Treatment	16.3	13.9	(2.4)	-14.8%
Residuals	0.0	0.0	0.0	0.0%
CSO	2.6	2.0	(0.6)	-24.5%
Other	32.0	14.4	(17.6)	-55.0%
Total Wastewater System Improvements	**$70.0**	**$43.4**	**($26.5)**	**-37.9%**
Waterworks System Improvements				
Drinking Water Quality Improvements	2.4	1.5	(0.9)	-37.2%
Transmission	32.6	21.4	(11.2)	-34.4%
Distribution & Pumping	27.8	20.2	(7.6)	-27.4%
Other	22.3	24.1	1.8	8.1%
Total Waterworks System Improvements	**$85.2**	**$67.3**	**($17.9)**	**-21.1%**
Business & Operations Support	**$11.4**	**$4.9**	**($6.5)**	**-56.8%**
Total MWRA	**$166.6**	**$115.6**	**($51.0)**	**-30.6%**

FY24 Spending by Program:

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

Other Wastewater: Net under planned spending of $17.6 million

- $17.6 million for Community I/I due to timing of community distributions of grants and loans.

Waterworks Transmission: Net under planned spending of $11.2 million

- $3.1 million for Tunnel Redundancy Preliminary Design & MEPA Review due to timing of consultant work.
- $1.7 million for Wachusett Lower Gatehouse Pipe & Boiler Replacement – Construction due to longer lead time on some larger items and a change in design for the multi-orifice valve.
- $1.3 million for WASM 3 Rehabilitation CP-1 due to work scheduled for FY24 performed in FY23.
- $1.1 million for Shaft 5 Improvements Design/CA and Construction, and $1.0 million for Maintenance Garage/Wash Bay/Storage Building - Construction due to schedule changes.
- $0.8 million for Geotechnical Support Services due to timing of support services.
- This under planned spending was partially offset by over planned spending of $1.4 million for Waltham Water Pipeline due to work scheduled in FY23 that was performed in FY24.

Water Distribution and Pumping: Net under planned spending of $7.6 million

- $2.6 million for Section 89/29 Replacement – Construction, $2.1 million for CP-1 NEH Improvements due to timing of work, and $2.4 million for Section 75 Extension - Construction CP-1 due to updated schedule.

Business & Operations Support: Net under planned spending of $6.5 million

- $2.1 million for As-Needed Design Contracts due to lower than projected task order work.
- $1.3 million for Security Equipment & Installation due to timing of security initiatives.

- $0.7 million for MAXIMO Interface Enhancements, $0.6 million for Cabling, $0.5 million for Lawson Upgrade, $0.4 million for Oracle Database Appliance, and $0.3 for Core Switches due to timing and scheduling of work.

Interception & Pumping: Net under planned spending of $5.9 million

- $4.0 million for Braintree/Weymouth Improvements – Construction due to timing, long lead time for equipment and delay in fabrication of structural steel.
  $1.6 million for Ward Street & Columbus Park Headworks Upgrades - Design/CA due to delay in performing shaft inspections and issuing NTP for Final Design.

Wastewater Treatment: Net under planned spending of $2.4 million

- $1.3 million for DITP Roofing Replacement, $0.8 million for DiStor Membrane Replacements, and $0.4 million for Chemical Pipe Replacement – Construction due to schedule changes.
- $0.9 million for Deer Island As-Needed Design contracts due to lower than projected task order work, and $0.7 million for South System Pump Station VFD Repl. Design due to timing of work.
- This under planned spending was partially offset by over planned spending of $2.1 million for Clarifier Rehabilitation Phase 2 – Construction due to equipment received ahead of schedule, $0.4 million for Miscellaneous VFD Replacements due timing of work, and $0.3 million for Radio Repeater System Upgrade 2 due to contractor progress.

Other Waterworks: Net over planned spending of $1.8 million

- $3.4 million for Local Financial Assistance due to timing of community loan distributions.
- This over planned spending was partially offset by less than planned spending of $1.1 million for Steel Tank Improvements due to updated schedule.

Drinking Water Quality Improvements: Net under planned spending of $0.9 million

- $1.4M for the John Carroll Water Treatment Plant (JCWTP) Technical Assistance due to lower than projected task order work, partially offset by $0.8 million for JCWTP Chemical Feed System Improvements Construction due to work scheduled for FY23 that was performed in FY24.

Combined Sewer Overflow: Net under planned spending of $0.6 million

- $0.7 million for Chelsea 008 CSO Pipe Replacement due to work scheduled for FY24 performed in FY23, and $0.4 million for Somerville Marginal New Pipe Connection due to schedule change.
- This under planned spending was partially offset by over planned spending of $0.7 million for Fort Point Channel & Mystic due to timing of Community Managed CSO payments.

Construction Fund Balance

The construction fund balance was $108.5 million as of the end of February. Commercial Paper/Revolving Loan available capacity was $120 million.

ATTACHMENTS:

Attachment 1 – Variance Summary February 2024
Attachment 2 – Current Expense Variance Explanations
Attachment 3 – Capital Improvement Program Variance Explanation
Attachment 4 – Year-End Current Expense Projections vs. Budget

ATTACHMENT 1
FY24 Actuals vs. FY24 Budget

	Feb 2024 Year-to-Date				
	Period 8 YTD Budget	Period 8 YTD Actual	Period 8 YTD Variance	%	FY24 Approved
EXPENSES					
WAGES AND SALARIES	$ 81,995,224	$ 73,043,564	$ (8,951,660)	-10.9%	$ 127,828,242
OVERTIME	3,915,258	4,130,267	215,009	5.5%	5,727,593
FRINGE BENEFITS	17,350,667	15,943,847	(1,406,820)	-8.1%	25,823,383
WORKERS' COMPENSATION	1,429,597	1,717,805	288,208	20.2%	2,144,395
CHEMICALS	17,961,055	14,315,028	(3,646,027)	-20.3%	28,269,124
ENERGY AND UTILITIES	20,718,677	20,636,306	(82,371)	-0.4%	31,064,890
MAINTENANCE	25,744,871	27,389,806	1,644,935	6.4%	38,574,256
TRAINING AND MEETINGS	296,800	237,510	(59,290)	-20.0%	498,597
PROFESSIONAL SERVICES	6,714,525	5,046,559	(1,667,966)	-24.8%	10,410,484
OTHER MATERIALS	3,283,406	4,173,565	890,159	27.1%	7,167,400
OTHER SERVICES	23,265,458	20,118,917	(3,146,541)	-13.5%	38,494,660
TOTAL DIRECT EXPENSES	**$ 202,675,538**	**$ 186,753,174**	**$ (15,922,366)**	**-7.9%**	**$ 316,003,024**
INSURANCE	$ 2,736,314	$ 3,038,833	$ 302,519	11.1%	$ 4,065,380
WATERSHED/PILOT	22,190,629	20,554,379	(1,636,250)	-7.4%	30,358,187
HEEC PAYMENT	5,321,659	5,478,215	156,556	2.9%	7,500,650
MITIGATION	1,197,462	1,197,462	-	0.0%	1,779,086
ADDITIONS TO RESERVES	5,291,081	5,291,081	-	0.0%	7,861,035
RETIREMENT FUND	15,972,804	15,972,804	-	0.0%	15,972,804
POST EMPLOYEE BENEFITS	-	-	-	---	2,849,365
TOTAL INDIRECT EXPENSES	**$ 52,709,949**	**$ 51,532,774**	**$ (1,177,174)**	**-2.2%**	**$ 70,386,507**
STATE REVOLVING FUND	$ 55,085,236	$ 55,610,415	$ 525,179	1.0%	$ 90,798,263
SENIOR DEBT	196,945,386	196,945,386	-	0.0%	294,055,644
DEBT SERVICE ASSISTANCE	(1,187,297)	(1,187,297)	-	0.0%	(1,187,297)
CURRENT REVENUE/CAPITAL	-	-	-	---	19,200,000
SUBORDINATE MWRA DEBT	46,404,791	46,404,791	-	0.0%	69,931,072
LOCAL WATER PIPELINE CP	-	-	-	---	7,744,625
CAPITAL LEASE	2,165,329	2,165,329	-	0.0%	3,217,060
VARIABLE DEBT	-	(2,739,766)	(2,739,766)	---	-
DEFEASANCE ACCOUNT	-	2,214,588	2,214,588	---	-
DEBT PREPAYMENT	-	-	-	---	4,000,000
TOTAL CAPITAL FINANCE EXPENSE	**$ 299,413,444**	**$ 299,413,444**	**$ -**	**0.0%**	**$ 487,759,367**
TOTAL EXPENSES	**$ 554,798,931**	**$ 537,699,392**	**$ (17,099,541)**	**-3.1%**	**$ 874,148,898**
REVENUE & INCOME					
RATE REVENUE	$ 561,526,539	$ 561,526,539	$ -	0.0%	$ 834,268,000
OTHER USER CHARGES	7,415,975	7,348,781	(67,194)	-0.9%	10,390,434
OTHER REVENUE	4,732,577	5,192,818	460,241	9.7%	5,838,903
RATE STABILIZATION	205,613	205,613	-	0.0%	305,482
INVESTMENT INCOME	14,330,610	20,016,126	5,685,516	39.7%	23,346,079
TOTAL REVENUE & INCOME	**$ 588,211,314**	**$ 594,289,876**	**$ 6,078,562**	**1.0%**	**$ 874,148,898**

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY24 Budget YTD February	FY24 Actuals February	FY24 YTD Actual vs. FY24 Budget		Explanations
			$	%	
Direct Expenses					
Wages & Salaries	81,995,224	73,043,564	(8,951,660)	-10.9%	Wages and Salaries are under budget by $9.0 million or 10.9%. Year to date, there have been 101 fewer average FTEs (1,067 versus 1,168 budget), lower average new hire salaries versus retirees, the timing of backfilling vacant positions.
Overtime	3,915,258	4,130,267	215,009	5.5%	Overtime expenses were greater than budget by $215,000 or 5.5%. Greater than budget spending at Deer Island of $369,000 due to shift coverage as well as rain and snow removal events, partially offset by Engineering & Construction of $43,000, and Field Operations of $40,000 due to vacancies resulting in less scheduled overtime. Year-to-date rainfall was a major contributor for the increased overtime.
Fringe Benefits	17,350,667	15,943,847	(1,406,820)	-8.1%	Fringe Benefit spending was lower than budget by $1.4 million or 8.1%. Spending was lower than budget for **Health Insurance** of $1.4 million, 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.
Worker's Compensation	1,429,597	1,717,805	288,208	20.2%	Worker's Compensation expenses were greater than budget by $288,000 or 20.2%. The higher than budgeted expenses were due to **Compensation Payments** of $191,000 and **Medical Payments** of $134,000 and, partially offset and **Administrative Expenses** of $37,000. Due to uncertainties of when spending will happen, the budget is spread evenly throughout the year.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY24 Budget YTD February	FY24 Actuals February	FY24 YTD Actual vs. FY24 Budget		Explanations
			$	%	
Chemicals	17,961,055	14,315,028	(3,646,027)	-20.3%	Chemicals were lower than budget by $3.6 million or 20.3%. Lower than budget spending on **Sodium Hypochlorit**e of $2.0 million driven by Water Operations of $1.3 million and Wastewater Operations of $152,000 primarily due to contract pricing, and DITP of $474,000 due to lower pricing for new contract, which is offset by additional usage for disinfection due to higher flows earlier in the fiscal year, **Ferric Chloride** of $665,000 due to decreased usage to maintain digested sludge orthophosphate levels within the target range, **Carbon Dioxide** was lower than budget by $471,000 primarily due to lower volume, lower contract price, and lower dose required to meet target residual levels in finished water, **Aqua Ammonia** of $235,000 due to lower price and lower flows, **Sodium Bisulfite** of $182,000 primarily driven by Water Operations of $108,000 due to lower dose and volume due to lower flows and DITP of $43,000 due to lower quantities to dechlorinate the effluent, **Other Oxidizers** (Bioxide) at Framingham PS was lower than budget by $118,000 due to lower price and less deliveries, partially offset by higher **Hydrogen Peroxide** of $230,000 which is added to the DITP influent to reduce elevated H2S levels for odor pretreatment and corrosion control, and allows staff to perform maintenance activities more safely within the tanks. DITP flows are 11.0% greater than the budget and the CWTP preliminary flows are 3.1% less than the budget through February. 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	20,718,677	20,636,306	(82,371)	-0.4%	Utilities were lower than budget by $82,000 or 0.4%. Underspending in **Diesel Fuel** of $1.7 million primarily due to timing of purchasing at Deer Island Treatment Plant (DITP). Purchase began on March 6th. Overspending in **Electricity** of $1.6 million primarily at DITP of $808,000 driven by new pass through cost associated with the Mystic Power Station and higher demand usage due to the many rain events. Electricity in Field Operations was greater than budget by $798,000 primarily due to higher use as a result of the many rain events for pumping and fan use for odor control.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY24 Budget YTD February	FY24 Actuals February	FY24 YTD Actual vs. FY24 Budget		Explanations
			$	%	
Maintenance	25,744,871	27,389,806	1,644,935	6.4%	Maintenance was greater than budget by $1.6 million or 6.4%, largely driven by the timing of projects. *Maintenance Services* were higher than budget by $889,000 driven by **Plant & Machinery Services** of $2.0 million primarily due to timing of Combustion Turbine Generator control system upgrade payment to order parts, **Computer Software-Licenses/Upgrades** of $509,000 due primarily to timing of licenses/upgrades including SQL Server Enterprise and updated cost for Oracle Maintenance, This higher than budgeted spending was partially offset by **Electrical Services** of $988,000 due to timing of work including JCWTP Ozone generator PLC replacement, JCWTP emergency generator emissions monitoring PLC repair, and JCWTP Switchgear PLC Replacement, **Building & Grounds Services** of $350,000 and **HVAC Services** of $108,000, also due to timing of work. M*aintenance Materials* are over budget by $756,000 driven by **Plant & Machinery Materials** of $796,000 due to timing and higher spending for glass lined pipe/fittings, seals, and grinder cartridges and **Warehouse Inventory** of $669,000 due to need for spare parts as well as purchasing of materials early due to supply chain issues, partially offset by **Special Equipment Materials** of $463,000 due to timing including the purchase of hatch covers at Loring Road, **HVAC Materials** of $215,000 and **Computer Materials** of $126,000, due to timing.
Training & Meetings	296,800	237,510	(59,290)	-20.0%	Training & Meetings was lower than budget by $59,000 or 20.0% is primarily due to timing driven by MIS ($49,000), Procurement ($10,000), Water Redundancy ($20,000), and Engineering & Construction ($11,000), partially offset by higher spending in Field Operations of $20,000 and Operations Administration of $17,000.
Professional Services	6,714,525	5,046,559	(1,667,966)	-24.8%	Professional Services were less than budget by $1.7 million or 24.9% driven by lower **Other Services** of $615,000 due to timing of services including the Disparity Study, **Computer Systems Consultant of** $343,000**, Legal Services of $277,000, and Lab & Testing Analysis** of $246,000 all due to the timing of spending.
Other Materials	3,283,406	4,173,565	890,159	27.1%	Other Materials were greater than budget by $890,000 or 27.1% driven by **Computer Hardware** of $724,000 million primarily due to timing of equipment purchases including printers and additional purchases for audiovisual equipment and equipment kiosks, **Vehicle Purchases** of $314,000 due to timing of purchases, **Vehicle Expense** of $95,000 due to timing of vehicle expenses including the electrical vehicle charging stations originally anticipated to be completed by FY23, and **Health/Safety** of $91,000 due to timing of purchases. These were partially offset by lower than budgeted spending for **Other Materials** of $199,000 due to Equipment/Furniture of $200,000 due to timing of purchases and timing of Phase 3 Office Consolidation to Chelsea and DITP.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY24 Budget YTD February	FY24 Actuals February	FY24 YTD Actual vs. FY24 Budget		Explanations
			$	%	
Other Services	23,265,458	20,118,917	(3,146,541)	-13.5%	Other Services were lower than budget by $3.1 million or 13.5% driven by **Sludge Pelletization** of $2.0 million primarily due to $1.9 million of the $6.2 million of potential landfill costs due to anticipated PFAS regulations that were budgeted in the second half of FY24 as well as lower quantities and **Grit & Screenings Removal** of $132,000 due to lower quantities, and **Telecommunications of** $750,000 due to updated and less than anticipated costs.
Total Direct Expenses	**202,675,538**	**186,753,174**	**(15,922,364)**	**-7.9%**	
Indirect Expenses					
Insurance	2,736,314	3,038,833	302,519	11.1%	Higher Payments/Claims of $293,000 and higher Premiums of $10,000 than budgeted
Watershed/PILOT	22,190,629	20,554,379	(1,636,250)	-7.4%	Lower Watershed Reimbursement of $1.6 million driven by lower spending on Wages & Salaries, Equipment/Maintenance, and Fringe Benefits.
HEEC Payment	5,321,659	5,478,215	156,556	2.9%	HEEC Revenue Requirement of $161,000.
Mitigation	1,197,462	1,197,462	-	0.0%	
Addition to Reserves	5,291,081	5,291,081	-	0.0%	
Pension Expense	15,972,804	15,972,804	-	0.0%	
Post Employee Benefits	-	-	-		
Total Indirect Expenses	**52,709,949**	**51,532,774**	**(1,177,175)**	**-2.2%**	
Debt Service					
Debt Service	300,600,742	300,600,742	-	0.0%	Capital Financing was on budget after the transfer of $2.2 million to the Defeasance account. The transfer reflects lower variable rate debt expense due to lower than budget variable interest expense of $2.7 million as a result of lower interest rates, partially offset by higher SRF spending of $525,000 due to timing.
Debt Service Assistance	(1,187,297)	(1,187,297)	-	0.0%	
Total Debt Service Expenses	**299,413,445**	**299,413,445**	**-**	**0.0%**	
Total Expenses	**554,798,932**	**537,699,393**	**(17,099,538)**	**-3.1%**	

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY24 Budget YTD February	FY24 Actuals February	FY24 YTD Actual vs. FY24 Budget		Explanations
			$	%	
Revenue & Income					
Rate Revenue	561,526,539	561,526,538	(1)	0.0%	
Other User Charges	7,415,976	7,348,781	(67,195)	-0.9%	
Other Revenue	4,732,577	5,192,818	460,241	9.7%	Other Revenue was $460,000 or 9.7% greater than budget due to **Miscellaneous Revenue** of $329,000, **Energy Revenue** of $181,000, and **Penalties** of $105,000, partially offset by **Profit and Loss on Disposal of Equipment** of $200,000.
Rate Stabilization	205,613	205,613	-	0.0%	HEEC Reserve.
Investment Income	14,330,609	20,016,125	5,685,516	39.7%	Investment Income is over budget due to higher than budgeted interest rates and higher average balances.
Total Revenue	**588,211,314**	**594,289,875**	**6,078,561**	**1.0%**	
Net Revenue in Excess of Expenses	**33,412,382**	**56,590,482**	**23,178,099**		

ATTACHMENT 3
FY24 CIP Variance Report ($000s)

	FY24 Budget February	FY24 Actuals February	Actuals vs. Budget		Explanations
			$	%	
Wastewater					
Interception & Pumping (I&P)	$19,069	$13,188	($5,881)	-30.8%	Less than planned spending Braintree/Weymouth Improvements - Construction: $4.0M (timing of work, long lead time for equipment and delay in fabrication of structural steel) Ward Street & Columbus Park Headworks Upgrades - Design/CA: $1.6M (delay in performing shaft inspections and issuing NTP for Final Design) Siphon Structure Rehabilitation Construction: $1.1M (schedule change) Greater than planned spending Chelsea Creek Upgrades: $1.6M (claim settlements) Prison Point Construction 2 - Discharge Piping Rehabilitation: $992k (award greater than budget)
Treatment	$16,262	$13,855	($2,407)	-14.8%	Less than planned spending DITP Roofing Replacement: $1.3M, DiStor Membrane Replacements: $833k, and Chemical Pipe Replacement - Construction: $375k (schedule changes) DITP As-Needed Design: $942k (lower than projected task order work) SSPS VFD Replacement - Design/ESDC/REI: $718k (Preliminary Design Report phase is more complicated than originally believed) Greater than planned spending Clarifier Rehabilitation Phase 2 - Construction: $2.1M (equipment received ahead of schedule) Miscellaneous VFD Replacements: $410k (timing of work) Radio Repeater System Upgrade 2: $276k (contractor progress)
Residuals	$0	$0	$0	0.0%	
CSO	$2,633	$1,987	($646)	-24.5%	Less than planned spending Chelsea 008 Pipe Replacement: $699k (work scheduled for FY24 performed in FY23) Somerville Marginal New Pipe Connection: $433k (schedule change) Greater than planned spending Fort Point Channel & Mystic: $714k (timing of Community Managed CSO payments)
Other Wastewater	$32,020	$14,414	($17,606)	-55.0%	Less than planned spending I/I Local Financial Assistance: $17.6M (timing of community distributions of grants and loans)
Total Wastewater	**$69,984**	**$43,444**	**($26,540)**	**-37.9%**	

ATTACHMENT 3
FY24 CIP Variance Report ($000s)

	FY24 Budget February	FY24 Actuals February	Actuals vs. Budget		Explanations
			$	%	
Waterworks					
Drinking Water Quality Improvements	$2,420	$1,520	($900)	-37.2%	Less than planned spending CWTP Technical Assistance: $1.4M (lower than projected task order work) Greater than planned spending CWTP Chemical Feed System Improvements - Construction: $795k (work scheduled for FY23 performed in FY24)
Transmission	$32,635	$21,400	($11,235)	-34.4%	Less than planned spending Tunnel Redundancy Preliminary Design & MEPA Review: $3.1M (timing of consultant work) Wachusett Lower Gatehouse Pipe & Boiler Replacement - Construction: $1.7M (longer lead time on some larger items and a change in design for the multi-orifice valve) WASM 3 Rehabilitation CP-1: $1.3M (work scheduled for FY24 performed in FY23) Shaft 5 Improvements Design/CA and Construction: $1.1M, and Maintenance Garage/Wash Bay/Storage Building - Construction: $967k (schedule changes) WASM 3 - MEPA/Design/CA/RI: $848k (timing of consultant work) Geotechnical Support Services: $840k (timing of support services) Administration, Legal & Public Outreach: $678k (timing of administration, legal and public acquisition costs) Program Support Services: $482k (timing of services) Watershed Land Acquisition: $445k (timing of land purchases) WASM/SPSM PRV - Design/CA: $434k (less than anticipated consultant services) Greater than planned spending Waltham Water Pipeline - Construction: $1.4M (work scheduled in FY23 performed in FY24)
Distribution & Pumping	$27,824	$20,198	($7,626)	-27.4%	Less than planned spending Section 89/29 Replacement - Construction: $2.6M, CP-1 NEH Improvements: $2.1M (timing of work) Section 75 Extension - Construction CP-1: $2.4M, and CP-2 NEH Improvements: $333k (schedule changes) Greater than planned spending CP-2, Sections 25 & 24 - Construction: $443k (contractor progress)

ATTACHMENT 3
FY24 CIP Variance Report ($000s)

	FY24 Budget February	FY24 Actuals February	Actuals vs. Budget		Explanations
			$	%	
Other Waterworks	$22,330	$24,147	$1,817	8.1%	Greater than planned spending Local Water Pipeline Financial Assistance Program: $3.4M (timing of community loan distributions) Electrical Distribution Upgrades at Southborough: $606k (work planned for FY23 performed in FY24) Less than planned spending Steel Tank Improvements - Construction: $1.1M and Design/CA: $498k (updated Construction schedule)
Total Waterworks	**$85,209**	**$67,265**	**($17,944)**	**-21.1%**	
Business & Operations Support					
Total Business & Operations Support	**$11,393**	**$4,919**	**($6,473)**	**-56.8%**	Less than planned spending As-Needed Design Contracts: $2.1M (lower than projected task order work) Security Equipment & Installation: $1.3M (timing of security initiatives), Cabling: $644k, MAXIMO Interface Enhancements: $515k, Lawson Upgrade: $452k, Oracle Database Appliance: $388k, and Core Switches: $320k (timing of work) FY24-28 Vehicle Purchases: $490k (timing of purchases) Greater than planned spending Office Space Modifications: $823k (FY23 planned work completed in FY24)
Total MWRA	**$166,586**	**$115,628**	**($50,957)**	**-30.6%**	

Attachment 4
FY24 Budget vs. FY24 Projection

TOTAL MWRA	FY24 Budget	FY24 Projection	Change FY24 Budget vs FY24 Projection	
			$	%
EXPENSES				
WAGES AND SALARIES	$ 127,828,242	$ 114,808,802	$ (13,019,440)	-10.2%
OVERTIME	5,727,593	6,350,450	622,857	10.9%
FRINGE BENEFITS	25,823,383	24,532,214	(1,291,169)	-5.0%
WORKERS' COMPENSATION	2,144,395	2,466,054	321,659	15.0%
CHEMICALS	28,269,124	21,543,101	(6,726,023)	-23.8%
ENERGY AND UTILITIES	31,064,893	31,928,750	863,857	2.8%
MAINTENANCE	38,574,255	39,074,255	500,000	1.3%
TRAINING AND MEETINGS	498,597	436,272	(62,325)	-12.5%
PROFESSIONAL SERVICES	10,410,484	9,410,484	(1,000,000)	-9.6%
OTHER MATERIALS	7,167,398	6,877,398	(290,000)	-4.0%
OTHER SERVICES	38,494,660	33,736,660	(4,758,000)	-12.4%
TOTAL DIRECT EXPENSES	**$ 316,003,024**	**$ 291,164,441**	**$ (24,838,583)**	**-7.9%**
INSURANCE	$ 4,065,380	$ 4,295,270	$ 229,890	5.7%
WATERSHED/PILOT	30,358,187	28,644,392	(1,713,795)	-5.6%
HEEC PAYMENT	7,500,650	7,643,162	142,512	1.9%
MITIGATION	1,779,086	1,779,086	-	0.0%
ADDITIONS TO RESERVES	7,861,035	7,861,035	-	0.0%
RETIREMENT FUND	15,972,805	15,972,805	-	0.0%
POSTEMPLOYMENT BENEFITS	2,849,365	2,849,365	-	0.0%
TOTAL INDIRECT EXPENSES	**$ 70,386,507**	**$ 69,045,115**	**$ (1,341,393)**	**-1.9%**
STATE REVOLVING FUND	$ 90,798,263	$ 83,358,104	$ (7,440,159)	-8.2%
SENIOR DEBT	294,055,644	291,943,144	(2,112,500)	-0.7%
SUBORDINATE DEBT	69,931,072	66,443,800	(3,487,272)	-5.0%
LOCAL WATER PIPELINE CP	7,744,625	7,744,625	-	0.0%
CURRENT REVENUE/CAPITAL	19,200,000	19,200,000	-	0.0%
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%
DEBT PREPAYMENT	4,000,000	4,000,000	-	0.0%
DEBT SERVICE ASSISTANCE	(1,187,297)	(1,187,297)	-	0.0%
TOTAL DEBT SERVICE	**$ 487,759,367**	**$ 474,719,436**	**$ (13,039,931)**	**-2.7%**
TOTAL EXPENSES	**$ 874,148,898**	**$ 834,928,991**	**$ (39,219,907)**	**-4.5%**
REVENUE & INCOME				
RATE REVENUE	$ 834,268,000	$ 834,268,000	$ -	0.00%
OTHER USER CHARGES	10,390,434	10,349,723	(40,711)	-0.4%
OTHER REVENUE	5,838,903	5,645,942	(192,961)	-3.3%
RATE STABILIZATION	305,482	305,482	-	0.0%
INVESTMENT INCOME	23,346,079	31,520,079	8,174,000	35.0%
TOTAL REVENUE & INCOME	**$ 874,148,898**	**$ 882,089,226**	**$ 7,940,328**	**0.9%**
VARIANCE:		**$ (47,160,235)**	**$ (47,160,235)**	

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Amendment 2 to Contract 7438 for the Enterprise Content Management System Purchase and Implementation
Cadence Solutions Inc.
Contract 7438

COMMITTEE: Administration, Finance, & Audit

___ INFORMATION
_X_ VOTE

Douglas Rice, Director, Procurement
Paula Weadick, MIS Director

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

Renata Thomas, Business Relationship Manager, MIS
Preparer/Title

Michele S. Gillen
Director, Administration

RECOMMENDATION:

That the Board of Directors, on behalf of the Authority, approve Amendment 2 to Contract 7438, Enterprise Content Management System purchase and implementation, with Cadence Solutions Inc. to extend the contract term by 12 months, from March 24, 2024 to March 24, 2025, with the additional cost of $86,700 to be included under a separate delegated authority amendment as set forth herein.

DISCUSSION:

In December 2020, the Board of Directors approved the award of Contract 7438 for an Enterprise Content Management System (ECM) to Cadence Solutions, Inc. The initial phase of the ECM implementation focused on streamlining the management processes for the collection, review, approval and distribution of various engineering and construction documents consisting of eleven engineering, five construction, and eleven records management workflows as well as thirty-one associated data sources/databases that were largely paper-based and time consuming.

The ultimate vision is for an Authority-wide ECM solution that can be used to manage multiple document types and workflows. The advantages of moving away from paper processes and implementing an electronic records management system were highlighted by the COVID-19 impacts to MWRA's business. Teleworking requirements emphasize the value of paperless document workflows, approvals, and electronic document management and access controls. Out of necessity, staff developed a number of ad-hoc processes during the shift to teleworking such as the approval of various forms. While these ad-hoc processes, still in place today, enabled the approval process to continue and reduced the reliance on paper, they lack consistency and document tracking. In addition to moving the engineering, construction, and records management

processes outlined above to electronic processes, the ECM system using OpenText software will provide a foundation for establishing Authority-wide standards for electronic signature and form approvals with improved tracking and document control.

Amendment #1

The testing and training phase of the project was extremely resource intensive. Staffing shortages and reallocation of resources impacted the timeline for completion of this phase. Additionally, eight workflow configurations were identified as needing modifications and two custom forms were needed to support the automation of configured workflows. The additional effort to complete the testing and training, workflow/configuration modifications and creating the custom forms were incorporated into the contract cost for an additional $198,150. Amendment 1 also included a one-year renewal of the OpenText maintenance and support for $98,838.19. Overall, Amendment 1 extended the contract end date an additional twelve months and increased the contract amount by $296,988.19.

Amendment #2

MWRA has completed all processes defined in both the original contract and Amendment 1. Engineering and Construction staff are using the ECM system to track and update projects through the various workflows, and the Records Center is utilizing all of the records management portions of the system for both physical and electronic records within the Authority. The roll out of this system has received overwhelmingly positive feedback.

Two additional workflows are recommended to ECM to address other critical Authority workflow needs. The additional workflows are 1) the Staff Summary review and approval process; and 2) the Policy and Procedures review and approval process. Also, the Contract Requisition workflow in ECM needs modifying to support all contract types. Staff will leverage the lessons learned from the ad-hoc processes previously created to configure these workflows. The two new workflows will utilize the robust tools inside ECM (e.g. version control and same-time, multi-person document commenting, automation, and tracking) to provide better visibility into the routing process. Staff recommend approval of this additional work.

The cost for the above additional work is $86,700. To perform this work an additional 12 months must be added to the contract for the time needed to complete the configurations and allow for testing and training. While the Executive Director has sufficient delegated authority to approve the cost for this additional work, he does not have any remaining delegated authority to extend the contract time. Accordingly, staff request that the Board approve an extension of 12 moths to the contract to perform the work of adding two workflows and modifying the Contract Requisition workflow, along with testing and training. If approved by the Board, the Executive Director, under delegated authority, would then approve an amendment to the contract of $86,700 to cover the costs of this additional work.

CONTRACT SUMMARY:

	Amount	Time	Dated
Original Contract:	$2,148,635.00	24 Months	03/24/2021
Amendment 1	$296,988.19	12 Months	03/15/2023
Proposed Amendment 2		12 Months	Pending
Amended Contract:		48 Months	

BUDGET/FISCAL IMPACT:

The FY24 Capital Improvement Program includes $2,629,508 for Contract 7438. This amendment is for a time extension only. Accordingly, there is no financial impact.

MBE/WBE PARTICIPATION:

Cadence Solutions is not a certified Minority-owned or Women-owned business.

MASSACHUSETTS WATER RESOURCES AUTHORITY
Deer Island
33 Tafts Avenue
Boston, MA 02128

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

WASTEWATER POLICY & OVERSIGHT COMMITTEE MEETING

Date: Wednesday, March 13, 2024

Time: Immediately following the Water Committee

Location: MWRA Chelsea Administration Building, 2nd Floor, Rooms 2C and D
2 Griffin Way
Chelsea, MA 02150

A photo ID will be required for entry.

The meeting will also be available via Webex. The Webex meeting link and password to attend virtually are below:

Webex meeting link (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Meeting Number: 2341 033 0434 Password: 3132024

AGENDA

A. Information

1. Infiltration/Inflow Local Financial Assistance Program Annual Update

B. Contract Awards

1. Thermal Plant, Hydro Power and Wind Turbine Maintenance: O'Connor Corporation, Contract OP-464

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Infiltration/Inflow Local Financial Assistance Program Annual Update

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COMMITTEE: Wastewater Policy & Oversight

X INFORMATION
VOTE

Kristen M. Hall, Senior Program Manager, Planning
Israel D. Alvarez, Project Manager, Planning
Preparer/Title

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

RECOMMENDATION:

For information only.

DISCUSSION:

MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program was initiated in May 1993 to provide funding to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. The Program's goal is to provide technical and financial assistance to member communities, thus improving sewer system conditions to reduce I/I and ensure ongoing repair and replacement and efficient operation and maintenance of local collection systems. Staff's review of long-term wastewater meter data and frequency and duration of sanitary sewer overflows (SSOs) indicates MWRA's financial assistance for local I/I reduction and collection system rehabilitation projects, together with Combined Sewer Overflow (CSO) control program projects and indoor water conservation, have reduced and continue to maintain flows in the regional wastewater collection system.

The I/I Local Financial Assistance Program is a critical component of MWRA's Regional I/I Reduction Plan.[1] Specifically, local sewer system rehabilitation projects are intended to reduce I/I, offsetting ongoing collection system deterioration and, in the long-term, resulting in lower regional I/I volumes. Regional I/I reductions ensure that the dry day wastewater flow does not exceed the Deer Island National Pollutant Discharge Elimination System (NPDES) permit limit of 436 mgd.[2] Over the last ten years, the dry day wastewater flow to the Deer Island plant has averaged 280 mgd, well below the current and proposed NPDES permit limits (see table below).

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[1] As required by the NPDES permit for the Deer Island Treatment Plant, MWRA's Regional Infiltration/Inflow Reduction Plan was approved by MassDEP in November 2002. MWRA is required to report annually on the I/I Reduction Plan and present estimates of I/I for each member sewer community. The new NPDES draft permit issued in May 2023 indicated that additional I/I reporting may be required.

[2] The draft NPDES permit has a proposed annual rolling average flow limit of 361 MGD.

Calendar Year	Total Wastewater Flow	Dry Day Wastewater Flow
2014	326 mgd	284 mgd
2015	295 mgd	256 mgd
2016	284 mgd	256 mgd
2017	318 mgd	280 mgd
2018	362 mgd	308 mgd
2019	335 mgd	295 mgd
2020	299 mgd	267 mgd
2021	347 mgd	305 mgd
2022	277 mgd	248 mgd
2023	340 mgd	298 mgd
10 Year Average	**318 mgd**	**280 mgd**

Update on Distribution of I/I Financial Assistance to Communities

Since 1993, a total of $860.75 million in grant and loan funds has been authorized by the Board and allocated to member sewer communities through the Program's 14 funding phases. Community grant/loan allocations are based on each community's share of sewer charges. In September 2022, Program funding Phase 14 ($100 million) was added. Financial assistance under Phase 14 continues at 75% grants and 25% ten-year, interest-free loans (the same as Program Phases 9 through 12). In June 2018, Program funding Phases 11, 12 and 13 were added at $100 million per phase. Phase 13 was added as a ten-year, interest-free loan-only phase, which communities could utilize if they exhausted their grant/loan allocations, prior to the creation of a new grant/loan phase. With the addition of Phase 14, communities can now access their Phase 14 grant/loan funding when they have exhausted their Phase 12 allocation without using the loan-only Phase 13 funds. Through December 2023, nine communities have used their entire Phase 14 funding allocation, four communities have used their entire Phase 13 funding allocation and 20 communities have used their entire Phase 12 funding allocation. One community (Chelsea) is expected to receive their total Phase 14 allocation as part of the February/March 2024 I/I funding distribution cycle.

All 43 metropolitan sewer customer communities are participating in the financial assistance program. Through December 2023, a total of $551.4 million has been distributed to member communities to fund 676 local sewer rehabilitation projects. The remaining $309.4 million are approved for distribution through FY30. All scheduled community loan repayments have been made, a total of $201 million to date. Of the 676 total projects, 587 projects have been completed and 89 projects are ongoing in planning, design or construction phase. Attachment 1 provides a summary of funds allocated, distributed, and remaining for each member community. Attachment 2 provides a summary of funding distributions by fiscal quarter since program inception in May 1993. Grant and loan funding is provided to local communities for eligible I/I reduction projects including planning, design, construction and engineering services during construction. These projects generally take one to three years to complete. A total of 79% of the funds distributed to date have financed local construction projects.

The table below details funds distributed for planning, design, construction and construction services for both completed and ongoing projects.

I/I Financial Assistance for Planning, Design and Construction

PROJECT PHASE	COMPLETED PROJECTS ($ millions)	ONGOING PROJECTS ($ millions)	TOTAL ($ millions)
Planning/Study:	$ 52.0	$ 11.5	$ 63.5 (11%)
Design:	18.0	9.0	27.0 (5%)
Construction:	317.3	117.7	435.0 (79%)
Eng. Services During Const.:	20.0	5.9	25.9 (5%)
TOTAL	$ 407.3 (74%)	$ 144.1 (26%)	$ 551.4 (100%)

Program Results from Local Projects

Through December 2023, 676 local I/I reduction and sewer system rehabilitation projects have been funded through the MWRA's I/I Local Financial Assistance (grant/loan) Program. Cumulative results are summarized below.

Results for planning and sewer inspection projects are:

- 2,530 miles of sewer TV inspected;
- 1,716 miles of sewer flow isolated;
- 1,489 miles of sewer smoke tested;
- 68,890 sewer manholes inspected; and
- 79,200 buildings inspected.

Offset Joint Detected via CCTV Inspection

Inflow Source Identified by Smoke Testing

Results for projects targeting infiltration reduction are:

- 83 miles of sewer replaced;
- 357 miles of cured-in-place-pipe (CIPP) liner installed;
- 195 miles of sewer tested/chemically sealed;
- 3,388 sewer spot repairs;
- 19,842 service connection repairs; and
- 4.8 miles of underdrains sealed.

Results for projects targeting inflow reduction are:

- 1,208 catch basins disconnected;
- 49 miles of new or replaced storm drains installed;
- 24,755 manholes rehabilitated/sealed;
- 4,051 manhole covers replaced or inflow seals installed;
- 551 sump pumps redirected; and
- 5,839 downspouts/area drains disconnected.

Sewer Manhole in Marsh: Raised and Sealed

CIPP Liner Installation

I/I and Stormwater Impacts on the MWRA Collection System

Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes, manholes and deteriorated joints. Typically, many sewer pipes and sewer service laterals are below the surrounding groundwater table. Therefore, leakage into the sewer (infiltration) is a broad problem that is difficult and expensive to identify and resolve.

Infiltration Into a Sanitary Sewer

Inflow is extraneous flow entering the collection system through point sources and may be directly related to stormwater runoff from sources such as roof leaders, yard and area drains, basement sump pumps, ponded manhole covers, cross connections from storm drains or catch basins, and leaking tide gates. Inflow causes a rapid increase in wastewater flow during and continuing after storms and extreme high tides. The volume of inflow entering a collection system typically depends on the magnitude and duration of rainfall, as well as related impacts from snowmelt, flooding, and storm surge.

Inflow Into a Manhole During Flooding

Stormwater in combined sewers is, by design, collected in the combined sewer system to be transported to a downstream treatment facility. During rainfall events that cause the combined sewer system to reach capacity, a portion of wastewater flow is diverted to combined sewer overflow (CSO) storage facilities and CSO outfalls.

The volume of I/I and stormwater (in combined sewers) that is discharged by member sewer communities into the MWRA collection system is influenced by seasonal and wet weather

conditions as well as tide height and storm surge. Stormwater and I/I take up pipeline capacity in the collection system that would otherwise be available to transport sanitary flow. During extreme storm events, particularly in periods of high groundwater, excessive I/I may cause sewer system surcharging and sanitary sewer overflows (SSOs). I/I entering the collection system also results in the transport of groundwater and surface water out of the natural watershed.

Review of Long-Term Flows in the MWRA Collection System

Attachment 3 provides graphs of long-term wastewater flow data (35 years from 1989 to 2023) for the total collection system to the Deer Island Treatment Plant as well as flow data for the north and south collection systems. The five-year running average wastewater flow is overlaid on each flow graph to smooth the annual variability in the flow data. Annual rainfall from the Logan Airport gauge is also displayed on Attachment 3. The long-term average daily flow for the total system is 349 mgd and the average annual rainfall is 43.5 inches. Using the five-year running average over the long term, the total system wastewater average daily flow has declined approximately 67 mgd, a reduction of 17%. The north collection system wastewater flow has declined by approximately 52 mgd, while the south collection system wastewater flow has declined by approximately 15 mgd.

The long-term flow tributary to the Deer Island Treatment Plant is impacted by a variety of factors, some helping to decrease wastewater flow while others increase wastewater flow, as noted below.

- CSO separation projects reduce stormwater tributary to the combined sewer system leading to decreased flows over time. However, MWRA's pumping and interceptor relief upgrades, as well as CSO optimization projects, are intended to maximize wet weather flow to the treatment plant and minimize CSOs and SSOs leading to increased flows over time.

- MWRA's technical and financial assistance for local I/I reduction and sewer rehabilitation projects stimulate gradual improvements to the regional collection system reducing I/I and stormwater over time. However, the regional collection system continues to age and deteriorate, leading to increased I/I over time.

- Water use in the region has decreased significantly. The reduction in indoor water use has resulted in a decrease in wastewater flow. However, decreases in outdoor water use and water system leakage will have no impact on wastewater flow. Within MWRA's sewer service area over the last 20 years, indoor water use has decreased by approximately 20 gallons per capita per day due to water conservation trends. However, over the same 20-year period, the sewered area population has increased by approximately 283,000 (due to increased population and expanded sewered areas). The net decrease in wastewater flow from reduced indoor water use is estimated at 20 mgd over the last 20 years.

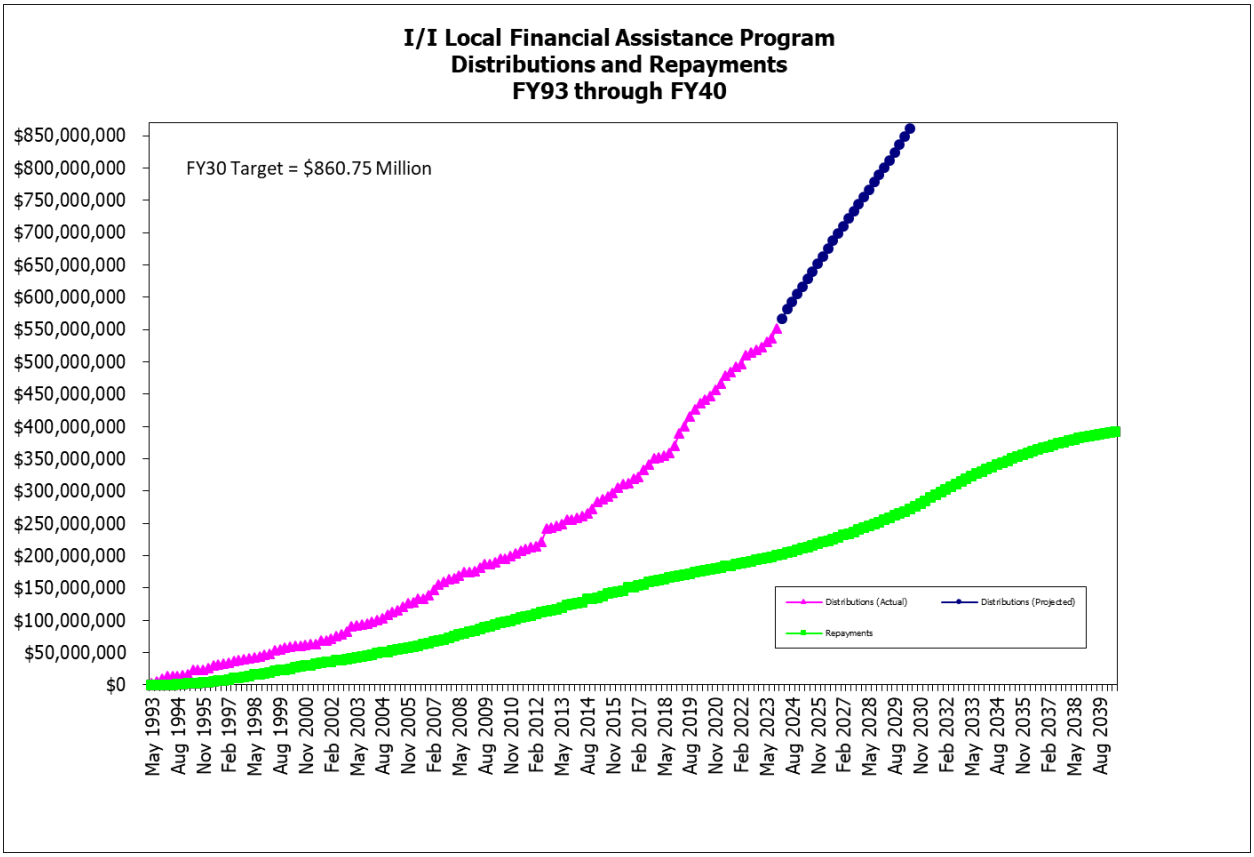
Wastewater Flow Reduction Summary

In summary, MWRA's financial assistance for local I/I reduction and collection system rehabilitation projects, in combination with CSO Control Program project benefits and indoor water use reductions, have reduced and continue to maintain wastewater flow volumes in the regional collection system tributary to the Deer Island Treatment Plant.

BUDGET/FISCAL IMPACT:

For the total program, the budget target is $860.75 million for grant and loan distributions. The FY24 CIP includes an overall budget of $468 million for the grant portion of the I/I Local Financial Assistance Program. An additional $393 million is budgeted for the loan portion of the program. Depending on the timing and level of community loan requests, loan distributions can fluctuate, sometimes causing overspending or underspending (versus budgeted totals) for any particular fiscal year. Community grants and loans are financed through MWRA 30-year bonds.

Through December 2023, $551 million has been distributed ($301 million in grants and $250 million in loans). The loan portion is offset by an equal amount of loan repayments over time. All scheduled community loan repayments have been made, a total of $201 million to date. As community loans are repaid, the funds are deposited into MWRA's construction fund. The Program has a remaining balance of $310 million in future community grants and loans through FY30. The graph below presents grant and loan distributions and loan repayments (actual and projected) for Program Phases 1-14 (FY93 through FY40).



At the MWRA Advisory Board's Operations Committee meeting on January 5, 2024, committee members developed and discussed two additional program funding phases (Phase 15 and Phase 16) to the existing MWRA I/I Local Financial Assistance Program (Phases 1-14). The two additional program funding phases were approved and will be advanced to the full Advisory Board as part of their CIP comments.

The Operations Committee recommended that I/I Program Phase 15 consist of a $100 million interest-free "stop gap" loan funding phase (as with the Program's Phase 13 funding phase).

Community funding allocations would become available in FY25. Zero-interest loan repayments would occur over 10 years.

The Operations Committee recommended that I/I Program Phase 16 consist of a $125 million grant-loan funding phase. Community funding allocations would become available in FY26. Phase 16 funds would be distributed as 75% grants and 25% interest-free loans with loan repayments over 10 years.

MBE/WBE PARTICIPATION:

MBE/WBE participation goals are included in the Program's Financial Assistance agreements.

ATTACHMENTS:

Attachment 1 - Community Funding Summary through December 2023
Attachment 2 - Summary of Funding Distributions by Fiscal Quarter
Attachment 3 - Long-Term Regional Flow Data

ATTACHMENT 1
MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
COMMUNITY FUNDING SUMMARY THROUGH DECEMBER 2023

Community	Total Allocations (Phases 1 - 14)	Total Distributions (Phases 1 - 14)	Percent Distributed	Funds Remaining
Arlington	$15,473,000	$12,215,900	79%	$3,257,100
Ashland	$4,348,500	$2,020,060	46%	$2,328,440
Bedford	$6,354,600	$3,109,158	49%	$3,245,442
Belmont	$9,325,100	$5,135,100	55%	$4,190,000
Boston	$246,921,200	$122,868,059	50%	$124,053,141
Braintree	$16,449,000	$12,040,400	73%	$4,408,600
Brookline	$24,005,200	$19,666,200	82%	$4,339,000
Burlington	$9,632,800	$8,522,800	88%	$1,110,000
Cambridge	$44,640,100	$28,830,100	65%	$15,810,000
Canton	$7,565,900	$3,126,850	41%	$4,439,050
Chelsea	$13,510,100	$11,760,100	87%	$1,750,000
Dedham	$10,400,000	$9,240,000	89%	$1,160,000
Everett	$15,251,500	$11,611,500	76%	$3,640,000
Framingham	$23,045,000	$13,671,000	59%	$9,374,000
Hingham	$3,202,500	$2,593,670	81%	$608,830
Holbrook	$3,149,600	$1,349,600	43%	$1,800,000
Lexington	$13,715,300	$12,155,300	89%	$1,560,000
Malden	$23,373,900	$6,725,900	29%	$16,648,000
Medford	$22,077,600	$7,961,600	36%	$14,116,000
Melrose	$11,456,300	$10,106,300	88%	$1,350,000
Milton	$10,164,500	$10,164,500	100%	$0
Natick	$10,522,600	$6,832,600	65%	$3,690,000
Needham	$11,267,600	$4,018,600	36%	$7,249,000
Newton	$39,277,400	$39,277,400	100%	$0
Norwood	$13,239,400	$6,879,400	52%	$6,360,000
Quincy	$36,950,000	$32,325,000	87%	$4,625,000
Randolph	$11,400,800	$4,971,058	44%	$6,429,742
Reading	$8,789,100	$6,709,100	76%	$2,080,000
Revere	$19,090,900	$6,302,900	33%	$12,788,000
Somerville	$29,265,800	$18,995,800	65%	$10,270,000
Stoneham	$8,919,900	$7,829,900	88%	$1,090,000
Stoughton	$8,962,900	$7,902,900	88%	$1,060,000
Wakefield	$11,116,900	$9,836,900	88%	$1,280,000
Walpole	$6,940,000	$4,806,050	69%	$2,133,950
Waltham	$25,062,400	$19,214,560	77%	$5,847,840
Watertown	$11,475,800	$8,865,800	77%	$2,610,000
Wellesley	$10,429,700	$4,739,700	45%	$5,690,000
Westwood	$4,932,300	$3,091,300	63%	$1,841,000
Weymouth	$21,750,900	$13,949,584	64%	$7,801,316
Wilmington	$4,822,000	$2,462,000	51%	$2,360,000
Winchester	$7,673,000	$5,923,000	77%	$1,750,000
Winthrop	$6,293,400	$5,083,400	81%	$1,210,000
Woburn	$18,505,500	$16,515,500	89%	$1,990,000
Totals	$860,750,000	$551,406,549	64%	$309,343,451

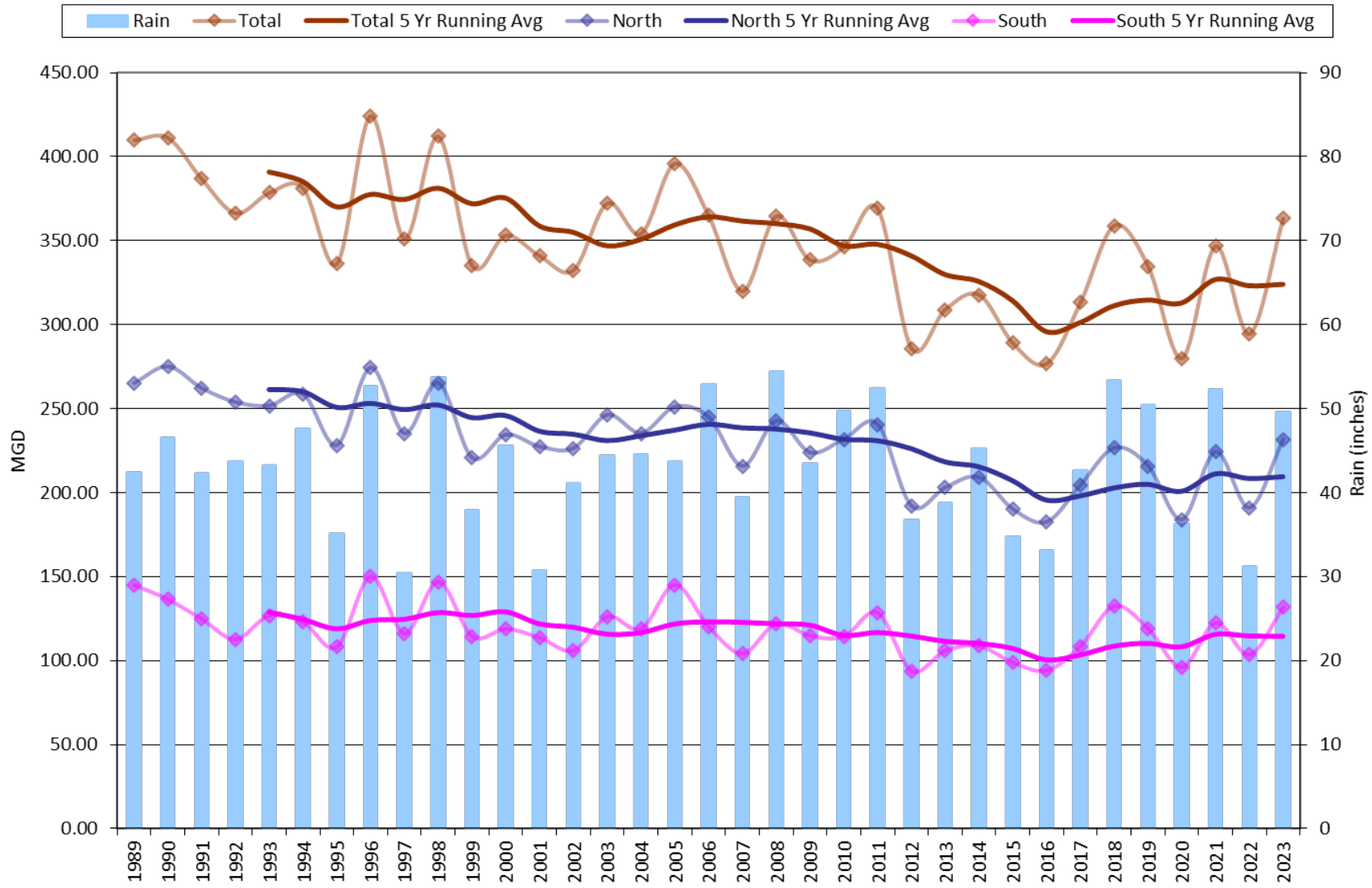
Note: Through December 2023, nine communities have used their entire Phase 14 funding allocation, four communities have used their entire Phase 13 funding allocation and 20 communities have used their entire Phase 12 funding allocation.

Attachment 2

MWRA I/I Local Financial Assistance Program - Fiscal Year Breakdown

FY	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	FY Total
FY93	Aug 1992	$0	Nov 1992	$0	Feb 1993	$0	May 1993	$2,714,883	$2,714,883
FY94	Aug 1993	$3,096,468	Nov 1993	$4,096,133	Feb 1994	$3,191,032	May 1994	$251,494	$10,635,127
FY95	Aug 1994	$354,126	Nov 1994	$976,700	Feb 1995	$1,894,030	May 1995	$6,489,891	$9,714,747
FY96	Aug 1995	$0	Nov 1995	$504,100	Feb 1996	$2,921,600	May 1996	$3,902,426	$7,328,126
FY97	Aug 1996	$1,682,061	Nov 1996	$1,581,266	Feb 1997	$395,100	May 1997	$3,530,758	$7,189,185
FY98	Aug 1997	$1,066,300	Nov 1997	$1,157,260	Feb 1998	$909,350	May 1998	$2,001,608	$5,134,518
FY99	Aug 1998	$1,521,100	Nov 1998	$2,464,263	Feb 1999	$1,481,700	May 1999	$5,758,077	$11,225,140
FY00	Aug 1999	$1,315,767	Nov 1999	$1,847,900	Feb 2000	$1,679,000	May 2000	$1,070,100	$5,912,767
FY01	Aug 2000	$1,148,400	Nov 2000	$388,000	Feb 2001	$1,640,931	May 2001	$804,800	$3,982,131
FY02	Aug 2001	$4,480,735	Nov 2001	$704,040	Feb 2002	$1,804,200	May 2002	$5,002,691	$11,991,666
FY03	Aug 2002	$1,962,600	Nov 2002	$4,461,768	Feb 2003	$7,955,752	May 2003	$1,836,600	$16,216,720
FY04	Aug 2003	$2,021,940	Nov 2003	$1,306,200	Feb 2004	$1,770,760	May 2004	$3,295,400	$8,394,300
FY05	Aug 2004	$2,756,659	Nov 2004	$6,013,436	Feb 2005	$4,054,060	May 2005	$2,636,700	$15,460,855
FY06	Aug 2005	$5,377,487	Nov 2005	$4,589,600	Feb 2006	$1,519,463	May 2006	$6,489,676	$17,976,226
FY07	Aug 2006	$0	Nov 2006	$4,947,414	Feb 2007	$8,789,300	May 2007	$8,121,023	$21,857,737
FY08	Aug 2007	$3,915,500	Nov 2007	$4,355,750	Feb 2008	$1,392,400	May 2008	$4,436,600	$14,100,250
FY09	Aug 2008	$4,196,399	Nov 2008	$352,000	Feb 2009	$1,990,300	May 2009	$4,872,400	$11,411,099
FY10	Aug 2009	$5,462,736	Nov 2009	$616,600	Feb 2010	$2,679,600	May 2010	$4,845,000	$13,603,936
FY11	Aug 2010	$723,700	Nov 2010	$3,183,250	Feb 2011	$4,123,100	May 2011	$4,258,900	$12,288,950
FY12	Aug 2011	$3,695,100	Nov 2011	$2,417,378	Feb 2012	$848,300	May 2012	$7,010,324	$13,971,102
FY13	Aug 2012	$21,299,965	Nov 2012	$1,004,610	Feb 2013	$2,460,000	May 2013	$2,675,000	$27,439,575
FY14	Aug 2013	$7,550,310	Nov 2013	$0	Feb 2014	$2,929,700	May 2014	$2,271,852	$12,751,862
FY15	Aug 2014	$4,053,000	Nov 2014	$7,647,400	Feb 2015	$10,128,648	May 2015	$4,803,450	$26,632,498
FY16	Aug 2015	$3,983,100	Nov 2015	$5,783,000	Feb 2016	$7,195,116	May 2016	$5,483,000	$22,444,216
FY17	Aug 2016	$2,352,100	Nov 2016	$6,553,210	Feb 2017	$2,918,900	May 2017	$10,434,030	$22,258,240
FY18	Aug 2017	$8,085,900	Nov 2017	$10,311,545	Feb 2018	$1,377,800	May 2018	$1,909,730	$21,684,975
FY19	Aug 2018	$4,107,370	Nov 2018	$12,150,449	Feb 2019	$19,027,200	May 2019	$11,067,748	$46,352,767
FY20	Aug 2019	$14,287,100	Nov 2019	$10,990,840	Feb 2020	$9,635,048	May 2020	$5,454,250	$40,367,238
FY21	Aug 2020	$6,087,196	Nov 2020	$9,789,250	Feb 2021	$9,642,573	May 2021	$11,878,316	$37,397,335
FY22	Aug 2021	$5,582,842	Nov 2021	$7,692,520	Feb 2022	$4,149,000	May 2022	$13,903,765	$31,328,127
FY23	Aug 2022	$4,897,221	Nov 2022	$4,024,558	Feb 2023	$4,076,134	May 2023	$8,736,800	$21,734,713
FY24	Aug 2023	$4,761,170	Nov 2023	$15,133,250	Feb 2024		May 2024		$19,894,420
Total		$131,824,352		$137,043,690		$124,580,097		$157,947,592	$551,406,549
Average		$4,252,398		$4,420,764		$4,152,670		$5,095,074	$17,920,906

ATTACHMENT 3
MWRA Long-Term Regional Flow Data
NOAA Annual Rainfall at Logan Airport



Note: As a result of the Wastewater Meter Replacement Project, CY21 wastewater flows were generated from Deer Island pumping records (as opposed to the summation of individual community flows).

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Thermal Plant, Hydro Power and Wind Turbine Maintenance Contract OP-464 O'Connor Corporation

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COMMITTEE: Wastewater Policy & Oversight

____ INFORMATION
_X_ VOTE

Michele S. Gillen
Director of Administration

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

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

RECOMMENDATION:

To approve the award of Contract OP-464, Thermal Plant, Hydro Power and Wind Turbine 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 $13,590,197 for a contract term of 1095 calendar days from the Notice to Proceed.

DISCUSSION:

This contract includes furnishing all labor, Factory Authorized Representative services, materials, equipment and incidentals necessary to repair, maintain and replace, as necessary, all equipment related to steam generation and heating systems at the Deer Island Thermal Power Plant, the hydroelectric turbines at the Deer Island Treatment Plant, the Loring Road Covered Storage Facility in Weston, the Cosgrove Intake Facility in Clinton, the Oakdale Power Station in West Boylston, the 600 kilowatt wind turbine at the Deer Island Treatment Plant and the 1,500 kilowatt wind turbine at the DeLauri Pump Station in Charlestown. In addition, this contract includes a one-time major rehabilitation of the wicket gate assemblies for the two 1,100 kilowatt hydro generators on Deer Island.

The Thermal Power Plant on Deer Island, which has been in service since 1998, contains two high-pressure boilers that generate steam energy, which is used for facility heating, process heating, and electrical generation. Both boilers can be fired with digester gas (methane), No. 2 diesel fuel oil, or a combination of both. The high-pressure steam from the boilers is directed to the main 18-megawatt steam turbine generator and a 1.2-megawatt backpressure steam turbine generator to generate electricity. The electric power generated by the steam turbines varies in relation to the plant's heating demand and digester gas production. The low-pressure exhaust steam from the steam turbines provides facility and process heating through Deer Island's hot water heat loop.

Figure 1: Two High - Pressure Steam Boilers at Deer Island

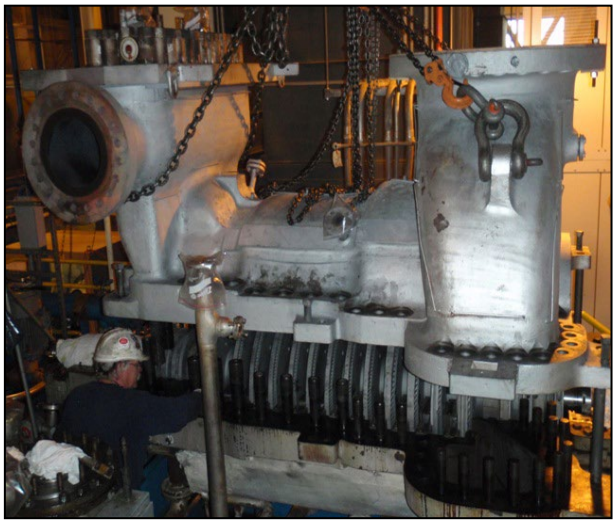

Figure 2: 18 MW Steam Turbine Generator at Deer Island

The 600 kilowatt wind turbine located on Deer Island has been installed and in service since November 2009. The 1,500 kilowatt wind turbine was installed in October 2011 and is located at the DeLauri Pump Station in Charlestown but connected to Eversource's electrical distribution system.

Figure 3: 1500 kW Wind Turbine at DeLauri Pump Station

Figure 4: 600 kW Wind Turbine at Deer Island

The two Deer Island hydro turbines have been in service since 2001. These units use treated plant effluent to generate electricity as the effluent falls into the outfall tunnel. The electric power generated by the hydro turbines varies in relation to total plant flow and ocean tide levels.

The Loring Road Covered Storage Facility contains a 200 kilowatt Leffel hydro turbine with a Marelli generator that was installed in 2011. The Cosgrove Intake Facility has two 1.2 Megawatt Kaplan Style controllable pitch, Leffell turbines accompanied by 4160 Volt General Electric generators that were installed in the 1960s. The Oakdale Power Station contains a three Megawatt Francis Morgan Smith turbine, circa 1940. These units operate in MWRA's drinking water facilities.

Figure 5: Deer Island Hydro Turbine Generator

The total annual economic benefit realized by MWRA (electric and thermal) from the steam turbines, hydroelectric turbines and wind turbines located on Deer Island is approximately $24.4 million; economic benefit from the hydroelectric turbines and wind turbine located at the other facilities included in this contract is approximately $1.6 million; for a total annual economic benefit of over $26 million from the equipment maintained under this contract. This contract will provide the required maintenance services to ensure the overall reliability and operation of the equipment.

State regulations require that steam boilers and appurtenances be thoroughly inspected externally and internally at least once a year in accordance with the National Board Inspection Code. These required inspections, along with preventive maintenance of the boilers, steam turbine generators, hydro turbine generators and associated equipment, are essential to ensuring the continued safe and reliable operation of these critical systems, and to their optimum performance.

The Contractor will provide scheduled annual inspection and maintenance services, non-emergency and emergency repair services, replacement parts and factory authorized vendor services at each of the facilities.

The scheduled annual inspections and maintenance services are included in the Lump Sum portion of the contract. These services are performed on either a pre-defined calendar basis or on the number of hours of operation for the equipment.

The contract also includes several allowance items and unit price items that will be drawn down on an as-needed basis: non-emergency labor $621,000 and emergency labor $108,500; replacement parts $875,000; authorized factory representative services $505,000; and fire department detail services $31,250, which are required when repairs are made that require welding. The maintenance scope and allowance items were developed based on reasonable assumptions and past usage from previous maintenance contracts for these systems.

In addition to the above services this Contract includes major rehabilitation of the wicket gate

assemblies for the two 1,100 kilowatt hydro generators located on Deer Island. The wicket gates consist of a number of gates that constantly modulate, controlling the flow of water into the generator which controls the speed and the amount of electricity produced by the units. The gates are controlled by a series of electrical and mechanical linkages that drive the gates open and close. Maintaining the reliability of the wicked gates have become very problematic over the last five to seven years and during that time, the contractors have performed a number of repairs and services on the limited parts that are accessible. The cost and frequency of the wicket gate repair work has increased significantly over the last seven years. The actual gates are located inside the assembly housing are not accessible without fully disassembling a portion of the hydro generator. The level of effort to remove and reinstall the assembly is extensive. In addition, only the original equipment manufacturer, Andritz Hydro, can perform the required work involved in the rehabilitation of the internal components of the wicket gate assemblies. This requires the assemblies to be shipped to the Andritz facility located in Washington State.

Procurement Process

Contract OP-464 was publically advertised in the Boston Herald, Banner Publications, El Mundo, the Central Register, and COMMBUYS. In addition, bids were made available for public downloading on MWRA's e-procurement system (Event 5781) and bid in accordance with Chapter 149 of the Massachusetts General Laws. Bids were opened on February 16, 2024; the results are presented below.

BIDDERS	BID PRICE
Engineer's Estimate	$8,603,958
O'Connor Corporation	$13,590,197

MWRA received one bid as summarized above. O'Connor Corporation's bid was $13,590,197, or 58% higher than the Engineer's Estimate.

Staff interviewed O'Connor Corporation's Project Manager and Estimator who confirmed that the submitted bid price represents the full scope of work as outlined in the contract specifications. The bid price contains all of the elements required in the lump sum. Staff determined that the differences between the Engineer's Estimate and O'Connor Corporation's bid price were primarily attributed to the following: rehabilitation of the two Deer Island 1,100 kilowatt hydro turbine wicket gate assemblies ($2.9M); overhead and profit ($1M); Project Management ($384K); and trade labor costs ($310K).

Previous maintenance contracts for the thermal power plant and hydro generators have historically drawn a limited number of bidders, primarily due to the specialized expertise required to perform the work and the requirement of DCAMM certification. DCAMM certification is required because this is a Chapter 149 construction contract. Staff included the maintenance of the 600 kilowatt Deer Island and the 1,500 kilowatt Charlestown wind turbines in this contract to attempt to take advantage of the economies of scale and to provide more mechanical maintenance capacity for these units. Previously, wind turbine maintenance was bid under a smaller maintenance contract that drew limited interest from small companies. While this procurement did not result in multiple bids, it should be noted that O'Connor's bid price included $300K for the work associated on the wind turbines which was $12K less than the Engineer's Estimate for that work.

The largest component of the difference between the bid price and the Engineer's Estimate is the rehabilitation of the hydro turbine wicket gate assemblies. The Engineer's Estimate carried approximately $1.2M for this work. O'Connor carried $4.1M in its bid. Andritz Hydro, the original equipment manufacturer, accounts for approximately $2.9M of the $4.1M carried in O'Connor's bid price to perform the rehabilitation work. During the bid review, O'Connor indicated that the bid includes new wicket gates (a component of the entire assembly) rather than refurbished. O'Connor stated that refurbishing the existing gates may result in the gates no longer being able to meet the original design tolerances due to the loss of material during the machining phase. In addition, O'Connor's bid carried approximately $1.2M for labor to remove and reinstall the wicked gate assemblies, material, tooling, transportation and technical support during installation. The Engineer's Estimate carried approximately $500K for this work.

Other differences between O'Connor's bid and the Engineer's Estimate are: 1) Overhead and Profit - O'Connor's bid included a 20% markup ($2.1M) for overhead and profit while the Engineer's Estimate carried 15% or $1.1M, which staff have typically seen on past projects; 2) Full-time Project Manager - O'Connor's bid included 8,000 hours for the Project Manager to oversee the work, while the Engineer's Estimate carried 5,000 hours, resulting in a difference of $384K; 3) Trade Labor Rate - O'Connor's bid included an average hourly mixed -trade rate of $138/hour versus the Engineer's Estimate of $119/hour, a difference of $310K for the work associated with the two high pressure boilers and steam turbines located in the Thermal Power Plan on Deer Island.

In light of this result, staff considered several different alternatives for moving forward. Repackaging the work under separate contracts was given careful consideration, however, staff does not recommend this approach due to the historically limited number of qualified bidders that would be interested in the work and the risk of receiving no bids or bids at an even higher cost.

References for O'Connor Corporation were checked and found to be favorable. O'Connor Corporation is the present contractor for the expiring Hydro and Thermal Maintenance Contract. Staff have reported that they are very pleased with the quality and timeliness of the work performed. Staff have determined that the bid price is reasonable, complete, and includes the payment of prevailing wages.

Staff have determined that O'Connor Corporation possesses the skill, ability, and integrity necessary to perform the work under this contract and is qualified to do so. Therefore, staff recommend the award of this Contract to O'Connor Corporation as the lowest responsible and eligible bidder.

BUDGET/FISCAL IMPACT:

Funding of $1,118,000 is included in FY24 Current Expense Budget for the first year of this contract. Appropriate funding will be included in subsequent Proposed CEB requests for the remaining term of the contract. The FY24 CEB will realize an economic benefit of over $26 million for the energy and renewable energy credits produced by this equipment.

MBE/WBE PARTICIPATION:

There were no MBE and WBE participation requirements for this contract due to limited opportunities for subcontracting

MASSACHUSETTS WATER RESOURCES AUTHORITY
Deer Island
33 Tafts Avenue
Boston, MA 02128

Frederick A. Laskey
Executive Director
Chair: J. Wolowicz
Vice-Chair: M. White-Hammond
Committee Members:
B. Peña
L. Taverna
P. Flanagan
J. Foti
H. Vitale

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

PERSONNEL & COMPENSATION COMMITTEE MEETING

Date: Wednesday, March 13, 2024

Time: Immediately following the Water Policy & Oversight Committee

Location: MWRA Chelsea Administration Building, 2nd Floor, Rooms 2C and D
2 Griffin Way
Chelsea, MA 02150

A photo ID will be required for entry.

The meeting will also be available via Webex. The Webex meeting link and password to attend virtually are below:

Webex meeting link (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Meeting Number: 2341 033 0434 Password: 3132024

AGENDA

A. Approvals

1. March 2024 PCR Amendments

STAFF SUMMARY

TO: Board of Director
FROM: Frederick A Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: March 2024 PCR Amendments

COMMITTEE: Personnel and Compensation

____ INFORMATION
__X__ VOTE

Wendy Chu, 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, except those resulting only in a change in title or cost center, must be approved by the Personnel and Compensation 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.

March 2024 PCR Amendments

There are two PCR Amendments this month.

Organizational Changes:

1. Salary adjustment to one filled position in the Operations Division, Pipe Maintenance Water Department for a Heavy Equipment Operator I, Unit 3, Grade 17, due to a union agreement for a class recruitment rate.

2. Salary adjustment to one filled position in the Operations Division, Ground Maintenance Metro Department for a Heavy Equipment Operator I, Unit 3, Grade 17, due to a union agreement for a class recruitment rate.

BUDGET/FISCAL IMPACT:

The annualized budget impact of these PCR amendments will be a maximum cost of $42,110. Staff will ensure that the cost associated with these PCR amendments will not result in spending over the approved FY24 Wages and Salaries budget.

ATTACHMENTS:
Job Description

MASSACHUSETTS WATER RESOURCES AUTHORITY
POSITION CONTROL REGISTER AMENDMENTS
FISCAL YEAR 2024

PCR AMENDMENTS REQUIRING BOARD APPROVAL - March 13, 2024

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
B75	Operations Pipe Maintenance Water Dept. 3383028	F	S	Heavy Equipment Operator	3	17	Heavy Equipment Operator	3	17	$69,034	$92,265	-	$92,265	$23,231	-	$23,231	Salary adjustment due to recruitment rate.
B76	Operations Ground Maintenance Metro Dept. 5411021	F	S	Heavy Equipment Operator I	3	17	Heavy Equipment Operator I	3	17	$73,386	$92,265	-	$92,265	$18,879	-	$18,879	Salary adjustment due to recruitment rate.
				BOARD TOTAL =	2						**TOTAL:**			$42,110	-	$42,110	

MWRA
POSITION DESCRIPTION

POSITION: Heavy Equipment Operator I

DIVISION: Operations

DEPARTMENT: Field Operations

BASIC PURPOSE:

Operates heavy equipment and vehicles.

SUPERVISION RECEIVED:

Works under the general supervision of the departmental Manager or Supervisor.

SUPERVISION EXERCISED:

Exercises close supervision of skilled laborers and laborers as assigned.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Operates a variety of heavy equipment such as, but not limited to, backhoe, front-end loader, cranes, tractor cab and trailers, excavators, pumps, generators, and pneumatic tools.
- Operates equipment for excavations for valve replacement, pipeline installation, leak repair, and other miscellaneous excavations.
- Installs trench boxes, mechanical shoring systems, and other support systems for the safety of excavations.
- Assists mechanics in the maintenance and repair of heavy vehicles and equipment as needed.

SECONDARY DUTIES:

- Promotes and participates in the cross-functional work practices.
- Trains peers and subordinates as requested.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) Basic reading, writing, mathematical, scientific and oral communication skills normally attained through a high school education or the equivalent: and

(B) Considerable knowledge of the methods and techniques used in the maintenance and safe operation of a wide variety of heavy and/or specialized maintenance and construction equipment and vehicles as acquired through a minimum of five (5) years' experience; and

(C) Experience in urban utility excavation, construction, and installation; or

(D) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

(A) Ability to follow oral and written instructions.

(B) Skill in the operation of listed tools and equipment.

(C) Ability to operate heavy equipment for extended periods in a variety of climatic conditions.

SPECIAL REQUIREMENTS:

Valid Massachusetts Class A Commercial Driver's License.

Department of Public Safety Hoisting Engineer's Licenses as follows:

a. 1B Hoisting License (Telescoping Boom with Cables Crane and 2A Hoisting License (Front End Loaders, Backhoes & Excavators) required at time of hire.

b. 3A Hoisting License (Overhead Cranes and Air or Electric Powered Cranes), 4E Hoisting License (Catch Basin Cleaners), and 4G Hoisting License (Specialty Lawn Mowers) to be obtained within six months of date of hire.

Must demonstrate proficiency for operating heavy equipment including but not limited to:

- 50 ton LinkBelt crane or equivalent
- Volvo tracked excavator or equivalent
- Tractor cab and lowboy trailer
- 10 wheel dumps with tagalong trailer
- Various types of backhoes (JCB, Caterpillar, John Deere)
- Front End Loader
- Truck Mounted crane

Complete productivity improvement competency-based training program related to **ESSENTIAL DUTIES AND RESPONSIBILITIES** as outlined above and successfully demonstrates required competencies.

TOOLS AND EQUIPMENT USED:

Motor vehicle, specialized maintenance and construction equipment, hand tools, hoist, mobile radio.

PHYSICAL DEMANDS:

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

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

The employee must regularly lift and/or move up to 60 pounds, frequently lift and/or move up to 100 pounds. Specific vision abilities required by this job include close, distance and peripheral vision, depth perception and the ability to adjust focus.

WORK ENVIRONMENT:

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

While performing the duties of this job, the employee regularly works near moving mechanical parts, is frequently exposed to wet and/or humid conditions and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and risk of electric shock, and vibration.

The noise level in the work environment is usually very loud in field settings and loud at other work locations.

August 2023

MASSACHUSETTS WATER RESOURCES AUTHORITY

Deer Island
33 Tafts Avenue
Boston, MA 02128

Frederick A. Laskey
Executive Director
Chair: R. Tepper
Vice-Chair: A. Pappastergion
Secretary: B. Peña
Board Members:
P. Flanagan
J. Foti
L. Taverna
H. Vitale
J. Walsh
P. Walsh
M. White-Hammond
J. Wolowicz

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

BOARD OF DIRECTORS' MEETING

Date: Wednesday, March 13, 2024

Time: 1:00pm

Location: MWRA Chelsea Administration Building, 2nd Floor, Rooms 2C and D
2 Griffin Way
Chelsea, MA 02150

A photo ID will be required for entry.

The meeting will also be available via Webex. The Webex meeting link and password to attend virtually are below:

Webex meeting link (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Meeting Number: 2341 033 0434 Password: 3132024

AGENDA

I. APPROVAL OF MINUTES

II. REPORT OF THE CHAIR

III. REPORT OF THE EXECUTIVE DIRECTOR

IV. EXECUTIVE SESSION

i. Approval of February 21, 2024 Executive Session Minutes

A. Real Estate

1. MWRA Hingham Sewage Pump Station: Acceptance of Grant of Sewer Easement from the Commonwealth acting by and through DCAMM (ref. ES 2.a)
2. Watershed Land Acquisition (ref. ES 2.b)
3. Watershed Land Acquisition, Amendment to Prior Board Vote (ref. ES 2.C)

B. Litigation

1. To Discuss Strategy with Respect to Litigation (verbal)

C. Collective Bargaining

1. Collective Bargaining Update – Units 1, 2, 3, 6 and 9 (verbal)

V. BOARD ACTIONS

A. APPROVALS

1. Metropolitan Water Tunnel Program: Contract Structure for Final Design Engineering Services, Contract 7556 (ref. W B.1)

V. BOARD ACTIONS (continued)

A. APPROVALS (continued)

2. March 2024 PCR Amendments (ref. P&C A.1)

B. CONTRACT AWARDS

1. Thermal Plant, Hydro Power and Wind Turbine Maintenance: O'Connor Corporation, Contract OP-464 (ref. WW B.1)

C. CONTRACT AMENDMENTS/CHANGE ORDERS

1. Section 101 Pipeline Extension (Waltham): Baltazar Contractors, Inc., Contract 7457, Change Order 4 (ref. W D.1)

2. Rehabilitation of WASM 3 Sections W11/W12/W16/51 (Medford, Somerville and Arlington): Albanese D&S, Inc., Contract 6544, Change Order 9 (ref. W D.2)

3. Enterprise Content Management System Purchase and Implementation: Cadence Solutions Inc., Contract 7438, Amendment 2 (ref. A&F B.1)

VII. OTHER BUSINESS

VIII. CORRESPONDENCE TO THE BOARD

IX. ADJOURNMENT

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the Board of Directors

February 21, 2024

A meeting of the Massachusetts Water Resources Authority ("MWRA") Board of Directors was held on February 21, 2024 at MWRA's headquarters at Deer Island in Boston, and also via remote participation.

Chair Tepper presided from MWRA Headquarters. Board Members Flanagan, Foti, Pappastergion, Peña, Taverna, Jack Walsh and White-Hammond also participated From MWRA Headquarters. Board Member Vitale participated remotely. Board Members Patrick Walsh and Wolowicz were absent.

MWRA Executive Director Frederick Laskey; General Counsel Carolyn Francisco Murphy; Chief Operating Officer David Coppes; Deputy Chief Operating Officer Rebecca Weidman; Director of Finance Thomas Durkin; Director of Administration Michele Gillen; Special Assistant for Affirmative Action Patterson Riley; Director of Planning and Sustainability Stephen Estes-Smargiassi; Senior Program Manager, Engineering and Construction Kathleen Cullen; Procurement Director Douglas Rice; Risk Manager Paul Whelan; Senior Program Manager, Planning Michael O'Keefe; MIS Director Paula Weadick; Budget Director Michael Cole; Deputy Finance Director/Treasurer Matthew Horan; Energy Manager Kristen Patneaude; TRAC Director Matt Dam; Deputy Deer Island Treatment Plant Director Chad Whiting; Senior Program Manager, Environmental Monitoring David Wu; Associate Special Assistant for Affirmative Action Tomeka Cribb; IT Asset Management Analyst, Michael Curtis; Chief of Staff Katie Ronan; Associate General Counsels Angela Atchue, Kimberley McMahon and Kristen Schuler Scammon; and, Assistant Secretary Kristin MacDougall participated at MWRA Headquarters.

Vandana Rao, EEA, participated at MWRA Headquarters, and Matt Romero, MWRA Advisory Board, participated remotely.

Chair Tepper called the meeting to order at 1:02pm.

ROLL CALL

MWRA General Counsel Francisco Murphy took roll call of Board Members in attendance and announced that Board Member Vitale was participating remotely. The Chair announced that the meeting was being held at MWRA's Headquarters and virtually, via a link posted on MWRA's website. She added that the meeting would be recorded, and that the agenda and meeting materials were available on MWRA's website. She also announced that individual roll call votes would be conducted after each motion was made and given an opportunity for discussion.

APPROVAL OF JANUARY 17, 2024 MINUTES

A motion was duly made and seconded to approve the minutes of the Board of Directors' meeting of January 17, 2024.

Chair Tepper asked if there was any discussion or questions from the Board. Hearing none, she requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. I)

REPORT OF THE EXECUTIVE DIRECTOR

MWRA Executive Director Fred Laskey noted that former State Senator Linda Dorcena Forry delivered an inspirational talk as part of MWRA's Lunchtime Speaker Series on February 13, 2024. He added that the March speaker will be Fredie Kay, President of the Women's Suffrage Celebration Coalition of Massachusetts, and invited Board Members to attend. Next, Mr. Laskey reported that MWRA received approximately $220,000 in revenue for providing emergency backup water supplies to Cambridge while the city completed necessary system repairs in January. He then advised that the Healey-Driscoll administration had released the state's first Environmental Justice (EJ) strategy in February. He noted that the strategy document includes MWRA's EJ Plan and features a photo of the Nut Island Headworks' landscaped grounds, and thanked staff for their work. Next, he reported that MWRA had sold the Cleverly Court parcel at the Fore River Shipyard. Finally, Mr. Laskey provided a brief status update on the System Expansion studies for Quabbin Reservoir-area communities. (ref. III)

EXECUTIVE SESSION

Chair Tepper requested that the Board move into Executive Session to discuss Litigation, since discussing such in Open Session could have a detrimental effect on the litigating position of the Authority. She announced the planned topic for Executive Session was a discussion of strategy with respect to litigation. She announced that the Board would return to Open Session after the conclusion of Executive Session.

A motion was duly made and seconded to enter Executive Session for these purposes, and to resume Open Session after Executive Session adjournment.

General Counsel Francisco Murphy reminded Board members that under the Open Meeting Law members who were participating remotely in Executive Session must state that no other person is present or able to hear the discussion at their remote location. A response of "yes" to the Roll Call to enter Executive Session when their name was called would also be deemed their statement that no other person was present or able to hear the Executive Session discussion.

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

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappas		
Pena		
Taverna		
Vitale		
J Walsh		
White-Hammond		

Voted: to enter Executive Session, and to resume Open Session after Executive Session adjournment.

*** EXECUTIVE SESSION ***

The meeting entered Executive Session at 1:07pm and adjourned at 1:39pm.

*** CONTINUATION OF OPEN SESSION ***

WATER POLICY AND OVERSIGHT

Information

Lead and Copper Rule Changes and Recommendations

Stephen Estes-Smargiassi, MWRA Director of Planning and Sustainability, presented an update on the EPA's Lead and Copper Rule Changes and Recommendations. He began with a brief summary of the timeline of the EPA's Lead and Copper Rule Improvements ("LCRI"). He explained that the Draft LCRI was issued in December 2023, and that the final is expected in October 2024, with an effective date in October 2027.

Mr. Estes-Smargiassi advised that the LCRI is more stringent than the current Lead and Copper Rule Revisions ("LCRR"). He noted that the LCRR requirements due by October 16, 2024, such as service line inventories; notices to every customer with service lines made of lead, galvanized metals, or unknown materials; and, 24-hour public notices if a community lead sample surpasses the Action Level, are still in effect. He further noted that the LCRI will supersede the LCRR, and includes additions, modifications and deferrals.

Next, Mr. Estes-Smargiassi discussed some key LCRI changes. He explained that the LCRI will require water systems to replace all lead service lines within ten years regardless of lead sampling results, and includes a Lead Action Level ("AL") of 10 parts per billion ("ppb"), versus the current AL of 15ppb. He advised that MWRA and its customer communities are more likely to exceed the LCRI's lower AL. He then described proposed changes to lead sampling and compliance calculation requirements. He explained that the LCRI proposes requirements for sampling at only homes with lead service lines (for systems that have any), and compliance calculations based on the higher result of first-liter and fifth-liter samples. Mr. Estes-Smargiassi advised that these changes will likely result in higher reported lead levels. He further advised that the LCRI proposes more stringent requirements for water systems that exceed the AL three times in five years, including additional public outreach, and the offering of water filters for all customers. He noted that MWRA will provide training on new LCRI requirements for customer communities.

Mr. Estes-Smargiassi then discussed how MWRA's corrosion control treatment could be affected if the MWRA system exceeds the new, lower LCRI Lead Action Level. He explained that in the case of AL exceedances, MWRA could be required to re-optimize its corrosion control system, potentially with the addition of orthophosphate, at an estimated capital and operating expense of $60-$80 million over 20 years.

Mr. Estes-Smargiassi stressed that any changes to corrosion control treatment must be carefully considered and studied to avoid unintended consequences such as water distribution system disruption; taste, color and odor changes; associated public perception concerns; and, the implications of adding a nutrient to the wastewater treatment system. He noted that if MWRA adds orthophosphate corrosion control treatment, it would need to continue doing so even after all community lead service lines are replaced. He advised that the LCRI includes a provision that water systems can avoid corrosion control re-optimization if they replace all lead service lines within five years, at a rate of 20% per year, rather than 10% per year.

Next, Mr. Estes-Smargiassi presented MWRA lead sampling data, including system-wide 90% lead levels for fully-supplied communities since 1992 (with an AL of 15ppb) and 2023 sampling results (10.8 ppb system-wide, average). He noted that the 2023 results indicate that the lead levels for samples collected from homes with lead service lines are four times higher than those

from homes without them. He then advised that approximately 91% of MWRA system samples that exceeded that Lead AL in 2022 and 2023 were taken from sites with lead service lines, which suggests that lead service lines, rather than MWRA water chemistry, are the main sources of elevated lead levels at service-area taps.

Mr. Estes-Smargiassi then discussed MWRA's ongoing Lead Service Line Loan Program. He reported that MWRA has provided approximately $41 million in loans to 17 customer communities since 2016, covering the cost to replace approximately 4,000 lead service lines. He then explained that approximately 15,400 lead service lines remain within MWRA communities, with an estimated total replacement cost of $150 million. He noted that updated community lead service line replacement data will be available in October 2024.

Next, Mr. Estes-Smargiassi outlined ways that MWRA could help communities to accelerate lead service line replacement rates, thus avoiding unnecessary corrosion control treatment optimization, including adding a $100 million Lead Service Line Loan Program phase and providing 25% grants to facilitate service line replacements on private property, at an estimated total cost of $40 million. He advised that MWRA and customer communities must act quickly to complete the replacement of all service lines within the MWRA service area by the expected LCRI deadline (2033).

Board Member Pappastergion asked if the LCRI takes brass fittings into consideration. Mr. Estes-Smargiassi explained that the LCRI does not specify requirements for brass, and noted that MWRA data shows that brass does not appear to be a significant factor in sampled lead levels.

Mr. Laskey stressed the importance of making sound strategic decisions with regard to system-wide lead service line replacement. He advised that in his view, constructing new water treatment facilities and making major changes to MWRA's water chemistry would prove to be costly, and provide fewer public health benefits, than undertaking a more aggressive lead service line replacement schedule. He noted that the matter of lead service line replacement versus corrosion control treatment optimization would be discussed further at a future Board meeting. Mr. Estes-Smargiassi added that under the LCRI, all lead service lines would need to be replaced within ten years whether MWRA re-optimized its corrosion control treatment or not. Chair Tepper requested clarification on the $150 million estimate for system-wide lead service line replacement. Mr. Estes-Smargiassi explained that the figure represents costs to replace all MWRA-area service lines over a 10-year period, and does not include costs to build and operate a new corrosion control facility. Mr. Laskey noted that the potential ramifications of added corrosion control chemicals on MWRA's wastewater treatment plant discharges should also be considered.

Board Member White-Hammond asked if the addition of orthophosphate would change the

taste of MWRA drinking water, and advised that such a change could negatively impact customers' perceptions of their tap water. Mr. Estes-Smargiassi agreed, noting that re-optimizing MWRA's corrosion control treatment could also cause other negative impacts such as water discoloration, especially during the transition period. There was brief, general discussion about public perception of significant water treatment changes.

Mr. Pappastergion expressed concern about the complexity of replacing lead service lines on private property. Mr. Estes-Smargiassi explained that the previously-discussed 25% grant program for privately-owned lead service line replacement was developed to address such concerns. He noted that approximately half of the communities participating in MWRA's Lead Service Line Loan Program already provide full funding to replace privately-owned portions of lead service lines. He advised that communities that simplify the service line replacement process by directly funding the work and providing contractors have higher participation rates than communities that require property owners to engage their own contractors and request reimbursement. Finally, Mr. Estes-Smargiassi noted that MWRA and its water communities may eventually need to develop additional strategies to encourage any outlying holdouts to have the private portions of their lead service lines replaced.

Hearing no further discussion or questions from the Board, Committee Chair Vitale moved to Contract Awards. (ref. V A.1)

Contact Awards

Top of Shaft 5 Interim Improvements, R. Zoppo Corp., Contract 7671

A motion was duly made and seconded to approve the award of Contract 7671, Top of Shaft 5 Interim Improvements, to the lowest responsible and eligible bidder, R. Zoppo Corp., and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of $5,361,500, with a contract term of 913 calendar days from the Notice to Proceed.

Kathleen Cullen, Senior Program Manager, Engineering and Construction, discussed a proposed contract award for Top of Shaft 5 Interim Improvements in Weston. She explained that this project was part of MWRA's wider effort (the Metropolitan Redundancy Interim Improvements Program) to improve and protect critical facilities related to the existing water tunnel system at nine shaft locations in Weston, Newton, Brighton, Malden, Boston College, Chestnut Hill, Dorchester and Somerville. She noted that this program is intended to reinforce the water system at points that will continue to lack redundancy until the Metropolitan Water Tunnel Program is complete, and presented a brief progress update. She explained that the program work is designed to take place without taking the MWRA water system out of service, and added that staff will discuss the Metropolitan Redundancy Interim Improvements Program further at a future Board meeting.

Next, Ms. Cullen described the scope of the Top of Shaft 5 Interim Improvements project. She showed examples of work to be performed, such as corrosion protection, bolt replacement and waterproofing at multiple valve vaults, and the decommissioning of an abandoned underground pump room to prevent potential leaks. She advised that this project presents significant challenges such as labor-intensive activities in confined spaces 400-feet below surface, and the need to restrict work during the summer peak water demand period due to the lack of redundancy.

Finally, Ms. Cullen summarized the contract's procurement process. She reported that the recommended contractor, R. Zoppo Corp. ("Zoppo"), had submitted the lowest bid, which came in under the Engineer's Estimate.

There was brief, general discussion about the Engineer's Estimate and the difference between Zoppo's bid price versus those of the two other bidders. Ms. Cullen noted that Zoppo's bid was lower because Zoppo will not use a tunnel subcontractor. She added that Zoppo's approach aligned with the assumptions in the Engineer's Estimate. There was brief, general discussion about the contract's scope, the required engagement of a tunnel rescue team, the contract cost, and the nut and bolt removal process.

Rev. White-Hammond expressed concern that Zoppo's bid price was lower than the Engineer's Estimate and significantly lower than the two other bids received. Ms. Cullen explained that Zoppo's performance of the work without a tunnel subcontractor was a significant factor in the lower bid price. Board Member Taverna requested more information about the project's Design Engineer. Ms. Cullen explained that the design firm was Hazen and Sawyer.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. V B.1)

ADMINISTRATION, FINANCE AND AUDIT

Information

Delegated Authority Report – January 2024

Douglas Rice, MWRA Director of Procurement, briefly discussed two items in the January 2024 Delegated Authority Report. He advised that the cost for Item C-6, Chestnut Hill and Weston Reservoir Dam Instrumentation (Piezometers) Installation should read "($38,707.50)"; and noted that item P-4, Purchase Order for Security Network Systems Administrator II Consultant (State Contract ITS77 Category 1A and 1B) was the companion contract for a security equipment and maintenance repair services contract that was awarded in November 2023 (ref. VI B.1, November 15, 2023).

Board Member Vitale requested more information about the non-selected bids received for Item C-4, Insurance Consulting Services – Task Order Contract, and Item C-12, Actuarial Services Related to Compliance with GASB No. 74 and 75. Paul Whelan, MWRA Risk Manager, advised that one non-selected bid for Item C-4 was received (from USI Insurance Services). He explained that USI's bid was deemed non-responsive because it was submitted on a lump sum, rather than hourly basis. He added that USI provides broker services. Thomas Durkin, MWRA Finance Director, advised that four non-selected bids were received for Item C-12, including the Siegel Group, Inc. ("Siegel"). Mr. Vitale asked why Stone Consulting, Inc. ("Stone") was selected for Item C-12. Mr. Durkin explained that while Siegel is well-qualified and does excellent work for MWRA on other contracts, their bid price for this contract was significantly higher than Stone's.

Hearing no further discussion or questions from the Board, Mr. Foti moved to the next Information item. (ref. VI A.1)

FY2024 Second Quarter Orange Notebook

Michael O'Keefe, MWRA Senior Program Manager, Planning, summarized key highlights of MWRA's Second Quarter Orange Notebook for FY2024. He reported that while staffing levels remained below target, hiring rates had increased in the second quarter ("Q2"). He added that staffing-related performance indicators that had not met targets for several quarters had met their goals in Q2. Next, Mr. O'Keefe advised that historically high precipitation levels and associated Deer Island flows had subsided to below-average levels overall in Q2, despite a few very intense storms in December, 2023. Finally, Mr. O'Keefe reported that the number of positive community total coliform test results had decreased substantially in Q2, and that there were no positive E. coli community test results in that timeframe.

Hearing no discussion or questions from the Board, Mr. Foti moved to the next Information item. (ref. VI A.2)

FY24 Financial Update and Summary through January 2024

Mr. Durkin reported that FY24's financial trends continued through January. He advised that budgetary challenges related to wages and salaries continued due to lagging full-time equivalent ("FTE") counts. He noted that chemical costs increased at a lower than anticipated rate in January, attributable to stabilizing inflation rates. Mr. Durkin relayed variable interest rates continued to be volatile in January 2024. He noted that variable rate volatility can be managed by balancing the associated debt cost increases with higher variable rate earnings on assets. He added that MWRA's investment income was higher than estimated due to rising money market rates. Finally, Mr. Durkin reported that MWRA's Capital Improvement Plan ("CIP") was within the range of historical precedent at 17.4% underspent, and that the Current Expense Budget ("CEB") was progressing well.

Mr. Jack Walsh requested more information about a $1.1 million line item for computer hardware presented in Attachment 2 of the Staff Summary for this agenda item. Paula Weadick, MWRA MIS Director, explained that those expenditures were mostly for the replacement of all printers, and for the procurement of new audio/visual equipment used for remote meetings at multiple worksites.

(Mr. Peña temporarily left the meeting, and Chair Tepper briefly left and returned to the meeting during the discussion.)

Hearing no further discussion or questions from the Board, Mr. Foti moved to the next Information item. (ref. VI A.3)

Fiscal Year 2024 Mid-Year Capital Improvement Program Spending Report

Mr. Durkin reported that the FY2024 CIP was 17.4% underspent overall through January, 2024. He noted that the CIP is historically 24%-27% underspent at the end of the fiscal year.

Mr. Vitale asked Mr. Durkin to discuss hypothetical rate impacts of reducing the CIP budget, noting a continued pattern of CIP underspending. Mr. Durkin explained that the CIP is designed to document MWRA's needs and aspirational goals, and that the CIP is a tool for communicating MWRA's plans and priorities with stakeholders. He further explained that MWRA's community assessments are mostly driven by debt service, and that MWRA limits borrowing so as not to borrow more or sooner than necessary. Mr. Vitale briefly discussed the Boston Water and Sewer Commission's budget, investment and bond issuance methodologies, and their impacts on rates. Mr. Durkin briefly described the purpose of MWRA's Current Revenue for Capital budget line item, the need to balance debt costs and revenue to control community assessments, and the principles of pay-as-you-go capital and generational equity. Finally, Mr. Durkin noted that the Staff Summary for the FY2024 Mid-Year Capital Spending Program Report includes detailed information and analysis of CIP spending.

Hearing no further discussion or questions from the Board, Mr. Foti moved to the next Information item. (ref. VI A.4)

FY2024 Community Assessment Adjustments

Mr. Durkin described how community assessment adjustments are calculated using community meter data, and advised that MWRA Metering staff had discovered an inaccuracy in CY2022 sewer metering data for Somerville during a routine quality assurance review. He explained that the discrepancy was subsequently investigated and validated, resulting in the issuance of a $351,687 reduction in Somerville's FY2024 sewer assessment, which will be applied to the City's FY2025 assessment. Mr. Durkin further explained that assessment adjustments due to the revised sewer flow shares will also be applied to FY2025 assessments for MWRA's other sewer communities.

Hearing no discussion or questions from the Board, Mr. Foti moved to the next Information item. (ref. VI A.5)

Preliminary FY25 Water and Sewer Assessments

Mr. Durkin summarized MWRA's water and sewer assessment strategy, and advised that staff are recommending a 3.0% combined increase for wholesale water and sewer charges in FY2025. He noted that the 3.0% increase is lower than June 2023's budget projection of 3.4%, partly due to the stabilization of inflation. Mr. Durkin referred Board Members to the Staff Summary for this agenda item, which includes more detailed information about FY25 Preliminary Assessments for each member community.

(Mr. Peña returned to the meeting during the summary.)

Mr. Vitale asked how much of the 3.0% increase in MWRA's annual rate revenue requirement is due to inflation. Mr. Durkin explained that nearly 60% of MWRA's budget is allocated for debt service. He further explained that inflation and interest rates have more impact on direct expenses, such as wages, salaries and chemicals, than on debt service.

Hearing no further discussion or questions from the Board, Mr. Foti moved to Approvals. (ref. VI A.6)

Approvals

Transmittal of the FY25 Proposed Current Expense Budget

A motion was duly made and seconded to approve the transmittal of the FY25 proposed Current Expense budget to the MWRA Advisory Board for its 60-day review and comment period.

Mr. Durkin briefly summarized MWRA's annual budget cycle, and noted that it is part of a

continuous, multi-year strategy.

Michael Cole, MWRA Budget Director, presented highlights of MWRA's Proposed CEB for FY2025. He began with an overview of the CEB budget structure. He reported a preliminary increase of 1.5% for direct expenses, driven by costs for chemicals, wages, salaries and maintenance. He noted that FY2025 direct expenses were offset by approximately 30% in savings for chemicals, due to ongoing price stabilization since June 2023. Mr. Cole then discussed the preliminary budget for indirect expenses (a 5.3% increase due to pension, reserve changes and watershed reimbursement). He explained that the preliminary FY2025 CEB includes an additional $7.7 million for pensions in anticipation of the 2030 full-funding deadline. He advised that staff had removed a vacancy adjustment for watershed reimbursement because the Department of Conservation and Recreation's watershed staffing level had recently reached 149 of its budgeted 150 FTEs.

Next, Mr. Cole discussed the preliminary budget for debt service, noting a proposed 3.6% increase driven by the structure of new and existing debt. He then presented historical rates and preliminary rate projections for FY2025 on a combined basis (+3.0%), and by utility (+3.9% for water, +2.5% for wastewater). He noted that the FY2025 preliminary rates reflected an overall decrease from what was projected when the FY24 budget was finalized and approved in June 2023. Finally, he summarized the next steps of the MWRA budget review and approval process.

Hearing no discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VI B.1)

Approval of the Eighty-Seventh Supplemental Bond Resolution

A motion was duly made and seconded to adopt the Eighty-Seventh Supplemental Resolution authorizing the issuance of up to $85,000,000 of Massachusetts Water Resources Authority

Subordinated General Revenue Bonds and the supporting issuance resolution.

Matthew Horan, MWRA Deputy Director of Finance/Treasurer advised that staff sought Board authorization to borrow $85 million from the State Revolving Fund (SRF). He explained that the Massachusetts Clean Water Trust ("Trust") offers subsidized SRF loans at 2.15% interest, which is lower than market rates. Mr. Horan noted that MWRA and its ratepayers are expected to save approximately $80 million in interest over the life of all loans with the Trust, which supports MWRA's overall debt reduction strategy. He advised that if approved, this borrowing would allow MWRA to access remaining American Rescue Plan Act ("ARPA") funds that have not yet been allocated. He noted that MWRA has received approximately $3.4 million in ARPA funds to date, and could potentially receive an additional $3 million in funding if the proposed borrowing is approved.

Mr. Vitale requested more information about the timeline for the proposed transaction. Mr. Horan explained that staff planned to execute an interim borrowing, followed by quarterly draws, and that the Trust is expected to issue permanent financing in October or November, 2024. Mr. Vitale then asked if recently announced federal funding for clean water and sewer infrastructure would impact MWRA. Mr. Horan explained that most of the federal clean infrastructure funds earmarked for Massachusetts will go to the Trust, which leverages those funds with state funding and distributes them through the SRF loan program. Finally, he added that the Trust could potentially apply some of the federal clean infrastructure funds to increased principal forgiveness, and advised that staff will keep Board Members updated as more details are released.

Mr. Jack Walsh requested clarification on the borrowing and bond authorization process. Mr. Horan briefly explained the steps.

Hearing no discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VI B.2)

Delegation of Authority to Execute a Contract for the Purchase and Supply of Electricity for the Deer Island Treatment Plant

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to execute a contract for the supply of electricity to the Deer Island Treatment Plant with the lowest responsive and responsible bidder for the period and pricing structure determined by staff to be in MWRA's best interest, and for a contract supply term not to exceed 36 months. This delegation of authority is necessary because MWRA will be required to execute a contract within several hours of the price submission in a constantly changing market.

Kristen Patneaude, MWRA Energy Manager, presented a proposal to execute a contract for the supply and delivery of electricity to the Deer Island Treatment Plant ("DITP"). She noted that MWRA has procured electricity in the competitive market since 2001, and that the largest electricity contract for DITP will expire in October 2024. She explained that staff sought approval for the delegated authority to competitively procure and execute a replacement contract. She advised that the delegated authority is needed due to the constantly changing market, which requires staff to execute the contract within hours of the price submission.

Next, Ms. Patneaude presented an overview of MWRA's electricity contracts. She explained that the Deer Island account represents 68% of MWRA's total purchase load, and 52% of electrical expenses. She then discussed MWRA's Interval accounts for larger facilities such as the Carroll Water Treatment Plant and the Clinton Wastewater Treatment Plant. She noted that interval accounts represent 28% of MWRA's electrical purchase load and 41% of expenses. Further, she relayed that profile accounts for smaller facilities such as CSOs and headworks make up 3% of MWRA's load and 6% of expenses, and that 0.1% of MWRA's purchase load is for basic electric service provided by utilities, to power devices such as meters and motorized valves. She explained that there is currently no financial advantage to competitively procuring electricity for these devices, due to administration costs relative to low load size. Ms. Patneaude stated MWRA facilities that are located within municipal light plant districts are not allowed to operate on competitively-supplied electricity.

Ms. Patneaude then explained that the proposed delegated authority contract to competitively purchase electricity for DITP is part of MWRA's overall strategy to optimize the procurement of commodities. She advised that this strategy take the type, size, and operational characteristics of the facilities supplied by each type of account into consideration, and added that staggering the procurements, as well as their terms and durations, mitigates overall financial risk. Finally, Ms. Patneaude commented that the proposed delegated authority contract under discussion reflects only the cost of energy supply, and that the non-negotiable delivery costs are determined by the regulated utilities.

Rev. White-Hammond requested the length of the proposed contract's term, and asked if MWRA could pursue higher levels of renewable electricity supplies. Ms. Patneaude responded that MWRA would seek bids for terms of one, two and three years. She advised that MWRA had historically purchased voluntary renewable energy certificates ("RECs"), and would suspend the practice for this contract because the voluntary REC market may be driving up the prices of the regular market, which impacts all stakeholders, and because the electrical grid is becoming greener regardless of the purchase of voluntary RECs. She added that MWRA staff sought guidance from state officials, who did not recommend the use of voluntary RECs to offset onsite greenhouse gas emissions versus investment in renewables that decrease onsite fossil fuel usage. Rev. White-Hammond suggested that the use of one, two, or three-year contracts may not provide enough leverage with respect to purchasing power for facilities that are expected to operate for decades, and that MWRA and other public entities could consider working collaboratively to maximize collective purchasing power. Ms. Patneaude agreed and, also, noted that MWRA had historically bundled the purchase of voluntary RECs with its electricity supply contracts; however, staff subsequently discontinued this approach due to a lack of supplier competition. Chair Tepper relayed that the EEA is working to address the previously-discussed issues with respect to voluntary RECs, while also focusing on the development of concrete projects that promote renewable energy and decrease fossil fuel use. She welcomed future conversations with MWRA and other stakeholders to develop collective buying power strategies.

There was further, general discussion about voluntary RECs, MWRA's onsite renewable power generation capabilities, its program to sell self-generated power back to the grid, and the sale of green credits. Mr. Laskey noted MWRA's participation in ISO New England's demand response program to use onsite, off-grid power during times of peak demand, and the potential to generate and sell more electricity to the grid. Rev. White-Hammond encouraged staff to consider engaging in collaborative efforts to further advance renewable energy generation and grid transformation. Chair Tepper encouraged continued discussion on the matter in the future and thanked staff for their work on the purchase.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		

Yes	No	Abstain
Vitale		
J. Walsh		
White-Hammond		

(ref. VI B.3)

Contract Awards

Remarketing Agent for the 2008 Series A-1 and A-3: TD Securities (USA), LLC Raymond James & Associates Inc., Contract F275

A motion was duly made and seconded to authorize the Executive Director, pursuant to the Fifty-fourth Supplemental Resolution, to approve the recommendation of the Selection Committee for Raymond James & Associates, Inc. and TD Securities (USA) LLC to provide remarketing services for 2008 Series A-1 and 2008 Series A-3 Multi-Modal Subordinated General Revenue Refunding Bonds, respectively, and to award successor contracts.

Mr. Horan advised that staff sought to engage new bond remarketing agents because one of its current agents with two series, Citigroup, had announced that they are exiting the municipal business and would no longer provide tax-exempt bond underwriting and remarketing of variable rate bonds. He summarized the procurement process for the new remarketing agents. Finally, he noted that 12 proposals were received, and that TD Securities (USA) LLC and Raymond James & Associates, Inc. were the recommended vendors.

In response to a question from Mr. Jack Walsh, Mr. Horan described the bond remarketing process. There was brief discussion about the process. Mr. Vitale requested more information about the number of remarketing agents engaged by MWRA and their allocations, as well as the number and allocations of liquidity banks. Mr. Horan explained that MWRA engages six remarketing agents. He noted that most of the agents have a 13% allocation, with one at 28%, which is held over from 2008. He further explained that MWRA engages approximately four liquidity banks, and advised that he would provide more details at a later date.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		

Yes	No	Abstain
Vitale		
J. Walsh		
White-Hammond		

(ref. VI C.1)

WASTEWATER POLICY AND OVERSIGHT

Approvals

Amendments to the MWRA Regulations for Sewer Use

A motion was duly made and seconded to authorize the TRAC Director, on behalf of the Authority, to publish notice of proposed amendments to MWRA's Regulations for Sewer Use (360 CMR 10.000), as outlined in the February 21, 2024 Staff Summary presented and filed with the records of this meeting, in the Massachusetts Register and newspapers for public comment. Staff will return to the Board for approval to adopt the amendments after public comments have been received.

Matt Dam, MWRA TRAC Director, requested Board approval to publish proposed Amendments to MWRA's Sewer Use Regulations for public comment. He explained that the revisions include a 3% increase in permit and monitoring fees for FY2025-FY2029, and two amendments related to a CY2021 EPA audit. He briefly described the timeline and next steps of the public comment period. Lastly, Mr. Dam advised that staff would return to the Board for final approval on the amended regulations after the public comments are reviewed and addressed.

Mr. Jack Walsh requested more information about the proposed fee increases. Mr. Dam explained that while the proposed fee increases generally align with the rate of inflation, they may yield higher returns on the Industrial Pretreatment Program's costs.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VII A.1)

Contract Awards/Change Orders

Oxygen Generation Facility Services - Deer Island Treatment Plant: Solutionwerks, Inc., Contract S587, Amendment 2

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to approve Amendment 2 to Contract S587, Oxygen Generation Facility Services, in the amount of $250,000, increasing the contract amount from $2,720,450 to $2,970,450 and extending the contract by 183 calendar days, from April 18, 2024 to October 18, 2024.

Chad Whiting, MWRA Deer Island Treatment Plant Deputy Director, presented the reasons for a proposed amendment to an Oxygen Generation Facilities Services contract at DITP. He explained that the current contract with Solutionwerks, Inc. ("Solutionwerks") is about to expire, and the requested cost increase and time extension will allow Solutionwerks to continue providing services while MWRA procures a new Chapter 149 construction contract. He noted that the new contract will include added maintenance services and other work outside the scope of the existing contract.

Mr. Whiting then presented an overview of the Deer Island Oxygen Generation Facility, and advised that its operation and maintenance requires specialized personnel. He then discussed the facility's equipment and the oxygen generation process.

Next, Mr. Whiting presented the bidding history of MWRA's Oxygen Generation Facility Services contracts. He relayed the pool of qualified bidders was limited due to the specialized nature of the work. He further advised that Solutionwerks is unable to continue providing the required services after its current contract expires, due to staff retirements.

Mr. Whiting then explained that staff are procuring a new Oxygen Generation Facility Services contract under Chapter 149, to address maintenance needs and to widen the bidding pool. He briefly discussed the procurement strategy and scope of the Chapter 149 contract, which includes the inspection of a liquid oxygen tank, and the replacement of a critical programmable logic controller. Finally, Mr. Whiting noted that the Chapter 149 contract was advertised on February 17, 2024 and summarized the next steps for the procurement.

Board Member Peña asked if staff had analyzed the benefits of on-site oxygen generation versus purchase. Mr. Whiting responded in the affirmative. He noted that DITP uses approximately 120 tons of oxygen per day, which depletes its 1,000 ton on-site storage capacity quickly. He explained that on-site generation produces a more stable oxygen supply and reduces the significant truck traffic through neighboring communities that would be required if the oxygen were purchased, as well as the associated costs of oxygen procurement and delivery. Mr. Jack Walsh requested more information on existing maintenance contract staffing. Mr. Whiting explained that one Solutionwerks specialist performs routine maintenance activities on-site one week per month, and approximately three specialists carry out a major

maintenance and inspection protocol twice a year.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VII B.1)

Harbor and Outfall Monitoring, Benthic, Fish, and Shellfish Monitoring: Contract OP-401B, Normandeau Associates, Inc., Amendment 2

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to approve Amendment 2 to Contract OP-401B, Harbor and Outfall Monitoring, Benthic, Fish and Shellfish Monitoring, with Normandeau Associates, Inc., to increase the contract amount by $557,230.94 from $1,940,812.40 to $2,498,043.34 and to increase the contract term by one year, from November 1, 2024 to October 31, 2025.

David Wu, MWRA Senior Program Manager, Environmental Monitoring, requested Board approval for an amendment to a benthic, fish and shellfish monitoring contract for the DITP outfall, as required by the current EPA NPDES permit. He noted that this monitoring is not a requirement of the new Draft Permit issued by the EPA in May, 2023, and is not expected to be included in the Final Permit, which has not yet been issued. He then advised this monitoring will continue to be required until the Final Permit is issued, potentially in one year. Mr. Wu then described the duration and cost of the proposed amendment, which would extend Normandeau Associates, Inc.'s ("Normandeau") current contract through the Final Permit's anticipated issuance. Finally, Mr. Wu briefly discussed the history of the contract, noting that proposed Amendment 2 represents a 2.9% increase over the cost of Amendment 1, which was approved by the Board of Directors in November, 2022.

Board Member Taverna requested more information about the contract's deliverables. Mr. Wu explained that Normandeau produces several reports per year, as well as submits data used for additional analysis as necessary. There was brief, general discussion about the anticipated

exclusion of benthic, fish and shellfish monitoring requirements in the new Final Permit. Mr. Peña complimented staff on a published video of marine life near MWRA's Deer Island Outfall, and asked how often this video is taken. Mr. Wu explained that the video is taken annually, and that a new video for 2023 is being processed.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VII B.2)

PERSONNEL AND COMPENSATION

Information

Reorganization of the Department of Environmental Quality

Rebecca Weidman, MWRA Deputy Chief Operating Officer, discussed a recommended reorganization of MWRA's Department of Environmental Quality ("ENQUAL"). She explained that the reorganization is designed to fulfill succession planning needs in response to the upcoming retirement of Betsy Reilley, MWRA ENQUAL Director, in July, 2024, and to address emerging, priority regulatory matters in the upcoming years. Further, Ms. Weidman relayed staff's recommendation that ENQUAL be broken into two departments: a Department of Environmental Quality to focus on wastewater issues, and a Department of Water Quality to focus on drinking water concerns.

Mr. Peña asked how many positions would be changed as a result of the reorganization. Ms. Weidman confirmed one new position would be created. Mr. Taverna and Rev. White-Hammond complimented Dr. Reilley on her outstanding performance as ENQUAL Director, and thanked her for her many contributions to MWRA. Board Members and meeting participants echoed their remarks and wished Dr. Reilley well.

Hearing no further discussion or questions from the Board, Committee Vice Chair White-Hammond moved to the next Information item. (ref. VIII A.1)

Diversity, Equity and Inclusion Update

Michele Gillen, MWRA Director of Administration, discussed the importance of Diversity, Equity and Inclusion ("DEI") at MWRA, and thanked Board Members for their support of staff's DEI efforts.

Next, Patterson Riley, MWRA Special Assistant for Affirmative Action, highlighted progress made on staffing goals during the second quarter of FY2024, as discussed in the earlier Orange Notebook presentation (ref. VI A.2), and noted that DEI is a key component of MWRA's recruitment and retention strategy. Mr. Laskey complimented MWRA's DEI Workgroup and noted that in his view, promoting DEI in the workplace is a rewarding endeavor. Ms. Gillen agreed, adding that new hires have offered positive feedback on MWRA's DEI program. Mr. Laskey described the successes and benefits of MWRA's programs for mentoring, training, internships and community employer partnerships. Tomeka Cribb, MWRA Associate Special Assistant for Affirmative Action, added that the community employer partnerships subcommittee was established to complement existing recruitment and retention efforts, and discussed recent initiatives, including hosting MWRA's first STEM Fair as part of Massachusetts STEM week; and partnerships with Boston Green Academy, other local high schools and tech vocational schools such as Madison Park.

Rev. White-Hammond expressed appreciation for these initiatives, recognized the positive results of MWRA's sustained DEI efforts over time, and discussed the ongoing challenges of attracting new workers to the water and wastewater industries. Mr. Foti echoed Rev. White-Hammond's remarks, and stressed the importance of promoting public service careers for younger workers. Rev. White-Hammond suggested that MWRA advertise its positive impacts with regard to climate change to recruits, and thanked MWRA staff for their work. (ref. VIII A.2)

Approvals

Approval of the 2024 Affirmative Action Plan

A motion was duly made and seconded that the Board of Directors approve the Massachusetts Water Resources Authority's Affirmative Action Plan effective for a one-year period from January 1, 2024 through December 31, 2024.

Mr. Riley invited questions from the board members concerning MWRA's Affirmative Action Plan for CY2024. He briefly discussed MWRA's ongoing staffing challenges related to COVID. He noted that the recruitment and retention improvements shown in FY2024 Q2 reflect staff's hard work and the value of DEI efforts.

Rev. White-Hammond encouraged staff to continue this positive momentum, and to invest in the development of a two or three-year Affirmative Action Plan. Mr. Vitale asked staff if they considered a Sheltered Market Program. Ms. Francisco Murphy discussed staff's recent review

of the Sheltered Market Program provisions, a statutory program under c. 30B to make available certain contracts to MBE and WBE firms; and noted awareness of Boston's program and the City of Cambridge's efforts to begin such a program. Mr. Vitale asked how MWRA is working to increase diversity among engineering staff. Mr. Riley responded that staff actively recruit through initiatives such as partnerships with local colleges and universities. Mr. Vitale requested more information about MWRA's efforts to increase its M/WBE participation for contractors. Mr. Riley explained that MWRA is conducting a disparity study to identify appropriate actions.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VIII B.1)

February 2024 PCR Amendments

A motion was duly made and seconded to approve amendments to the Position Control Register (PCR) as presented and filed with the records of this meeting.

Ms. Gillen invited questions from Board Members.

Hearing no discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		

Yes	No	Abstain
J. Walsh		
White-Hammond		

(ref. VIII B.2)

CORRESPONDENCE TO THE BOARD

There was no correspondence to the Board (ref. IX)

OTHER BUSINESS

There was no other business. (ref. X)

ADJOURNMENT

A motion was duly made and seconded to adjourn the meeting.

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

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. XI)

The meeting adjourned at 3:17pm.

Approved: March 13, 2024

Attest: _____

Brian Peña, Secretary

LIST OF DOCUMENTS AND EXHIBITS USED

- Draft Minutes of January 17, 2024 MWRA Board of Directors' Meeting (ref. I)

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Documents used for this meeting and cited in these minutes, including meeting materials/staff summaries, presentations, and approved minutes, are posted on MWRA's website: https://www.mwra.com/02org/html/bodmtg.htm

- February 21, 2024 Staff Summary and Presentation – Lead and Copper Rule Changes and Recommendations (ref. V A.1)
- February 21, 2024 Staff Summary and Presentation – Top of Shaft 5 Interim Improvements, R. Zoppo Corp., Contract 7671 (ref. V B.1)
- February 21, 2024 Staff Summary – Delegated Authority Report – January 2024 (ref. VI A.1)
- February 21, 2024 Staff Summary – FY2024 Second Quarter Orange Notebook
- February 21, 2024 Staff Summary – FY2024 Financial Update and Summary through January 2024 (ref. VI A.3)
- February 21, 2024 Staff Summary – FY2024 Mid-Year Capital Improvement Program Spending Report (ref. VI A.4)
- February 21, 2024 Staff Summary – FY2024 Community Assessment Adjustments (ref. VI A.5)
- February 21, 2024 Staff Summary – Preliminary FY25 Water and Sewer Assessments (ref. VI A.6)
- February 21, 2024 Staff Summary and Presentation – Transmittal of the FY25 Proposed Current Expense Budget (ref. VI B.1)
- February 21, 2024 Staff Summary – Approval of the Eighty-Seventh Supplemental Bond Resolution (ref. VI B.2)
- February 21, 2024 Staff Summary and Presentation – Delegation of Authority to Execute a Contract for the Purchase and Supply of Electricity for the Deer Island Treatment Plant (ref. VI B.3)
- February 21, 2024 Staff Summary – Remarketing Agent for the 2008 Series A-1 and A-3: TD Securities (USA), LLC Raymond James & Associates Inc., Contract F275 (ref. VI C.1)
- February 21, 2024 Staff Summary – Amendments to the MWRA Regulations for Sewer Use (ref. VII A.1)
- February 21, 2024 Staff Summary and Presentation – Oxygen Generation Facility Services - Deer Island Treatment Plant: Solutionwerks, Inc., Contract S587, Amendment 2 (ref. VII B.1)
- February 21, 2024 Staff Summary – Harbor and Outfall Monitoring, Benthic, Fish, and Shellfish Monitoring: Contract OP-401B, Normandeau Associates, Inc., Amendment 2 (ref. VII B.2)
- February 21, 2024 Staff Summary – Reorganization of the Department of Environmental Quality (ref. VIII A.1)
- February 21, 2024 Staff Summary – Diversity, Equity and Inclusion Update (ref. VIII A.2)
- February 21, 2024 Staff Summary – Approval of the 2024 Affirmative Action Plan (ref. VIII B.1)
- February 21, 2024 Staff Summary – February 2024 PCR Amendments

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MASSACHUSETTS WATER RESOURCES AUTHORITY

Deer Island
33 Tafts Avenue
Boston, MA 02128

Frederick A. Laskey
Executive Director
Chair: H. Vitale
Vice-Chair: L. Taverna
Committee Members:
J. Foti
P. Flanagan
J. Walsh
P. Walsh
J. Wolowicz

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

WATER POLICY & OVERSIGHT COMMITTEE MEETING

Date: Wednesday, March 13, 2024

Time: 10:00am

Location: MWRA Chelsea Administration Building, 2nd Floor, Rooms 2C and D
2 Griffin Way
Chelsea, MA 02150

A photo ID will be required for entry.

The meeting will also be available via Webex. The Webex meeting link and password to attend virtually are below:

Webex meeting link (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Meeting Number: 2341 033 0434 Password: 3132024

AGENDA

A. Information

1. Metropolitan Water Tunnel Program: Needs and Overview
2. Metropolitan Redundancy Interim Improvements Projects Update
3. Metropolitan Water Tunnel Program: Preliminary Design and Environmental Impact Report
4. Metropolitan Water Tunnel Program: Look Ahead
5. Metropolitan Water Tunnel Program: FY25 CIP Updated Program Cost Estimate and Cost Controls

B. Approvals

1. Metropolitan Water Tunnel Program: Contract Structure for Final Design Engineering Services, Contract 7556

C. Information (Continued)

1. Local Water System Assistance Program Annual Update

D. Contract Amendments/Change Orders

1. Section 101 Pipeline Extension (Waltham): Baltazar Contractors, Inc., Contract 7457, Change Order 4
2. Rehabilitation of WASM 3 Sections W11/W12/W16/51 (Medford, Somerville and Arlington): Albanese D&S, Inc., Contract 6544, Change Order 9

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Water Tunnel Program
Program Needs and Overview

COMMITTEE: Water Policy & Oversight

X INFORMATION
VOTE

Paul V. Savard, P.E., Director, Design and Construction
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

For information only. This staff summary provides a review of the needs for the Metropolitan Water Tunnel Program (Tunnel Program) and an overview of the Tunnel Program development to date.

DISCUSSION:

On February 5, 2017, the Board of Directors approved construction of northern and southern deep rock water supply tunnels to provide needed redundancy for the Metropolitan Tunnel system. The Board directed staff to proceed with preliminary design, geotechnical investigations and Massachusetts Environmental Policy Act review of the project.

This decision was the culmination of a series of meetings that started with a Special Meeting of the Board of Directors on October 6, 2016, at which staff provided a briefing on the status of the existing MWRA water transmission system and the lack of redundancy for the City Tunnel (1950), City Tunnel Extension (1963), and the Dorchester Tunnel (1976) with an accompanying binder of supporting materials.

Figure 1 – Condition of Some Existing Tunnel System Valves

The following is a summary of the briefing and staff recommendations.

- Staff concluded that the tunnels and shafts themselves require little or no maintenance and represent a low risk of failure. However, the cast iron, steel pipe and valves at the tops of the shafts are in poor condition and are in need of rehabilitation and maintenance.

- Staff noted that failure at the tops of shafts in the existing system could result in widespread outages of water service, impacting 60% of the service area, which would require activation of emergency backup sources of supply, water use restrictions, pressure swings, and a boil order. The economic impact, at that time, to the metropolitan region was determined through Federal Emergency Management Agency methodology to be on the order of $360 million per day (2024).

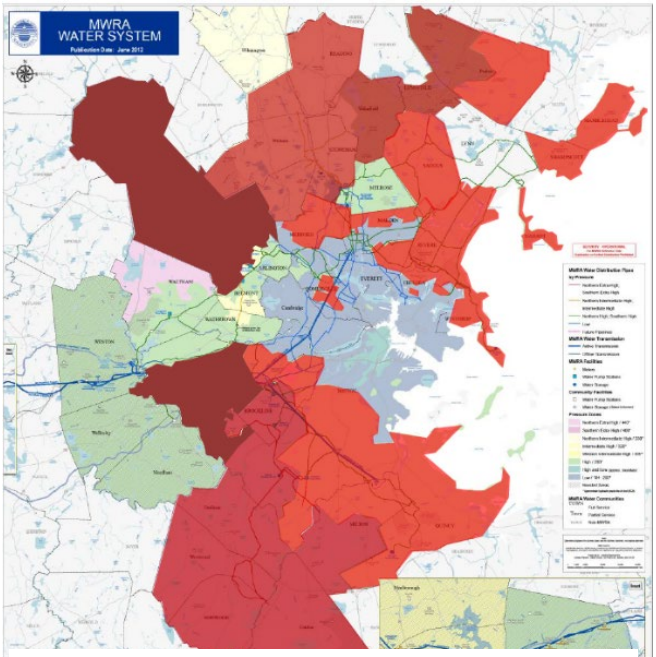

Figure 2 –Impact of Metropolitan Tunnel System Shutdown

- Staff presented financial considerations of advancing a capital program to address redundancy with the goals of preserving sustainable and predictable rates at the water utility level, ensuring adequate capital is available when necessary, and minimizing the cost of borrowing.

Following the 2016 Special Meeting, and at the direction of the Board of Directors, staff developed Metropolitan Redundancy Interim Improvements projects to mitigate the risk of a failure while proceeding with planning, design, construction and ultimately start-up of the new tunnels.

At the conclusion of the Special Meeting, staff were directed to brief member communities, and state and local officials in order to build consensus and support.

The MWRA Advisory Board hosted a Long-Term Redundancy Forum on December 8, 2016 at which staff presented the history of the MWRA waterworks system, the need for Metropolitan Tunnel redundancy and the challenges, both implementation and financial, of building redundancy. The Honorable Jeanette A. McCarthy, Mayor of Waltham, provided the perspective of local communities on the potential for impacts and disruption. On January 19, 2017, the MWRA Advisory Board met and voted to support moving forward with the deep rock, two-tunnel project, utilizing a Program Management Division Approach, similar to the model used for the Boston Harbor Project; and concurrent construction of both tunnels, rather than a phased approach. In February 2017, the Board of Directors approved construction of northern and southern deep rock tunnels and for staff to proceed with preliminary design.

In 2018, MWRA established the Metropolitan Tunnel Redundancy Department to develop and execute the Metropolitan Water Tunnel Program and lead its day-to-day operations, decision-

making and selection of implementation strategies as well as to manage all professional services and construction contracts for the Program.

Preliminary design began in 2020 and was completed in early 2024 and included preliminary geotechnical investigation (deep rock borings), evaluation of preliminary tunnel alignment and shaft site alternatives, preliminary design, preliminary contract packaging, preparation of the required MEPA filings and development of a comprehensive list of required environmental permits. In addition, an updated and comprehensive preliminary design level cost estimate and construction schedule was developed. Geotechnical investigations along the primary tunnel alignment are ongoing. Final design is anticipated to start later in 2024 with a target for the first tunnel construction contract bidding in 2027, and tunnel construction beginning in 2028. Tunnel Program completion is anticipated by 2040.

The Tunnel Program transition from preliminary to final design is an opportunity to review the Program's development over the last few years, current status, and path forward. Accordingly, staff summaries and presentations will be provided at this Board of Directors' meeting on the following topics:

- Update on Interim Improvements Projects;
- Preliminary Design and Environmental Impact Reviews;
- Program Schedule and Look Ahead (including critical path items, challenges and opportunities);
- Updated Program Cost Estimate, FY25 CIP, and Cost Controls; and
- Final Design Engineering Services Procurement and Contract Structure.

Finally, Figure 3 below shows the current preliminary tunnel alignment, limits of segments, and shaft sites.

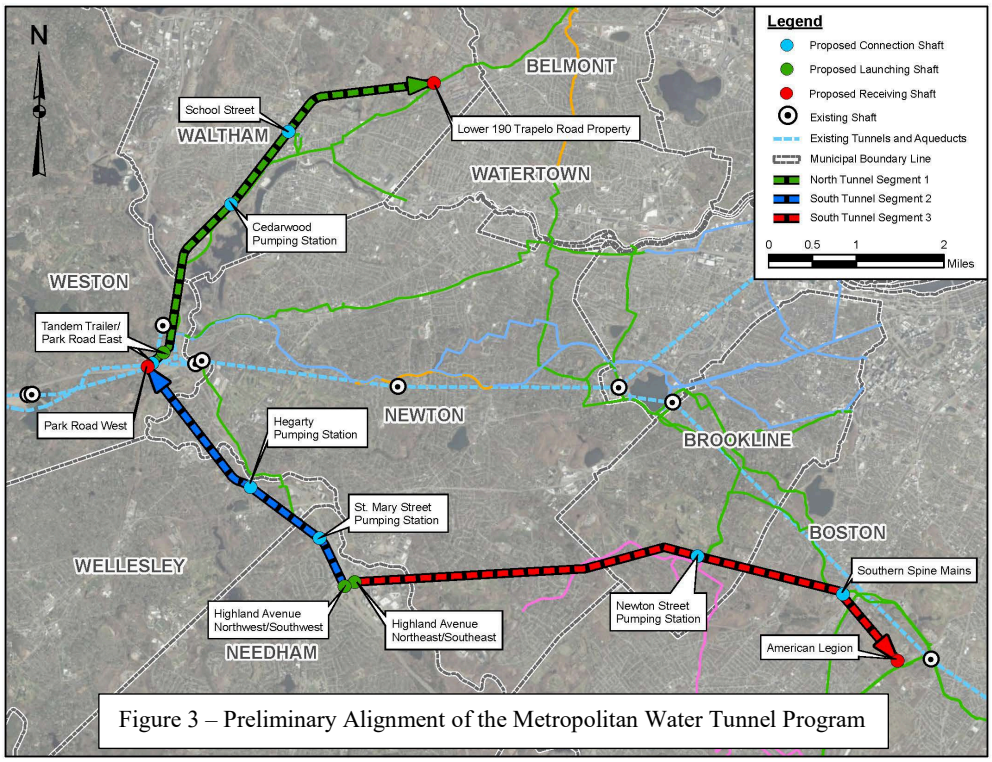

Figure 3 – Preliminary Alignment of the Metropolitan Water Tunnel Program

BUDGET/FISCAL IMPACTS:

The proposed FY25 CIP includes $2.1 billion for the Metropolitan Water Tunnel Program. This budget will be refined periodically during Final Design.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Redundancy Interim Improvements Projects Update

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COMMITTEE: Water Policy and Oversight

X INFORMATION
_____ VOTE

Valerie Moran, P.E., Director of Waterworks
Brian L. Kubaska, P.E., Chief Engineer
Lisa Hamilton, P.E., Assistant Director, Engineering
Preparer/Title

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

RECOMMENDATION:

For information only. This staff summary provides an update on the Metropolitan Redundancy Interim Improvements projects. These projects are being implemented to reduce the risk of failure of surface pipe components of the three Metropolitan Tunnels (City Tunnel, City Tunnel Extension and Dorchester Tunnel) and to improve MWRA's ability to respond in the event of a failure that requires an isolation of any part of the Metropolitan Tunnel system.

DISCUSSION:

Each of the existing Metropolitan Tunnels consists of concrete-lined deep rock tunnel sections linked to the surface through steel and concrete vertical shafts. The tunnels and shafts themselves require little or no maintenance and represent a low risk of failure. The shafts are located in Weston, Chestnut Hill, Allston, Somerville, Malden, West Roxbury, and Dorchester. At the top of each shaft, cast iron or steel pipe and valves connect to the MWRA surface pipe network. These pipes and valves are accessed through subterranean vaults and chambers. The piping and many of the valves are in poor condition. Interim improvements as detailed below are being implemented to strengthen the physical assets at top of shaft structures and to provide additional flow capacity and redundancy to the existing supply system in the event of an emergency due to a tunnel failure.

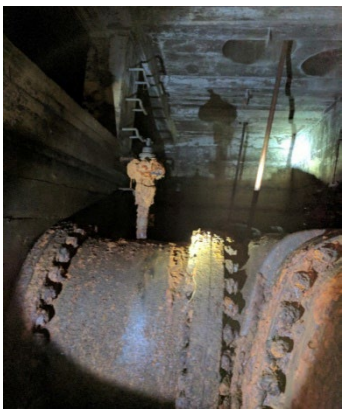
Commonwealth Avenue Pumping Station Improvements

This project provides a means for the Commonwealth Avenue pumping station, located in the City of Newton, to continue to operate, independent of the City Tunnel, by adding a pipeline connection to MWRA's Low Service system and two new pumps capable of pumping from the Low Service grade line. This project was completed in 2021 at a final cost of $8.0M.

New Pumps at Commonwealth Avenue

Tunnel-Shaft Pipeline Improvements

Modifications are being implemented to protect the valves and piping in the chambers at the tops of the tunnels shafts and to reduce water infiltration that is contributing to corrosion and can require significant pumping of ground water in order to access valves for operation. Construction was completed in 2020 at Shafts 6, 8, and 9A at a cost of $2.2M. This provided protection of all exposed piping, shaft caps, end caps, nuts, bolts, and valve bodies with corrosion protection tape or exterior carbon fiber wrapping; removed and replaced corroded nuts and bolts; and reduced or eliminated water infiltration in eight vaults through waterproofing and grouting.



Shaft 9A before improvements

After improvements

Construction of similar improvements in the Shaft 5 building for valve and piping was awarded at the February 2024 Board meeting at a cost of $5.4M. In addition to corrosion control, Shaft 5 work includes the abandonment of a pump room at the bottom of a 400-foot-deep shaft. Design of similar work at Shafts 7, 7B, 7C, and 7D is anticipated to start in 2026 is estimated to cost $8.6M.

Shaft 5 - Electrical Switchgear to be replaced

Improvements to the Shaft 5 building in Weston will upgrade and bring existing utilities to code, replace dewatering and sump pumps and upgrade instrumentation and control systems at an estimated of cost $3.3M. This will allow better access to valves and equipment and provide better remote monitoring. The design is currently underway with an anticipated construction award in April 2026. Similar upgrades to the Shaft 9 building in Somerville will be designed at a future date (2028) and is estimated to cost $13.6M.

Weston Aqueduct Supply Main (WASM) 3 Rehabilitation

This eleven-mile steel pipe, installed in the 1920s and 1930s, is a critical supply line to over 250,000 customers in the Northern High, Northern Extra High, and Intermediate High pressure zones. In the event of a loss of the City Tunnel or City Tunnel Extension, this large diameter pipe will be depended on to provide emergency flow to the Gillis Pump Station, which would serve the Northern High and Northern Intermediate High communities. The first of three contracts was substantially complete in May 2023 that rehabilitated over 2.5 miles of 56-inch and 60-inch pipe at an estimated

WASM 3 - cement-mortar lined steel pipe

WASM 3 – pipe replacement

cost of $20.5M. The second phase of the WASM 3 rehabilitation will repair 0.6 miles of 60-inch pipe in poor condition with a history of leaks. CP-2 is currently under design with an anticipated construction award in August 2025 and at an estimated cost of $13.8M.

Low Service Pressure Reducing Valve Improvements

This project is nearing the completion of construction at a cost of approximately $12.2M. The project has increased the size of existing pressure reducing valves (PRVs) on the WASM 4 pipe at Nonantum Road in Boston and the WASM 3 pipe at Mystic Valley Parkway in Medford, increasing the capacity of flow from the High Service pressure zone to the Northern Low pressure zone. They will ultimately supply the Spot Pond and Gillis Pumping Stations in an emergency condition with either the City Tunnel or the City Tunnel Extension out of service. With this increased capacity, these stations will be capable of supplying the Northern High and Northern Intermediate High pressure zones.

WASM 3 42-inch diameter PRVs

Section 101 Waltham Pipeline Extension

The project consists of installing 9,000 linear feet of new 36-inch diameter water main and appurtenances extending from Waltham's Meter 182 at the Waltham/Lexington town line down Lexington Street to Totten Pond Road, where it will connect to Waltham's existing water system. This new water main will provide redundancy for MWRA's Lexington Street pumping station during the anticipated isolation of MWRA's WASM 3 pipeline discussed for the construction projects mentioned above or in the event of a WASM 3/Lexington Street pumping station failure. This project is currently in construction and is approximately 40% complete at an approximate cost of $32.7M.

36" pipe & thrust block @ Lexington St & Totten Pond Rd

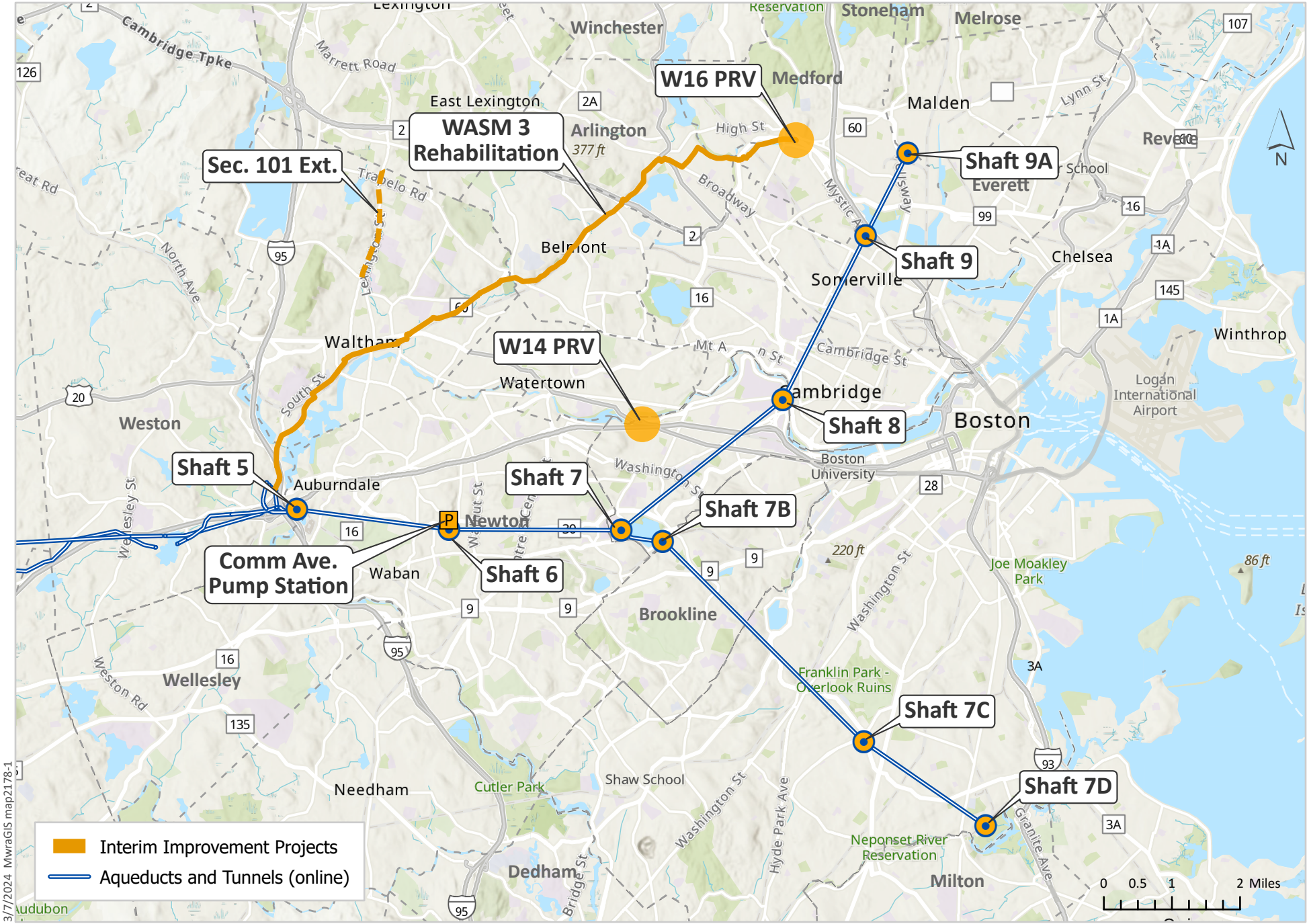
BUDGET/FISCAL IMPACT:

The cost of these projects is $120.3M and is included in the Capital Improvement Program budget.

ATTACHMENT:

Figure 1 - Metropolitan Interim Improvements Projects

FIGURE 1: Metropolitan Interim Improvement Projects



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Water Tunnel Program
Preliminary Design and Environmental Impact Report

COMMITTEE: Water Policy and Oversight

X INFORMATION
VOTE

Paul V. Savard, P.E., Director, Design and Construction
Colleen Rizzi, P.E., Director, Env. & Reg. Affairs
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:
For information only. This staff summary provides a summary of the preliminary design and Environmental Impact Report for the Metropolitan Water Tunnel Program (Tunnel Program).

DISCUSSION:

Preliminary Design and Environmental Impact Report Summary

On February 5, 2017, the Board of Directors approved construction of northern and southern deep rock water supply tunnels to provide needed redundancy for the Metropolitan Tunnel System. The Board directed staff to proceed with preliminary design, geotechnical investigations and Massachusetts Environmental Policy Act review of the project. These two tunnels and the related work of the Tunnel Program will provide the needed redundancy for the Metropolitan Tunnel System, which consists of the City Tunnel, the City Tunnel Extension, and the Dorchester Tunnel.

On May 27, 2020, the Board approved the award of Contract 7159, Metropolitan Tunnel Redundancy Program Preliminary Design, Geotechnical Investigation and Environmental Impact Report. As part of this contract, the Preliminary Design Report (PDR) was completed. The PDR presents the plan for approximately 15 miles of tunnels that will be constructed in rock about 250 to 500 feet below ground.

Contract 7159 also included preparation of the required Massachusetts Environmental Policy Act (MEPA) filings, and development of a comprehensive list of the environmental permits needed. The MWRA submitted an Environmental Notification Form (ENF), Draft Environmental Impact Report (DEIR), Supplemental Draft Environmental Impact Report (SDEIR), and the Final Environmental Impact Report (FEIR). Contract 7159 was completed in January 2024.

Work associated with the preliminary design and MEPA filings was performed in parallel. Several key objectives of this phase of design that were accomplished include; selection of shaft sites that meet system hydraulic requirements and provide sufficient space for temporary staging areas and permanent infrastructure; establishment of a preliminary tunnel alignment (both horizontal and

vertical) that control costs associated with mining through difficult ground conditions or requiring costly permanent liner systems; establishment of tunnel segments and construction sequencing and packaging that will promote good competition by qualified bidders; and avoidance, minimization, and mitigation of damage to the environment and impacts to the communities to the maximum extent practicable.

As the preliminary design phase progressed, certain aspects of the FY17 concept evolved with differences incorporated into the current Tunnel Program as noted herein.

Geotechnical Investigation

Subsurface investigation of ground conditions is crucial for the design and construction of the Tunnel Program. The subsurface investigations for the Tunnel Program are being performed in multiple phases to suit the advancement of the design and future construction contract documents. During preliminary design, historical data was compiled and reviewed, bedrock outcrop mapping was completed and used to inform the preliminary design of the tunnels and shafts. Given the length of the tunnels and their depth, a substantial amount of geological samples, including tens of thousands of feet of rock cores, will be collected as part of the Tunnel Program. Contract 7159 collected approximately 7,000 feet of rock core from 18 borings. Over 30,000 feet of rock core as well as other geotechnical sample data are expected to be collected for the Tunnel Program.

The proposed tunnel alignments will cross multiple major regional faults. The locations of the faults were first identified by a desktop study of geologic maps and construction records for several of MWRA's past tunnel projects. They were refined based on bedrock outcrop mapping and the geotechnical investigations. In subsequent stages of the subsurface investigations, additional work will further refine the locations and limits of the faults, as well as investigate the faults' characteristics and ultimately help control the costs of construction.

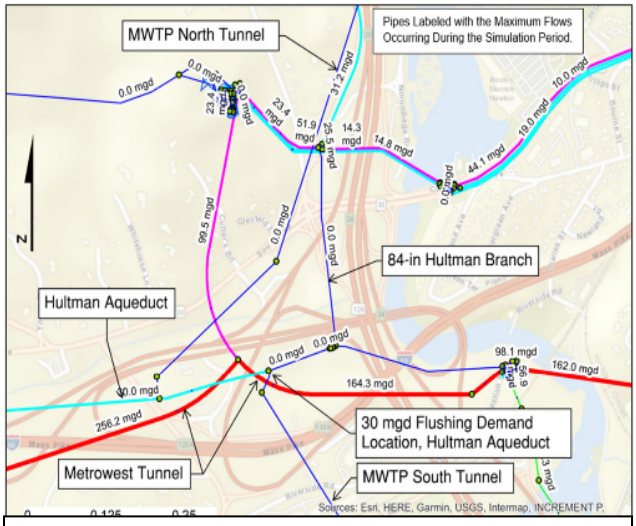
On November 16, 2022, the Board approved a lease of approximately 19,000 square feet of warehouse and office space for rock core storage at 110-116 Gould Street in Needham, Massachusetts. The Core Storage Facility provides the space needed for core storage and logging, photographing, reviewing, and processing the large amount of data in an accelerated manner.


Core Storage Facility (Needham)

Hydraulic Analysis

Hydraulic modeling was performed to support the evaluation and development of the preliminary design for the North and South Tunnel alignments that will provide a fully redundant tunnel system. The primary objective of the hydraulic modeling was to determine the required finished tunnel diameter and appropriate configurations of shafts

and connecting pipes from the new deep rock tunnels to MWRA's system and community systems. Hydraulic performance parameters included meeting target system hydraulic grade line (HGL) elevations while supplying projected design flows to customer meters (revenue meters), control valves, storage facilities, pumping stations and at other key locations in the water system. Modeling was also used to ensure the new tunnels, when in service, would not affect water age and that water quality would be maintained throughout the Metropolitan System. Hydraulic modeling confirmed that the tunnels should be sized between 10-foot to 12-foot diameter to meet the Authority's hydraulic performance goals to supply sufficient flow and pressures to its customers with the existing Metropolitan Tunnels out of service.



MWRA Hydraulic Model Near Shaft 5A

Hydraulic modeling also considered whether there would be appreciable differences in system operation considering the construction sequence of the two tunnels. As a result it was determined that early beneficial use of the South Tunnel is preferred because the South Tunnel could support greater system wide demand without requiring activation and control of the Authority's Chestnut Hill Emergency Pumping Station.

Shaft Sites and Tunnel Alignment

The tunnels will be integrated into the existing water transmission and distribution system by installing pipelines between shafts on the new tunnels and existing system infrastructure. The location of shafts was based in part on the required hydraulic connections to the existing water transmission and distribution system and the availability of land suitable for shaft sites.

Four shafts provide connections to the Hultman Aqueduct in Weston, the WASM 3 pipeline in Waltham, and the surface pipelines near the Dorchester Tunnel in Boston. These four shafts are required as they are the terminus of each tunnel and include:

- Lower 190 Trapelo Road Property, Waverley Oaks Road Entrance (North Tunnel, Segment 1) for connection to the Weston Aqueduct Supply Main 3 (WASM 3) pipeline;
- Park Road East (North Tunnel, Segment 1) for connection to the Hultman Aqueduct;
- Park Road West (South Tunnel, Segment 2) for connection to the Hultman Aqueduct; and
- American Legion (South Tunnel, Segment 3) for connection to surface piping and the stub at Shaft 7C of the Dorchester Tunnel.

Three shafts are required on sites with sufficient space for launching of the Tunnel Boring Machines (TBMs). The three launching shafts include:

- Tandem Trailer (North Tunnel, Segment 1);
- Highland Avenue Northwest (South Tunnel, Segment 2); and
- Highland Avenue Northeast (South Tunnel, Segment 3).

This presents one additional launching shaft than envisioned in the FY17 concept. The two shafts located at Highland Avenue break up the long South Tunnel into two shorter segments allowing flexibility in the construction sequencing and mitigating schedule risk associated with potential delays during construction of a single longer tunnel heading. Notwithstanding the benefits of bisecting the long South Tunnel, shaft sites large enough to accommodate TBM launching at either end of the South Tunnel were not readily available.

Six intermediate connections along the two tunnels provide redundancy to the existing system and provide benefit to MWRA's customers by reinforcing the water system network, and to meet hydraulic and water quality performance goals. The intermediate connections connect from the deep rock tunnel through a connection shaft and surface piping to existing pumping stations or existing water mains. Intermediate connections include:

MWRA School Street Parcel (connection to Lexington St Pumping Station)

- School Street (North Tunnel, Segment 1);
- Cedarwood Pumping Station (North Tunnel, Segment 1);
- Hegarty Pumping Station (South Tunnel, Segment 2);
- St. Mary Street Pumping Station (South Tunnel, Segment 2);
- Newton Street Pumping Station (South Tunnel, Segment 3); and
- Southern Spine Mains (South Tunnel, Segment 3).

The intermediate connections to Cedarwood Pumping Station in Waltham, Hegarty Pumping Station in Wellesley, and St. Mary Street Pumping Station in Needham were not part of the original FY17 concept but they provide meaningful redundancy that would not otherwise be provided to the local communities and can be most cost effectively constructed as part of the Tunnel Program. The Cedarwood Pumping Station currently relies solely on the WASM 3 pipeline for its supply. An intermediate shaft and connection at Cedarwood Pumping Station includes provisions for a second direct connection from the North Tunnel to feed WASM 3. Both the Hegarty Pumping Station and the St. Mary Street Pumping Station intermediate connections will provide a significant operational benefit for the communities of Wellesley and Needham, respectively, as these connections will ease concern of service disruption due to the age and condition of the Section 80 pipeline, which currently supplies these two community pumping stations.

The intermediate shafts are planned to be constructed primarily using the raise bore method. This method has the advantages of requiring a small construction staging footprint as well as limiting excavated material hauling from the shaft site since most of the shaft excavate material will fall into the tunnel below and be transported to and removed at the launching shaft sites.

One additional valve chamber, the Hultman Aqueduct Isolation Valve, was also not part of the FY17 concept, but it was identified as a recommended feature in the preliminary design. It will provide additional redundancy, resiliency and security, allowing MWRA to isolate an important section of the Hultman Aqueduct that will feed the two tunnels from the Shaft 5/5A area where the MWWST, the Hultman Aqueduct and the City Tunnel all interconnect within short distances.

The preliminary design also provides permanent tunnel dewatering points to allow future draining of the North Tunnel at Tandem Trailer and draining of the South Tunnel at Highland Avenue Northeast.

Overall, the preliminary design identifies the 13 shafts required for a complete tunnel system. Although six of these shafts were not identified in the FY17 concept, they are needed to achieve required redundancy, provide benefits, or mitigate risks as described herein. Once the shaft sites were established, the primary driver for the tunnel horizontal alignment is to have the shortest tunnel length possible between shafts. However, deviations from a simple straight-line alignment between shafts are needed to facilitate construction via appropriate horizontal curves and consideration of geologic conditions, including minimizing exposure to depressions in the top of rock elevation and avoiding crossing of major faults which can result in slower and more expensive tunnel mining and necessitate construction of a steel permanent liner.

The FY17 concept generally assumed that geologic conditions would result in tunnel construction and a tunnel liner system that is consistent with the MWWST project. The geologic data collected during the preliminary design better defined those geologic conditions. The data exhibits some important differences from that of the MWWST and provides a clearer understanding of the numerous faults, such as the Northern Boundary Fault, the Western Boundary Fault and others that cannot be avoided entirely along the tunnel alignments. The additional data collected during preliminary design was used to better estimate the tunnel excavation productivity rates for mining through the variable geologic conditions. The preliminary design tunnel excavation productivity rates are lower than what was anticipated in the FY17 concept, but are reasonable, considering the geologic conditions that are now better understood.

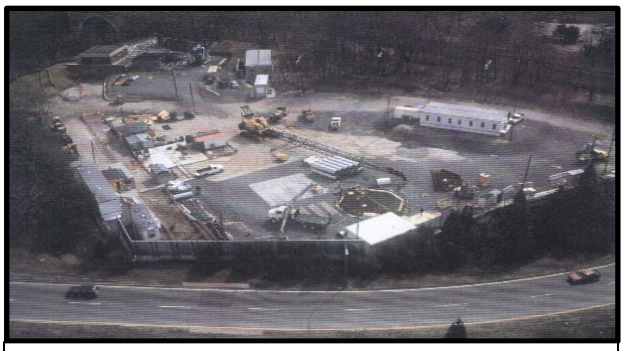
In addition to connecting to the shaft sites, the tunnel alignment avoids, to the extent possible, tunneling long distances within the influence of faults and overly variable geologic conditions. This results in an increase in the overall tunnel length by about one mile from what was anticipated in the FY17 concept, but reduces risks associated with mining through such challenging geology. The preliminary design alignment provides a net benefit to the Tunnel Program when considering the likely costs associated with tunneling through long lengths of faulted ground, and the increased contingency and potential schedule impacts.

Construction Staging Considerations

The staging area requirements for tunnel and shaft construction were factored into shaft site selection and preliminary design site layouts. Primary staging areas for tunnel construction will be at the TBM launching shaft sites. The Tunnel Program requires three TBM launching shafts as described above. Secondary staging areas will be needed at the receiving shafts at the Lower 190 Trapelo Road Property, at the west side of Park Road, and at the American Legion site. These launching and receiving shaft staging areas include space for construction activities for groundwater treatment, excavated material stockpiles, possible onsite concrete batch plants, and contractor workshops, equipment storage areas, field trailers, and construction worker parking areas. Larger staging areas are required at TBM launching shaft sites as compared to receiving shaft sites.

TBMs require a significant power supply. Selection of launching shaft sites considered the existing availability or ability to provide the required power supply to the site.

Informed by the MWWST, each TBM launching shaft site was selected in part to provide direct access to the nearest Interstate Highway System. Since each site has limited space for temporary excavated material storage, the direct highway access allows loading excavated material onto trucks with immediate access to the highway system for reuse or disposal offsite. This will greatly reduce vehicle traffic and avoid haul routes through most adjacent neighborhoods.



MWWST Shaft 5A with Highway Access

During the preliminary design, working closely with Massachusetts Department of Transportation (MassDOT) and other property owners, staff determined that several shaft sites needed alternative locations to those anticipated in the FY17 conceptual plan due to land availability. These alternative sites are equally, if not more favorably, suited for tunnel construction. For example, locating two launching shafts at the Highland Avenue interchange area complies with MassDOT's utility accommodation policy making effective use of the land that would otherwise remain underutilized. It avoids taking of other open space land that has more beneficial uses, and it has fewer community impacts during construction.

Tunnel Segments

The tunnels will be constructed in three segments (Figure 1). The North Tunnel comprises Segment 1 and extends from a connection to the Hultman Aqueduct on the east side of Park Road near a MassDOT maintenance facility building within the I-90/I-95 interchange in Weston. It will be approximately 4.8 miles long through Weston and Waltham. It will end at the Lower 190 Trapelo Road Property in Waltham where a connection to WASM 3 will be made.

The South Tunnel comprises two segments, Segment 2 and Segment 3. Segment 2 extends from a connection to the Hultman Aqueduct on the west side of Park Road in Weston. It will be approximately 3.4 miles long through Weston, Newton, Wellesley, and Needham. It will end at the northwest cloverleaf of the Highland Avenue/I-95 interchange. Approximately 0.1 miles of connector tunnel will extend to the northeast cloverleaf at the Highland Avenue/I95 interchange to connect to Segment 3.

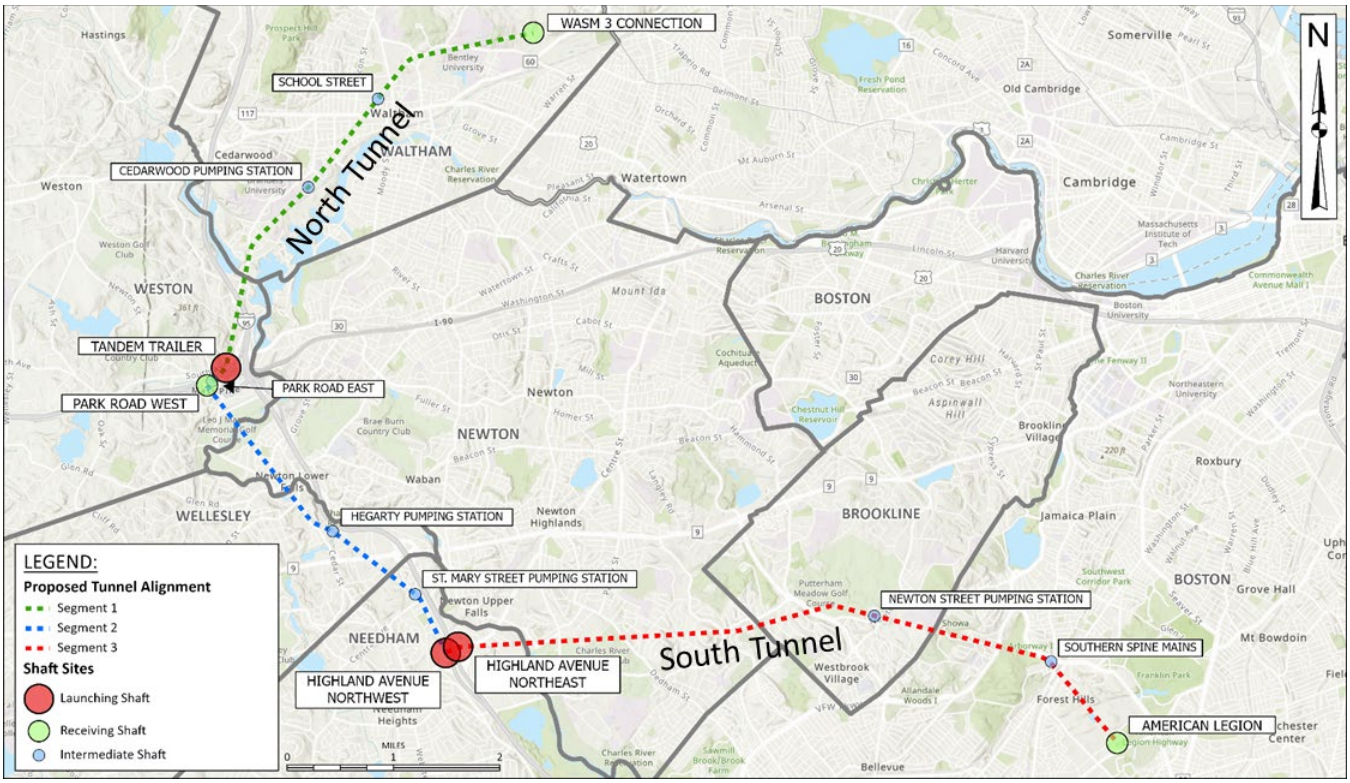


Figure 1 - North and South Tunnels

Segment 3 extends from the northeast cloverleaf of the Highland Avenue/I-95 interchange in Needham. It will be approximately 6.8 miles long through Needham, Newton, Brookline, and Boston to the proposed receiving shaft located on the north side of American Legion Highway (between Walk Hill Street and Morton Street) where connections to surface piping near Shaft 7C will be made.

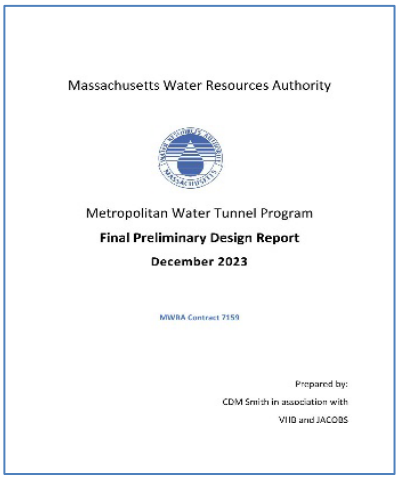
When put into service, the North Tunnel and the South Tunnel may be operated independently from each other and from the Metropolitan Tunnel System and still achieve required system redundancy. Water from the Norumbega Covered Storage Facility to the west can be delivered into the North Tunnel, the South Tunnel, and the Metropolitan Tunnels. Either of these tunnel systems could be taken off-line for maintenance without interrupting service. The two segments of the South Tunnel must both be put into service together in order to provide system redundancy when the Metropolitan Tunnel System is off-line.

Tunnel Design

The tunnel design and construction approach is based on a deep rock pressure tunnel with a cast-in-place concrete lining; otherwise referred to as two-pass tunnel construction. The first pass refers to construction of the tunnel primarily using a TBM for excavation of the tunnel along with installation of temporary initial ground support. The second pass refers to installation of concrete or steel permanent final lining. The horizontal and vertical alignment of the tunnel is set to allow for a plain (unreinforced) concrete lining for most of the tunnel length taking into consideration the rock strength and rock cover along the tunnel alignments. This tunnel design and construction approach is consistent with the MWWST.

Two Pass Tunnel - Cast in Place Concrete Liner

Preliminary Design Report



The PDR documents the basis of design and summarizes field investigations, engineering analyses, preliminary design decisions and preliminary design drawings. It includes information gathered from geotechnical investigations, field surveys, hydraulic analyses, environmental evaluations, tunnel design and construction approaches, site staging for tunnel construction, operation and maintenance, land availability, permit approach, and construction cost estimate and schedules among other initial design considerations.

The PDR presents the preliminary tunnel alignment and profile, design of the valve chambers and surface pipeline connections at the shaft sites, a construction contract packaging and sequence approach, and an updated construction cost estimate and construction schedule based on the recommended contract packaging.

During the final design stage the design will progress to 100% and construction bid documents. Although some aspects of the design will evolve throughout final design (i.e., shaft site layout, valve chamber details, pipe sizes, some construction methods, limited sections of tunnel alignment), shaft site locations and functions (i.e., launching, receiving, intermediate connection), connections, dewatering and isolation points, tunnel segments, and contract packaging are not expected to change during the final design stage.

Environmental Impact Report Status

Staff submitted an ENF to the MEPA Office for public comment in March of 2021. The ENF included an Alternatives Screening Report that documented the comparison and selection of the preferred two tunnel concept to other surface pipe and tunnel alternatives. The Secretary of Energy and Environmental Affairs (EEA) issued a certificate on the ENF that required the submittal of a mandatory DEIR.

Staff submitted a DEIR to the MEPA Office for public comment on October 22, 2022. The DEIR evaluated a preferred alternative and two backup alternatives. The purpose of evaluating three alternatives equally was to help maintain the Tunnel Program schedule should aspects of the preferred alternative become not viable at a later stage of design.

The DEIR included information on the following topics for the three DEIR Alternatives:

- Project Description and Permitting;
- Public Outreach;
- Environmental Justice;
- Alternatives Analysis;
- Land Alteration, Open Space, Wetlands, Rare Species Habitat, Cultural and Historical Resources;
- Water Management Act/Water Supply;
- Climate Change (adaption and resiliency, greenhouse gas emissions);
- Construction Period Impacts; and
- Responses to ENF Comments.

Through detailed analysis performed in parallel with the preliminary design, staff determined that the temporary construction impacts were very similar across the three remaining alternatives. The preferred alternative that will be advance to final design was selected in part because it provides the most flexibility to optimize packaging and configuration and the shortest overall construction schedule. The DEIR also included Mitigation and Draft Section 61 Findings, as required by MEPA.

EEA issued a certificate on the DEIR that required the submittal of a SDEIR before the Tunnel Program could proceed to the FEIR phase. Specifically, the SDEIR was to address the availability of the proposed North Tunnel receiving shaft site at the Fernald Property in Waltham, which was common to all three alternatives included in the DEIR, and to analyze and present any potential alternative receiving shaft locations. In addition, the SDEIR was to respond to comments on the DEIR received as part of the public comment and to supplement environmental justice and greenhouse gas analysis presented in the DEIR.

Staff submitted a SDEIR to the MEPA Office for public comment on July 31, 2023, which presented two alternative shaft sites in Waltham for the end of the North Tunnel. Two alternatives included a parcel on Beaver Street owned by the University of Massachusetts and one alternative included a different area on the Lower 190 Trapelo Road Property (referred to as the Lower Fernald Property in the SDEIR filing). The SDEIR evaluated the two new sites consistent with the methodology and criteria used in the DEIR.

EEA issued a certificate on the SDEIR that allowed the Tunnel Program to proceed to the FEIR phase and required that the FEIR address all comments received on the SDEIR. Staff submitted the FEIR to MEPA on February 15, 2024, notified nearly 200 stakeholders of its availability, and delivered hard copies to ten public libraries. Public comments are due to MEPA by March 25, 2024 and a certificate is expected in early April. The FEIR included Alternative 4B as the preferred alternative. This alternative is very similar to the preferred alternatives in the DEIR and SDEIR, with the most significant change being the terminus of the North Tunnel. The FEIR preferred

alternative, and the one that will be carried into final design includes a receiving shaft at the Lower 190 Trapelo Road Property in Waltham.

Community and Stakeholder Outreach

Staff have implemented a communication plan to ensure that communities and stakeholders are informed as to the importance of this effort and what can be expected in the years ahead. Staff have been coordinating with a working group that includes representatives of each of the ten communities in the Tunnel Program study area, the MWRA Advisory Board, the Water Supply Citizens Advisory Committee and the Metropolitan Area Planning Council. This working group was particularly active in the planning phases of the Tunnel Program and the environmental review process as staff were evaluating shaft sites and tunnel alignments. Ongoing coordination with the working group members has been primarily to provide Tunnel Program updates with a focus on field work and other Tunnel Program related activities planned in the communities. Staff will continue to collaborate with the working group members as the Tunnel Program moves through final design.

Further, staff are holding additional meetings with community representatives from the seven municipalities where the tunnel will be constructed. Staff have been meeting with individual property owners in support of the geotechnical exploration program. Coordination meetings with public safety personnel from several communities has begun and will continue through design and construction to ensure the safety of the public as well as the workers who will construct the tunnels. To date, staff have held over 140 meetings with various community representatives, state agencies, stakeholders, and property owners.

Staff will hold broader public information sessions starting in 2024 with a variety of topics to keep the sessions to a reasonable timeframe. Topics may include a Tunnel Program overview, an overview of tunneling methods (i.e. “Tunneling 101”) and associated construction period impacts such as traffic, noise and vibration, and other topics of interest to stakeholders. As design and/or construction progresses, these public sessions may be split to focus on the North Tunnel and the South Tunnel, given the geographic area and the schedules associated with each tunnel. Additionally, staff will continue to hold public information sessions and/or workshops as requested by communities or other stakeholders. Staff are also looking at opportunities to engage local schools and other community-based organizations as the Tunnel Program moves forward.

A key goal of the public outreach plan is ensuring participation of members of environmental justice populations throughout all phases of the Tunnel Program. This includes improving the accessibility of information within the communities through appropriate public notices ahead of public meetings, dissemination of fact sheets, hosting relevant information on the Tunnel Program website, providing translation and interpretation services in the prevalent languages within the communities, and utilizing non-traditional media sources. Staff will employ additional methods of engagement as the Tunnel Program progresses with feedback from stakeholders and in alignment with MWRA’s overall environmental justice strategy. Moreover, staff will work with community representatives and community-based organizations to determine the most effective means of communication and notification to environmental justice populations.

BUDGET/FISCAL IMPACTS:

The proposed FY25 CIP includes $2.1 billion for the Metropolitan Water Tunnel Program. This budget will be refined periodically during Final Design.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Water Tunnel Program
Program Look Ahead

COMMITTEE: Water Policy and Oversight

X INFORMATION
VOTE

Paul V. Savard, P.E., Director, Design and Construction
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

For information only. This staff summary provides a summary of ongoing and future activities for the Metropolitan Water Tunnel Program (Tunnel Program).

DISCUSSION:

Program Schedule

The Tunnel Program is a multi-decade effort with planning, permitting, design, and construction each taking significant time to complete. Early Tunnel Program planning began in 2015 with preliminary design and environmental review. Geotechnical investigations began in 2020. Preliminary design is now complete, environmental review is nearing completion, and final design is anticipated to begin in fall 2024. Tunnel system construction is targeted to begin in 2028 and is estimated to be completed with the new tunnel systems in service by 2040.

Completed, Ongoing and Future Contracts

To date, three professional services contracts have been approved by the Board, executed in support of the Tunnel Program and are managed by the Metropolitan Water Tunnel Department. The professional services contracts include the following:

- Program Support Services, which provides general consulting, submittal review, risk management support, constructability reviews, cost estimating/validation, schedule support, staff augmentation, and Expert Review Panel engagement support. This contract was for an initial term of five years for $10,247,877. The initial term will end in April 2024 and the first of two optional two-year terms at $7,000,000 was approved by the Board in December 2023;

- Preliminary Design, which consists of early geotechnical investigations, preparation of Environmental Impact Reports and preparation of a Preliminary Design Report, drawings, schedule and cost estimate. This contract was for $15,692,527 and ended in January 2024;

- Geotechnical Support Services, which focuses on the collection of extensive geotechnical/geological data to support final design, bidding and construction of the Tunnel Program. This contract is for $12,789,889 and is scheduled to end in January 2026.

One real estate lease was approved by the Board in November 2022 and executed for approximately 19,000 square feet of warehouse/flex space in Needham, Massachusetts for the processing and storage of geotechnical samples (primarily rock core) that are needed for the Tunnel Program. The warehouse/flex space includes offices for Tunnel Program use. More details on the overall Tunnel Real Estate Program are included later in this staff summary.

Additional professional services contracts are planned in support of the Tunnel Program. These include Final Design Engineering Services and Construction Management. The Final Design Engineering Services contract procurement is ongoing with an anticipated recommendation for award at the September 2024 Board meeting. This contract is the subject of a separate staff summary.

The Construction Management (CM) contract(s) procurement is anticipated to begin in 2025. However, provided the overall Tunnel Program schedule is maintained, it is anticipated that one CM contract will be awarded for both tunnel construction packages, similar to the approach used for the MetroWest Water Supply Tunnel (MWWST).

Two tunnel construction contracts are planned; one for the North Tunnel and one for the South Tunnel. Bidding of the South Tunnel construction contract is targeted for 2027 with tunnel construction starting in 2028. Bidding and start of construction of the North Tunnel is targeted for 2028 and 2029 respectively. Tunnel construction, including surface work and commissioning, is estimated to take 8 to 12 years to complete. It is expected that two or three smaller construction contracts will be procured and completed prior to the start of tunnel construction to remove early enabling works from the tunnel contracts' critical paths. These enabling contracts are related to demolition of existing buildings, site reconfiguration to allow continuity of current use, and dewatering drain line work at or near future launching shaft sites.

Project Labor Agreement

MWRA has begun the process of evaluating the use of a Project Labor Agreement for the Tunnel Program and intends to secure counsel to assist in these efforts. Staff will return to the Board for further updates on this item.

Tunnel Department

In 2018, the Authority established the Metropolitan Tunnel Redundancy Department (Tunnel Department) to develop and execute the Tunnel Program and lead its day-to-day management, decision-making and selection of implementation strategies as well as be responsible for the management of all professional services and construction contracts for the Tunnel Program. In addition, the Tunnel Department oversees aspects of the Tunnel Program that MWRA will self-perform (land acquisition, outreach, and stakeholder agreements) and program level controls (schedule, budget, and change management).

The Tunnel Department is leading the Tunnel Program in all respects noted above and is currently focused on executing critical path activities, to control both Tunnel Program schedule and budget,

as discussed below. These include systematic monitoring of budget expenditures and schedule milestones of the various consultants. The Tunnel Department has integrated the MWRA self-performed work into the Tunnel Program schedule and is managing this work to meet schedule milestones. Reorganization of the Tunnel Department to align staffing for the next phase of the Tunnel Program was the subject of a staff summary and presentation at the December 2023 meeting of the Board of Directors.

Critical Path

As the Tunnel Program transitions from preliminary to final design, the focus of the work will shift to completing a detailed final design and permitting for each construction contract, acquiring land, expanding outreach efforts, achieving stakeholder agreements and preparing for tunnel construction. The planned overall schedule for the Tunnel Program is similar to the overall schedule achieved for the MetroWest Water Supply Tunnel (MWWST). This schedule is considered achievable, provided several critical path activities, such as geotechnical investigations, land acquisition, stakeholder agreements, and Tunnel Boring Machine (TBM) power supply are not significantly delayed. Extending the Program schedule beyond that currently planned will add inflationary and other costs to the overall Tunnel Program. Depending on the actual rate of inflation, the number of unawarded contracts, and impact on awarded contracts at the time, a six-month schedule slippage could add between $15 million to over $100 million to the total Tunnel Program cost. Accordingly, staff continue to focus on critical path items without sacrificing quality of work, stakeholder engagement, or adding unnecessary costs to the Tunnel Program.

Current critical path activities, including those that will involve Board approvals are as follows:

Geotechnical Investigations: Completion of deep rock test borings throughout the tunnel alignments has been on the critical path for some time. The Geotechnical Support Services contract was implemented to assist in collecting the geotechnical and geological data necessary for design, bidding and construction of the tunnel contracts. Upwards of 100 test borings were planned with over 40 borings drilled to date, however, progress in completing this work has been slower than originally anticipated. The boring locations have proved to be difficult to site, due in part to the dense urban nature of the Tunnel Program area, property access limitations and restrictions, and the complexity of the local geology. In addition, there are resource constraints (locally and nationally) in the industry to execute this work (e.g., skilled drillers, testing labs, geophysical survey firms, experienced field staff, qualified geologists, etc.). A similar size investigation program has not been conducted in the Boston area since the Central Artery/Tunnel, the Boston Harbor Project and MWWST, over 20 years ago. The quality and completeness of this data will serve as a key foundational basis for final designs, future engineers' cost estimates, contractors' bids, and claims mitigation. Therefore, successfully completing this work without affecting the Tunnel Program schedule is a high priority. Staff are leveraging the current Geotechnical Support Services contract to prioritize geotechnical data collection in areas that could have a material impact on the tunnel alignment, construction methods, construction duration, or costs in an effort to mitigate potential schedule impacts.

Land Acquisition: Much of the land on which the Tunnel Program will be constructed is not currently owned by MWRA. Land associated with three launching shaft sites, three receiving shaft sites, one large connection shaft site, and three of the six connection shaft sites will need to be acquired. All three launching shaft sites, one receiving shaft site, and the large connection shaft site are under the care and control of Massachusetts Department of Transporatation (MassDOT)

with the right-of-way for the Hultman Aqueduct under the care and control of MWRA. One receiving shaft site and one connection shaft site are owned by the City of Waltham. The third receiving shaft site and one connection shaft site are under the care and control of DCR and will require Article 97 legislation and must meet the obligations of the Public Lands Preservation Act (PLPA), including the identification and dedication of replacement land. One connection shaft site is owned by the Town of Wellesley and may also require Article 97 legislation.

MWRA currently owns the land associated with three connection shaft sites: School Street (Waltham), St. Mary Street Pumping Station (Needham), and Newton Street Pumping Station (Brookline). In July 2021, the Board approved the purchase of a parcel of land on School Street in Waltham for the purposes of constructing a connection shaft for the Tunnel Program. In September 2021, the School Street parcel was purchased for $1,850,000. The St. Mary Street Pumping Station connection shaft site is located within an existing easement for the Sudbury Aqueduct over which MWRA has care and control. The Newton Street Pumping Station connection shaft site is located within the limits of the existing MWRA station and will require no new land acquisition.

MWRA plans to acquire most new land and shaft sites in fee with the exception of MassDOT-controlled sites which will be acquired by permanent easement. In addition to land currently owned by MWRA, approximately nine acres of land will be permanently acquired for shaft sites, of which approximately 3.8 acres require Article 97 legislation. Temporary easements for approximately 38 acres of construction staging areas will also be needed in addition to the permanent land acquired at various shaft sites.

Easements in roadways or on public land for new water and drain pipelines will be required at eight sites involving approximately 6,000 feet of new pipeline easement. Permanent access easements will be needed at approximately nine sites to allow for long term operations and maintenance of the future valve vaults and top of shaft structures where the planned permanent site limits do not extend to a public way.

Subterranean easements will be required for each property below which the new tunnels will be constructed. The subterranean easements will run the entire length of the new tunnels and dimensionally extend 50 feet wide by 50 feet high centered on the tunnel axis. The subterranean easements will be 200 to 450 feet below ground and will not allow for surface access, and thus will not affect property usage above the tunnel. Subterranean easements that extend below protected and recreational open space will require Article 97 Legislation to acquire, however, since these easements will not affect property usage above, replacement land obligations of the PLPA are not anticipated. The number of subterranean easements to be acquired will depend on the final tunnel alignments; however, it is estimated that approximately 160 subterranean easements will be required for the North Tunnel and approximately 440 subterranean easements for the South Tunnel.

Figure 1 shows shaft site locations with current ownership as well as land (both shaft sites and subterranean easements) that may require Article 97 legislation to acquire.

For shaft sites that will need to be purchased, costs are expected to be based on negotiations and an appraised value consistent with MWRA's Real Property Acquisition Policy. Costs for subterranean easements will also be based on appraised values but because the easements are 200 to 450 feet below ground and do not impact surface use or development, the subterranean easements are typically acquired at nominal cost.

All property acquisitions will be coordinated and in compliance with MWRA's Real Property Acquisition Policy and approval requirements. Of significance, many of the current landowners are state agencies and municipalities, and they too have their own multi-step requirements and approval processes for property dispositions. Recommended property acquisitions will be presented in detail to the Board for authorization.
Applicable acquisitions will need to be completed prior to bidding of each tunnel construction package, preferable by the 90% design stage. The design details necessary to prepare acquisition documents will likely not be finalized until after the 60% design stage. The expected time period between 60% and 90% design is around 12 months, leaving a significant number of acquisitions to be executed in a relatively short amount of time. Therefore, land acquisition will be on the critical path in the future. Staff have already begun coordinating the shaft site acquisitions, pipeline easements, and access easements with landowners in order to mitigate a potential schedule impact.

Community/Stakeholder Agreements: Memoranda of Understanding (MOUs) will need to be executed with each community in which the tunnel alignment crosses. These memoranda typically address a wide range of topics including land acquisition, permitting and local regulations, public safety, public communications, water supply contingency, work hours, hauling hours and routes, traffic management, dust and noise control, blasting and vibration control, connections to community water systems, mitigations, and final site conditions (fencing, lighting, landscaping, etc.). These topics will need to be resolved with each of the seven communities in which the tunnels and shafts will be located. Although discussions with communities have already begun, similar to land acquisition, sufficient design details at 60% design stage are needed to include in the MOUs.

MWRA is coordinating with local fire and emergency management entities from multiple communities to support the Tunnel Program with emergency response to the Tunnel Program sites. As has been done on past MWRA tunnel projects and consistent with industry practice, advance coordination during the design phase is necessary to ensure a proper framework is established for local fire and emergency response during construction. The framework will include local fire and EMS personnel receiving specialized training, procuring necessary equipment and establishing a coordinated response by the various communities. Staff have been working with emergency personnel from the seven communities who have indicated they will have to rely on mutual aid agreements between communities as no one community in the Tunnel Program area is large enough to be the sole emergency responder during construction. Community emergency personnel have indicated that significant advance coordination will be required to obtain the necessary equipment and train sufficient numbers of emergency personnel to ensure that enough properly trained staff can be available to respond to emergencies at multiple active shaft sites, if needed, over the course of construction, without affecting their emergency readiness. Resource commitments by MWRA will be required and included in each community MOU.

All recommended MOUs will be presented to the Board for authorization. Each MOU will need to be executed prior to construction, ideally by the 90% design stage, and will be included in the contract documents for the respective construction bid packages. Thus, MOUs will be on the critical path in the future.

Tunnel Boring Machine Power Supply: High voltage power for the Tunnel Boring Machines (TBM) is not readily available at the three launch sites. It is estimated that approximately 9,000kVA is required at each site. Power supply is often a long lead work activity for tunnel projects. Staff have been working with Eversource since 2021 to develop a plan to have high

voltage power brought to each launch site prior to the start of construction. This work will involve installation of approximately 1.7 miles of new and reused duct bank and cable through Needham for the two South Tunnel launch shaft sites at Highland Avenue in Needham. Approximately 3.2 miles of new duct bank and cable through Waltham, Newton, and Weston will be needed for the North Tunnel launch shaft site at the Tandem Trailer site in Weston. The work, including a power supply assessment and routing study, the design of the new duct banks and construction, would be undertaken by Eversource. It is anticipated that MWRA and Eversource will enter into an agreement, which will address the required schedule and compensation for this work. When the Tunnel Program is complete, the added power supply will remain and provide further resilience to the power grid. The full details of an agreement with Eversource to supply power for the Tunnel Program will be presented to the Board for authorization.

Figure 2 shows a conceptual Tunnel Program Critical Path Schedule with the items noted above.

Challenges and Opportunities

The Tunnel Program is considered a "megaproject" in that it is a large scale, complex project that will take many years to design, permit and build and it involves multiple private and public stakeholders, with a total cost of over one billion dollars. MWRA has a history of successfully completing large complicated projects and understands that with any big endeavor, challenges will arise along with opportunities to address those challenges. A few items that staff have identified as challenges and opportunities are as follows.

Resources: Completion of the Tunnel Program within the currently planned schedule will require the collaboration and coordination of a number of parties including, but not limited to, the MWRA Board of Directors, the MWRA Advisory Board, and multiple MWRA Departments, numerous federal and state agencies, seven host communities, key stakeholders, design and construction consultants, construction contractors and subcontractors, labor groups, and a small army of talented construction workers. It is estimated that during the construction period, approximately 200 people will be directly employed at one time in some form by the Tunnel Program. The specialty nature of this work will require people both locally available but will also draw from national talent. This influx of quality jobs provides an opportunity for MWRA to continue to support certified minority-owned and women-owned businesses.

Given the number of parties involved, with many experiencing resource challenges currently, resource constraints will inevitably occur over the course of the Tunnel Program. Some level of resource constraint is anticipated on any large project but the current labor and economic climate makes the potential occurrence and possible consequence greater. In an effort toward early identification that should allow time to mitigate some of these challenges, staff have developed an initial program schedule, extending into construction and with sufficient granular detail, to identify required sequential activities and overlapping resource needs. For example, community representatives and MWRA staff (Tunnel Department, Law Division and Public Affairs) are involved in both finalizing land acquisitions and executing community agreements, which preferably occur between the completion of 60% and 90% design. Staff have already begun coordinating acquisitions and MOU development in order to mitigate a potential schedule impact; however, it is expected that this resource constraint will require continued monitoring and mitigation.

In addition, tunneling is a highly specialized, national and international market with significant tunnel work ongoing worldwide and closer to home, as well as in the North American pipeline. As a result, this may lead to impacts related to the availability of contractors, labor workforce, and longer lead times for materials and equipment. MWRA cannot control national and international market conditions. However, staff continue to monitor the conditions that influence the tunneling industry for the purposes of identifying potential increases and/or decreases in the cost of commodities and resources to be able to most accurately reflect current climates that may influence Tunnel Program costs.

Geologic Conditions: A tunnel project is unique in that most, if not all, of the project is constructed below ground. The largest costs and often the greatest risks to cost increases, schedule delays, and safety are related to the geologic conditions. Although MWRA has a long history of tunneling in the Boston area, each project is unique due to the geologic conditions in which it is constructed. These conditions are challenging in part due to the wide range of rock types that will be mined (hard granites and volcanic rocks, conglomerates to soft shales; abrasive rocks that can be faulted, fractured, and water bearing). In addition, at least four known fault zones will need to be crossed along the tunnel alignments. Fortunately, many of these rock conditions are relatively well understood and have been successfully mined in past projects. However, the geotechnical investigations conducted to date for the Tunnel Program have identified some previously unknown geologic conditions.

Along the North Tunnel alignment in Waltham, where the Northern Boundary Fault was anticipated but no previous test borings had been drilled to sufficient depth to confirm its presence or geometry, multiple fault zones, deep soil overburden, and some low-quality sedimentary rock have been identified. Although these ground conditions do not impact the overall constructability of a rock tunnel with a modern TBM, areas of poor quality rock can add to construction durations and cost impacts, as mining production can be slower and require more dewatering, stabilization grouting and/or additional ground support. Accordingly, staff are focused on conducting geotechnical explorations at target locations in Waltham to better understand these conditions, where they occur, as well as to look at means to avoid, minimize or mitigate the impact (e.g., shift the alignment between shaft sites to avoid them, shorten tunnel lengths in challenging rock formations to minimize encountering them, and specify stabilization methods rather than allow a contractor to select certain construction methods to mitigate them).

Along portions of the South Tunnel alignment, naturally occurring asbestos has been found within thin veins in some rock types. Naturally occurring asbestos refers to a family of very thin and fibrous minerals that are formed as a result of natural geologic processes and is present in many rock types in over 30 states. However, it is not prevalent in Massachusetts. It is expected that, where present in the Tunnel Program area, only trace levels occur but the exact limits and amount along the South Tunnel alignment are unclear at this time. Naturally occurring asbestos does not dissolve in water or evaporate, and, if left undisturbed, is not a health risk. However, it can become a health risk if it is released from its bound, crystalline form in the rock during construction, potentially becoming airborne and inhaled. The presence of naturally occurring asbestos may require additional engineering controls during tunnel construction (i.e., ventilation, dust control, etc.) as well as added management of excavated rock handling and disposal. Massachusetts has no regulations specific to handling or disposal of rock with naturally occurring asbestos. Staff have been working with MassDEP to develop safe work protocols for the current geotechnical exploration program. In addition, staff are currently focused on conducting explorations at target locations to better understand the limits, occurrences and concentrations of naturally occurring

asbestos in suspect rock types. The presence of naturally occurring asbestos in the rock in which the tunnel will be constructed will not impact the long term safety or performance of the tunnel system.

BUDGET/FISCAL IMPACTS:

The proposed FY25 CIP includes $2.1 billion for the Tunnel Program. This budget will be refined during final design.

ATTACHMENT:

Figure 1 – Shaft Site Locations, Current Ownership Land Requiring Article 97 Legislation
Figure 2 – Conceptual Tunnel Program Critical Path Schedule

Figure 1 – Shaft Site Locations, Current Ownership, and Land Requiring Article 97 Legislation

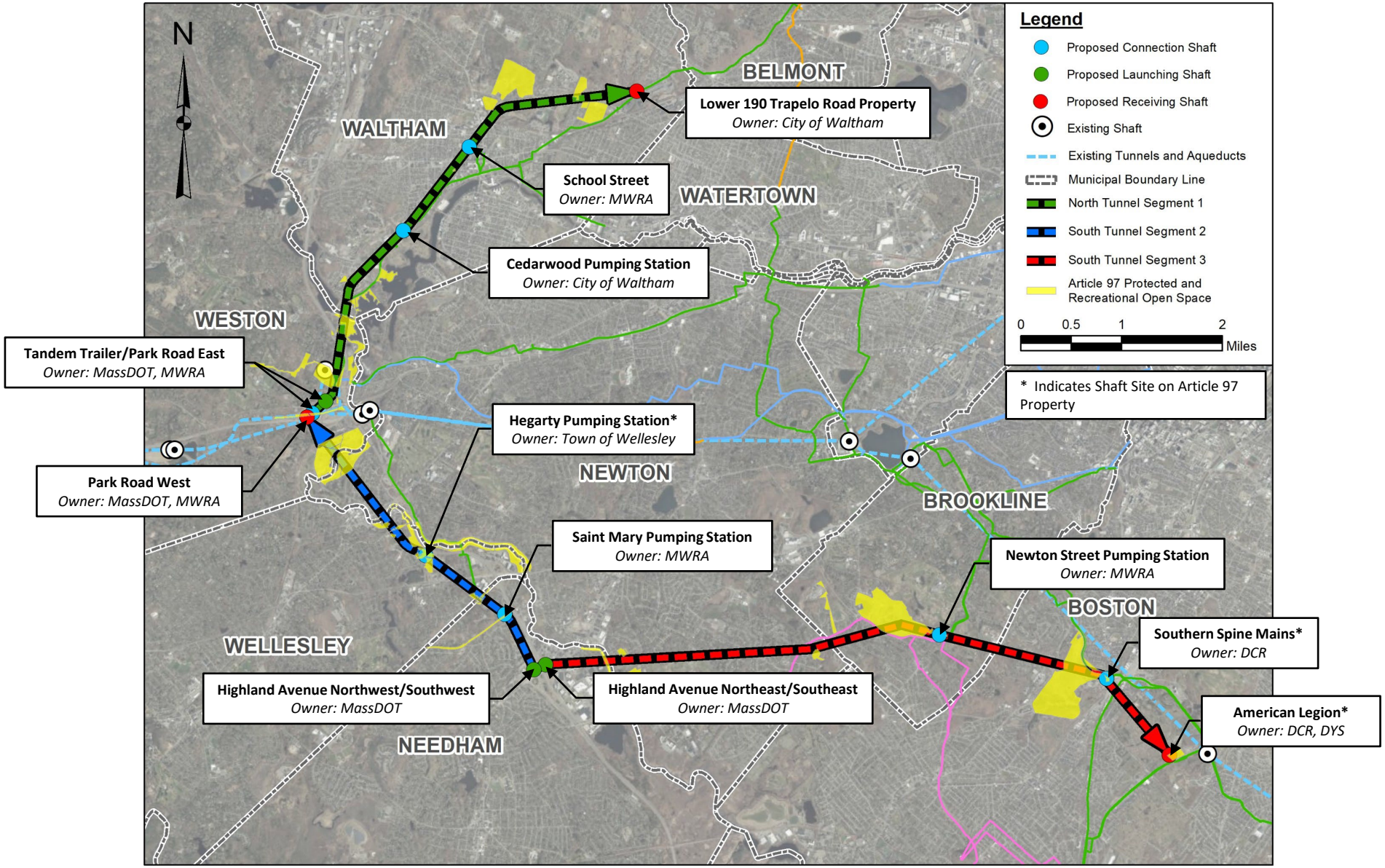
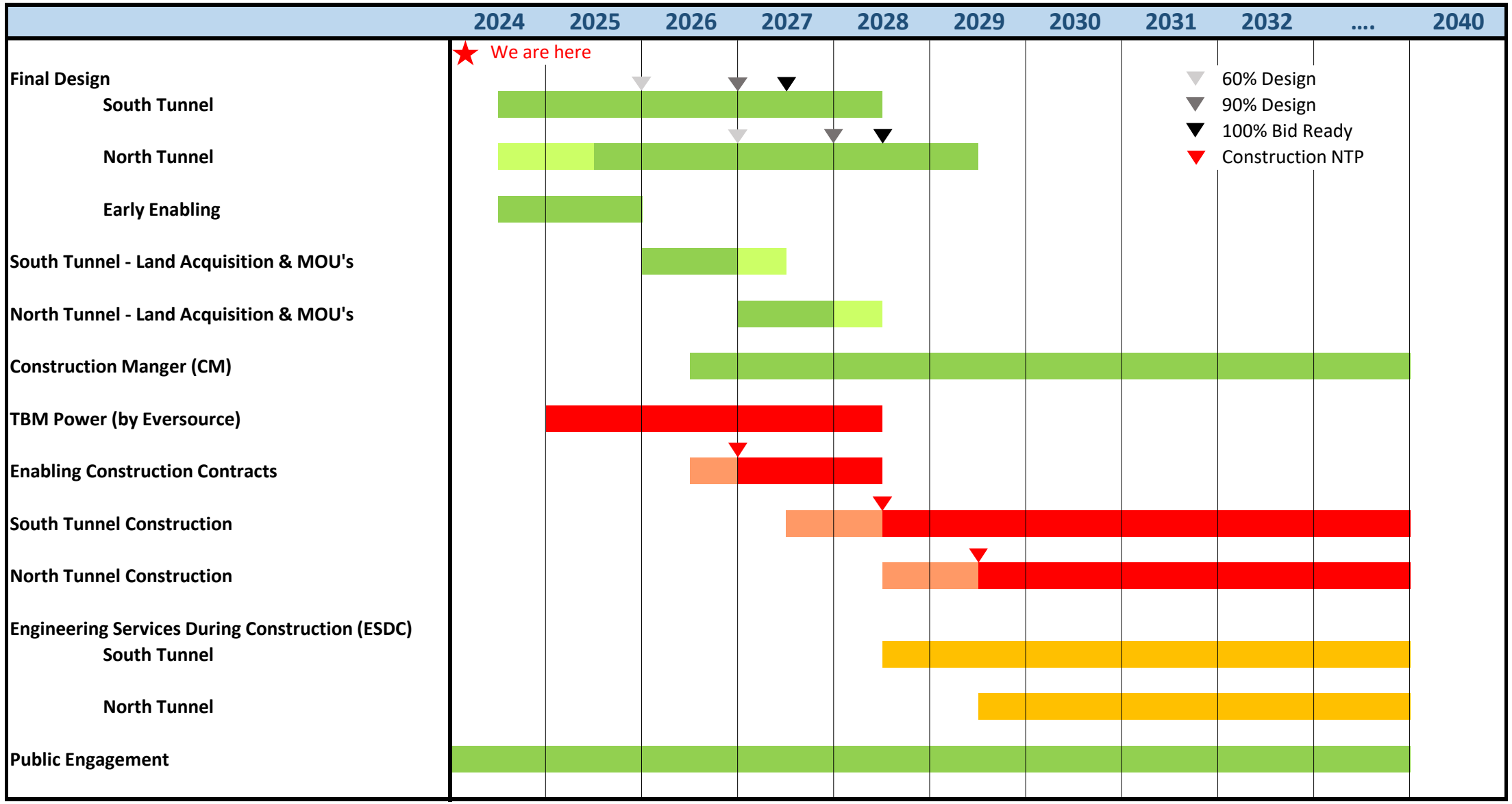


Figure 2 - Conceptual Tunnel Program Critical Path Schedule



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Water Tunnel Program
FY25 CIP Updated Program Cost Estimate and Cost Controls

COMMITTEE: Water Policy and Oversight

__X__ INFORMATION
_____ VOTE

Thomas J. Durkin, Director, Finance
Paul V. Savard, P.E., Director, Design and Construction
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

For information only. This staff summary provides an update on the cost estimates for the Metropolitan Water Tunnel Program (Tunnel Program) as reflected in the proposed FY25 Capital Improvement Plan and summarizes cost control measures for the Tunnel Program.

DISCUSSION:

The Tunnel Program was originally added to the Capital Improvement Plan (CIP) in 2017 as item "625 Long Term Redundancy" with an estimated program cost of approximately $1.47 billion (value date of December 2016). This estimate was a planning level estimate and included a 30 percent contingency and a four percent contractor escalation.

Modifications to this original CIP item occurred in FY18 CIP with some sub-phases moved out to other CIP items and annual inflation added to future contracts. The FY18 CIP for 625 Metro Tunnel Redundancy was $1.36 billion. Between the FY18 and FY24 CIPs, modifications to 625 Metro Tunnel Redundancy have been limited to the addition of annual inflation, award of three professional services contracts, and purchase of one parcel of land. The FY24 CIP was $1.8 billion. The difference between the FY18 and FY24 CIPs (approximately $438 million) is due to annual inflation added each year to bring the CIP value consistent with the mid-point of each fiscal year. Base costs to plan, design and construct the Tunnel Program have not been updated since 2016.

Proposed FY 25 CIP

With the completion of preliminary design, which included the development of the first bottom-up cost estimate for the Tunnel Program, CIP Project 625 can be updated to accurately reflect the preliminary design documents, likely construction methods, ground conditions as currently understood, planned construction packaging, schedule, and current market conditions (among other factors).

The proposed FY25 CIP for 625 Metro Tunnel Redundancy includes an estimated program cost of approximately $2.1 billion (value date of December 2024). This estimate includes an increase for annual inflation to unawarded construction contracts ($130 million) and an increase to the base

construction cost ($200 million). Design, construction management, land acquisition, legal, and administrative costs were increased for annual inflation only ($17 million). The proposed FY25 CIP 625 Metro Tunnel Redundancy also includes modifications to several sub-phases to reflect the Tunnel Program contracts as they are currently envisioned to be executed (i.e., two tunnel construction pacakges) as well as updates to the expenditure forecast to better reflect the projected cash flow. These changes are important, as projected spending for the Tunnel Program will become a large part of near term spending as well as upcoming five-year Cap Periods.

The following table summarizes the CIP for 625 Metro Tunnel Redundancy from FY17 to FY25 ($ in millions).

	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Other Projects	$191.4	$4.8[1]	$3.5	$3.5	$3.5	$3.5	$3.5	$3.5	$3.5
Design/CM	$204.5	$216.8	$210.4	$240.3	$257.5	$256.4	$274.5	$310.4	$324.8
Construction	$919.4	$963.1	$997.6	$1,024.5	$1,046.7	$1,041.6	$1,083	$1,306.7	$1,636.8[2]
Adm/Legal/PR	$153.4	$160.7	$163.7	$140.3	$140.5	$140.1	$135.9	$157.3	$159.3
Future Projects	$5.9	$12.3	$12.8	$13.1	$14.6	$14.6	$15.1	$17.5	$18.0
Total FY CIP	**$1,474**	**$1,358**	**$1,388**	**$1,422**	**$1,507**	**$1,500**	**$1,558**	**$1,795**	**$2,142**
Annual Inflation Added[3]	N/A	$69.6	$30.2	$33.8	$85.2	($6.7)	$57.5	$237.6	$147.1
Cumulative Inflation Added Since 2017	N/A	$69.6	$99.8	$133.6	$218.8	$212.1	$269.6	$507.2	$654.3

1. FY18 Other Projects item reflects ~$186M in costs moved out of 625 Metro Tunnel Redundancy and into other CIP items.
2. FY25 construction item includes $200M cost increase and $130M in annual inflation over FY24.
3. Annual Inflation is included in the Total FY CIP amount for each FY.

The increase in construction cost reflects the first change to the Tunnel Program's base construction cost estimate since FY17. The FY25 proposed construction cost is based on two detailed cost estimates: one prepared by the Preliminary Design Engineer; and a second independent cost estimate prepared by the Program Support Services consultant. Both estimates were detailed "bottom-up" cost estimates developed in early 2023 (January 2023 value date) reflecting current market conditions and the recently completed preliminary design. Each involved detailed cost and schedule analysis, at an in-depth level, that consider quantity take-offs for materials, labor and equipment for anticipated construction means and methods, anticipated construction sequencing, and construction contract packaging (among other factors). A 25 percent design contingency is recommended, and included in the construction estimate, to reflect the current level of design definition. The 25 percent design contingency is consistent with the standard contingency factor for preliminary design provided in MWRA's Guidelines for Life Cycle Cost Estimating.

The increase in base construction cost is primarily attributable to a few factors as further detailed below.

- There are Program configuration differences between the FY17 conceptual design and the FY24 preliminary design.
    - Three additional intermediate shafts were added to provide improved redundancy to the Cedarwood Pumping Station in Waltham, Hegarty Pumping Station in Wellesley, and the St. Mary Street Pumping Station in Needham

- Two new launch shafts at Highland Avenue in Needham were added to facilitate construction of the 10 mile long South Tunnel

- One large connection shaft was added at the Park Road East site in Weston which allows for a connection to the Hultman Aqueduct as the Tandem Trailer shaft site, which is of sufficient size for a launching shaft site, does not allow for a direct connection to the Hultman Aqueduct on that site

- An additional one mile of tunnel was added to connect to the additional shafts and to reduce risk of constructing along better defined boundary faults and geologic conditions

- There were adjustments to tunnel mining production rates (slower) due to better understanding of geologic conditions.

- The preliminary design cost estimates reflect a volatility in the market that was not present during 2017. The current-day quotes and pricing for material, equipment and labor received from vendors and specialty contractors reflect a particularly volatile market with global influence on commodities including steel, cement and fuel costs. While difficult to quantify, such volatility likely contributed to the increase in base construction cost estimates. This volatility will be monitored as design advances and cost estimates are updated.

Although the 2017 planning level cost estimate included a 30 percent contingency in accordance with the MWRA's Guidelines for Life Cycle Cost Estimating, which was intended to account for advancement of the design (number of connections, shaft site availability, ground conditions, etc.), this contingency was not sufficient to accommodate compounding of the influences described above plus recent market volatility.

While the 2023 construction cost estimates reflect the factors discussed above, the cost estimates do not consider factors that cannot be accurately forecasted such as market conditions more severe or unpredictable than recent experience, new or changes to regulations, and stakeholder mitigations that could have a material influence on construction methods or schedule.

The cost estimates do not include MWRA's allocation for construction contingency (7% for non-tunnel projects and 15% for tunnel projects) which is included in the FY CIP, but outside item 625 Metro Tunnel Redundancy. This construction contingency is intended to cover potential change orders.

Future Cost Updates

Updated construction cost estimates will be performed throughout final design. Cost estimates will be updated at the 60%, 90%, and 100% design stage for each construction package. These future cost estimates will also be bottom-up estimates, with increased level of detail, and will account for design advancement, additional understanding of geologic conditions, refined material quantities, updated construction means and methods, risk allocation, some stakeholder mitigations, annual inflation, and market conditions. Future cost estimates will include a design contingency that is reduced in consideration of the stage of design advancement. The next

bottom-up cost estimate will be available at the completion of 60% design for the first tunnel construction package, which is projected to be approximately 18 months after the final design notice to proceed. This cost estimate will be reflected in the subsequent CIP update.

Cost Controls

Staff are implementing a number of cost control measures, including managing to a Program schedule to reduce the influence of inflation on the Program and robust project controls processes to manage expenditures. Monthly monitoring of the Program schedule and detailed dashboards to monitor consultant costs are two key project control measures that help Staff manage to the budgets established in the CIP.

Cost control measures are being incorporated in the design of the Program as well. Measures to reduce risks and increase efficiency in construction are considered throughout the design development. As part of the design development, staff are implementing a risk management process to identify and mitigate risk, qualitatively and quantitatively. As a result, staff and Program consultants are actively incorporating mitigations into the design of the Program. These include:

- Suitably locating and sizing launching shaft sites that reduce impacts on the environment and third parties, which could result in costly mitigation, such as locating them adjacent to highways for ease of material/equipment transport and near water bodies for simplified groundwater treatment and discharge;

- Shifting tunnel alignments to reduce risk presented by key geologic features, such as the Northern Border Fault;

- Developing a contract packaging approach that reduces construction contract interface risks, and controlling contract sizes to ensure a maximum number of qualified bidders;

- Planning for early enabling works packages in order to prepare shaft sites for the tunnel contractors and reduce the risk of delaying the start of tunnel construction;

- Selecting consultants with sufficient expertise and resources to complete quality work on time and maintain schedule; and

- Implementing construction contract practices that will promote good competition by qualified bidders and reduce the amount of contingency included in the bids. These practices include risk allocation tools such as Geotechnical Baseline Reports, commodity escalation clauses (per Massachusetts Law), and potentially prequalifying tunnel contractors.

Program Financial Considerations

The estimated cost of the Tunnel Program has evolved as information and time have progressed. During the early presentations to the Board, the Advisory Board, and stakeholder groups, staff used an estimate of $1.341 billion, representing the average of two possible alternatives: Alternative 2A - two tunnels, one to the north and one to the south, totaling 14 miles with an

estimated cost of $1.183 billion; and Alternative 3D – also, two tunnels, though further north to Shaft 9A in Malden and south to Shaft 7C, totaling 18.2 miles with an estimated cost of $1.499 billion (value date of October 2015).

The Tunnel Program was first included as Project 625 Metro Tunnel Redundancy in the Proposed FY17 CIP. Project 625 as proposed was revised from earlier alternatives to include additional sub-phase work on the WASMs, the Wachusett Aqueduct Pumping Station and other improvements. In the FY17 CIP, Project 625 included an estimated project cost of $1.429 billion plus $41 million related to inflation. For the FY18 CIP, the additional sub-phases were moved from Project 625 to a different project, reducing the cost to $1.259 billion plus $99 million for inflation. Annually, the Project cost estimate is revised to reflect updated amounts due to contract awards, design progress, revised estimates and inflation.

Staff continue to assume the Tunnel Program will be financed with long-term tax exempt bonds and funding from the Massachusetts Clean Water Trust[1] through State Revolving Funds. The debt service for these bonds is modeled based on the current CIP estimated cost, conservative estimated interest rates and a thirty-year level amortization. The water utility assessment projections included with the Proposed FY25 Current Expense Budget (CEB) include this additional debt service.

As Tunnel Program spending increases with the commencement of construction, MWRA will likely utilize short-term borrowings for the construction in progress. Staff will structure the long-term borrowing to permanently finance the Tunnel Program around existing water debt service. The utilization of short-term borrowings for construction in progress and structured long-term debt will help mitigate the impact on the Water Utility's assessments. Each fiscal year as the CEB recommendation is developed, staff iteratively monitor the necessary revenue from community assessments. All additions, deletions and revisions to the CEB are evaluated for the impacts to the rate of increase to the assessments. The Proposed FY25 CEB resulted in a 3.9% increase to the Water Utility assessment and the model projected a 3.9% increase for Fiscal Years 2025-2029. This proposed increase, and the projected increases, includes the impact of the modeled debt service associated with the Tunnel Program included in the Proposed FY25 CIP.

BUDGET/FISCAL IMPACTS:

The proposed FY25 CIP includes $2.1 billion for the Metropolitan Water Tunnel Program. This budget will be refined during and at the completion of Final Design.

[1] The Trust provides low-interest loans and grants to water utilities through the Massachusetts State Revolving Funds to assist in financing water infrastructure projects.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Metropolitan Water Tunnel Program
Contract Structure for Final Design Engineering Services, Contract 7556

COMMITTEE: Water Policy and Oversight

_____ INFORMATION
__X__ VOTE

Michele S. Gillen
Director of Administration

Rita Mercado, Deputy Director, Procurement
Paul V. Savard, P.E., Director, Design and Construction
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

To approve staff's recommended contract structure for Engineering Services During Construction under Contract 7556, Final Design Engineering Services for the Metropolitan Water Tunnel Program (Tunnel Program) where the cost for Engineering Services During Construction during tunnel construction, if approved by the Board of Directors, will be authorized and added by amendment(s) to the Final Design Engineering Services Contract 7556, as further detailed in this staff summary.

DISCUSSION:

The Tunnel Program is on schedule to achieve a significant milestone with the completion of preliminary design and environmental reviews in early 2024. Passing this milestone will shift the focus of work to final designs with additional emphasis on completing land acquisition, expanding outreach efforts, achieving stakeholder agreements, and preparing for tunnel construction. Based on the proposed FY25 Capital Improvement Plan (CIP), it is projected that, in the coming years, over $270 million in professional services contracts will be awarded to support the Tunnel Program. These include Final Design Engineering Services (FDES), Construction Management (CM), and a possible second extension to the Program Support Services (PSS) contract.

Ongoing and completed professional services contracts for the Tunnel Program include the following:

- Program Support Services – The Board authorized the Executive Director to exercise the contract's first optional 24-month renewal during the December 13, 2023 meeting. This contract provides assistance with program-wide activities, such as risk management, quality management, design and construction package planning, independent technical reviews, construction practices review and implementation, independent cost estimates, critical path scheduling, and budget tracking. This contract was for an initial award of $10,247,877 with an increase of $7,000,000 to $17,247,877 and 24-month contract extension approved by the Board of Directors at the December 2023 meeting.

- Preliminary Design Engineering Services – This contract's scope of services consisted of initial geotechnical investigations, preparation of Environmental Impact Reports, and preparation of a Preliminary Design Report, drawings, schedule and cost estimate. This contract was for $15,692,527 and ended in January 2024.

- Geotechnical Support Services – This contract focuses on the collection of geotechnical/geological data to support final design, bidding and construction of the Program. This contract is for $12,789,889 and will end in January 2026.

Additional professional services contracts may be required over the course of the Tunnel Program to support legal matters, land acquisition, insurance, labor agreements, and community technical assistance.

The FDES procurement is ongoing with an anticipated recommendation for award at the September 2024 Board meeting. The procurement of Construction Management contract(s) is anticipated to begin in 2025.

Final Design Engineering Services

One FDES contract is planned. A single FDES contract provides a number of advantages over multiple contracts and is consistent with the approach used for the MetroWest Water Supply Tunnel. One FDES engineer provides efficiency in executing the designs, consistency between construction packages, a simplified development of common specifications and standards, a consistent application of risk management, and flexibility in construction procurement if needed. It also requires less MWRA staff to support and manage. The FDES engineer will be precluded from any other future role on the Tunnel Program.

It is expected that the FDES contract will extend from fall 2024 (assuming award in September 2024) through the duration of the tunnel construction projects (currently anticipated before 2040). Two tunnel construction contracts are planned, as well as two or three smaller construction contracts that will be procured and completed prior to the start of tunnel construction. These smaller construction contracts will remove early enabling construction works from the critical path of the tunnel construction contracts.

The proposed FY25 CIP includes $77.8 million for FDE. This figure does not include ESDC (discussed below). The FDES firm will require a multi-discipline design team with expertise in pressurized water tunnel design and construction, rock engineering, geotechnical engineering, water systems and hydraulics, mechanical systems design, site-civil works, permitting, risk management, construction, cost estimating and scheduling. The team must be efficiently managed so that time critical design submittals are aligned with the targeted Tunnel Program construction schedule. This team will also support the Authority in outreach, land acquisitions, and memoranda of understanding. The FDES engineer will serve as the Engineer of Record for all designs for the Tunnel Program.

ESDC are those services provided by the Engineer of Record during construction that are necessary to maintain the integrity of the design. These services include construction advice, interpretation and clarification through Request for Information responses, review of contractors' submittals, review of contractors' value engineering proposals, onsite meetings and observations,

change order and dispute assistance, structural geology mapping for final tunnel lining, development of record drawings, startup assistance, operations and maintenance training, and certification reporting.

While ESDC involves technical reviews and technical inspections by the Engineer of Record to ensure the construction contractor's approach is in conformance with the technical requirements of the design, the CM consultant is responsible for overall administration of the construction contracts. CM services include resident inspection to ensure the work conforms with the contract documents, document control, project controls, change management, and the point of contact between the construction contractors, the Authority and its consultants (including the FDES staff).

ESDC will begin upon the start of the first tunnel construction contract, targeted for 2028, and extend through all tunnel construction contracts. The proposed FY25 CIP includes $40 million for ESDC with an estimated duration of approximately ten years.

Procurement Process

On November 15, 2023, MWRA commenced a two-step procurement process for FDES. A Request for Qualifications (RFQ) was publicly advertised, and a Request for Proposals (RFP) will be issued to the firms that were shortlisted after the RFQ phase.

On December 15, 2024, four firms submitted statements of qualifications (SOQs) in response to the RFQ. A Selection Committee reviewed the SOQs, and shortlisted the following three firms: Jacobs Associates d/b/a Delve Underground; Mott MacDonald, LLC; and WSP USA, Inc. The RFP will be made available to those firms once the development of the Scope of Services is completed and the final structure of the FDES contract is determined.

Recommended Contract Award Structure for ESDC

Historically, for professional design engineering service contracts the Authority's Request for Qualifications Statements/Proposals contains a detailed scope of services that includes specific tasks to perform during the full design phase including preliminary and final design, the preparation of bid documents and bid-related services through the award of the construction contract, and specific tasks for ESDC. Proposals for these contracts typically include costs for this entire scope of work, including ESDC. Proposed costs for ESDC are based on the specified scope and anticipated level of effort required during construction. This results in a total contract award/amount that includes both full design services and ESDC.

For the Tunnel Program's FDES contract, staff recommend that proposals be received, and the initial contract scope and price include, final design services through the construction contract award and ESDC for the smaller enabling works construction packages. Staff recommend that the detailed ESDC scope of work for the tunnel construction be prepared by staff after completion of the final design for each tunnel construction package and that the cost for those services be negotiated with the FDES firm and, if approved by the Board of Directions, authorized and added by amendment(s) to the FDES contract. Importantly, key financial parameters (i.e., maximum overhead rate and fee) that will be utilized for ESDC will be submitted by proposers and evaluated as part of the initial contract award.

Staff recommend this alternative approach of not receiving detailed cost proposals for specific ESDC tasks for tunnel construction because of the challenges associated with accurately developing a scope and the level of effort required to support future significant and long-term tunnel construction work. Additionally, staff propose to include ESDC for the smaller enabling works as part of the initial FDES contract award as these services are more straight forward, can be scoped and priced at the proposal stage, and will mostly likely be performed during the first five years of the contract (during the design of the tunnel construction package).

It is industry best practice on large tunnel projects to defer negotiations the cost for ESDC services until late in the final design phase when construction scope, phasing, and duration are better defined. Several public agencies, such as the New York City Department of Environmental Protection, Naragansett Bay Commission (Providence, RI), DC Water, ALCOSAN (Pittsburgh, PA), and Metropolitan District Commission (Hartford, CT) negotiate the level of effort for ESDC services after award of the design contract, closer to 90% or 100% design stage.

Conclusion

For FDES , staff are recommending that proposals be received (including labor rates, maximum overhead, fee and level of effort) and an initial contract executed for specific design development tasks, including development of the Basis of Design reports, performance of subsurface investigations, and design development of two tunnel construction packages and two or three enabling works construction projects along with risk management, quality management, cost estimating, and construction scheduling. Given the complexity and scope of the Tunnel Program, the performance of these design services will be critical to determine the duration of each tunnel construction package, and the schedule and level of effort required for ESDC. Accordingly, staff recommend that the Authority prepare the detailed scope of ESDC for the tunnel construction work after the preparation of the final design for such work.[1] Staff will thereafter negotiate the cost for ESDC and seek the authorization for such services from the Board of Directors, which if approved will be implemented through a contract amendment(s) of the FDES contract. The FDES contractual maximum overhead rate and fee for ESDC for the tunnel construction packages will apply to this amendment(s).

BUDGET/FISCAL IMPACTS:

The proposed FY25 CIP includes $77.8 million for Final Design services and $40 million for ESDC.

MBE/WBE PARTICIPATION:

The minimum MBE and WBE participation requirements for this contract are established at 7.18% and 5.77%, respectively.

[1] The Authority may seek separate ESDC authorizations as tunnel construction packages are completed by the FDES firm.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Local Water System Assistance Program Annual Update

COMMITTEE: Water Policy & Oversight

X INFORMATION
VOTE

Kristen M. Hall, Senior Program Manager, Planning
Claudia F. Baptista, Project Manager, Planning
David A. Granados, P.E., Project Manager, Planning
Preparer/Title

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

RECOMMENDATION:

For information only.

DISCUSSION:

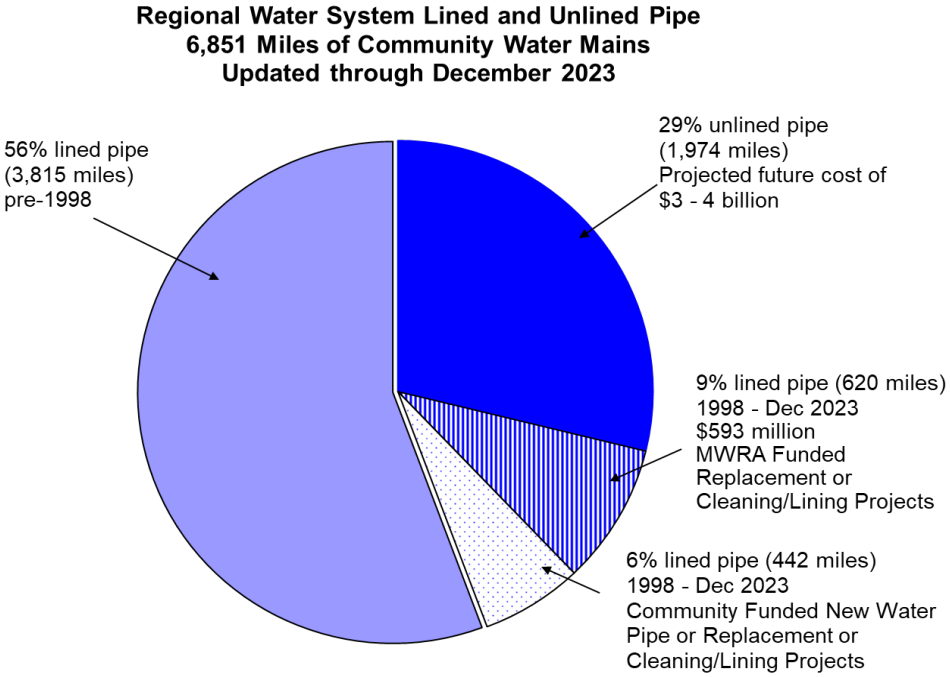
MWRA's goal in providing financial assistance to member communities is to improve local water systems' ability to maintain high water quality as it passes from MWRA facilities through local pipelines to customers' taps. Older water mains, particularly those constructed of unlined cast iron pipe, need to be replaced or cleaned and lined to prevent tuberculation (rust buildup), loss of disinfectant residual and potential bacteria growth. Replacement of lead service lines improves water quality by reducing the risk that lead can leach into the water consumed in customers' homes.

Unlined Cast Iron | Tuberculated Pipe | Cement Lined Pipe

Prior to 1998, 3,815 miles (56%) of the 6,851-mile regional distribution system consisted of lined water pipe. Since 1998, MWRA's community financial assistance programs (including the $30 million pilot program in FY98-99) have invested $593 million in local water distribution systems and resulted in the replacement or cleaning and lining of 620 miles of water mains. Additional community-only funded rehabilitation or new pipeline projects have added 442 miles of lined water mains. Approximately 1,974 miles (29%) of locally-owned water distribution systems

remain unlined, representing a regional need of about three to four billion dollars for future water main rehabilitation. Attachment 1 provides individual statistics for the total miles of lined and unlined water mains in each member community's water system.

Water Loan Funds Distribution Update



Under the Local Water System Assistance Program (LWSAP), the Board has authorized a total of $725 million for community water loans from FY01 through FY30. Loan funds are allocated to member water communities based on a combination of their percent share of unlined pipe and wholesale water charge. MWRA's partially supplied communities receive pro-rated shares based on their percentage use of MWRA water[1]. Through December 2023, $563 million[2] in ten-year interest-free loans have been distributed to member communities to finance 529 projects that will help maintain high water quality in local distribution systems. Of the 529 total projects, 457 have been completed and 72 are in construction. Community loans are repaid to MWRA over a ten-year period. All scheduled community loan repayments have been made, a total of $384 million to date. A total of 43 of the 47 eligible member water communities[3] have participated in the Program. Two communities (Medford and Waltham) are scheduled to receive water loans (totaling $9.64 million) during the February/March 2024 LWSAP funding distribution cycle.

The photos below detail local water system rehabilitation construction work funded through the

[1] In December 2020, Ashland and Burlington received LWSAP loan allocations when they were approved as partially supplied member communities.

[2] This does not include MWRA's $30 million pilot distribution rehabilitation program (FY98-99).

[3] MWRA has a total of 52 water communities (with Dedham/Westwood Water District counted as one). Under MWRA's Local Water System Assistance Program, 47 communities are allocated loan funds. The five water communities that are ineligible to receive funding assistance have special case considerations: Cambridge receives water on an emergency-only basis; Lynn receives water only for the GE Plant; and Clinton, Leominster and Worcester (also on an emergency-only basis) receive untreated water from the Wachusett Reservoir. The three Chicopee Valley Aqueduct (CVA) communities (Chicopee, South Hadley FD#1 and Wilbraham) were allocated funds under Phases 2 and 3 of the Loan Program.

LWSAP.

Water Main Replacement Construction

Cleaning and Lining Old Cast Iron Water Main

Rehabilitated Water Storage Tank

The Phase 1 LWSAP began in FY01 and was completed at the end of FY13. It provided $222.3 million in ten-year interest-free loans to finance 257 water main replacement, cleaning and lining and lead service line replacements projects.

The Phase 2 LWSAP was established in FY11. The Phase 2 expansion of the water loan program added $210 million in interest-free loans for member water communities (including a $10 million allocation for the three Chicopee Valley Aqueduct (CVA) communities: Chicopee, South Hadley Fire District #1 and Wilbraham. LWSAP Phase 2 loan funds will sunset at the end of FY25. Through December 2023, $200 million in Phase 2 funds has been distributed. Thirty-nine communities have received their entire Phase 2 funding allocation. (See Attachment 2 - Allocation and Fund Utilization by Community.) As part of the upcoming February/March 2024 LWSAP funding distribution cycle, two additional communities (Medford and Waltham) will reach their Phase 2 funding allocation limit.

The Phase 3 LWSAP was established in FY18. The Phase 3 expansion of the water loan program added $293.3 million in interest-free loans (including a $14 million allocation for the three CVA communities). Phase 3 funding distributions are approved through FY30. Through December 2023, $140.8 million in Phase 3 funds have been distributed and $152.5 million remain to be distributed. Eight communities have used all of their allocated Phase 3 funds. (See Attachment 2 - Allocation and Fund Utilization by Community). Through December 2023, Program Phases 2 and 3 have financed 272 projects.

The majority of financial assistance water loans (93%) under Program Phases 2 and 3 have funded replacement/rehabilitation of unlined water mains, lead service line replacements, water tank rehabilitation and other water quality projects. Some communities have also utilized a portion of their funding allocations on water system efficiency, or “Tier Two.” projects, such as water meter replacements, automated meter reading systems and booster pump station rehabilitation.

Lead Service Line Replacement Loan Program Update


Lead Service Line

In March 2016, the Board approved an enhancement to the LWSAP to provide up to an additional $100 million in ten-year interest-free loans to communities solely for efforts to fully replace lead service lines from the water main all the way to the house. Under MWRA's Lead Service Line Replacement Loan Program, each community can develop its own program tailored to its local circumstances. Some communities are implementing a phased approach, with multiple loans financing lead service replacements over a number of construction seasons. Lead line inventories are also eligible for financing under the Lead Loan Program. To date, MWRA has distributed $41 million in lead loans (via 44 separate distributions) to 17 communities to replace 4,270 lead service lines and 1,001 lead goosenecks, and perform four lead line inventories:

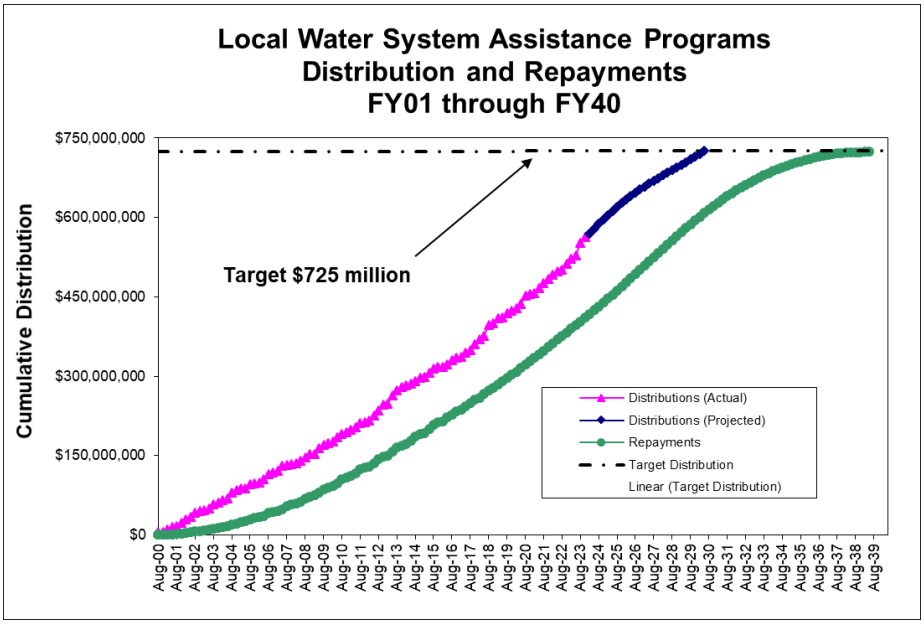
- BWSC: $2,602,419 in FY21 and $862,500 in FY22 ($3.5 million total);
- Chelsea: $100,000 in FY19, $300,000 in FY20, $300,000 in FY21, $300,000 in FY22, $500,000 in FY23 and $300,000 in FY24 ($1.8 million total);
- Everett: $1.0 million in FY19, $1.0 million in FY20, $500,000 in FY20, $1.5 million in FY21 and $1.5 million in FY22 ($5.5 million total);
- Lexington: $3.9 million in FY24;
- Malden: $500,000 in FY24;
- Marlborough: $1.0 million in FY18, $1.0 million in FY19, $1.0 million in FY20 and $2.0 million in FY21 ($5.0 million total);
- Melrose: $1,035,000 in FY24;
- Needham: $1.0 million in FY18;
- Newton: $4.0 million in FY17;
- Quincy: $1.5 million in FY17;
- Reading: $1.5 million in FY23;
- Revere: $195,000 in FY18 and $1,300,000 in FY22 ($1.5 million total);
- Somerville: $900,000 in FY20 and $1,555,000 in FY22 ($2.5 million total);
- Watertown: $600,000 in FY21, $300,000 in FY23, an additional $300,000 in FY23, and $300,000 in FY24 ($1.5 million total);
- Weston: $160,000 in FY20;
- Winchester: $500,000 in FY17, $500,000 in FY18, $600,000 in FY20, $600,000 in FY21 and $600,000 in FY23 ($2.8 million total); and
- Winthrop: $284,000 in FY18, $487,850 in FY19, $690,000 in FY20, $750,000 in FY21, $750,000 in FY22 and $750,125 in FY23 ($3.7 million total).

Most communities have elected to fully fund replacement of the portion of the service line on private property, while others offer a variety of incentive programs to encourage participation. With the MassDEP Lead Service Line Inventory deadline on the horizon (October 16, 2024), staff have increased communication with member communities to gauge overall interest in program participation and included discussions of the program in all training sessions on the Lead and Copper Rule Revisions. Staff have also revised and implemented new program funding application and financial assistance agreement execution parameters to facilitate the filing and reporting process for member communities.

BUDGET/FISCAL IMPACTS:

The FY24 CIP includes an overall net budget of zero dollars for both the LWSAP and the Lead Service Line Replacement Loan Program because community loans are offset by repayments over time. However, depending on the timing and level of community loan requests, loan distributions can fluctuate, sometimes causing overspending or underspending (versus budget projections) for any particular quarter or year. The LWSAP Guidelines restrict each community's annual allocation to the larger of: (1) 10% of their total allocation; or (2) $500,000. If not utilized in a given year, annual allocations roll over and accumulate up to the community's total allocation. The annual allocation restrictions are intended to limit MWRA's annual financial exposure.

The program budget target is $725 million for water system rehabilitation loan distributions and repayments (not including the $100 million for additional lead service line replacement loans). Through December 2023, $563 million [4] in water project loans have been distributed. Community loan repayments total $384 million. An additional $41.3 million in lead service line project loans have also been distributed. Lead project loan repayments total $11 million. As community loans are repaid, the funds are deposited into MWRA's construction fund. The FY24 CEB budget includes $7.7 million for the cost of loan interest as a separate line item under Debt Service. The graph below presents loan funding distributions (actual and projected) and corresponding repayments for the LWSAP (FY01 through FY40).



At the MWRA Advisory Board's Operations Committee January 5, 2024 meeting, committee members developed and discussed an additional program funding phase (Phase 4) to the existing LWSAP (Phases 2 and 3). The additional program funding phase was approved and will be advanced to the full Advisory Board as part of its CIP comments. The Operations Committee recommended that proposed LWSAP Phase 4 consist of a $300 million interest-free loan funding phase. Community funding allocations would become available in FY25. Zero-interest loan repayments would occur over ten years.

[4] This does not include MWRA's $30 million pilot distribution water rehabilitation program (FY98-99).

MBE/WBE PARTICIPATION:

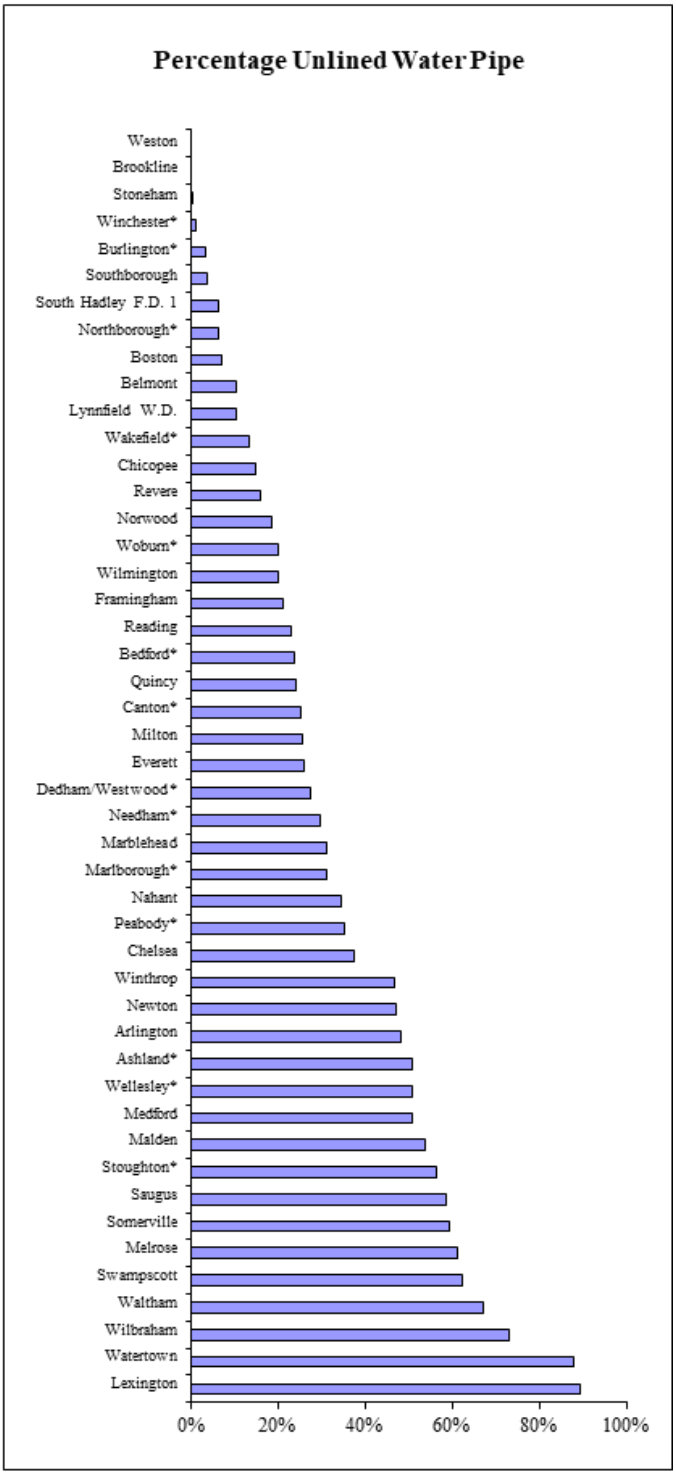
MBE/WBE goals for community projects are outlined in the Program Guidelines.

ATTACHMENTS:

Attachment 1 - Lined and Unlined Pipe by Community (through December 2023)
Attachment 2 - Phases 2 and 3 - Local Water System Assistance Program Allocation and Fund Utilization by Community

MWRA LOCAL WATER SYSTEM ASSISTANCE PROGRAM
LINED AND UNLINED PIPE BY COMMUNITY
THROUGH DECEMBER 2023

Community	Total Miles of Pipe	Miles of Lined Pipe	Miles of Unlined Pipe	Percent Unlined
Arlington	129	67	62	48%
Ashland*	85	42	43	51%
Bedford*	85	65	20	24%
Belmont	92	83	9	10%
Boston	1009	941	68	7%
Brookline	140	140	0	0%
Burlington*	124	120	4	3%
Canton*	128	96	32	25%
Chelsea	59	37	22	37%
Chicopee	275	235	40	15%
Dedham/Westwood*	208	151	57	27%
Everett	70	52	18	26%
Framingham	282	223	59	21%
Lexington	157	17	140	89%
Lynnfield W.D.	29	26	3	10%
Malden	121	56	65	54%
Marblehead	97	67	30	31%
Marlborough*	183	126	57	31%
Medford	144	71	73	51%
Melrose	82	32	50	61%
Milton	140	104	36	26%
Nahant	25	16	9	34%
Needham*	135	95	40	30%
Newton	329	175	154	47%
Northborough*	65	61	4	6%
Norwood	119	97	22	18%
Peabody*	208	135	73	35%
Quincy	240	183	58	24%
Reading	115	89	26	23%
Revere	108	91	17	16%
Saugus	125	52	73	58%
Somerville	110	45	65	59%
South Hadley F.D. 1	83	78	5	6%
Southborough	87	84	3	3%
Stoneham	80	80	0	0%
Stoughton*	151	66	85	56%
Swampscott	58	22	36	62%
Wakefield*	114	99	15	13%
Waltham	170	56	114	67%
Watertown	82	10	72	88%
Wellesley*	150	74	76	51%
Weston	111	111	0	0%
Wilbraham	74	20	54	73%
Wilmington	126	101	25	20%
Winchester*	112	111	1	1%
Winthrop	45	24	21	47%
Woburn*	190.40	152.70	38	20%
TOTAL	**6,851**	**4,878**	**1,974**	**29%**



* Partially Served Communities

MWRA LOCAL WATER SYSTEM ASSISTANCE PROGRAM
ALLOCATION AND FUND UTILIZATION BY COMMUNITY
THROUGH DECEMBER 2023

Community	Community Total Phase 2 Allocation	Phase 2 Funds Distributed thru December 2023	Total Remaining Phase 2 Funds	Community Total Phase 3 Allocation	Community Phase 3 Annual Allocation	Phase 3 Allocation To Date (Year 7)	Phase 3 Funds Distributed thru December 2023	Phase 3 Funds Currently Available	Total Phase 2 and 3 Funds Available
Arlington	$6,225,000	$6,225,000	$0	$8,687,000	$868,700	$6,080,900	$3,275,000	$2,805,900	$2,805,900
Ashland*¶	$0	$0	$0	$519,400	N/A	$519,400	$0	$519,400	$519,400
Bedford *	$2,418,000	$2,418,000	$0	$3,649,000	$500,000	$3,500,000	$0	$3,500,000	$3,500,000
Belmont	$3,477,000	$3,477,000	$0	$3,852,000	$500,000	$3,500,000	$3,500,000	$0	$0
Boston	$38,754,000	$38,754,000	$0	$52,787,000	$5,278,700	$36,950,900	$30,267,364	$6,683,536	$6,683,536
Brookline	$3,426,000	$3,426,000	$0	$4,585,000	$500,000	$3,500,000	$1,234,000	$2,266,000	$2,266,000
Burlington*¶	$0	$0	$0	$827,400	N/A	$827,400	$0	$827,400	$827,400
Canton *	$3,216,000	$3,216,000	$0	$2,971,000	N/A	$2,971,000	$2,500,000	$471,000	$471,000
Chelsea	$3,814,000	$3,814,000	$0	$5,039,000	$503,900	$3,527,300	$2,511,700	$1,015,600	$1,015,600
Dedham/Westwood *	$503,000	$503,000	$0	$849,000	N/A	$849,000	$849,000	$0	$0
Everett	$4,672,000	$4,672,000	$0	$6,298,000	$629,800	$4,408,600	$3,319,200	$1,089,400	$1,089,400
Framingham	$7,357,000	$7,357,000	$0	$9,003,000	$900,300	$6,302,100	$2,700,900	$3,601,200	$3,601,200
Lexington	$3,024,000	$3,024,000	$0	$3,777,000	$500,000	$3,500,000	$1,891,015	$1,608,985	$1,608,985
Lynnfield Water Dist.	$1,396,000	$1,396,000	$0	$1,678,000	N/A	$1,678,000	$1,530,800	$147,200	$147,200
Malden	$7,272,000	$7,272,000	$0	$10,605,000	$1,060,500	$7,423,500	$7,423,500	$0	$0
Marblehead	$4,237,000	$4,237,000	$0	$5,112,000	$511,200	$3,578,400	$1,022,400	$2,556,000	$2,556,000
Marlborough *	$1,917,000	$1,283,800	$633,200	$3,512,000	$500,000	$3,500,000	$0	$3,500,000	$4,133,200
Medford	$6,959,000	$5,815,006	$1,143,994	$10,800,000	$1,080,000	$7,560,000	$5,281,994	$2,278,006	$3,422,000
Melrose	$3,988,000	$3,988,000	$0	$6,865,000	$686,500	$4,805,500	$4,119,000	$686,500	$686,500
Milton	$4,123,000	$4,123,000	$0	$5,967,000	$596,700	$4,176,900	$641,000	$3,535,900	$3,535,900
Nahant	$1,490,000	$1,490,000	$0	$1,835,000	N/A	$1,835,000	$745,550	$1,089,450	$1,089,450
Needham *	$794,000	$794,000	$0	$1,894,000	N/A	$1,894,000	$337,265	$1,556,735	$1,556,735
Newton	$13,602,000	$13,602,000	$0	$20,837,000	$2,083,700	$14,585,900	$6,251,100	$8,334,800	$8,334,800
Northborough *	$1,048,000	$986,053	$61,947	$1,450,000	N/A	$1,450,000	$0	$1,450,000	$1,511,947
Norwood	$4,395,000	$4,395,000	$0	$6,296,000	$629,600	$4,407,200	$4,407,200	$0	$0
Peabody *	$1,089,000	$1,089,000	$0	$2,756,000	N/A	$2,756,000	$2,756,000	$0	$0
Quincy**	$10,505,000	$10,505,000	$0	$14,252,000	$1,425,200	$12,826,800	$12,826,800	$0	$0
Reading	$4,146,000	$4,146,000	$0	$5,073,000	$507,300	$3,551,100	$3,043,800	$507,300	$507,300
Revere	$5,034,000	$5,034,000	$0	$5,315,000	$531,500	$3,720,500	$2,126,000	$1,594,500	$1,594,500
Saugus	$6,621,000	$6,621,000	$0	$9,688,000	$968,800	$6,781,600	$3,502,414	$3,279,186	$3,279,186
Somerville	$7,419,000	$7,419,000	$0	$10,791,000	$1,079,100	$7,553,700	$5,589,234	$1,964,466	$1,964,466
Southborough	$1,512,000	$0	$1,512,000	$1,920,000	N/A	$1,920,000	$0	$1,920,000	$3,432,000
Stoneham	$2,339,000	$2,339,000	$0	$2,742,000	N/A	$2,742,000	$2,500,000	$242,000	$242,000
Stoughton*	$2,506,000	$2,506,000	$0	$3,547,000	$500,000	$3,500,000	$1,622,000	$1,878,000	$1,878,000
Swampscott	$3,755,000	$3,755,000	$0	$5,276,000	$527,600	$3,693,200	$2,294,468	$1,398,732	$1,398,732
Wakefield *	$2,325,000	$2,325,000	$0	$3,356,000	N/A	$3,356,000	$3,000,000	$356,000	$356,000
Waltham	$10,293,000	$5,520,201	$4,772,799	$14,904,000	$1,490,400	$10,432,800	$0	$10,432,800	$15,205,599
Watertown	$2,978,000	$2,978,000	$0	$3,745,000	$500,000	$3,500,000	$2,683,000	$817,000	$817,000
Wellesley *	$2,350,000	$1,813,569	$536,431	$3,268,000	N/A	$3,268,000	$0	$3,268,000	$3,804,431
Weston	$1,625,000	$1,625,000	$0	$2,295,000	N/A	$2,295,000	$1,767,997	$527,003	$527,003
Wilmington *	$611,000	$611,000	$0	$1,306,000	N/A	$1,306,000	$0	$1,306,000	$1,306,000
Winchester *	$882,000	$775,000	$107,000	$1,394,000	N/A	$1,394,000	$0	$1,394,000	$1,501,000
Winthrop^	$3,312,000	$3,312,000	$0	$4,119,000	N/A	$4,119,000	$4,119,000	$0	$0
Woburn *	$2,591,000	$2,591,000	$0	$3,905,000	$500,000	$3,500,000	$3,500,000	$0	$0
SUBTOTAL	**$200,000,000**	**$191,232,629**	**$8,767,371**	**$279,346,800**	**$25,359,500**	**$215,546,700**	**$135,138,701**	**$80,407,999**	**$89,175,370**
Chicopee	$7,153,000	$7,153,000	$0	$9,774,000	$977,400	$6,841,800	$5,186,400	$1,655,400	$1,655,400
South Hadley F.D. 1	$1,538,000	$1,538,000	$0	$2,026,000	N/A	$2,026,000	$500,000	$1,526,000	$1,526,000
Wilbraham	$1,309,000	$0	$1,309,000	$2,200,000	N/A	$2,200,000	$0	$2,200,000	$3,509,000
SUBTOTAL	**$10,000,000**	**$8,691,000**	**$1,309,000**	**$14,000,000**	**$977,400**	**$11,067,800**	**$5,686,400**	**$5,381,400**	**$6,690,400**
TOTAL	**$210,000,000**	**$199,923,629**	**$10,076,371**	**$293,346,800**	**$26,336,900**	**$226,614,500**	**$140,825,101**	**$85,789,399**	**$95,865,770**

Phase 2 funds will sunset on FY25

* Partially Served Communities

¶ Ashland and Burlington: Partial Water Communities Beginning in FY21

^ Exempt per Board Approval

** Per Board Approval, years 4, 9 and 10 allocations were distributed in June 2020

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Section 101 Pipeline Extension (Waltham)
Baltazar Contractors, Inc.
Contract 7457, Change Order 4

COMMITTEE: Water Policy & Oversight

____ INFORMATION
__X__ VOTE

Martin E. McGowan, Director, Construction
Terrence Flynn, P.E., 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 4 to Contract 7457, Section 101 Pipeline Extension, with Baltazar Contractors, Inc., for a not-to-exceed amount of $500,000, increasing the contract amount from $32,735,976.89 to $33,235,976.89, and extending the contract term by 540 calendar days from April 7, 2024 to September 29, 2025.

Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 7457 in an amount not to exceed the aggregate of $1,000,000 and 180 days in accordance with the Management Policies and Procedures of the Board of Directors.

DISCUSSION:

The Section 101 Pipeline Extension project consists of a new 36-inch diameter water main and appurtenances extending from MWRA's Meter 182 at the Waltham/Lexington town line down Lexington Street to Totten Pond Road, where it will connect to Waltham's water system. This connection will provide a new redundant water supply to Waltham's Prospect Hill Service area from the Northern Extra High (NEH) pressure zone and to MWRA's Lexington Street Pumping Station. The contract documents also include water, sewer and drain utility replacement work in the project area for the City of Waltham that needs to be completed concurrently with the MWRA work and prior to completion of construction of the City's new high school, which is anticipated in 2024. At its December 15, 2021 meeting the Board authorized the execution of a Memorandum of Agreement (MOA) with the City of Waltham to cover the City's reimbursement to MWRA for the design and construction of the City's portions of work. Despite staff's efforts, ultimately Waltham did not execute an MOA; but it did, however, agree that it would reimburse the Authority for Waltham's work. Thus far, Waltham has paid $1,931,826.95 to the Authority, which is the amount, to date, MWRA has requested from Waltham for its work.

This Change Order consists of the following item:

Extend the Contract Time by 540 Days — Not-to-exceed $500,000

A Notice to Proceed was issued in July 2022. This contract was bid with tight timeline constraints due to the City's new high school project. After commencement of the contract, the Contractor notified the Authority that new pipe and pipe materials had long lead times resulting from global supply chain issues. Fabrication and delivery of pipe materials required to commence work was approximately eight months, delaying the start of work until the following construction season. Since the supply chain issues were beyond the reasonable control of the Contractor, a time extension is now warranted. The delays resulting from the supply chain issues, however, will be at no additional cost to the Authority.

Once work began in the spring of 2023, the City of Waltham reduced the Contractor's work hours to mitigate traffic impacts on Lexington Street and required that portions of work be performed during night shifts instead of the day. These new constraints added by the City after bid resulted in significant delays to the progress of the work by having shorter work days and performing work at night instead of the day. Change Order 1 was executed on June 30, 2023 for an amount not to exceed $500,000 to reimburse the Contractor for compensable costs pursuant to the contract documents directly related to the new constraints added by the City. These compensable costs include shift differential, idle time for labor and equipment and additional roadway lighting. Approximately $425,000 has been spent to date. When Change Order 1 was executed, the actual time impacts were unknown, so it did not include additional time. This Change Order 4, if approved, will add additional time to the contract as a result of the delays associated with these constraints.

Traffic Impact

Night Work

The Contractor encountered a greater amount of ledge along the proposed pipe alignments than identified during the design investigations. This increase in ledge has significantly reduced production further delaying the Contractor in completing the work. Staff estimate an additional 450 cubic yards of ledge will need to be removed during the 540 day extension. The additional time required to remove the unforeseen ledge is included in this time extension, however, the additional costs to remove this ledge will be negotiated with the Contractor and included in a future change order.

The unforeseen conditions listed above have impacted the critical path. The current project schedule indicates that the pipe replacement work will be completed in late spring of 2025, with

final paving being completed in early fall 2025. Staff reviewed the latest schedule and agreed that the total duration being requested is fair and reasonable. As a result of these delays to the critical path, the Contract Time must now be extended by an additional 540 calendar days from April 7, 2024 to September 29, 2025.

With exception to the delays attributed to the supply chain issues, the Contractor is requesting additional compensation for certain recoverable costs allowed per Article 13 of the General Conditions. As an example, other direct costs may include rental for office space, staging areas, utilities, bonds and insurance. Staff will carefully review all these requested costs to determine what is compensable under the terms of the Contract.

Ledge Encountered

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to amount not to exceed $500,000. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

CONTRACT SUMMARY:

	AMOUNT	TIME	DATED
Original Contract:	$31,900,000.00	635 Days	07/12/22
CHANGE ORDERS:			
Change Order 1*	$500,000.00	0 Days	06/28/23
Change Order 2*	$126,454.82	0 Days	12/08/23
Change Order 3*	$209,522.07	0 Days	02/07/24
Change Order 4	$500,000.00	540 Days	Pending
Total Change Orders:	$1,335,976.89	540 Days	
Adjusted Contract:	$33,235,976.89	1,175 Days	

*Approved under delegated authority

If Change Order 4 is approved, the cumulative value of all change orders to this contract will be $1,335,976.89 or 4.2% of the original contract amount. Work on this contract is approximately 45% complete.

BUDGET/FISCAL IMPACT:

The FY24 CIP includes $27,552,619 for Contract 7457 which includes the reimbursement to MWRA of $4,347,381 in accordance with the terms of the MOA between MWRA and the City of Waltham. Including this change order for $500,000, the adjusted subphase total including the MOA reimbursement will be $28,888,595.89, or $1,335,976.89 over the CIP amount. This amount will be absorbed within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

The MBE and WBE participation requirements for this contract were established at 7.24% and 3.6%, respectively. The Contractor will be notified that these requirements are still expected to be met.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Rehabilitation of WASM 3 Sections W11/W12/W16/51
(Medford, Somerville and Arlington)
Albanese D&S, Inc.
Contract 6544, Change Order 9

COMMITTEE: Water Policy & Oversight

____ INFORMATION
__X__ VOTE

Martin E. McGowan, Director, Construction
Jeremiah P. Sheehan, 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 9 to Contract 6544, Rehabilitation of WASM 3 Sections W11/W12/W16/51 (Medford, Somerville and Arlington), with Albanese D&S, Inc. for a lump sum amount of $374,297.01, increasing the contract amount from $20,175,619.60 to $20,549,916.61, with no increase in contract term.

DISCUSSION:

MWRA's Weston Aqueduct Supply Main 3 (WASM 3) consists of approximately ten miles of steel pipe installed in the 1920s and 1930s. The pipe is a critical supply to over 250,000 customers in the Northern High, Northern Extra High and Intermediate High supply systems, serving Waltham, Watertown, Belmont, Lexington, Bedford, Arlington, Somerville and Medford. It also can provide emergency supply to the Gillis Pumping Station, serving communities of the North Shore and Northern Intermediate High if the City Tunnel were to fail.

Contract 6544 included rehabilitation of approximately 13,800 feet of 56-inch and 60-inch diameter water main in Medford, Arlington and Somerville. The rehabilitation consisted of cleaning and internal cement mortar lining and adding valves for better operational flexibility. This project was declared substantially complete in May 2023, 15 months ahead of the original contract completion date. The Contractor will be finishing the final punch list items in the coming weeks. The Contractor and Authority recently completed negotiations and finalized costs for the remaining change order items for the project and such are presented below. Aside from the final balancing change order for unspent quantities and allowances, this change order is expected to be the last.

This Change Order consists of the following six items:

Additional Work at Meter 171 $230,098.68

The Contractor was required to perform work at Meter 171 serving the Town of Arlington. Work included removal of the existing meter vault roof to replace the internal piping and valves located within the vault and installation of a new precast removable roof section. Following the isolation of WASM 3 pipeline in Arlington to perform the cement mortar lining rehabilitation, significant leakage was encountered that prevented the Contractor from starting this work. Field investigation with the Arlington Water Department identified two existing 12-inch gate valves at the Meter 171 interconnection leaking and did not provide the necessary isolation. These two valves were not included in the contract scope for replacement. To eliminate these leaks and proceed with the cement mortar lining, the Contractor temporarily capped the 12-inch connection from WASM pipeline to Meter 171. To ensure a tight shutdown for future work in this location and eliminate impacts to MWRA or the Town of Arlington, the Contractor was directed to replace the two leaking 12-inch gate valves along with the associated pipe, fittings and manholes.

Cutting Concrete Walls at Meter 171

Without any available as-built information on the buried Meter 171 structure, the design required the Contractor to excavate a test pit to determine the thickness of the existing roof slab before ordering a new roof slab. At that time, the Contractor discovered the walls and roof slab were poured as a monolithic concrete structure without any means for removal of the top slab. To perform the contract work inside the vault, the Contractor had to expand the excavation around the perimeter of the meter structure to saw cut the concrete walls to allow removal of the roof slab. A concrete ring wall was constructed and doweled into the existing walls to provide a tight seal for installation of a new removable roof slab in the event removal is necessary in the future.

As a result of the additional valve replacement and vault work described above, the limits of disturbance in the vicinity of Meter 171 increased significantly. This required the Contractor to place temporary trench pavement over additional trenches and to a greater extent around the vault structure. Finally, the Town of Arlington requested that the milling and overlay paving limits be extended to incorporate all the additional work, including restoration of the pavement markings and crosswalks.

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of $230,098.68 for this additional work, with no increase in contract term. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Install ADA Compliant Ramps $43,299.12

During design, the Consultant met with the Town of Arlington to provide construction information about the WASM 3 pipeline rehabilitation project, including the construction timeline, limits of

work, and the need to identify locations for access pits over the pipe to get equipment and materials inside the pipeline. Because these access pits occupy a significant portion of the roadway over extended periods of time, the Consultant requested the Town provide a list of high traffic areas and intersections where access pits would adversely impact local traffic. Based on the information provided by the Town, the Consultant included restrictions in the contract documents for approved access pit locations.

Once construction began, the actual traffic impacts were greater than originally anticipated. There was significant congestion during the morning and evening commutes that created delays for MBTA and local school bus routes. In addition, the local police and fire departments voiced concerns with access for emergency vehicles for public safety. To alleviate these concerns, the Town of Arlington requested that one of the access pits be relocated to the intersection of Pleasant Street and Irving Street. This new location allowed the Contractor to place its equipment and materials along Irving Street instead of Pleasant Street, which is one of the main roads through town. While this new location mitigated the traffic and safety concerns, it created the need for the Contractor to replace the existing sidewalk with new ADA compliant sidewalks and ramps in this location.

Cement Lining Equipment at Pipeline Access Pits

ADA Compliant Ramps at Pleasant Street

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of $43,299.12. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Relocate 10-inch Insertion Valve $33,428.66

As part of the operational upgrade to the WASM 3 pipeline, additional butterfly valves and structures were included at key locations. In order to install the large valve chamber at Pleasant Street and Maple Street, the Contractor was required to relocate the adjacent Town of Arlington water main. To minimize interruptions in water supply to numerous blocks of downtown Arlington businesses and residents, the design included two insertion valves and replacement piping for the Town's water line. During placement for one of the insertion valves, a crack was discovered in the

existing ten-inch cast iron water pipe, preventing installation of the valve in this location. As a result of this unforeseen condition, the Contractor was required to relocate the insertion valve by approximately 20 feet and extend replacement water piping to eliminate the section of pipe that was cracked.

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of $33,428.66 for this additional work with no increase in contract term. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Additional Welding $25,822.91

The Contractor is required to clean and cement mortar line the 56-inch steel WASM 3 pipeline. This pipeline was constructed in the 1930s utilizing a combination of Lock-Bar pipe for straight sections and riveted sections for bends. In the early 1930s, the fabrication method for steel pipes consisted of rolling steel sheets or plates and riveting the pipeline together at the horizontal and end seams. The riveted seams were not effective at keeping the pipeline from distorting to an oval shape. By the late 1930s, Lock-Bar pipe, which consisted of H-shaped bars to hold the circular steel pieces in place, supplanted riveted pipe and was more effective at maintaining the circular steel shape of the pipeline. However, Lock-Bar was made in 30-foot straight lengths and thus could not be utilized for bends. Both these pipe construction methods have been replaced by today's standard of fully welded steel pipe, which holds it shape better.

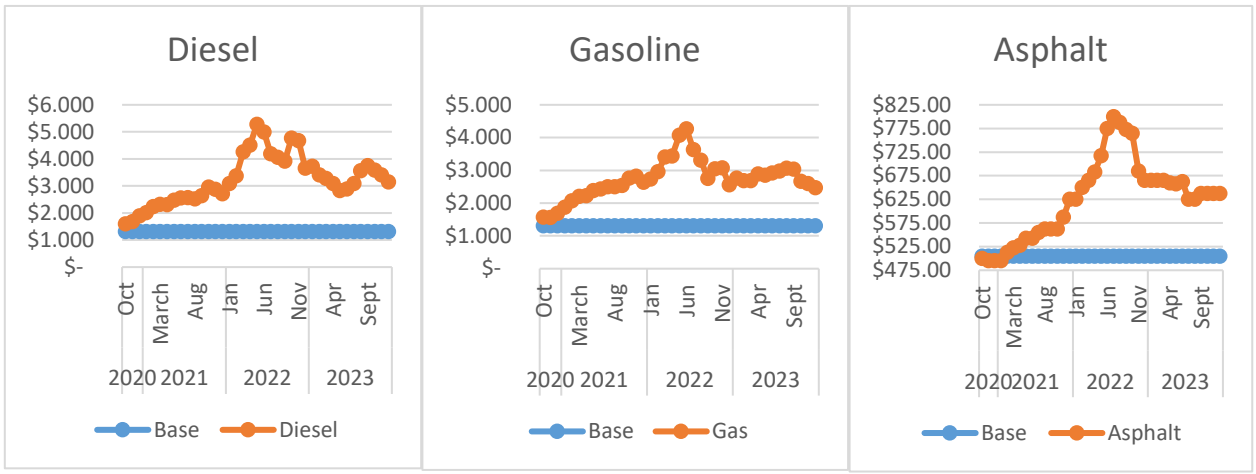
Differences in Diameter at Welding Connections

During final fit-up for the closure pieces at the access pits, it was discovered that several sections of the existing 56-inch steel pipe were significantly out of round. The weld details included in the contract documents accounted for some expected out-of-round areas, but would not seal the larger gaps encountered at some locations between the new and existing pipes. It is critical that these interfaces are tight and properly welded to withstand the pipeline operating pressure. The Design Engineer developed additional welding details to ensure proper fit-up between the existing out-of-round steel pipe and the new round steel pipe sections. As a result of this unforeseen condition, the Contractor performed additional welding at locations where the existing 56-inch steel pipe is out of round and must connect to the new 56-inch circular steel pipe.

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of $25,822.91 for this additional work with no increase in contract term. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Increase Commodity Allowance $23,723.74

In accordance with the requirements of M.G.L. Chapter 30, Section 38A, construction contracts include an allowance for fluctuation of certain commodity prices at the time the work is performed. This contract had an allowance for price adjustments of diesel fuel, gasoline, liquid asphalt and Portland cement in the amount of $30,000. The contract was awarded in October 2020 and included a cost of $1.312 per gallon for diesel fuel oil, $1.305 per gallon for gasoline and $505 per ton for liquid asphalt. Since the contract award, the price of diesel fuel, gasoline and liquid asphalt have dramatically increased and stayed well above the award contract amount. As of February 2024, the rates for diesel fuel oil have fluctuated as high as $5.279 to the current period price of $3.167, the rates for gasoline have fluctuated as high as $4.265 to the current period price of $2.483 and liquid asphalt has fluctuated as high as $800 to the current period price of $637.50, resulting in a significant overrun to the allowance. Change Orders 5 and 8 were previously executed to increase the original allowance by $65,000 to offset costs above the original stated prices. To date, the Contractor has been reimbursed $95,000 for commodity escalation. Now that the contract work is complete, staff reviewed the Contractor's final documentation confirming that an additional $23,723.74 is needed to adjust these commodities.



This item was identified by MWRA staff as an overrun. MWRA staff, the Consultant, and the Contractor have agreed to an amount of $23,723.74. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

Temporarily Relocate Pedestrian Traffic Signal $17,923.90

During design, the Design Engineer collected all the available record information on utilities from the Town of Arlington. These records did not include any information on traffic signal conduit or wiring. Prior to the start of work, the Contractor requested that DigSafe mark out all local utilities on the roadway surface. While excavating to install a temporary access pit at Pleasant Street and Irving Street, an unmarked electric line for a local traffic light was accidentally damaged. As the traffic light controls vehicle flow from a local school exit, the Contractor was required to

temporarily relocate and restore the traffic fixture to maintain traffic flow and reinstall the traffic light after completion of the work.

This item was identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of $17,923.90 for this additional work with no increase in contract term. The Contractor proceeded with this work at its own risk in order to complete the remainder of the contract work.

CONTRACT SUMMARY:

	Amount	**Time**	**Dated**
Original Contract:	$19,487,850.00	1,383 Days	10/28/20
Change Orders:			
Change Order 1*	$50,000.00	0 Days	05/25/21
Change Order 2*	$17,503.06	0 Days	07/16/21
Change Order 3*	$13,053.55	0 Days	10/13/21
Change Order 4*	$88,020.62	0 Days	11/08/21
Change Order 5*	$107,782.50	0 Days	09/23/22
Change Order 6*	$57,062.16	0 Days	02/28/23
Change Order 7*	$339,347.71	0 Days	04/10/23
Change Order 8*	$15,000.00	0 Days	06/24/23
Change Order 9	$374,297.01	0 Days	Pending
Total of Change Orders:	$1,062,066.61	0 Days	
Adjusted Contract:	$20,549,916.61	1,383 Days	

*Approved under delegated authority

If Change Order 9 is approved, the cumulative value of all change orders to this contract will be $1,062,066.61 or 5.4% of the original contract amount. Work on this contract is 100% complete.

BUDGET/FISCAL IMPACT:

The FY24 CIP includes a budget of $20,256,272 for Contract 6544. Including this change order for $374,297.01, the adjusted contract total is $20,549,916.61, or $293,644.61 over budget. This amount will be absorbed within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

Contract 6544 will receive funding through the Clean Water State Revolving Fund, which is administered by the Massachusetts Clean Water Trust. The D/MBE and D/WBE participation requirements for this project were established by the Department of Environmental Protection at 4.2% and 4.5%, respectively. The Contractor has met these requirements.

MASSACHUSETTS WATER RESOURCES AUTHORITY
Deer Island
33 Tafts Avenue
Boston, MA 02128

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

ADMINISTRATION, FINANCE & AUDIT COMMITTEE MEETING

Date: Wednesday, March 13, 2024

Time: Immediately following the Water Policy & Oversight Committee

Location: MWRA Chelsea Administration Building, 2nd Floor, Rooms 2C and D
2 Griffin Way
Chelsea, MA 02150

A photo ID will be required for entry.

The meeting will also be available via Webex. The Webex meeting link and password to attend virtually are below:

Webex meeting link (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Meeting Number: 2341 033 0434 Password: 3132024

AGENDA

A. Information

1. Delegated Authority Report – February 2024
2. FY2024 Financial Update and Summary through February 2024

B. Contract Amendments/Change Orders

1. Enterprise Content Management System Purchase and Implementation: Cadence Solutions Inc., Contract 7438, Amendment 2

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Delegated Authority Report – February 2024

COMMITTEE: Administration, Finance & Audit

X INFORMATION
___ VOTE

Michele S. Gillen
Director, Administration

Barbara Aylward, Administrator A & F
Karen Smith, Administrative Systems Coor.
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 February 1 - 29, 2024.

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 16, 2022, delegate authority to the Executive Director to approve the following:

Construction Contract Awards:

Up to $3.5 million if the award is to the lowest bidder.

Change Orders:

Up to 25% of the original contract amount or $1,000,000.00, 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 $1,000,000 and three years with a firm; or up to $200,000 and two years with an individual.

Non-Professional Service Contract Awards:

Up to $1,000,000 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 $3.5 million if the award is to the lowest bidder.

Amendments:

Up to 25% of the original contract amount or $500,000, whichever is less, and for a term not exceeding an aggregate of six months.

Amendments to the Position Control Register:

Amendments which result only in a change in cost center.

BUDGET/FISCAL IMPACT:

Recommendations for delegated authority approval include information on the budget/fiscal impact related to the action. For items funded through the capital budget, dollars are measured against the approved capital budget. If the dollars are in excess of the amount authorized in the budget, the amount will be covered within the five-year CIP spending cap. For items funded through the Current Expense Budget, variances are reported monthly and year-end projections are prepared at least twice per year. Staff review all variances and projections so that appropriate measures may be taken to ensure that overall spending is within the MWRA budget.

Purchasing Delegated Authority Items February 1-29, 2024

No.	Date of Award	Title and Explanation	Company	Value
P-1	02/01/2024	**Sole Source Purchase Order for 15 Trimble, Inc. RU-35 Data Recorders** The MWRA Metering Department uses Badger, Inc., data recorders throughout the MWRA water and wastewater systems at more than 500 sites. The data recorders collect flow meter data and periodically send the data back to the proprietary Badger database located at the Chelsea Facility via cellular communication. Only the Badger data recorders are able to communicate with the existing Badger software. These new data recorders to be keep in stock in the Chelsea Warehouse for replacement as necessary.	**Badger, Inc**.	**$52,717.50**
P-2	02/05/2024	**Purchase Order for One R-134a Refrigerant Compressor** The Deer Island Treatment Plant has a network of Air Handling Units (AHUs) that heat and cool personnel work areas, electric equipment rooms and other process areas. During a recent maintenance check, staff determined that Module 1 compressor failed and could not be refurbished. This purchase is for a replacement compressor for Module 1. MWRA staff will perform all tasks related to the removal and replacement of the compressors.	**MECS, Inc.**	**$57,888.00**
P-3	01/30/2024	**One-Year Purchase Order Contract for the Analysis of Perfluoroalkyl and Polyfluoroalkyl Substances in Wastewater Samples** MWRA has been collecting samples for the analysis of perfluoroalkyl and polyfluoroalkyl substances (PFAS) in wastewater samples since October 2020. The new Clinton NPDES permit added additional testing requirements and imposes a change in methods from EPA Methods 533 to draft EPA Method 1633. The proposed Deer Island permit includes the same requirements. This represents a substantial increase in the number of samples requiring analysis. The Department of Laboratory Services has received certification for testing PFAS in drinking water samples however; the laboratory is still in the process of preparing for testing for PFAS in wastewater samples, which requires a different method than that used for drinking water samples. This contract will provide for wastewater PFAS analysis for up to 400 wastewater samples, 250 field quality control samples and ten sludge cakes.	**Pace Analytical Services, LLC**	**$243,540.00**
P-4	02/14/2024	**Sole Source Purchase Order for Programming Modifications of a Replacement Inverter at the John J. Carroll Water Treatment Plant** The John J. Carroll Water Treatment Plant uses ozone gas as one of its primary treatment processes. The manufacturing of this gas is performed by a FUJI Ozone System. This system has been online for over 20 years and is critical for water treatment. Repair parts and some service for the ozone system are provided exclusively from Aqua-Aerobic Systems, Inc. Ozone Generator #1 developed power output problems which caused it to shut down. Aqua-Aerobic	**Aqua-Aerobic Systems, Inc**.	**$34,930.00**

No.	Date of Award	Title and Explanation	Company	Value
		Systems, Inc. provide the equipment and field service technicians needed for the programing and commissioning of the replacement inverter.		
P-5	**02/16/2024**	**Sole Source Purchase Order for Professional Services to Provide an Assessment of the Laboratory Information Management System** The current version of the Laboratory Information management System (LIMS) application is no longer supported, and must be upgraded to maintain support, mitigate performance issues, provide additional features and functionality, as well as, address compatibility and security vulnerabilities that are generally associated with operating older versions of software. Because LabWare, Inc. is the developer of LIMS, no other firm has the knowledge or ability to provide MWRA with the comprehensive assessment that is needed for MWRA to make an informed decision to determine the best approach to upgrade of the LIMS system.	**Labware, Inc.**	**$29,040.00**
P-6	**02/15/2024**	**Purchase Order for 50 Split Idler Sprockets for the Deer Island Treatment Plant** There are 48 Primary Clarifiers at Deer Island. Each Primary clarifier has two longitudinal drive sprockets and one cross collector drive sprocket for a total of 144 drive sprockets. There are 54 Secondary Clarifiers at Deer Island. Each Secondary clarifier has two longitudinal drive sprockets and two cross collector drive sprocket for a total of 216 drive sprockets. Drive sprockets can become worn or damaged for a number of reasons, including misalignments, excessive sludge and/or scum build-up in the collector, and / or wear shoe failures. The drive sprockets are stocked as inventory items in Deer Island's warehouse.	**Garland Manufacturing Company**	**$32,500.00**
P-7	**2/16/2024**	**Purchase Order for Two 36-Inch Butterfly Valves** As a part of its overall maintenance and operation of the Metropolitan water system, Field Operations' Water Pipeline Unit replaces approximately 20 main line valves of varying sizes each year. To ensure that the proper sized valve is always available to minimize down time and to be able to immediately respond in the event of a sudden break in service, valves of various dimensions are maintained at the Chelsea Facility. These valves are used as needed by MWRA staff to complete pipeline projects.	**Everett J. Prescott, Inc.**	**$33,318.00**
P-8	**02/16/2024**	**Sole Source Purchase Order Contract for One-Year of Roadway Worker Protection Training** The MWRA's Wastewater/Water System has assets at various locations that require employees to access them on or near commuter railroad property. Keolis requires all personnel working near and/or on commuter rail property to complete the Keolis Roadway Worker Protection Training. The MWRA has 250 employees who work near and/or on commuter rail property. Keolis Commuter Rail Service contracts the Roadway Worker	**Railpros Field Services, Inc**	**$35,000.00**

No.	Date of Award	Title and Explanation	Company	Value
		Protection Training with vendor Rail Pros. Rail Pros is a safety services company to America's rail and transit industry. TRailPros is the only vendor capable of providing this training.		
P-9	**02/15/2024**	**Purchase Order for Two Portable Air Compressors** The Wastewater Pipeline Unit currently utilizes two aging pieces of equipment that provide compressed air to a variety jobsites and facilities. The two pieces of equipment to be replaced are a 2001 and a 2004 Ingersoll-rand air compressors. The two compressors being replaced will immediately be declared surplus and disposed of in accordance with MWRA's Surplus Property Policy via a publicly advertised bid or auction.	**Houston Compression & Services, dba Texas Compression Services**	**$52,614.00**
P-10	**02/07/2024**	**Purchase Order for Three Oracle Database Appliances (X10-L), Five Years of Maintenance and Support, and Installation Services** An Oracle Database Appliance (ODA) is a fully integrated system with software, servers, storage and networking in a single enclosure, which combines the benefits of virtualization with hardware redundancy to provide high availability in a single box. The Authority's ODAs support the following applications: Lawson, Maximo, LIMS, PIMS, GIS and PI. This procurement replaces the two existing ODA X5-2 with three next generation ODA X10-L appliances and provides installation services to configure and migrate.	**Mythics LLC**	**$396,095.70.**
P-11	**02/21/2024**	**Sole Source Purchase Order Two Jerome Hydrogen Sulfide Gas Meters** Hydrogen sulfide meters are used to measure the level being exhausted from wastewater facilities. Department of Environmental Protection permitting requires extremely low hydrogen sulfide levels at certain facilities water facilities. The Jerome 631-X meter, manufactured by Ametek Arizona Instrument, LLC is one hydrogen sulfide gas monitor uniquely capable of registering the levels. This purchase provides two of the four meters that MWRA plans to replace over the next three years.	**Ametek Arizona Instrument, LLC**	**$32,522.00**
P-12	**02/26/2024**	**Purchase Order for Audiovisual Equipment Upgrade for the Southborough Facility and a One-Year Service Contract – *State Contract OFF50*** This procurement is to provide the necessary equipment to upgrade the Common Room located at the Southborough Facility with video conferencing capabilities. The room will be outfitted with the necessary tools to have hybrid meetings, training sessions, and other events. The new equipment below will be integrated with the existing equipment other conference rooms throughout the MWRA. This procurement also includes a one-year service agreement, which will provide preventative maintenance and any necessary repairs to the equipment installed.	**RenVisioning Technology LLC**	**$27,758.41**

No.	Date of Award	Title and Explanation	Company	Value
P-13	**02/27/2024**	**Sole Source Purchase Order for One Year of Maintenance and Support for the InfoWater Suite, InfoSurge, and InfoWorks Sewer Software** All hydraulic modeling of the Authority's water and wastewater distribution systems are performed using Infowater Suite, InfoSurge, and Infoworks Sewer software by staff in the Process Control group, and Planning, Engineering and Construction, and Tunnel Redundancy Departments. Maintenance and support of this software provides for technical support, patches, bug fixes and access to the newest versions of the software.	**Autodesk Inc., dba Innovyze, LLC**	**$31,348**
P-14	**02/28/2024**	**One-Year Purchase Order Contract for Maintenance and Support of CrowdStrike Endpoint and Server licenses – State Contract ITC73** In 2022, MWRA replaced its McAfee Secure Endpoint, Cisco AMP for Endpoints, and FireEye HX software products with CrowdStrike's Falcon Complete software and managed service, which provided next generation endpoint protection in a comprehensive solution that includes antivirus protection, anti-malware protection, proactive threat hunting, 24/7 monitoring, and the capability to automate containment and remediation, if needed. This procurement extends the maintenance and support of the software for another year, while dropping the managed service component, which has been transferred to the new Managed Security Service Provider, NWN Carousel.	**IntraSystems, Inc.**	**$67,754.08**

Construction & Professional Services Delegated Authority Items February 1 – 29, 2024

No.	Date of Award	Title and Explanation	Contract	Amend/CO	Company	Value
C-1	**02/01/24**	**SCADA Network Monitoring Solution** Award of a contract to the lowest responsive bidder to supply, install and configure a network monitoring solution for the SCADA network for a term of 365 calendar days.	**OP-467**	**Award**	**Dragos, Inc.**	**$77,896.00**
C-2	**02/01/24**	**Emergency Replacement of Make-Up Air Handling Units Columbus Park Headworks Facility** Award of an emergency contract to the lowest responsive solicited bidder for the replacement of Make-Up Air Handling Units located at the Columbus Park Headworks Facility for a term 365 calendar days.	**8100**	**Award**	**CAM HVAC & Construction, Inc.**	**$1,055,000.00**
C-3	**02/07/24**	**HVAC Systems Maintenance** Award of a contract to the lowest responsive bidder to provide preventive maintenance and repair services for the entire HVAC systems for a term of 730 calendar days.	**OP-469**	**Award**	**ENE Systems, Inc.**	**$948,566.00**
C-4	**02/12/24**	**Screw Pump Replacement, Phase 1, Clinton Wastewater Treatment Plant** Delete the requirement to perform concrete repairs, demolish and install flow meters.	**7704**	**2**	**IPC Lydon, LLC**	**($54,419.52)**
C-5	**02/14/24**	**John J. Carroll Water Treatment Plant SCADA System Improvements** Furnish and install individually configured and prefabricated backplane assemblies in selected control panels.	**7582**	**10**	**LeVangie Electric Company, Inc.**	**$163,496.23**
C-6	**02/16/24**	**Western Operations Facilities Groundskeeping Services** Award of a contract to the lowest responsive bidder for groundskeeping services at the Western Operations Facilities for a term of 1,095 calendar days.	**OP-470**	**Award**	**JAM Corporation**	**$257,770.00**
C-7	**02/22/24**	**Nut Island Headworks Odor Control Facility and HVAC Improvements** Furnish and install individually configured and prefabricated backplane assemblies in selected control panels.	**7548**	**16**	**Walsh Construction Company, Inc.**	**$491,644.21**

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: FY24 Financial Update and Summary through February 2024

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 2024 through February 2024, comparing actual spending to the budget, and includes a projection to June 30, 2024.

DISCUSSION:

MWRA is continuing the practice of setting aside favorable Capital Finance variances into the Defeasance Account with the intention of recommending Board approval to use these funds to defease debt and provide rate relief in future years. Targeted defeasances are a critical component of the Authority's multi-year rate management strategy. As such, in February the year-to-date debt related savings of $2.2 million was transferred to the Defeasance Account. This variance is primarily due to lower than budgeted variable interest expense.

The total Year-to-Date variance for the FY24 CEB is $23.2 million, due to lower direct expenses of $15.9 million, indirect expenses of $1.2 million, and higher revenue of $6.1 million. The year-end favorable variance is projected at $47.2 million, of which $13.0 million is related to debt service. Beyond debt service savings, staff project a favorable variance of approximately $34.1 million at year-end of which $24.8 million would be from lower direct expenses, $1.3 million from lower indirect expenses, and $7.9 million from greater than budgeted revenues.

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

FY24 Current Expense Budget

The CEB expense variances through February 2024 by major budget category were:

- Lower Direct Expenses of $15.9 million or 7.9% under budget. Spending was lower for Wages & Salaries, Chemicals, Other Services, Professional Services, Fringe Benefits,

Utilities, and Training & Meetings. Spending was higher than budget for Maintenance, Other Materials, Workers' Compensation, and Overtime.

- Lower Indirect Expenses of $1.2 million or 2.2% under budget due primarily to lower Watershed Reimbursement and PILOT.

- Debt Service expenses were on budget after the transfer of $2.2 million to the defeasance account.

- Revenue was $6.1 million or 1.0% over budget driven by higher Investment Income of $5.7 million due to higher than budgeted interest rates and higher average balances.

FY24 Budget and FY24 Actual Variance by Expenditure Category
(in millions)

	FY24 Budget	FY24 Actual	$ Variance	% Variance
Direct Expenses	$202.7	$186.8	-$15.9	-7.9%
Indirect Expenses	$52.7	$51.5	-$1.2	-2.2%
Capital Financing	$299.4	$299.4	$0.0	0.0%
Total	**$554.8**	**$537.7**	**-$17.1**	**-3.1%**

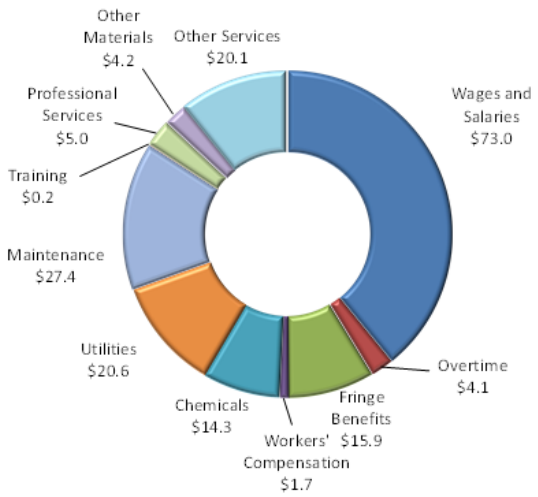
Totals may not add due to rounding

Please refer to Attachment 1 for a more detailed comparison by line item of the budget variances for FY24.

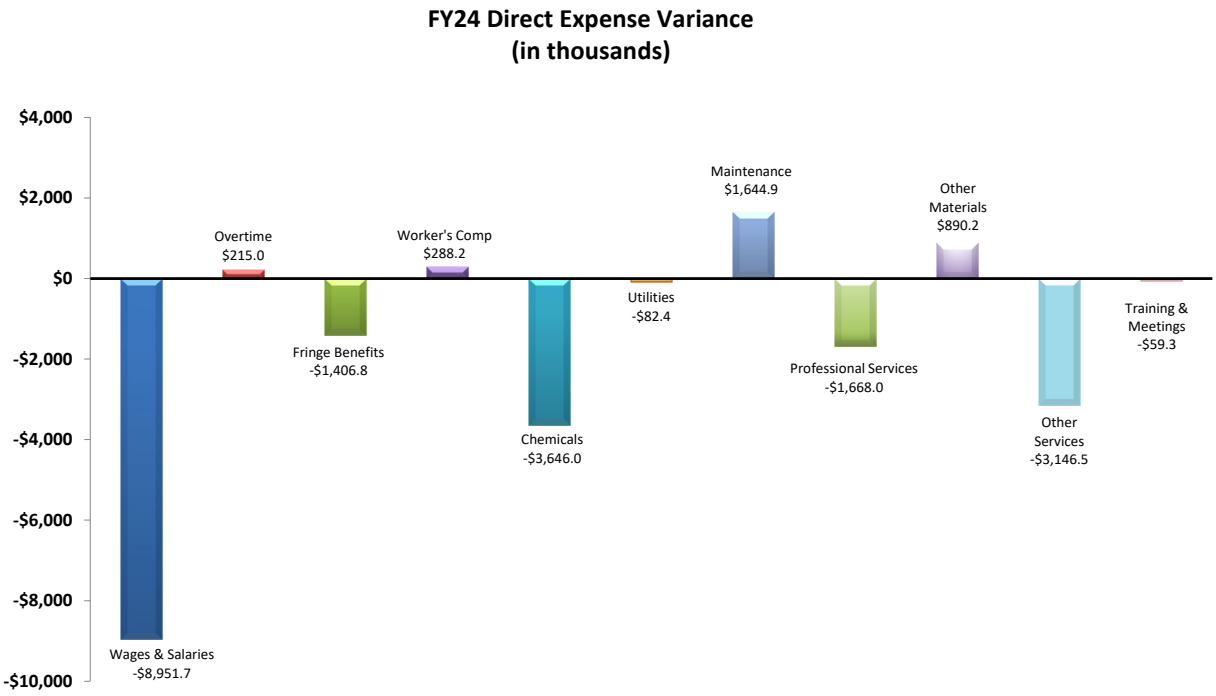
Direct Expenses

FY24 Direct Expenses through February totaled $186.8 million, which was $15.9 million or 7.9% less than budgeted.

FY24 Direct Expenses
(in millions)

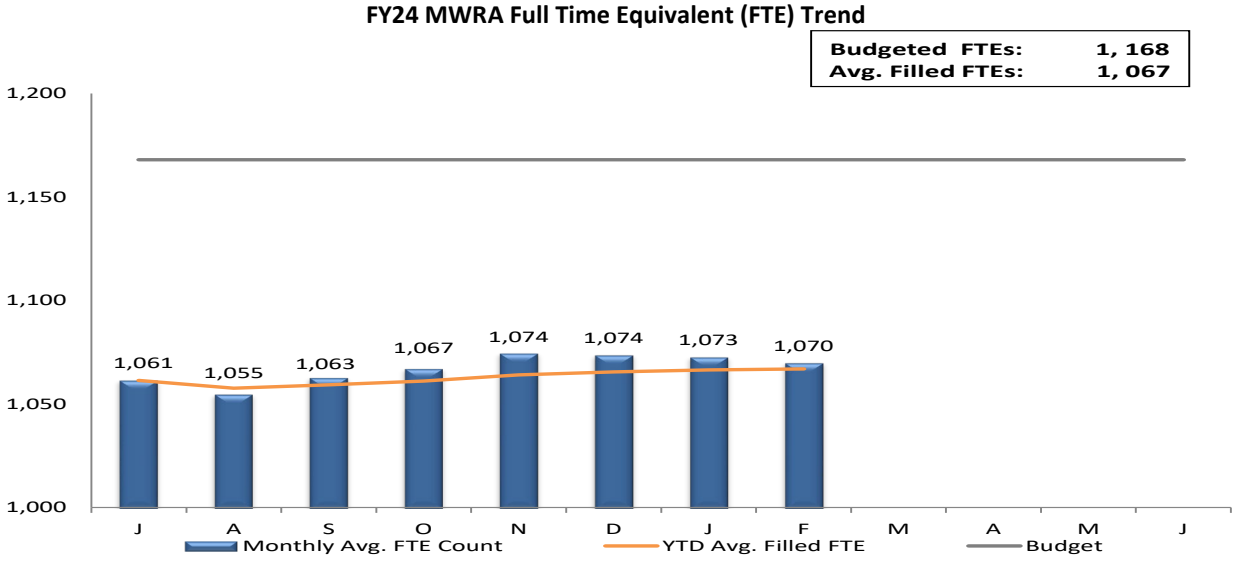


Spending was lower than budget for Wages & Salaries, Chemicals, Other Services, Professional Services, Fringe Benefits, Utilities, and Training & Meetings. These were partially offset by higher than budgeted spending for Maintenance, Other Materials, Workers' Compensation, and Overtime.



Wages and Salaries

Wages and Salaries were under budget by $9.0 million or 10.9%. Through February, there were 101 fewer average FTEs (1,067 versus 1,168 budget) or 8.6% and lower average salaries for new hires versus retirees. The timing of backfilling vacant positions also contributed to Regular Pay being under budget.



Chemicals

Chemicals were lower than budget by $3.6 million or 20.3%. Lower than budget spending on Sodium Hypochlorite of $2.0 million driven by Water Operations of $1.3 million and Wastewater Operations of $152,000 primarily due to contract pricing, and D of $474,000 due to lower pricing for new contract, which is partially offset by additional usage for disinfection due to higher flows earlier in the fiscal year, Ferric Chloride of $665,000 due to decreased usage to maintain digested sludge orthophosphate levels within the target range, Carbon Dioxide was lower than budget by $471,000 primarily due to lower contract price and lower dose required to meet target residual levels in finished water, Aqua Ammonia of $235,000 due to lower price and lower flows, Sodium Bisulfite of $182,000 primarily driven by Water Operations of $108,000 due to lower dose and volume due to lower flows and DITP of $43,000 due to lower quantities to dechlorinate the effluent, and Other Oxidizers (Bioxide) at Framingham PS was lower than budget by $118,000 due to lower price and less deliveries. These are partially offset by higher Hydrogen Peroxide of $230,000 which is added to the DITP influent to reduce elevated H2S levels for odor pretreatment and corrosion control, and allows staff to perform maintenance activities more safely within the tanks. DITP flows are 11.0% greater than the budget and the JCWTP preliminary flows are 3.1% less than the budget through February. 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.

Other Services

Other Services were lower than budget by $3.1 million or 13.5% driven by lower Sludge Pelletization of $2.0 million primarily due to $1.9 million of the $6.2 million of potential landfill costs due to anticipated PFAS regulations that were budgeted in the second half of FY24 as well as lower quantities, Grit & Screenings Removal of $132,000 due to lower quantities, Telecommunications of $750,000 due to updated and less than anticipated costs.

Professional Services

Professional Services were less than budget by $1.7 million or 24.8% driven by lower Other Services of $615,000 due to timing of services including the Disparity Study, Computer Systems Consultant of $343,000, Legal Services of $277,000, and Lab & Testing Analysis of $246,000 all due to the timing of spending.

Maintenance

Maintenance was greater than budget by $1.6 million or 6.4%, largely driven by the timing of projects. Maintenance Services were higher than budget by $889,000 driven by Plant & Machinery Services of $2.0 million primarily due to timing of Combustion Turbine Generator control system upgrade payment to order parts, Computer Software-Licenses/Upgrades of $509,000 due primarily to timing of licenses/upgrades including SQL Server Enterprise and updated cost for Oracle Maintenance, This higher than budgeted spending was partially offset by lower Electrical Services of $988,000 due to timing of work including JCWTP Ozone generator PLC replacement, JCWTP emergency generator emissions monitoring PLC repair, and JCWTP Switchgear PLC Replacement, Building & Grounds Services of $350,000 and HVAC Services of $108,000, also due to timing of work. Maintenance Materials are over budget by $756,000 driven

by Plant & Machinery Materials of $796,000 due to timing and higher spending for glass lined pipe/fittings, seals, and grinder cartridges, and Warehouse Inventory of $669,000 due to need for spare parts as well as purchasing of materials early due to supply chain issues, partially offset by lower Special Equipment Materials of $463,000 due to timing including the purchase of hatch covers at Loring Road, HVAC Materials of $215,000 and Computer Materials of $126,000, due to timing.

Fringe Benefits

Fringe Benefit spending was lower than budget by $1.4 million or 8.1%. Spending was lower than budget for Health Insurance of $1.4 million, 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.

Other Materials

Other Materials were greater than budget by $890,000 or 27.1% driven by higher Computer Hardware of $724,000 primarily due to timing of equipment purchases including printers and additional purchases for audiovisual equipment and equipment kiosks and Vehicle Purchases of $314,000 due to timing of purchases. These were partially offset by lower than budgeted spending for Equipment/Furniture of $200,000 due to timing of purchases related to Phase 3 of the Office Consolidation to Chelsea and DITP, as well as Other Materials of $199,000 due to timing.

Worker's Compensation

Worker's Compensation expenses were greater than budget by $288,000 or 20.2%. The higher than budgeted expenses were due to Compensation Payments of $191,000 and Medical Payments of $134,000 and, partially offset by lower Administrative Expenses of $37,000. Due to uncertainties of when spending will happen, the budget is spread evenly throughout the year.

Overtime

Overtime expenses were greater than budget by $215,000 or 5.5%. Greater than budgeted spending at Deer Island of $369,000 was due to shift coverage as well as rain and snow removal events, partially offset by lower Engineering & Construction of $43,000, and Field Operations of $40,000 due to vacancies resulting in less scheduled overtime. Year-to-date rainfall was a major contributor for the increased overtime.

Utilities

Utilities were lower than budget by $82,000 or 0.4%. Underspending in Diesel Fuel of $1.7 million primarily due to timing of purchasing at Deer Island Treatment Plant (DITP). Deliveries for the most recent purchase of Diesel Fuel began on March 6th. Overspending in Electricity of $1.6 million primarily at DITP of $808,000 is driven by new pass through costs associated with the Mystic Power Station and higher demand usage due to the many rain events. Electricity in Field Operations was greater than budget by $798,000 primarily due to higher use as a result of the many rain events for pumping and fan use for odor control.

Training & Meetings

Training & Meetings was lower than budget by $59,000 or 20.0% primarily due to timing of spending.

Indirect Expenses

Indirect Expenses totaled $51.5 million, which is $1.2 million or 2.2% lower than budget. The variance is driven by lower Watershed Reimbursements and PILOT.

Based on FY24 operating activity only, the Watershed Division is $1.1 million or 8.0% under budget. Lower spending on Wages and Salaries, Fringe Benefits, and Maintenance are driving the variance. When factoring in the FY23 balance forward of $157,000 which was a credit towards FY24, Watershed Reimbursement is $1.2 million or 9.2% below budget through February 2024.

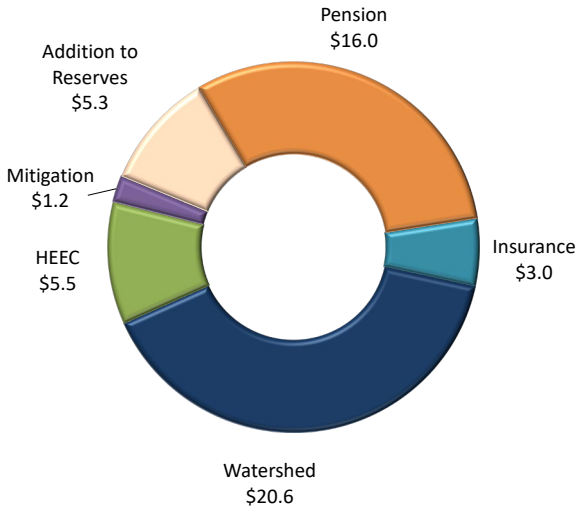
FY24 Watershed Protection Variance

$ in millions	YTD Budget	YTD Actual	YTD $ Variance	YTD % Variance
Operating Expenses	14.1	12.9	-1.2	-8.7%
Operating Revenues - Offset	0.8	0.6	-0.2	-19.2%
FY24 Operating Totals	**13.3**	**12.2**	**-1.1**	**-8.0%**
DCR Balance Forward (FY23 year-end accrual true-up)	0.0	-0.2	-0.2	
FY24 Adjusted Operating Totals	**13.3**	**12.1**	**-1.2**	**-9.2%**
PILOT	8.9	8.5	-0.4	-4.6%
Total Watershed Reimbursement	**22.2**	**20.6**	**-1.6**	**-7.4%**

Totals may not add due to rounding

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 monthly in arears. Accruals are being made monthly based on estimates provided by DCR and trued-up monthly based on the monthly invoice. MWRA's budget is based on the annual Fiscal Year Work Plan approved by the Massachusetts Water Supply Protection Trust (with a vacancy adjustment applied). The FTE count at the end of February was 147 (and 145.1 on a year-to-date basis) vs. a budget of 150.

FY24 Indirect Expenses
(in millions)

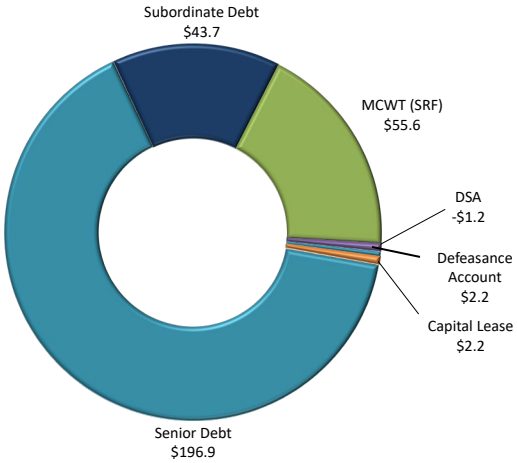


Capital Financing

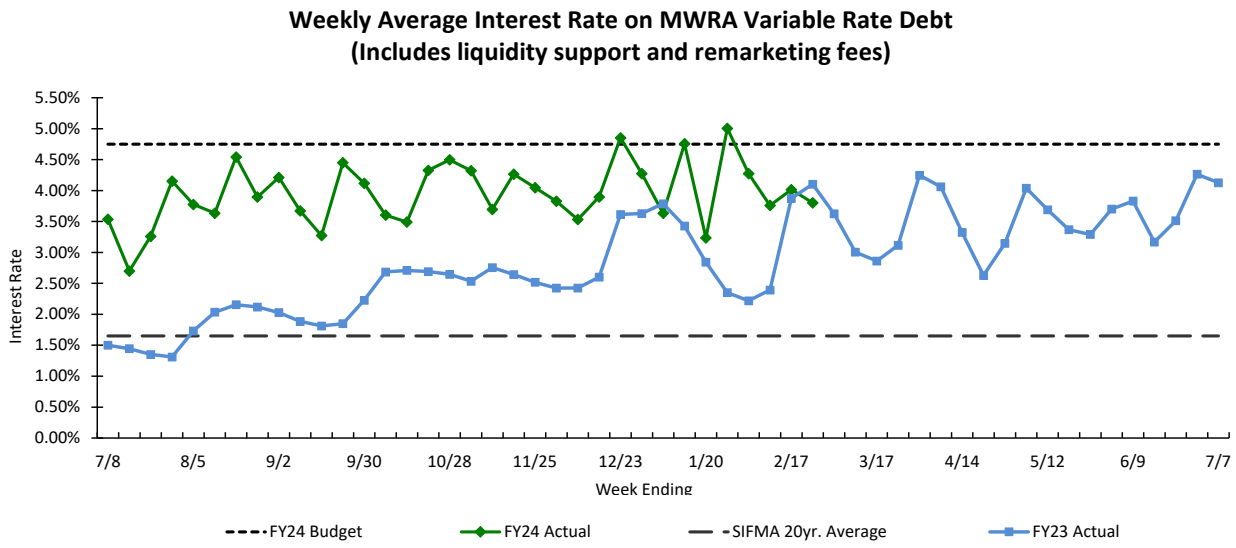
Capital Financing expenses include the principal and interest payments for fixed senior debt, the variable subordinate debt, the Massachusetts Clean Water Trust (SRF) obligation, the commercial paper program for the local water pipeline projects, current revenue for capital, Optional Debt Prepayment, and the Chelsea Facility lease payment.

Capital Financing expenses for FY24 through February totaled $299.4 million, which is at budget after the transfer of $2.2 million year-to-date to the Defeasance account. The transfer reflects lower variable rate debt expense due to lower than anticipated interest rates, partially offset by higher SRF spending due to timing.

FY24 Capital Finance
($ in millions)



The graph below reflects the FY24 actual variable rate trend by week against the FY24 Budget.



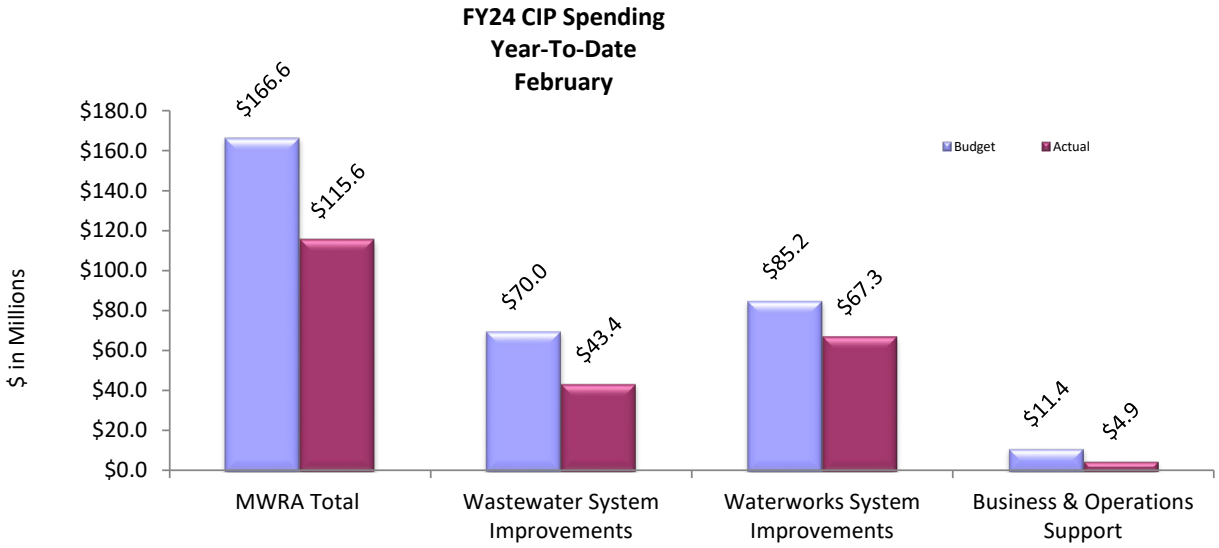
Revenue & Income

Revenues of $594.3 million were $6.1 million or 1.0% over the estimate driven by Investment Income which was $5.7 million or 39.7% over the estimate due to higher than anticipated interest rates and higher average balances.

FY24 Capital Improvement Program

Capital expenditures in Fiscal Year 2024 through February total $115.6 million, $51.0 million or 30.6% under planned spending.

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 $80.1 million, $37.5 million or 31.9% under planned spending.



Overall, CIP spending reflects under planned spending in Wastewater Improvements ($26.5 million), Waterworks ($17.9 million) and Business and Operations Support ($6.5 million). Major variances in Wastewater are primarily due to timing of community grants and loans for the I/I Local Financial Assistance Program, timing of work and construction delays for Braintree/Weymouth Improvements – Construction, delay in performing shaft inspections and issuing NTP for Final Design for the Ward Street & Columbus Park Headworks Upgrades - Design/CA contract, schedule change for DITP Roofing Replacement, lower than projected task order work for DITP As-Needed Design contracts, and work scheduled for FY24 that was completed in FY23 for Chelsea 008 Pipe Replacement. This was partially offset by equipment received ahead of schedule for the Clarifier Rehabilitation Phase 2 – Construction contract, claim settlements for Chelsea Creek Upgrades, and contractor progress for DITP Radio Repeater System Upgrade.

Waterworks variances are primarily due to timing of consultant's work for Tunnel Redundancy Preliminary Design and Massachusetts Environmental Policy Act (MEPA) Review, timing of work for Section 89/29 Replacement – Construction and CP-1 NEH Improvements, schedule change for Section 75 Extension, and timing of services for Geotechnical Support. This was partially offset by timing of community loan distributions for the Water Loan Program, timing of work for Waltham Water Pipeline, work scheduled in FY23 that was completed in FY24 for the CWTP Chemical Feed System Improvements – Construction, and contractor progress for CP-2, Sections 25 & 24 – Construction contracts.

$ in Millions	Budget	Actuals	$ Var.	% Var.
Wastewater System Improvements				
Interception & Pumping	19.1	13.2	(5.9)	-30.8%
Treatment	16.3	13.9	(2.4)	-14.8%
Residuals	0.0	0.0	0.0	0.0%
CSO	2.6	2.0	(0.6)	-24.5%
Other	32.0	14.4	(17.6)	-55.0%
Total Wastewater System Improvements	**$70.0**	**$43.4**	**($26.5)**	**-37.9%**
Waterworks System Improvements				
Drinking Water Quality Improvements	2.4	1.5	(0.9)	-37.2%
Transmission	32.6	21.4	(11.2)	-34.4%
Distribution & Pumping	27.8	20.2	(7.6)	-27.4%
Other	22.3	24.1	1.8	8.1%
Total Waterworks System Improvements	**$85.2**	**$67.3**	**($17.9)**	**-21.1%**
Business & Operations Support	**$11.4**	**$4.9**	**($6.5)**	**-56.8%**
Total MWRA	**$166.6**	**$115.6**	**($51.0)**	**-30.6%**

FY24 Spending by Program:

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

Other Wastewater: Net under planned spending of $17.6 million

- $17.6 million for Community I/I due to timing of community distributions of grants and loans.

Waterworks Transmission: Net under planned spending of $11.2 million

- $3.1 million for Tunnel Redundancy Preliminary Design & MEPA Review due to timing of consultant work.
- $1.7 million for Wachusett Lower Gatehouse Pipe & Boiler Replacement – Construction due to longer lead time on some larger items and a change in design for the multi-orifice valve.
- $1.3 million for WASM 3 Rehabilitation CP-1 due to work scheduled for FY24 performed in FY23.
- $1.1 million for Shaft 5 Improvements Design/CA and Construction, and $1.0 million for Maintenance Garage/Wash Bay/Storage Building - Construction due to schedule changes.
- $0.8 million for Geotechnical Support Services due to timing of support services.
- This under planned spending was partially offset by over planned spending of $1.4 million for Waltham Water Pipeline due to work scheduled in FY23 that was performed in FY24.

Water Distribution and Pumping: Net under planned spending of $7.6 million

- $2.6 million for Section 89/29 Replacement – Construction, $2.1 million for CP-1 NEH Improvements due to timing of work, and $2.4 million for Section 75 Extension - Construction CP-1 due to updated schedule.

Business & Operations Support: Net under planned spending of $6.5 million

- $2.1 million for As-Needed Design Contracts due to lower than projected task order work.
- $1.3 million for Security Equipment & Installation due to timing of security initiatives.

- $0.7 million for MAXIMO Interface Enhancements, $0.6 million for Cabling, $0.5 million for Lawson Upgrade, $0.4 million for Oracle Database Appliance, and $0.3 for Core Switches due to timing and scheduling of work.

Interception & Pumping: Net under planned spending of $5.9 million

- $4.0 million for Braintree/Weymouth Improvements – Construction due to timing, long lead time for equipment and delay in fabrication of structural steel.
  $1.6 million for Ward Street & Columbus Park Headworks Upgrades - Design/CA due to delay in performing shaft inspections and issuing NTP for Final Design.

Wastewater Treatment: Net under planned spending of $2.4 million

- $1.3 million for DITP Roofing Replacement, $0.8 million for DiStor Membrane Replacements, and $0.4 million for Chemical Pipe Replacement – Construction due to schedule changes.
- $0.9 million for Deer Island As-Needed Design contracts due to lower than projected task order work, and $0.7 million for South System Pump Station VFD Repl. Design due to timing of work.
- This under planned spending was partially offset by over planned spending of $2.1 million for Clarifier Rehabilitation Phase 2 – Construction due to equipment received ahead of schedule, $0.4 million for Miscellaneous VFD Replacements due timing of work, and $0.3 million for Radio Repeater System Upgrade 2 due to contractor progress.

Other Waterworks: Net over planned spending of $1.8 million

- $3.4 million for Local Financial Assistance due to timing of community loan distributions.
- This over planned spending was partially offset by less than planned spending of $1.1 million for Steel Tank Improvements due to updated schedule.

Drinking Water Quality Improvements: Net under planned spending of $0.9 million

- $1.4M for the John Carroll Water Treatment Plant (JCWTP) Technical Assistance due to lower than projected task order work, partially offset by $0.8 million for JCWTP Chemical Feed System Improvements Construction due to work scheduled for FY23 that was performed in FY24.

Combined Sewer Overflow: Net under planned spending of $0.6 million

- $0.7 million for Chelsea 008 CSO Pipe Replacement due to work scheduled for FY24 performed in FY23, and $0.4 million for Somerville Marginal New Pipe Connection due to schedule change.
- This under planned spending was partially offset by over planned spending of $0.7 million for Fort Point Channel & Mystic due to timing of Community Managed CSO payments.

Construction Fund Balance

The construction fund balance was $108.5 million as of the end of February. Commercial Paper/Revolving Loan available capacity was $120 million.

ATTACHMENTS:

Attachment 1 – Variance Summary February 2024
Attachment 2 – Current Expense Variance Explanations
Attachment 3 – Capital Improvement Program Variance Explanation
Attachment 4 – Year-End Current Expense Projections vs. Budget

ATTACHMENT 1
FY24 Actuals vs. FY24 Budget

	Feb 2024 Year-to-Date				
	Period 8 YTD Budget	Period 8 YTD Actual	Period 8 YTD Variance	%	FY24 Approved
EXPENSES					
WAGES AND SALARIES	$ 81,995,224	$ 73,043,564	$ (8,951,660)	-10.9%	$ 127,828,242
OVERTIME	3,915,258	4,130,267	215,009	5.5%	5,727,593
FRINGE BENEFITS	17,350,667	15,943,847	(1,406,820)	-8.1%	25,823,383
WORKERS' COMPENSATION	1,429,597	1,717,805	288,208	20.2%	2,144,395
CHEMICALS	17,961,055	14,315,028	(3,646,027)	-20.3%	28,269,124
ENERGY AND UTILITIES	20,718,677	20,636,306	(82,371)	-0.4%	31,064,890
MAINTENANCE	25,744,871	27,389,806	1,644,935	6.4%	38,574,256
TRAINING AND MEETINGS	296,800	237,510	(59,290)	-20.0%	498,597
PROFESSIONAL SERVICES	6,714,525	5,046,559	(1,667,966)	-24.8%	10,410,484
OTHER MATERIALS	3,283,406	4,173,565	890,159	27.1%	7,167,400
OTHER SERVICES	23,265,458	20,118,917	(3,146,541)	-13.5%	38,494,660
TOTAL DIRECT EXPENSES	**$ 202,675,538**	**$ 186,753,174**	**$ (15,922,366)**	**-7.9%**	**$ 316,003,024**
INSURANCE	$ 2,736,314	$ 3,038,833	$ 302,519	11.1%	$ 4,065,380
WATERSHED/PILOT	22,190,629	20,554,379	(1,636,250)	-7.4%	30,358,187
HEEC PAYMENT	5,321,659	5,478,215	156,556	2.9%	7,500,650
MITIGATION	1,197,462	1,197,462	-	0.0%	1,779,086
ADDITIONS TO RESERVES	5,291,081	5,291,081	-	0.0%	7,861,035
RETIREMENT FUND	15,972,804	15,972,804	-	0.0%	15,972,804
POST EMPLOYEE BENEFITS	-	-	-	---	2,849,365
TOTAL INDIRECT EXPENSES	**$ 52,709,949**	**$ 51,532,774**	**$ (1,177,174)**	**-2.2%**	**$ 70,386,507**
STATE REVOLVING FUND	$ 55,085,236	$ 55,610,415	$ 525,179	1.0%	$ 90,798,263
SENIOR DEBT	196,945,386	196,945,386	-	0.0%	294,055,644
DEBT SERVICE ASSISTANCE	(1,187,297)	(1,187,297)	-	0.0%	(1,187,297)
CURRENT REVENUE/CAPITAL	-	-	-	---	19,200,000
SUBORDINATE MWRA DEBT	46,404,791	46,404,791	-	0.0%	69,931,072
LOCAL WATER PIPELINE CP	-	-	-	---	7,744,625
CAPITAL LEASE	2,165,329	2,165,329	-	0.0%	3,217,060
VARIABLE DEBT	-	(2,739,766)	(2,739,766)	---	-
DEFEASANCE ACCOUNT	-	2,214,588	2,214,588	---	-
DEBT PREPAYMENT	-	-	-	---	4,000,000
TOTAL CAPITAL FINANCE EXPENSE	**$ 299,413,444**	**$ 299,413,444**	**$ -**	**0.0%**	**$ 487,759,367**
TOTAL EXPENSES	**$ 554,798,931**	**$ 537,699,392**	**$ (17,099,541)**	**-3.1%**	**$ 874,148,898**
REVENUE & INCOME					
RATE REVENUE	$ 561,526,539	$ 561,526,539	$ -	0.0%	$ 834,268,000
OTHER USER CHARGES	7,415,975	7,348,781	(67,194)	-0.9%	10,390,434
OTHER REVENUE	4,732,577	5,192,818	460,241	9.7%	5,838,903
RATE STABILIZATION	205,613	205,613	-	0.0%	305,482
INVESTMENT INCOME	14,330,610	20,016,126	5,685,516	39.7%	23,346,079
TOTAL REVENUE & INCOME	**$ 588,211,314**	**$ 594,289,876**	**$ 6,078,562**	**1.0%**	**$ 874,148,898**

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY24 Budget YTD February	FY24 Actuals February	FY24 YTD Actual vs. FY24 Budget		Explanations
			$	%	
Direct Expenses					
Wages & Salaries	81,995,224	73,043,564	(8,951,660)	-10.9%	Wages and Salaries are under budget by $9.0 million or 10.9%. Year to date, there have been 101 fewer average FTEs (1,067 versus 1,168 budget), lower average new hire salaries versus retirees, the timing of backfilling vacant positions.
Overtime	3,915,258	4,130,267	215,009	5.5%	Overtime expenses were greater than budget by $215,000 or 5.5%. Greater than budget spending at Deer Island of $369,000 due to shift coverage as well as rain and snow removal events, partially offset by Engineering & Construction of $43,000, and Field Operations of $40,000 due to vacancies resulting in less scheduled overtime. Year-to-date rainfall was a major contributor for the increased overtime.
Fringe Benefits	17,350,667	15,943,847	(1,406,820)	-8.1%	Fringe Benefit spending was lower than budget by $1.4 million or 8.1%. Spending was lower than budget for **Health Insurance** of $1.4 million, 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.
Worker's Compensation	1,429,597	1,717,805	288,208	20.2%	Worker's Compensation expenses were greater than budget by $288,000 or 20.2%. The higher than budgeted expenses were due to **Compensation Payments** of $191,000 and **Medical Payments** of $134,000 and, partially offset and **Administrative Expenses** of $37,000. Due to uncertainties of when spending will happen, the budget is spread evenly throughout the year.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY24 Budget YTD February	FY24 Actuals February	FY24 YTD Actual vs. FY24 Budget		Explanations
			$	%	
Chemicals	17,961,055	14,315,028	(3,646,027)	-20.3%	Chemicals were lower than budget by $3.6 million or 20.3%. Lower than budget spending on **Sodium Hypochlorit**e of $2.0 million driven by Water Operations of $1.3 million and Wastewater Operations of $152,000 primarily due to contract pricing, and DITP of $474,000 due to lower pricing for new contract, which is offset by additional usage for disinfection due to higher flows earlier in the fiscal year, **Ferric Chloride** of $665,000 due to decreased usage to maintain digested sludge orthophosphate levels within the target range, **Carbon Dioxide** was lower than budget by $471,000 primarily due to lower volume, lower contract price, and lower dose required to meet target residual levels in finished water, **Aqua Ammonia** of $235,000 due to lower price and lower flows, **Sodium Bisulfite** of $182,000 primarily driven by Water Operations of $108,000 due to lower dose and volume due to lower flows and DITP of $43,000 due to lower quantities to dechlorinate the effluent, **Other Oxidizers** (Bioxide) at Framingham PS was lower than budget by $118,000 due to lower price and less deliveries, partially offset by higher **Hydrogen Peroxide** of $230,000 which is added to the DITP influent to reduce elevated H2S levels for odor pretreatment and corrosion control, and allows staff to perform maintenance activities more safely within the tanks. DITP flows are 11.0% greater than the budget and the CWTP preliminary flows are 3.1% less than the budget through February. 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	20,718,677	20,636,306	(82,371)	-0.4%	Utilities were lower than budget by $82,000 or 0.4%. Underspending in **Diesel Fuel** of $1.7 million primarily due to timing of purchasing at Deer Island Treatment Plant (DITP). Purchase began on March 6th. Overspending in **Electricity** of $1.6 million primarily at DITP of $808,000 driven by new pass through cost associated with the Mystic Power Station and higher demand usage due to the many rain events. Electricity in Field Operations was greater than budget by $798,000 primarily due to higher use as a result of the many rain events for pumping and fan use for odor control.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY24 Budget YTD February	FY24 Actuals February	FY24 YTD Actual vs. FY24 Budget		Explanations
			$	%	
Maintenance	25,744,871	27,389,806	1,644,935	6.4%	Maintenance was greater than budget by $1.6 million or 6.4%, largely driven by the timing of projects. *Maintenance Services* were higher than budget by $889,000 driven by **Plant & Machinery Services** of $2.0 million primarily due to timing of Combustion Turbine Generator control system upgrade payment to order parts, **Computer Software-Licenses/Upgrades** of $509,000 due primarily to timing of licenses/upgrades including SQL Server Enterprise and updated cost for Oracle Maintenance, This higher than budgeted spending was partially offset by **Electrical Services** of $988,000 due to timing of work including JCWTP Ozone generator PLC replacement, JCWTP emergency generator emissions monitoring PLC repair, and JCWTP Switchgear PLC Replacement, **Building & Grounds Services** of $350,000 and **HVAC Services** of $108,000, also due to timing of work. M*aintenance Materials* are over budget by $756,000 driven by **Plant & Machinery Materials** of $796,000 due to timing and higher spending for glass lined pipe/fittings, seals, and grinder cartridges and **Warehouse Inventory** of $669,000 due to need for spare parts as well as purchasing of materials early due to supply chain issues, partially offset by **Special Equipment Materials** of $463,000 due to timing including the purchase of hatch covers at Loring Road, **HVAC Materials** of $215,000 and **Computer Materials** of $126,000, due to timing.
Training & Meetings	296,800	237,510	(59,290)	-20.0%	Training & Meetings was lower than budget by $59,000 or 20.0% is primarily due to timing driven by MIS ($49,000), Procurement ($10,000), Water Redundancy ($20,000), and Engineering & Construction ($11,000), partially offset by higher spending in Field Operations of $20,000 and Operations Administration of $17,000.
Professional Services	6,714,525	5,046,559	(1,667,966)	-24.8%	Professional Services were less than budget by $1.7 million or 24.9% driven by lower **Other Services** of $615,000 due to timing of services including the Disparity Study, **Computer Systems Consultant of** $343,000**, Legal Services of $277,000, and Lab & Testing Analysis** of $246,000 all due to the timing of spending.
Other Materials	3,283,406	4,173,565	890,159	27.1%	Other Materials were greater than budget by $890,000 or 27.1% driven by **Computer Hardware** of $724,000 million primarily due to timing of equipment purchases including printers and additional purchases for audiovisual equipment and equipment kiosks, **Vehicle Purchases** of $314,000 due to timing of purchases, **Vehicle Expense** of $95,000 due to timing of vehicle expenses including the electrical vehicle charging stations originally anticipated to be completed by FY23, and **Health/Safety** of $91,000 due to timing of purchases. These were partially offset by lower than budgeted spending for **Other Materials** of $199,000 due to Equipment/Furniture of $200,000 due to timing of purchases and timing of Phase 3 Office Consolidation to Chelsea and DITP.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY24 Budget YTD February	FY24 Actuals February	FY24 YTD Actual vs. FY24 Budget		Explanations
			$	%	
Other Services	23,265,458	20,118,917	(3,146,541)	-13.5%	Other Services were lower than budget by $3.1 million or 13.5% driven by **Sludge Pelletization** of $2.0 million primarily due to $1.9 million of the $6.2 million of potential landfill costs due to anticipated PFAS regulations that were budgeted in the second half of FY24 as well as lower quantities and **Grit & Screenings Removal** of $132,000 due to lower quantities, and **Telecommunications of** $750,000 due to updated and less than anticipated costs.
Total Direct Expenses	**202,675,538**	**186,753,174**	**(15,922,364)**	**-7.9%**	
Indirect Expenses					
Insurance	2,736,314	3,038,833	302,519	11.1%	Higher Payments/Claims of $293,000 and higher Premiums of $10,000 than budgeted
Watershed/PILOT	22,190,629	20,554,379	(1,636,250)	-7.4%	Lower Watershed Reimbursement of $1.6 million driven by lower spending on Wages & Salaries, Equipment/Maintenance, and Fringe Benefits.
HEEC Payment	5,321,659	5,478,215	156,556	2.9%	HEEC Revenue Requirement of $161,000.
Mitigation	1,197,462	1,197,462	-	0.0%	
Addition to Reserves	5,291,081	5,291,081	-	0.0%	
Pension Expense	15,972,804	15,972,804	-	0.0%	
Post Employee Benefits	-	-	-		
Total Indirect Expenses	**52,709,949**	**51,532,774**	**(1,177,175)**	**-2.2%**	
Debt Service					
Debt Service	300,600,742	300,600,742	-	0.0%	Capital Financing was on budget after the transfer of $2.2 million to the Defeasance account. The transfer reflects lower variable rate debt expense due to lower than budget variable interest expense of $2.7 million as a result of lower interest rates, partially offset by higher SRF spending of $525,000 due to timing.
Debt Service Assistance	(1,187,297)	(1,187,297)	-	0.0%	
Total Debt Service Expenses	**299,413,445**	**299,413,445**	**-**	**0.0%**	
Total Expenses	**554,798,932**	**537,699,393**	**(17,099,538)**	**-3.1%**	

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY24 Budget YTD February	FY24 Actuals February	FY24 YTD Actual vs. FY24 Budget		Explanations
			$	%	
Revenue & Income					
Rate Revenue	561,526,539	561,526,538	(1)	0.0%	
Other User Charges	7,415,976	7,348,781	(67,195)	-0.9%	
Other Revenue	4,732,577	5,192,818	460,241	9.7%	Other Revenue was $460,000 or 9.7% greater than budget due to **Miscellaneous Revenue** of $329,000, **Energy Revenue** of $181,000, and **Penalties** of $105,000, partially offset by **Profit and Loss on Disposal of Equipment** of $200,000.
Rate Stabilization	205,613	205,613	-	0.0%	HEEC Reserve.
Investment Income	14,330,609	20,016,125	5,685,516	39.7%	Investment Income is over budget due to higher than budgeted interest rates and higher average balances.
Total Revenue	**588,211,314**	**594,289,875**	**6,078,561**	**1.0%**	
Net Revenue in Excess of Expenses	**33,412,382**	**56,590,482**	**23,178,099**		

ATTACHMENT 3
FY24 CIP Variance Report ($000s)

	FY24 Budget February	FY24 Actuals February	Actuals vs. Budget		Explanations
			$	%	
Wastewater					
Interception & Pumping (I&P)	$19,069	$13,188	($5,881)	-30.8%	Less than planned spending Braintree/Weymouth Improvements - Construction: $4.0M (timing of work, long lead time for equipment and delay in fabrication of structural steel) Ward Street & Columbus Park Headworks Upgrades - Design/CA: $1.6M (delay in performing shaft inspections and issuing NTP for Final Design) Siphon Structure Rehabilitation Construction: $1.1M (schedule change) Greater than planned spending Chelsea Creek Upgrades: $1.6M (claim settlements) Prison Point Construction 2 - Discharge Piping Rehabilitation: $992k (award greater than budget)
Treatment	$16,262	$13,855	($2,407)	-14.8%	Less than planned spending DITP Roofing Replacement: $1.3M, DiStor Membrane Replacements: $833k, and Chemical Pipe Replacement - Construction: $375k (schedule changes) DITP As-Needed Design: $942k (lower than projected task order work) SSPS VFD Replacement - Design/ESDC/REI: $718k (Preliminary Design Report phase is more complicated than originally believed) Greater than planned spending Clarifier Rehabilitation Phase 2 - Construction: $2.1M (equipment received ahead of schedule) Miscellaneous VFD Replacements: $410k (timing of work) Radio Repeater System Upgrade 2: $276k (contractor progress)
Residuals	$0	$0	$0	0.0%	
CSO	$2,633	$1,987	($646)	-24.5%	Less than planned spending Chelsea 008 Pipe Replacement: $699k (work scheduled for FY24 performed in FY23) Somerville Marginal New Pipe Connection: $433k (schedule change) Greater than planned spending Fort Point Channel & Mystic: $714k (timing of Community Managed CSO payments)
Other Wastewater	$32,020	$14,414	($17,606)	-55.0%	Less than planned spending I/I Local Financial Assistance: $17.6M (timing of community distributions of grants and loans)
Total Wastewater	**$69,984**	**$43,444**	**($26,540)**	**-37.9%**	

ATTACHMENT 3
FY24 CIP Variance Report ($000s)

	FY24 Budget February	FY24 Actuals February	Actuals vs. Budget		Explanations
			$	%	
Waterworks					
Drinking Water Quality Improvements	$2,420	$1,520	($900)	-37.2%	Less than planned spending CWTP Technical Assistance: $1.4M (lower than projected task order work) Greater than planned spending CWTP Chemical Feed System Improvements - Construction: $795k (work scheduled for FY23 performed in FY24)
Transmission	$32,635	$21,400	($11,235)	-34.4%	Less than planned spending Tunnel Redundancy Preliminary Design & MEPA Review: $3.1M (timing of consultant work) Wachusett Lower Gatehouse Pipe & Boiler Replacement - Construction: $1.7M (longer lead time on some larger items and a change in design for the multi-orifice valve) WASM 3 Rehabilitation CP-1: $1.3M (work scheduled for FY24 performed in FY23) Shaft 5 Improvements Design/CA and Construction: $1.1M, and Maintenance Garage/Wash Bay/Storage Building - Construction: $967k (schedule changes) WASM 3 - MEPA/Design/CA/RI: $848k (timing of consultant work) Geotechnical Support Services: $840k (timing of support services) Administration, Legal & Public Outreach: $678k (timing of administration, legal and public acquisition costs) Program Support Services: $482k (timing of services) Watershed Land Acquisition: $445k (timing of land purchases) WASM/SPSM PRV - Design/CA: $434k (less than anticipated consultant services) Greater than planned spending Waltham Water Pipeline - Construction: $1.4M (work scheduled in FY23 performed in FY24)
Distribution & Pumping	$27,824	$20,198	($7,626)	-27.4%	Less than planned spending Section 89/29 Replacement - Construction: $2.6M, CP-1 NEH Improvements: $2.1M (timing of work) Section 75 Extension - Construction CP-1: $2.4M, and CP-2 NEH Improvements: $333k (schedule changes) Greater than planned spending CP-2, Sections 25 & 24 - Construction: $443k (contractor progress)

ATTACHMENT 3
FY24 CIP Variance Report ($000s)

	FY24 Budget February	FY24 Actuals February	Actuals vs. Budget		Explanations
			$	%	
Other Waterworks	$22,330	$24,147	$1,817	8.1%	Greater than planned spending Local Water Pipeline Financial Assistance Program: $3.4M (timing of community loan distributions) Electrical Distribution Upgrades at Southborough: $606k (work planned for FY23 performed in FY24) Less than planned spending Steel Tank Improvements - Construction: $1.1M and Design/CA: $498k (updated Construction schedule)
Total Waterworks	**$85,209**	**$67,265**	**($17,944)**	**-21.1%**	
Business & Operations Support					
Total Business & Operations Support	**$11,393**	**$4,919**	**($6,473)**	**-56.8%**	Less than planned spending As-Needed Design Contracts: $2.1M (lower than projected task order work) Security Equipment & Installation: $1.3M (timing of security initiatives), Cabling: $644k, MAXIMO Interface Enhancements: $515k, Lawson Upgrade: $452k, Oracle Database Appliance: $388k, and Core Switches: $320k (timing of work) FY24-28 Vehicle Purchases: $490k (timing of purchases) Greater than planned spending Office Space Modifications: $823k (FY23 planned work completed in FY24)
Total MWRA	**$166,586**	**$115,628**	**($50,957)**	**-30.6%**	

Attachment 4
FY24 Budget vs. FY24 Projection

TOTAL MWRA	FY24 Budget	FY24 Projection	Change FY24 Budget vs FY24 Projection	
			$	%
EXPENSES				
WAGES AND SALARIES	$ 127,828,242	$ 114,808,802	$ (13,019,440)	-10.2%
OVERTIME	5,727,593	6,350,450	622,857	10.9%
FRINGE BENEFITS	25,823,383	24,532,214	(1,291,169)	-5.0%
WORKERS' COMPENSATION	2,144,395	2,466,054	321,659	15.0%
CHEMICALS	28,269,124	21,543,101	(6,726,023)	-23.8%
ENERGY AND UTILITIES	31,064,893	31,928,750	863,857	2.8%
MAINTENANCE	38,574,255	39,074,255	500,000	1.3%
TRAINING AND MEETINGS	498,597	436,272	(62,325)	-12.5%
PROFESSIONAL SERVICES	10,410,484	9,410,484	(1,000,000)	-9.6%
OTHER MATERIALS	7,167,398	6,877,398	(290,000)	-4.0%
OTHER SERVICES	38,494,660	33,736,660	(4,758,000)	-12.4%
TOTAL DIRECT EXPENSES	**$ 316,003,024**	**$ 291,164,441**	**$ (24,838,583)**	**-7.9%**
INSURANCE	$ 4,065,380	$ 4,295,270	$ 229,890	5.7%
WATERSHED/PILOT	30,358,187	28,644,392	(1,713,795)	-5.6%
HEEC PAYMENT	7,500,650	7,643,162	142,512	1.9%
MITIGATION	1,779,086	1,779,086	-	0.0%
ADDITIONS TO RESERVES	7,861,035	7,861,035	-	0.0%
RETIREMENT FUND	15,972,805	15,972,805	-	0.0%
POSTEMPLOYMENT BENEFITS	2,849,365	2,849,365	-	0.0%
TOTAL INDIRECT EXPENSES	**$ 70,386,507**	**$ 69,045,115**	**$ (1,341,393)**	**-1.9%**
STATE REVOLVING FUND	$ 90,798,263	$ 83,358,104	$ (7,440,159)	-8.2%
SENIOR DEBT	294,055,644	291,943,144	(2,112,500)	-0.7%
SUBORDINATE DEBT	69,931,072	66,443,800	(3,487,272)	-5.0%
LOCAL WATER PIPELINE CP	7,744,625	7,744,625	-	0.0%
CURRENT REVENUE/CAPITAL	19,200,000	19,200,000	-	0.0%
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%
DEBT PREPAYMENT	4,000,000	4,000,000	-	0.0%
DEBT SERVICE ASSISTANCE	(1,187,297)	(1,187,297)	-	0.0%
TOTAL DEBT SERVICE	**$ 487,759,367**	**$ 474,719,436**	**$ (13,039,931)**	**-2.7%**
TOTAL EXPENSES	**$ 874,148,898**	**$ 834,928,991**	**$ (39,219,907)**	**-4.5%**
REVENUE & INCOME				
RATE REVENUE	$ 834,268,000	$ 834,268,000	$ -	0.00%
OTHER USER CHARGES	10,390,434	10,349,723	(40,711)	-0.4%
OTHER REVENUE	5,838,903	5,645,942	(192,961)	-3.3%
RATE STABILIZATION	305,482	305,482	-	0.0%
INVESTMENT INCOME	23,346,079	31,520,079	8,174,000	35.0%
TOTAL REVENUE & INCOME	**$ 874,148,898**	**$ 882,089,226**	**$ 7,940,328**	**0.9%**
VARIANCE:		**$ (47,160,235)**	**$ (47,160,235)**	

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Amendment 2 to Contract 7438 for the Enterprise Content Management System Purchase and Implementation
Cadence Solutions Inc.
Contract 7438

COMMITTEE: Administration, Finance, & Audit

___ INFORMATION
_X_ VOTE

Douglas Rice, Director, Procurement
Paula Weadick, MIS Director

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

Renata Thomas, Business Relationship Manager, MIS
Preparer/Title

Michele S. Gillen
Director, Administration

RECOMMENDATION:

That the Board of Directors, on behalf of the Authority, approve Amendment 2 to Contract 7438, Enterprise Content Management System purchase and implementation, with Cadence Solutions Inc. to extend the contract term by 12 months, from March 24, 2024 to March 24, 2025, with the additional cost of $86,700 to be included under a separate delegated authority amendment as set forth herein.

DISCUSSION:

In December 2020, the Board of Directors approved the award of Contract 7438 for an Enterprise Content Management System (ECM) to Cadence Solutions, Inc. The initial phase of the ECM implementation focused on streamlining the management processes for the collection, review, approval and distribution of various engineering and construction documents consisting of eleven engineering, five construction, and eleven records management workflows as well as thirty-one associated data sources/databases that were largely paper-based and time consuming.

The ultimate vision is for an Authority-wide ECM solution that can be used to manage multiple document types and workflows. The advantages of moving away from paper processes and implementing an electronic records management system were highlighted by the COVID-19 impacts to MWRA's business. Teleworking requirements emphasize the value of paperless document workflows, approvals, and electronic document management and access controls. Out of necessity, staff developed a number of ad-hoc processes during the shift to teleworking such as the approval of various forms. While these ad-hoc processes, still in place today, enabled the approval process to continue and reduced the reliance on paper, they lack consistency and document tracking. In addition to moving the engineering, construction, and records management

processes outlined above to electronic processes, the ECM system using OpenText software will provide a foundation for establishing Authority-wide standards for electronic signature and form approvals with improved tracking and document control.

Amendment #1

The testing and training phase of the project was extremely resource intensive. Staffing shortages and reallocation of resources impacted the timeline for completion of this phase. Additionally, eight workflow configurations were identified as needing modifications and two custom forms were needed to support the automation of configured workflows. The additional effort to complete the testing and training, workflow/configuration modifications and creating the custom forms were incorporated into the contract cost for an additional $198,150. Amendment 1 also included a one-year renewal of the OpenText maintenance and support for $98,838.19. Overall, Amendment 1 extended the contract end date an additional twelve months and increased the contract amount by $296,988.19.

Amendment #2

MWRA has completed all processes defined in both the original contract and Amendment 1. Engineering and Construction staff are using the ECM system to track and update projects through the various workflows, and the Records Center is utilizing all of the records management portions of the system for both physical and electronic records within the Authority. The roll out of this system has received overwhelmingly positive feedback.

Two additional workflows are recommended to ECM to address other critical Authority workflow needs. The additional workflows are 1) the Staff Summary review and approval process; and 2) the Policy and Procedures review and approval process. Also, the Contract Requisition workflow in ECM needs modifying to support all contract types. Staff will leverage the lessons learned from the ad-hoc processes previously created to configure these workflows. The two new workflows will utilize the robust tools inside ECM (e.g. version control and same-time, multi-person document commenting, automation, and tracking) to provide better visibility into the routing process. Staff recommend approval of this additional work.

The cost for the above additional work is $86,700. To perform this work an additional 12 months must be added to the contract for the time needed to complete the configurations and allow for testing and training. While the Executive Director has sufficient delegated authority to approve the cost for this additional work, he does not have any remaining delegated authority to extend the contract time. Accordingly, staff request that the Board approve an extension of 12 moths to the contract to perform the work of adding two workflows and modifying the Contract Requisition workflow, along with testing and training. If approved by the Board, the Executive Director, under delegated authority, would then approve an amendment to the contract of $86,700 to cover the costs of this additional work.

CONTRACT SUMMARY:

	Amount	Time	Dated
Original Contract:	$2,148,635.00	24 Months	03/24/2021
Amendment 1	$296,988.19	12 Months	03/15/2023
Proposed Amendment 2		12 Months	Pending
Amended Contract:		48 Months	

BUDGET/FISCAL IMPACT:

The FY24 Capital Improvement Program includes $2,629,508 for Contract 7438. This amendment is for a time extension only. Accordingly, there is no financial impact.

MBE/WBE PARTICIPATION:

Cadence Solutions is not a certified Minority-owned or Women-owned business.

MASSACHUSETTS WATER RESOURCES AUTHORITY
Deer Island
33 Tafts Avenue
Boston, MA 02128

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

WASTEWATER POLICY & OVERSIGHT COMMITTEE MEETING

Date: Wednesday, March 13, 2024

Time: Immediately following the Water Committee

Location: MWRA Chelsea Administration Building, 2nd Floor, Rooms 2C and D
2 Griffin Way
Chelsea, MA 02150

A photo ID will be required for entry.

The meeting will also be available via Webex. The Webex meeting link and password to attend virtually are below:

Webex meeting link (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Meeting Number: 2341 033 0434 Password: 3132024

AGENDA

A. Information

1. Infiltration/Inflow Local Financial Assistance Program Annual Update

B. Contract Awards

1. Thermal Plant, Hydro Power and Wind Turbine Maintenance: O'Connor Corporation, Contract OP-464

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Infiltration/Inflow Local Financial Assistance Program Annual Update

---

COMMITTEE: Wastewater Policy & Oversight

X INFORMATION
VOTE

Kristen M. Hall, Senior Program Manager, Planning
Israel D. Alvarez, Project Manager, Planning
Preparer/Title

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

RECOMMENDATION:

For information only.

DISCUSSION:

MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program was initiated in May 1993 to provide funding to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. The Program's goal is to provide technical and financial assistance to member communities, thus improving sewer system conditions to reduce I/I and ensure ongoing repair and replacement and efficient operation and maintenance of local collection systems. Staff's review of long-term wastewater meter data and frequency and duration of sanitary sewer overflows (SSOs) indicates MWRA's financial assistance for local I/I reduction and collection system rehabilitation projects, together with Combined Sewer Overflow (CSO) control program projects and indoor water conservation, have reduced and continue to maintain flows in the regional wastewater collection system.

The I/I Local Financial Assistance Program is a critical component of MWRA's Regional I/I Reduction Plan.[1] Specifically, local sewer system rehabilitation projects are intended to reduce I/I, offsetting ongoing collection system deterioration and, in the long-term, resulting in lower regional I/I volumes. Regional I/I reductions ensure that the dry day wastewater flow does not exceed the Deer Island National Pollutant Discharge Elimination System (NPDES) permit limit of 436 mgd.[2] Over the last ten years, the dry day wastewater flow to the Deer Island plant has averaged 280 mgd, well below the current and proposed NPDES permit limits (see table below).

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[1] As required by the NPDES permit for the Deer Island Treatment Plant, MWRA's Regional Infiltration/Inflow Reduction Plan was approved by MassDEP in November 2002. MWRA is required to report annually on the I/I Reduction Plan and present estimates of I/I for each member sewer community. The new NPDES draft permit issued in May 2023 indicated that additional I/I reporting may be required.

[2] The draft NPDES permit has a proposed annual rolling average flow limit of 361 MGD.

Calendar Year	Total Wastewater Flow	Dry Day Wastewater Flow
2014	326 mgd	284 mgd
2015	295 mgd	256 mgd
2016	284 mgd	256 mgd
2017	318 mgd	280 mgd
2018	362 mgd	308 mgd
2019	335 mgd	295 mgd
2020	299 mgd	267 mgd
2021	347 mgd	305 mgd
2022	277 mgd	248 mgd
2023	340 mgd	298 mgd
10 Year Average	**318 mgd**	**280 mgd**

Update on Distribution of I/I Financial Assistance to Communities

Since 1993, a total of $860.75 million in grant and loan funds has been authorized by the Board and allocated to member sewer communities through the Program's 14 funding phases. Community grant/loan allocations are based on each community's share of sewer charges. In September 2022, Program funding Phase 14 ($100 million) was added. Financial assistance under Phase 14 continues at 75% grants and 25% ten-year, interest-free loans (the same as Program Phases 9 through 12). In June 2018, Program funding Phases 11, 12 and 13 were added at $100 million per phase. Phase 13 was added as a ten-year, interest-free loan-only phase, which communities could utilize if they exhausted their grant/loan allocations, prior to the creation of a new grant/loan phase. With the addition of Phase 14, communities can now access their Phase 14 grant/loan funding when they have exhausted their Phase 12 allocation without using the loan-only Phase 13 funds. Through December 2023, nine communities have used their entire Phase 14 funding allocation, four communities have used their entire Phase 13 funding allocation and 20 communities have used their entire Phase 12 funding allocation. One community (Chelsea) is expected to receive their total Phase 14 allocation as part of the February/March 2024 I/I funding distribution cycle.

All 43 metropolitan sewer customer communities are participating in the financial assistance program. Through December 2023, a total of $551.4 million has been distributed to member communities to fund 676 local sewer rehabilitation projects. The remaining $309.4 million are approved for distribution through FY30. All scheduled community loan repayments have been made, a total of $201 million to date. Of the 676 total projects, 587 projects have been completed and 89 projects are ongoing in planning, design or construction phase. Attachment 1 provides a summary of funds allocated, distributed, and remaining for each member community. Attachment 2 provides a summary of funding distributions by fiscal quarter since program inception in May 1993. Grant and loan funding is provided to local communities for eligible I/I reduction projects including planning, design, construction and engineering services during construction. These projects generally take one to three years to complete. A total of 79% of the funds distributed to date have financed local construction projects.

The table below details funds distributed for planning, design, construction and construction services for both completed and ongoing projects.

I/I Financial Assistance for Planning, Design and Construction

PROJECT PHASE	COMPLETED PROJECTS ($ millions)	ONGOING PROJECTS ($ millions)	TOTAL ($ millions)
Planning/Study:	$ 52.0	$ 11.5	$ 63.5 (11%)
Design:	18.0	9.0	27.0 (5%)
Construction:	317.3	117.7	435.0 (79%)
Eng. Services During Const.:	20.0	5.9	25.9 (5%)
TOTAL	$ 407.3 (74%)	$ 144.1 (26%)	$ 551.4 (100%)

Program Results from Local Projects

Through December 2023, 676 local I/I reduction and sewer system rehabilitation projects have been funded through the MWRA's I/I Local Financial Assistance (grant/loan) Program. Cumulative results are summarized below.

Results for planning and sewer inspection projects are:

- 2,530 miles of sewer TV inspected;
- 1,716 miles of sewer flow isolated;
- 1,489 miles of sewer smoke tested;
- 68,890 sewer manholes inspected; and
- 79,200 buildings inspected.

Offset Joint Detected via CCTV Inspection

Inflow Source Identified by Smoke Testing

Results for projects targeting infiltration reduction are:

- 83 miles of sewer replaced;
- 357 miles of cured-in-place-pipe (CIPP) liner installed;
- 195 miles of sewer tested/chemically sealed;
- 3,388 sewer spot repairs;
- 19,842 service connection repairs; and
- 4.8 miles of underdrains sealed.

Results for projects targeting inflow reduction are:

- 1,208 catch basins disconnected;
- 49 miles of new or replaced storm drains installed;
- 24,755 manholes rehabilitated/sealed;
- 4,051 manhole covers replaced or inflow seals installed;
- 551 sump pumps redirected; and
- 5,839 downspouts/area drains disconnected.

Sewer Manhole in Marsh: Raised and Sealed

CIPP Liner Installation

I/I and Stormwater Impacts on the MWRA Collection System

Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes, manholes and deteriorated joints. Typically, many sewer pipes and sewer service laterals are below the surrounding groundwater table. Therefore, leakage into the sewer (infiltration) is a broad problem that is difficult and expensive to identify and resolve.

Infiltration Into a Sanitary Sewer

Inflow is extraneous flow entering the collection system through point sources and may be directly related to stormwater runoff from sources such as roof leaders, yard and area drains, basement sump pumps, ponded manhole covers, cross connections from storm drains or catch basins, and leaking tide gates. Inflow causes a rapid increase in wastewater flow during and continuing after storms and extreme high tides. The volume of inflow entering a collection system typically depends on the magnitude and duration of rainfall, as well as related impacts from snowmelt, flooding, and storm surge.

Inflow Into a Manhole During Flooding

Stormwater in combined sewers is, by design, collected in the combined sewer system to be transported to a downstream treatment facility. During rainfall events that cause the combined sewer system to reach capacity, a portion of wastewater flow is diverted to combined sewer overflow (CSO) storage facilities and CSO outfalls.

The volume of I/I and stormwater (in combined sewers) that is discharged by member sewer communities into the MWRA collection system is influenced by seasonal and wet weather

conditions as well as tide height and storm surge. Stormwater and I/I take up pipeline capacity in the collection system that would otherwise be available to transport sanitary flow. During extreme storm events, particularly in periods of high groundwater, excessive I/I may cause sewer system surcharging and sanitary sewer overflows (SSOs). I/I entering the collection system also results in the transport of groundwater and surface water out of the natural watershed.

Review of Long-Term Flows in the MWRA Collection System

Attachment 3 provides graphs of long-term wastewater flow data (35 years from 1989 to 2023) for the total collection system to the Deer Island Treatment Plant as well as flow data for the north and south collection systems. The five-year running average wastewater flow is overlaid on each flow graph to smooth the annual variability in the flow data. Annual rainfall from the Logan Airport gauge is also displayed on Attachment 3. The long-term average daily flow for the total system is 349 mgd and the average annual rainfall is 43.5 inches. Using the five-year running average over the long term, the total system wastewater average daily flow has declined approximately 67 mgd, a reduction of 17%. The north collection system wastewater flow has declined by approximately 52 mgd, while the south collection system wastewater flow has declined by approximately 15 mgd.

The long-term flow tributary to the Deer Island Treatment Plant is impacted by a variety of factors, some helping to decrease wastewater flow while others increase wastewater flow, as noted below.

- CSO separation projects reduce stormwater tributary to the combined sewer system leading to decreased flows over time. However, MWRA's pumping and interceptor relief upgrades, as well as CSO optimization projects, are intended to maximize wet weather flow to the treatment plant and minimize CSOs and SSOs leading to increased flows over time.

- MWRA's technical and financial assistance for local I/I reduction and sewer rehabilitation projects stimulate gradual improvements to the regional collection system reducing I/I and stormwater over time. However, the regional collection system continues to age and deteriorate, leading to increased I/I over time.

- Water use in the region has decreased significantly. The reduction in indoor water use has resulted in a decrease in wastewater flow. However, decreases in outdoor water use and water system leakage will have no impact on wastewater flow. Within MWRA's sewer service area over the last 20 years, indoor water use has decreased by approximately 20 gallons per capita per day due to water conservation trends. However, over the same 20-year period, the sewered area population has increased by approximately 283,000 (due to increased population and expanded sewered areas). The net decrease in wastewater flow from reduced indoor water use is estimated at 20 mgd over the last 20 years.

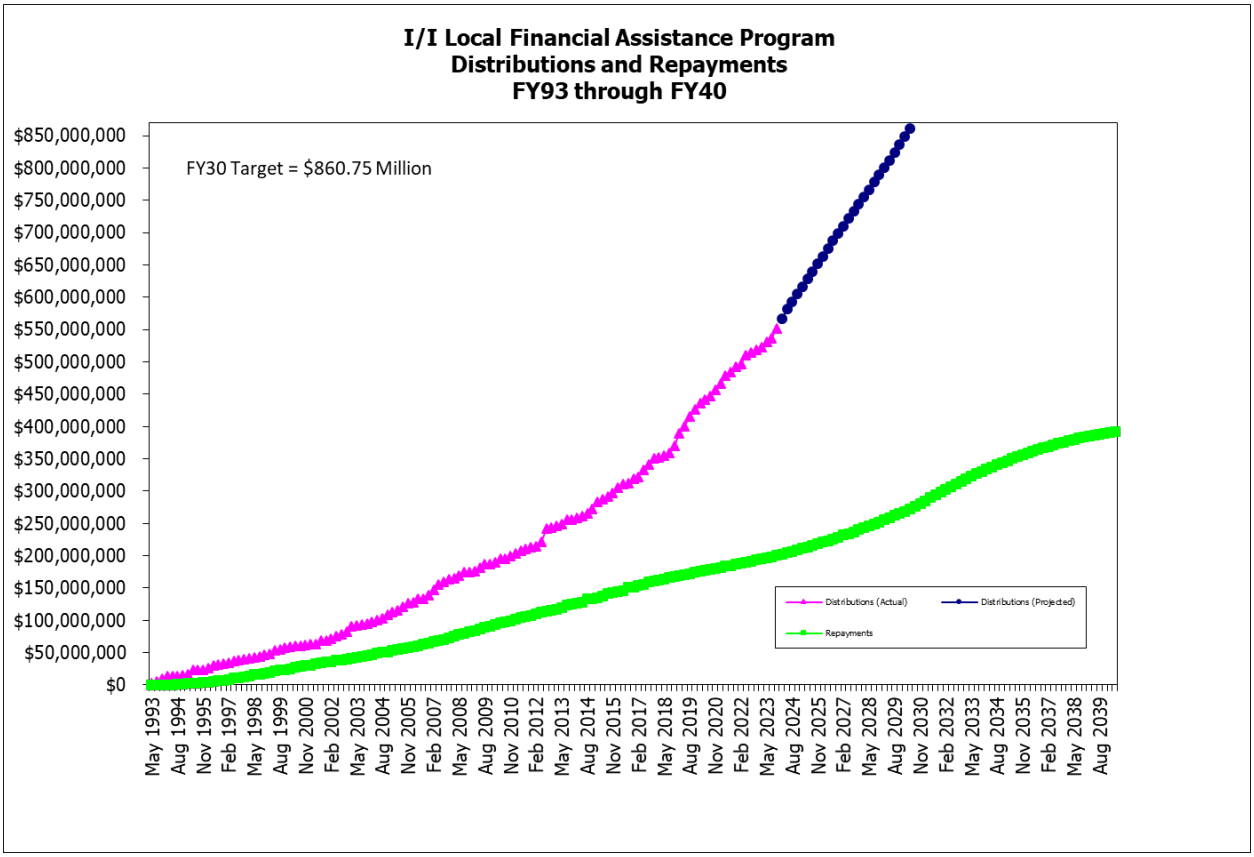
Wastewater Flow Reduction Summary

In summary, MWRA's financial assistance for local I/I reduction and collection system rehabilitation projects, in combination with CSO Control Program project benefits and indoor water use reductions, have reduced and continue to maintain wastewater flow volumes in the regional collection system tributary to the Deer Island Treatment Plant.

BUDGET/FISCAL IMPACT:

For the total program, the budget target is $860.75 million for grant and loan distributions. The FY24 CIP includes an overall budget of $468 million for the grant portion of the I/I Local Financial Assistance Program. An additional $393 million is budgeted for the loan portion of the program. Depending on the timing and level of community loan requests, loan distributions can fluctuate, sometimes causing overspending or underspending (versus budgeted totals) for any particular fiscal year. Community grants and loans are financed through MWRA 30-year bonds.

Through December 2023, $551 million has been distributed ($301 million in grants and $250 million in loans). The loan portion is offset by an equal amount of loan repayments over time. All scheduled community loan repayments have been made, a total of $201 million to date. As community loans are repaid, the funds are deposited into MWRA's construction fund. The Program has a remaining balance of $310 million in future community grants and loans through FY30. The graph below presents grant and loan distributions and loan repayments (actual and projected) for Program Phases 1-14 (FY93 through FY40).



At the MWRA Advisory Board's Operations Committee meeting on January 5, 2024, committee members developed and discussed two additional program funding phases (Phase 15 and Phase 16) to the existing MWRA I/I Local Financial Assistance Program (Phases 1-14). The two additional program funding phases were approved and will be advanced to the full Advisory Board as part of their CIP comments.

The Operations Committee recommended that I/I Program Phase 15 consist of a $100 million interest-free "stop gap" loan funding phase (as with the Program's Phase 13 funding phase).

Community funding allocations would become available in FY25. Zero-interest loan repayments would occur over 10 years.

The Operations Committee recommended that I/I Program Phase 16 consist of a $125 million grant-loan funding phase. Community funding allocations would become available in FY26. Phase 16 funds would be distributed as 75% grants and 25% interest-free loans with loan repayments over 10 years.

MBE/WBE PARTICIPATION:

MBE/WBE participation goals are included in the Program's Financial Assistance agreements.

ATTACHMENTS:

Attachment 1 - Community Funding Summary through December 2023
Attachment 2 - Summary of Funding Distributions by Fiscal Quarter
Attachment 3 - Long-Term Regional Flow Data

ATTACHMENT 1
MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
COMMUNITY FUNDING SUMMARY THROUGH DECEMBER 2023

Community	Total Allocations (Phases 1 - 14)	Total Distributions (Phases 1 - 14)	Percent Distributed	Funds Remaining
Arlington	$15,473,000	$12,215,900	79%	$3,257,100
Ashland	$4,348,500	$2,020,060	46%	$2,328,440
Bedford	$6,354,600	$3,109,158	49%	$3,245,442
Belmont	$9,325,100	$5,135,100	55%	$4,190,000
Boston	$246,921,200	$122,868,059	50%	$124,053,141
Braintree	$16,449,000	$12,040,400	73%	$4,408,600
Brookline	$24,005,200	$19,666,200	82%	$4,339,000
Burlington	$9,632,800	$8,522,800	88%	$1,110,000
Cambridge	$44,640,100	$28,830,100	65%	$15,810,000
Canton	$7,565,900	$3,126,850	41%	$4,439,050
Chelsea	$13,510,100	$11,760,100	87%	$1,750,000
Dedham	$10,400,000	$9,240,000	89%	$1,160,000
Everett	$15,251,500	$11,611,500	76%	$3,640,000
Framingham	$23,045,000	$13,671,000	59%	$9,374,000
Hingham	$3,202,500	$2,593,670	81%	$608,830
Holbrook	$3,149,600	$1,349,600	43%	$1,800,000
Lexington	$13,715,300	$12,155,300	89%	$1,560,000
Malden	$23,373,900	$6,725,900	29%	$16,648,000
Medford	$22,077,600	$7,961,600	36%	$14,116,000
Melrose	$11,456,300	$10,106,300	88%	$1,350,000
Milton	$10,164,500	$10,164,500	100%	$0
Natick	$10,522,600	$6,832,600	65%	$3,690,000
Needham	$11,267,600	$4,018,600	36%	$7,249,000
Newton	$39,277,400	$39,277,400	100%	$0
Norwood	$13,239,400	$6,879,400	52%	$6,360,000
Quincy	$36,950,000	$32,325,000	87%	$4,625,000
Randolph	$11,400,800	$4,971,058	44%	$6,429,742
Reading	$8,789,100	$6,709,100	76%	$2,080,000
Revere	$19,090,900	$6,302,900	33%	$12,788,000
Somerville	$29,265,800	$18,995,800	65%	$10,270,000
Stoneham	$8,919,900	$7,829,900	88%	$1,090,000
Stoughton	$8,962,900	$7,902,900	88%	$1,060,000
Wakefield	$11,116,900	$9,836,900	88%	$1,280,000
Walpole	$6,940,000	$4,806,050	69%	$2,133,950
Waltham	$25,062,400	$19,214,560	77%	$5,847,840
Watertown	$11,475,800	$8,865,800	77%	$2,610,000
Wellesley	$10,429,700	$4,739,700	45%	$5,690,000
Westwood	$4,932,300	$3,091,300	63%	$1,841,000
Weymouth	$21,750,900	$13,949,584	64%	$7,801,316
Wilmington	$4,822,000	$2,462,000	51%	$2,360,000
Winchester	$7,673,000	$5,923,000	77%	$1,750,000
Winthrop	$6,293,400	$5,083,400	81%	$1,210,000
Woburn	$18,505,500	$16,515,500	89%	$1,990,000
Totals	$860,750,000	$551,406,549	64%	$309,343,451

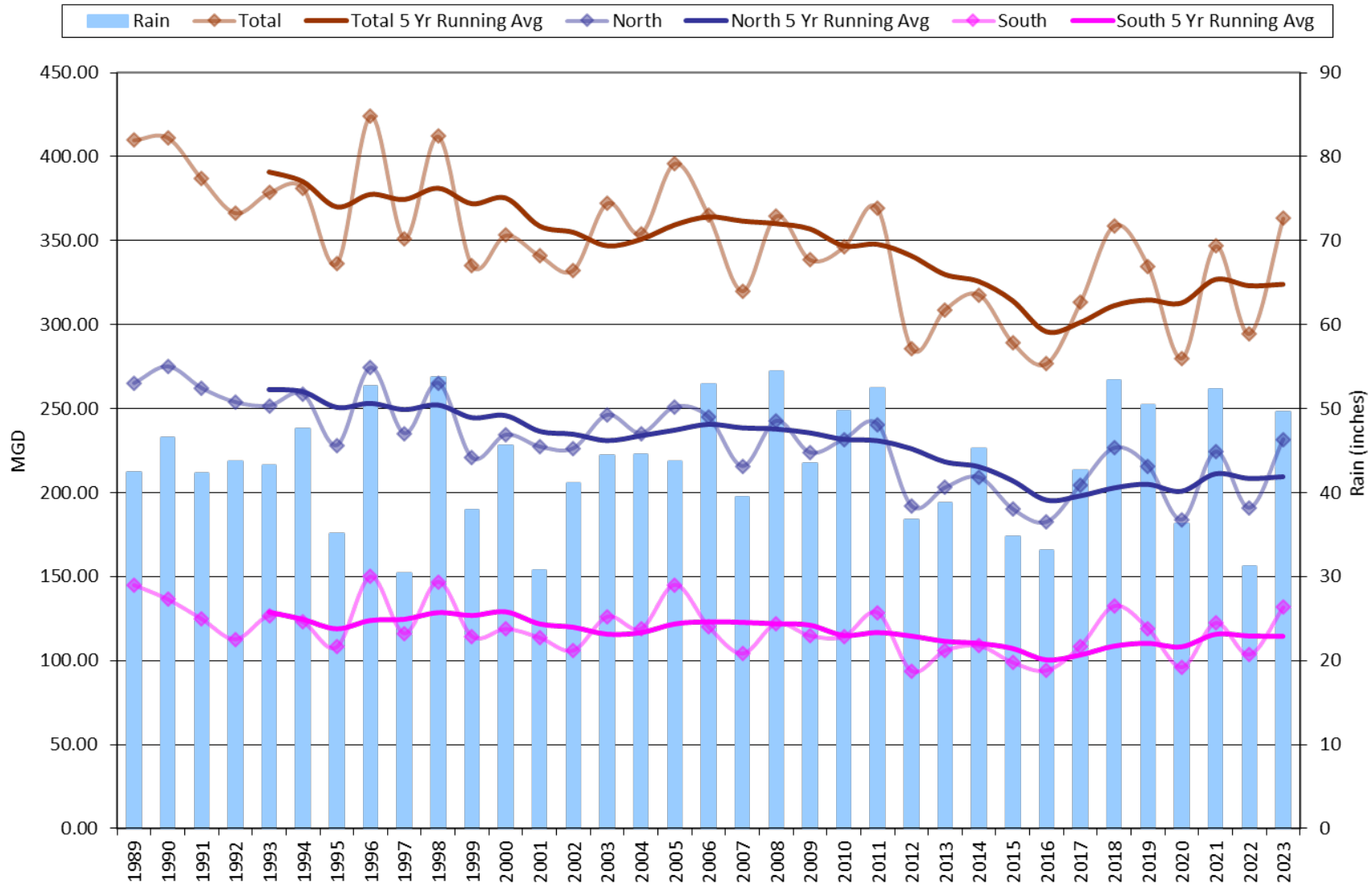
Note: Through December 2023, nine communities have used their entire Phase 14 funding allocation, four communities have used their entire Phase 13 funding allocation and 20 communities have used their entire Phase 12 funding allocation.

Attachment 2

MWRA I/I Local Financial Assistance Program - Fiscal Year Breakdown

FY	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	Distribution Cycle	Distribution Amount	FY Total
FY93	Aug 1992	$0	Nov 1992	$0	Feb 1993	$0	May 1993	$2,714,883	$2,714,883
FY94	Aug 1993	$3,096,468	Nov 1993	$4,096,133	Feb 1994	$3,191,032	May 1994	$251,494	$10,635,127
FY95	Aug 1994	$354,126	Nov 1994	$976,700	Feb 1995	$1,894,030	May 1995	$6,489,891	$9,714,747
FY96	Aug 1995	$0	Nov 1995	$504,100	Feb 1996	$2,921,600	May 1996	$3,902,426	$7,328,126
FY97	Aug 1996	$1,682,061	Nov 1996	$1,581,266	Feb 1997	$395,100	May 1997	$3,530,758	$7,189,185
FY98	Aug 1997	$1,066,300	Nov 1997	$1,157,260	Feb 1998	$909,350	May 1998	$2,001,608	$5,134,518
FY99	Aug 1998	$1,521,100	Nov 1998	$2,464,263	Feb 1999	$1,481,700	May 1999	$5,758,077	$11,225,140
FY00	Aug 1999	$1,315,767	Nov 1999	$1,847,900	Feb 2000	$1,679,000	May 2000	$1,070,100	$5,912,767
FY01	Aug 2000	$1,148,400	Nov 2000	$388,000	Feb 2001	$1,640,931	May 2001	$804,800	$3,982,131
FY02	Aug 2001	$4,480,735	Nov 2001	$704,040	Feb 2002	$1,804,200	May 2002	$5,002,691	$11,991,666
FY03	Aug 2002	$1,962,600	Nov 2002	$4,461,768	Feb 2003	$7,955,752	May 2003	$1,836,600	$16,216,720
FY04	Aug 2003	$2,021,940	Nov 2003	$1,306,200	Feb 2004	$1,770,760	May 2004	$3,295,400	$8,394,300
FY05	Aug 2004	$2,756,659	Nov 2004	$6,013,436	Feb 2005	$4,054,060	May 2005	$2,636,700	$15,460,855
FY06	Aug 2005	$5,377,487	Nov 2005	$4,589,600	Feb 2006	$1,519,463	May 2006	$6,489,676	$17,976,226
FY07	Aug 2006	$0	Nov 2006	$4,947,414	Feb 2007	$8,789,300	May 2007	$8,121,023	$21,857,737
FY08	Aug 2007	$3,915,500	Nov 2007	$4,355,750	Feb 2008	$1,392,400	May 2008	$4,436,600	$14,100,250
FY09	Aug 2008	$4,196,399	Nov 2008	$352,000	Feb 2009	$1,990,300	May 2009	$4,872,400	$11,411,099
FY10	Aug 2009	$5,462,736	Nov 2009	$616,600	Feb 2010	$2,679,600	May 2010	$4,845,000	$13,603,936
FY11	Aug 2010	$723,700	Nov 2010	$3,183,250	Feb 2011	$4,123,100	May 2011	$4,258,900	$12,288,950
FY12	Aug 2011	$3,695,100	Nov 2011	$2,417,378	Feb 2012	$848,300	May 2012	$7,010,324	$13,971,102
FY13	Aug 2012	$21,299,965	Nov 2012	$1,004,610	Feb 2013	$2,460,000	May 2013	$2,675,000	$27,439,575
FY14	Aug 2013	$7,550,310	Nov 2013	$0	Feb 2014	$2,929,700	May 2014	$2,271,852	$12,751,862
FY15	Aug 2014	$4,053,000	Nov 2014	$7,647,400	Feb 2015	$10,128,648	May 2015	$4,803,450	$26,632,498
FY16	Aug 2015	$3,983,100	Nov 2015	$5,783,000	Feb 2016	$7,195,116	May 2016	$5,483,000	$22,444,216
FY17	Aug 2016	$2,352,100	Nov 2016	$6,553,210	Feb 2017	$2,918,900	May 2017	$10,434,030	$22,258,240
FY18	Aug 2017	$8,085,900	Nov 2017	$10,311,545	Feb 2018	$1,377,800	May 2018	$1,909,730	$21,684,975
FY19	Aug 2018	$4,107,370	Nov 2018	$12,150,449	Feb 2019	$19,027,200	May 2019	$11,067,748	$46,352,767
FY20	Aug 2019	$14,287,100	Nov 2019	$10,990,840	Feb 2020	$9,635,048	May 2020	$5,454,250	$40,367,238
FY21	Aug 2020	$6,087,196	Nov 2020	$9,789,250	Feb 2021	$9,642,573	May 2021	$11,878,316	$37,397,335
FY22	Aug 2021	$5,582,842	Nov 2021	$7,692,520	Feb 2022	$4,149,000	May 2022	$13,903,765	$31,328,127
FY23	Aug 2022	$4,897,221	Nov 2022	$4,024,558	Feb 2023	$4,076,134	May 2023	$8,736,800	$21,734,713
FY24	Aug 2023	$4,761,170	Nov 2023	$15,133,250	Feb 2024		May 2024		$19,894,420
Total		$131,824,352		$137,043,690		$124,580,097		$157,947,592	$551,406,549
Average		$4,252,398		$4,420,764		$4,152,670		$5,095,074	$17,920,906

ATTACHMENT 3
MWRA Long-Term Regional Flow Data
NOAA Annual Rainfall at Logan Airport



Note: As a result of the Wastewater Meter Replacement Project, CY21 wastewater flows were generated from Deer Island pumping records (as opposed to the summation of individual community flows).

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: Thermal Plant, Hydro Power and Wind Turbine Maintenance Contract OP-464 O'Connor Corporation

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COMMITTEE: Wastewater Policy & Oversight

____ INFORMATION
_X_ VOTE

Michele S. Gillen
Director of Administration

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

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

RECOMMENDATION:

To approve the award of Contract OP-464, Thermal Plant, Hydro Power and Wind Turbine 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 $13,590,197 for a contract term of 1095 calendar days from the Notice to Proceed.

DISCUSSION:

This contract includes furnishing all labor, Factory Authorized Representative services, materials, equipment and incidentals necessary to repair, maintain and replace, as necessary, all equipment related to steam generation and heating systems at the Deer Island Thermal Power Plant, the hydroelectric turbines at the Deer Island Treatment Plant, the Loring Road Covered Storage Facility in Weston, the Cosgrove Intake Facility in Clinton, the Oakdale Power Station in West Boylston, the 600 kilowatt wind turbine at the Deer Island Treatment Plant and the 1,500 kilowatt wind turbine at the DeLauri Pump Station in Charlestown. In addition, this contract includes a one-time major rehabilitation of the wicket gate assemblies for the two 1,100 kilowatt hydro generators on Deer Island.

The Thermal Power Plant on Deer Island, which has been in service since 1998, contains two high-pressure boilers that generate steam energy, which is used for facility heating, process heating, and electrical generation. Both boilers can be fired with digester gas (methane), No. 2 diesel fuel oil, or a combination of both. The high-pressure steam from the boilers is directed to the main 18-megawatt steam turbine generator and a 1.2-megawatt backpressure steam turbine generator to generate electricity. The electric power generated by the steam turbines varies in relation to the plant's heating demand and digester gas production. The low-pressure exhaust steam from the steam turbines provides facility and process heating through Deer Island's hot water heat loop.

Figure 1: Two High - Pressure Steam Boilers at Deer Island

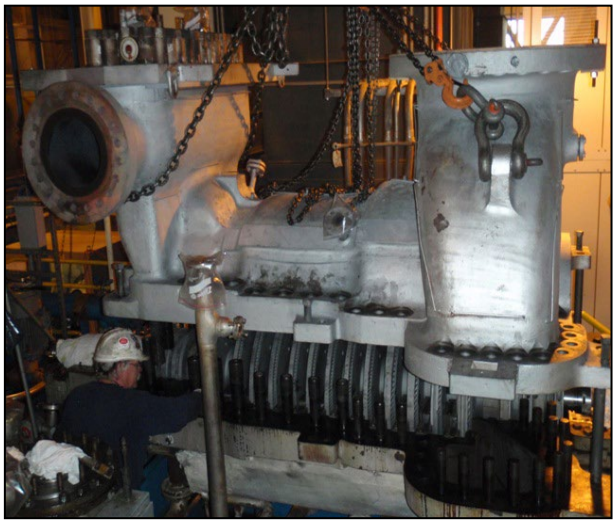


Figure 2: 18 MW Steam Turbine Generator at Deer Island

The 600 kilowatt wind turbine located on Deer Island has been installed and in service since November 2009. The 1,500 kilowatt wind turbine was installed in October 2011 and is located at the DeLauri Pump Station in Charlestown but connected to Eversource's electrical distribution system.

Figure 3: 1500 kW Wind Turbine at DeLauri Pump Station

Figure 4: 600 kW Wind Turbine at Deer Island

The two Deer Island hydro turbines have been in service since 2001. These units use treated plant effluent to generate electricity as the effluent falls into the outfall tunnel. The electric power generated by the hydro turbines varies in relation to total plant flow and ocean tide levels.

The Loring Road Covered Storage Facility contains a 200 kilowatt Leffel hydro turbine with a Marelli generator that was installed in 2011. The Cosgrove Intake Facility has two 1.2 Megawatt Kaplan Style controllable pitch, Leffell turbines accompanied by 4160 Volt General Electric generators that were installed in the 1960s. The Oakdale Power Station contains a three Megawatt Francis Morgan Smith turbine, circa 1940. These units operate in MWRA's drinking water facilities.

Figure 5: Deer Island Hydro Turbine Generator

The total annual economic benefit realized by MWRA (electric and thermal) from the steam turbines, hydroelectric turbines and wind turbines located on Deer Island is approximately $24.4 million; economic benefit from the hydroelectric turbines and wind turbine located at the other facilities included in this contract is approximately $1.6 million; for a total annual economic benefit of over $26 million from the equipment maintained under this contract. This contract will provide the required maintenance services to ensure the overall reliability and operation of the equipment.

State regulations require that steam boilers and appurtenances be thoroughly inspected externally and internally at least once a year in accordance with the National Board Inspection Code. These required inspections, along with preventive maintenance of the boilers, steam turbine generators, hydro turbine generators and associated equipment, are essential to ensuring the continued safe and reliable operation of these critical systems, and to their optimum performance.

The Contractor will provide scheduled annual inspection and maintenance services, non-emergency and emergency repair services, replacement parts and factory authorized vendor services at each of the facilities.

The scheduled annual inspections and maintenance services are included in the Lump Sum portion of the contract. These services are performed on either a pre-defined calendar basis or on the number of hours of operation for the equipment.

The contract also includes several allowance items and unit price items that will be drawn down on an as-needed basis: non-emergency labor $621,000 and emergency labor $108,500; replacement parts $875,000; authorized factory representative services $505,000; and fire department detail services $31,250, which are required when repairs are made that require welding. The maintenance scope and allowance items were developed based on reasonable assumptions and past usage from previous maintenance contracts for these systems.

In addition to the above services this Contract includes major rehabilitation of the wicket gate

assemblies for the two 1,100 kilowatt hydro generators located on Deer Island. The wicket gates consist of a number of gates that constantly modulate, controlling the flow of water into the generator which controls the speed and the amount of electricity produced by the units. The gates are controlled by a series of electrical and mechanical linkages that drive the gates open and close. Maintaining the reliability of the wicked gates have become very problematic over the last five to seven years and during that time, the contractors have performed a number of repairs and services on the limited parts that are accessible. The cost and frequency of the wicket gate repair work has increased significantly over the last seven years. The actual gates are located inside the assembly housing are not accessible without fully disassembling a portion of the hydro generator. The level of effort to remove and reinstall the assembly is extensive. In addition, only the original equipment manufacturer, Andritz Hydro, can perform the required work involved in the rehabilitation of the internal components of the wicket gate assemblies. This requires the assemblies to be shipped to the Andritz facility located in Washington State.

Procurement Process

Contract OP-464 was publically advertised in the Boston Herald, Banner Publications, El Mundo, the Central Register, and COMMBUYS. In addition, bids were made available for public downloading on MWRA's e-procurement system (Event 5781) and bid in accordance with Chapter 149 of the Massachusetts General Laws. Bids were opened on February 16, 2024; the results are presented below.

BIDDERS	BID PRICE
Engineer's Estimate	$8,603,958
O'Connor Corporation	$13,590,197

MWRA received one bid as summarized above. O'Connor Corporation's bid was $13,590,197, or 58% higher than the Engineer's Estimate.

Staff interviewed O'Connor Corporation's Project Manager and Estimator who confirmed that the submitted bid price represents the full scope of work as outlined in the contract specifications. The bid price contains all of the elements required in the lump sum. Staff determined that the differences between the Engineer's Estimate and O'Connor Corporation's bid price were primarily attributed to the following: rehabilitation of the two Deer Island 1,100 kilowatt hydro turbine wicket gate assemblies ($2.9M); overhead and profit ($1M); Project Management ($384K); and trade labor costs ($310K).

Previous maintenance contracts for the thermal power plant and hydro generators have historically drawn a limited number of bidders, primarily due to the specialized expertise required to perform the work and the requirement of DCAMM certification. DCAMM certification is required because this is a Chapter 149 construction contract. Staff included the maintenance of the 600 kilowatt Deer Island and the 1,500 kilowatt Charlestown wind turbines in this contract to attempt to take advantage of the economies of scale and to provide more mechanical maintenance capacity for these units. Previously, wind turbine maintenance was bid under a smaller maintenance contract that drew limited interest from small companies. While this procurement did not result in multiple bids, it should be noted that O'Connor's bid price included $300K for the work associated on the wind turbines which was $12K less than the Engineer's Estimate for that work.

The largest component of the difference between the bid price and the Engineer's Estimate is the rehabilitation of the hydro turbine wicket gate assemblies. The Engineer's Estimate carried approximately $1.2M for this work. O'Connor carried $4.1M in its bid. Andritz Hydro, the original equipment manufacturer, accounts for approximately $2.9M of the $4.1M carried in O'Connor's bid price to perform the rehabilitation work. During the bid review, O'Connor indicated that the bid includes new wicket gates (a component of the entire assembly) rather than refurbished. O'Connor stated that refurbishing the existing gates may result in the gates no longer being able to meet the original design tolerances due to the loss of material during the machining phase. In addition, O'Connor's bid carried approximately $1.2M for labor to remove and reinstall the wicked gate assemblies, material, tooling, transportation and technical support during installation. The Engineer's Estimate carried approximately $500K for this work.

Other differences between O'Connor's bid and the Engineer's Estimate are: 1) Overhead and Profit - O'Connor's bid included a 20% markup ($2.1M) for overhead and profit while the Engineer's Estimate carried 15% or $1.1M, which staff have typically seen on past projects; 2) Full-time Project Manager - O'Connor's bid included 8,000 hours for the Project Manager to oversee the work, while the Engineer's Estimate carried 5,000 hours, resulting in a difference of $384K; 3) Trade Labor Rate - O'Connor's bid included an average hourly mixed -trade rate of $138/hour versus the Engineer's Estimate of $119/hour, a difference of $310K for the work associated with the two high pressure boilers and steam turbines located in the Thermal Power Plan on Deer Island.

In light of this result, staff considered several different alternatives for moving forward. Repackaging the work under separate contracts was given careful consideration, however, staff does not recommend this approach due to the historically limited number of qualified bidders that would be interested in the work and the risk of receiving no bids or bids at an even higher cost.

References for O'Connor Corporation were checked and found to be favorable. O'Connor Corporation is the present contractor for the expiring Hydro and Thermal Maintenance Contract. Staff have reported that they are very pleased with the quality and timeliness of the work performed. Staff have determined that the bid price is reasonable, complete, and includes the payment of prevailing wages.

Staff have determined that O'Connor Corporation possesses the skill, ability, and integrity necessary to perform the work under this contract and is qualified to do so. Therefore, staff recommend the award of this Contract to O'Connor Corporation as the lowest responsible and eligible bidder.

BUDGET/FISCAL IMPACT:

Funding of $1,118,000 is included in FY24 Current Expense Budget for the first year of this contract. Appropriate funding will be included in subsequent Proposed CEB requests for the remaining term of the contract. The FY24 CEB will realize an economic benefit of over $26 million for the energy and renewable energy credits produced by this equipment.

MBE/WBE PARTICIPATION:

There were no MBE and WBE participation requirements for this contract due to limited opportunities for subcontracting

MASSACHUSETTS WATER RESOURCES AUTHORITY
Deer Island
33 Tafts Avenue
Boston, MA 02128

Frederick A. Laskey
Executive Director
Chair: J. Wolowicz
Vice-Chair: M. White-Hammond
Committee Members:
B. Peña
L. Taverna
P. Flanagan
J. Foti
H. Vitale

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

PERSONNEL & COMPENSATION COMMITTEE MEETING

Date: Wednesday, March 13, 2024

Time: Immediately following the Water Policy & Oversight Committee

Location: MWRA Chelsea Administration Building, 2nd Floor, Rooms 2C and D
2 Griffin Way
Chelsea, MA 02150

A photo ID will be required for entry.

The meeting will also be available via Webex. The Webex meeting link and password to attend virtually are below:

Webex meeting link (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Meeting Number: 2341 033 0434 Password: 3132024

REVISED AGENDA

A. Approvals

1. March 2024 PCR Amendments
2. Appointment of Heather Sulejman, Manager, Training and Development

STAFF SUMMARY

TO: Board of Director
FROM: Frederick A Laskey, Executive Director
DATE: March 13, 2024
SUBJECT: March 2024 PCR Amendments

COMMITTEE: Personnel and Compensation

____ INFORMATION
__X__ VOTE

Wendy Chu, 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, except those resulting only in a change in title or cost center, must be approved by the Personnel and Compensation 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.

March 2024 PCR Amendments

There are two PCR Amendments this month.

Organizational Changes:

1. Salary adjustment to one filled position in the Operations Division, Pipe Maintenance Water Department for a Heavy Equipment Operator I, Unit 3, Grade 17, due to a union agreement for a class recruitment rate.

2. Salary adjustment to one filled position in the Operations Division, Ground Maintenance Metro Department for a Heavy Equipment Operator I, Unit 3, Grade 17, due to a union agreement for a class recruitment rate.

BUDGET/FISCAL IMPACT:

The annualized budget impact of these PCR amendments will be a maximum cost of $42,110. Staff will ensure that the cost associated with these PCR amendments will not result in spending over the approved FY24 Wages and Salaries budget.

ATTACHMENTS:
Job Description

MASSACHUSETTS WATER RESOURCES AUTHORITY
POSITION CONTROL REGISTER AMENDMENTS
FISCAL YEAR 2024

PCR AMENDMENTS REQUIRING BOARD APPROVAL - March 13, 2024

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
B75	Operations Pipe Maintenance Water Dept. 3383028	F	S	Heavy Equipment Operator	3	17	Heavy Equipment Operator	3	17	$69,034	$92,265	-	$92,265	$23,231	-	$23,231	Salary adjustment due to recruitment rate.
B76	Operations Ground Maintenance Metro Dept. 5411021	F	S	Heavy Equipment Operator I	3	17	Heavy Equipment Operator I	3	17	$73,386	$92,265	-	$92,265	$18,879	-	$18,879	Salary adjustment due to recruitment rate.
				BOARD TOTAL =	2						**TOTAL:**			$42,110	-	$42,110	

MWRA
POSITION DESCRIPTION

POSITION: Heavy Equipment Operator I

DIVISION: Operations

DEPARTMENT: Field Operations

BASIC PURPOSE:

Operates heavy equipment and vehicles.

SUPERVISION RECEIVED:

Works under the general supervision of the departmental Manager or Supervisor.

SUPERVISION EXERCISED:

Exercises close supervision of skilled laborers and laborers as assigned.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Operates a variety of heavy equipment such as, but not limited to, backhoe, front-end loader, cranes, tractor cab and trailers, excavators, pumps, generators, and pneumatic tools.
- Operates equipment for excavations for valve replacement, pipeline installation, leak repair, and other miscellaneous excavations.
- Installs trench boxes, mechanical shoring systems, and other support systems for the safety of excavations.
- Assists mechanics in the maintenance and repair of heavy vehicles and equipment as needed.

SECONDARY DUTIES:

- Promotes and participates in the cross-functional work practices.
- Trains peers and subordinates as requested.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) Basic reading, writing, mathematical, scientific and oral communication skills normally attained through a high school education or the equivalent: and

(B) Considerable knowledge of the methods and techniques used in the maintenance and safe operation of a wide variety of heavy and/or specialized maintenance and construction equipment and vehicles as acquired through a minimum of five (5) years' experience; and

(C) Experience in urban utility excavation, construction, and installation; or

(D) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

(A) Ability to follow oral and written instructions.

(B) Skill in the operation of listed tools and equipment.

(C) Ability to operate heavy equipment for extended periods in a variety of climatic conditions.

SPECIAL REQUIREMENTS:

Valid Massachusetts Class A Commercial Driver's License.

Department of Public Safety Hoisting Engineer's Licenses as follows:

a. 1B Hoisting License (Telescoping Boom with Cables Crane and 2A Hoisting License (Front End Loaders, Backhoes & Excavators) required at time of hire.

b. 3A Hoisting License (Overhead Cranes and Air or Electric Powered Cranes), 4E Hoisting License (Catch Basin Cleaners), and 4G Hoisting License (Specialty Lawn Mowers) to be obtained within six months of date of hire.

Must demonstrate proficiency for operating heavy equipment including but not limited to:

- 50 ton LinkBelt crane or equivalent
- Volvo tracked excavator or equivalent
- Tractor cab and lowboy trailer
- 10 wheel dumps with tagalong trailer
- Various types of backhoes (JCB, Caterpillar, John Deere)
- Front End Loader
- Truck Mounted crane

Complete productivity improvement competency-based training program related to **ESSENTIAL DUTIES AND RESPONSIBILITIES** as outlined above and successfully demonstrates required competencies.

TOOLS AND EQUIPMENT USED:

Motor vehicle, specialized maintenance and construction equipment, hand tools, hoist, mobile radio.

PHYSICAL DEMANDS:

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

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

The employee must regularly lift and/or move up to 60 pounds, frequently lift and/or move up to 100 pounds. Specific vision abilities required by this job include close, distance and peripheral vision, depth perception and the ability to adjust focus.

WORK ENVIRONMENT:

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

While performing the duties of this job, the employee regularly works near moving mechanical parts, is frequently exposed to wet and/or humid conditions and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and risk of electric shock, and vibration.

The noise level in the work environment is usually very loud in field settings and loud at other work locations.

August 2023

STAFF SUMMARY

To: Board of Directors
From: Frederick A. Laskey, Executive Director
Date: March 13, 2024
Subject: Appointment of Heather Sulejman
Manager, Training and Development

COMMITTEE: Personnel & Compensation

_____ INFORMATION
_X_ VOTE

Wendy Chu, Director, Human Resources
Preparer/Title

Michele S. Gillen
Director, Administration

RECOMMENDATION:

To approve the appointment of Heather Sulejman to the position of Manager, Training and Development (Non-Union, Grade 14) in the Administration Division at an annual salary of $139,000, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The position of Manager, Training and Development became vacant upon the retirement of the incumbent, Jack Porcello, effective March 1, 2024. The position reports to the Director, Human Resources and is responsible for the development, implementation, and overall management of all professional, technical and non-technical training and development programs for the Authority. The Manager, Training and Development supervises a Program Manager and two Senior Training Specialists.

This position was posted internally and externally. There were 31 applicants for the position. Five candidates were interviewed, including one internal candidate. The selection committee was comprised of the Director, Human Resources, the incumbent Manager, Training and Development, and the Manager, Occupational Health and Safety. The selection committee recommended Ms. Sulejman as the best candidate for the position. Given the critical nature of this position, a second interview was conducted with the Director, Human Resources, the Director, Administration and the Special Assistant, Affirmative Action and Compliance Unit who concurred with the first selection committee's recommendation to appoint Ms. Sulejman as the Manager, Training and Development based upon her experience, background, and knowledge.

Ms. Sulejman is highly qualified for the position. She has over 15 years of experience in the fields of education and corporate training, including course instruction, course development, training facilitation, and operationalizing training delivery services. She began her career as an Instructor of English Reading and Writing at the collegiate level, but eventually transitioned from academic instruction to business/corporate learning. She has worked directly on and has overseen trainings on a broad range of subject matters geared towards a wide range of learners, including micro-businesses, governmental agencies, Fortune 500 companies, and business associations. She also has several years of experience managing employees and currently supervises a team of four

employees who are responsible for providing training services in the areas of communication and negotiation.

Ms. Sulejman is also an experienced user of Learning Management Systems (LMS) and oversaw the implementation and administration of the LMS used by her current employer. This required her to evaluate several different LMS products, assist with designing the selected LMS product, and roll out and troubleshoot the product with users.

Ms. Sulejman received a Bachelor of Arts degree from Rowan University and a Master's degree from Rutgers University.

BUDGET/FISCAL IMPACT:

There are sufficient funds for this position in the FY24 CEB.

ATTACHMENTS:

Resume of Heather Sulejman
Position Description – Manager, Training and Development
Organizational Chart for the Human Resources Department

Heather Sulejman

Learning & Development Professional

- Engaging and collaborative Learning & Development professional with a background in operations and systems.
- Innovative instructional designer, skilled at creating and delivering practical and engaging learning solutions.
- Adept at liaising with stakeholders and across functions to assess organizational needs, gather and allocate resources, and define best practices on a global scale to ensure cohesive, consistent results.
- Trained mediator with a focus on management of workplace conflicts through communication.
- Thoughtful and intentional leader and coach.

Key Competencies

Instructional Design	Process Design	Project Management
Team Leadership	Coaching and Facilitation	Negotiation
Conflict Mediation	Skills Training	Vendor Management

Professional Experience

Operations and Curriculum Development Consultant, Disagreeing Better LLC, Lexington, MA April 2022-Present

- Design customized leadership and organization-wide training and consulting solutions grounded in behavioral science.
- Conduct client needs and capability assessments to ensure highest impact of training interventions.
- Design and co-facilitate live and virtual instructional training programs and learning journeys.
- Collaborated on CDC-funded project to produce online learning series for health care professionals to have conversations with patients about vaccines.
- Configured ChatGPT coaching chatbot for learners to practice and get feedback on receptive conversations.
- Perform strategic planning for growth and expansion of the consultancy.
- Oversee operations, finance, systems, contracting, and compliance.

Director of Operations, Triad Consulting Group, Boston, MA 2014-Present

- Oversee finance, systems, pricing, and client services for a corporate education consulting firm specializing in leadership and management training in the areas of communication and negotiation.
- Manage finance and accounting, including financial reporting, modeling, and budgeting for firm with multi-million dollars in revenue.
- Designed and manage client pricing, including establishing rates and process for consistent pricing across services.
- Implemented and administered custom CRM solution that emphasizes users' needs at all business levels.
- Created and implemented comprehensive and equitable human resources policies, including employee leave policy.
- Led a high-performing operations and client-services team while setting clear standards, encouraging open dialogue, and modeling a strong feedback culture.
- Oversaw implementation and administration of LMS for client service offering rolled out to thousands of learners.

Office Manager, Triad Consulting Group, Boston, MA 2010-2014

- Managed coordination of 150+ in-person training programs per year.
- Built a team to support growing client base and ensure high-quality client solutions.
- Managed accounting function for multi-million dollars in revenue; managed cash flow and budget.
- Managed office, IT, systems, and all business administration.
- Selected vendors, negotiated agreements, and managed vendor accounts.

Clearinghouse Coordinator, Harvard Law School, Cambridge, MA 2010

- Managed catalogue of publications, including negotiation simulations and white papers, and coordinated with Harvard and MIT faculty on content development and delivery.
- Created blog posts featuring Clearinghouse content and resources on the Program on Negotiation (PON) website; Prepared and sent regular newsletters and group announcements for speaking events and conferences.
- Assisted in successful coordination of the annual IACM (International Association for Conflict Management) conference in Boston.

Business English Instructor and Consultant, ILC, Paris, France 2008-2009

- Designed and facilitated negotiation courses for leaders at France Telecom. Workshopped real-life negotiation cases.
- Designed curriculum and delivered highly-rated courses to auditors, accountants, engineers, and business managers. Key clients included Ernst & Young, Sanofi, Loreal, and Glaxo Smith Kline.

Education

MA, English, Rutgers University, Camden, NJ 2006
BA, English, Rowan University, Glassboro, NJ 2003

Languages

French, Full Professional Proficiency
Polish, Elementary

Qualifications and Teaching Experience

Certificates and Training

- Trained Mediator. Completed 40 hours of mediation training in accordance with M.G.L. ch.233 § 23C with MWI in Boston, MA- May 2023
- "Workplace Mediation" 40- hour course with the Center of Understanding in Conflict (CUC)- March 2023
- Preparing for Negotiation Success with instructor Chris Voss- 2017
- Negotiation Exec Ed 12-week seminar at Harvard Law School- Fall 2010

Previous Teaching Experience

Lecturer of English and Writing 2004-2008

2004 – 2008	Camden County College, Blackwood, NJ
2006	Rowan University, Glassboro, NJ
2006	Rutgers University, Camden, NJ

Technologies and Platforms

Sugar CRM Design & Administration	Drupal	QuickBooks
Box.com Administration	Coupa	MS Office
Google Workspace Administration	Trello/Asana	LMS solutions
Slack	ChatGPT	Ubiquity 401(k)

MWRA
POSITION DESCRIPTION

POSITION: Manager, Training and Development

DIVISION: Administration

DEPARTMENT: Human Resources

BASIC PURPOSE:

Develops, implements and manages all professional, technical and non-technical training and development programs for the Authority.

SUPERVISION RECEIVED:

Works under the general supervision of the Director of Human Resources.

SUPERVISION EXERCISED:

Exercises close supervision over Training Department staff, including but not limited to Program Manager Training, Senior Training Specialists, and Intern.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Manages the design, implementation and evaluation of all training and development programs for MWRA staff, including non-union, supervisory, technical, trades, maintenance and administrative personnel.
- Manages the training unit and ensures that all training programs are results-oriented and meet current and future training needs.
- Provides guidance to Senior Managers on succession planning training initiatives.
- Designs and implements license renewal, skill development and career development programs to ensure that MWRA has qualified resources to meet current and future work and skill mix requirements.
- Ensures sufficient training availability to meet mandatory requirements for license renewals (Water and Wastewater Operator, Electrician, Plumber, Heavy Equipment Operator, etc.)
- Manages the tuition reimbursement and remission program.

- Serves as administrator for the learning management system (LMS). Works closely with Management Information Systems (MIS) Department and vendor on updates to the LMS. Ensures reports are readily available to managers and super-users.

- Works closely with the Procurement Department on securing bids and contracts for training services provided by outside vendors.

- Identifies relevant online courses (e.g., LinkedIn Learning) and promotes these offerings to employees.

- Designs and conducts Training Needs Assessments and periodic surveys to determine the training requirements and priorities of the Authority.

- Maintains training data integrity and accuracy for all training programs and keeps information up-to-date in tracking systems.

- Develops Training Department procedures and assists in the development and implementation of training policies, procedures and special human resource program initiatives.

- Develops curriculum and other descriptive training materials. Conducts and supervises training programs, workshops and seminars virtually and in person at all MWRA locations.

- Establishes and maintains active working relationships with union leadership in implementing training programs.

- Establishes and maintains contact with other agencies, training organizations and associations for the purpose of keeping abreast of new training offerings and courses.

- Maintains relationships with educational institutions and professional associations that provide environmental, wastewater and other related training programs.

- Manages the department in a manner that is consistent with MWRA's goals of Diversity, Equity, and Inclusion.

SECONDARY DUTIES:

- Performs other related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A Bachelor's degree in education, human resources, communications, or related field; and

(B) Thorough understanding of design, development, management, delivery and evaluation of professional, technical and non-technical training programs as acquired through at least seven (7) years of experience, of which at least three (3) years are in a supervisory and/or managerial capacity; or

(C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

(A) Experience in meeting facilitation, moderating training sessions, and coordinating large online meetings.
(B) Excellent written and oral communication skills including public speaking and presentation skills.
(C) Demonstrated knowledge and skills in providing professional, technical and non-technical training, competency-based training, and career development.
(D) Strong command of WebEx and other web-based sharing platforms including experience recording and developing training sessions conducted in WebEx or equivalent videoconferencing tool.
(E) Solid knowledge of the Microsoft Office Suite.
(F) Ability to use learning management system (LMS) as a platform to manage trainings. Experience with Infor LMS preferred.
(G) Knowledge of the public sector procurement process preferred.
(H) Public sector experience and/or experience in water/wastewater industry preferred.

SPECIAL REQUIREMENTS:

Valid Class D Massachusetts Motor Vehicle Operators License.

Must be available for on-call nights and weekends on a rotating basis.

TOOLS AND EQUIPMENT USED:

Office machines as normally associated with professional administrative settings, including but not limited to the use of telephone, personal computer, word processing and other software, videoconferencing applications, copier, scanner, 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 feel, finger, handle or operate objects, including office equipment or controls and reach with hands and arms. The employee is occasionally required to stand and walk. The employee is regularly required to sit, and talk or hear.

The employee must frequently lift and/or move up to 10 pounds. 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.

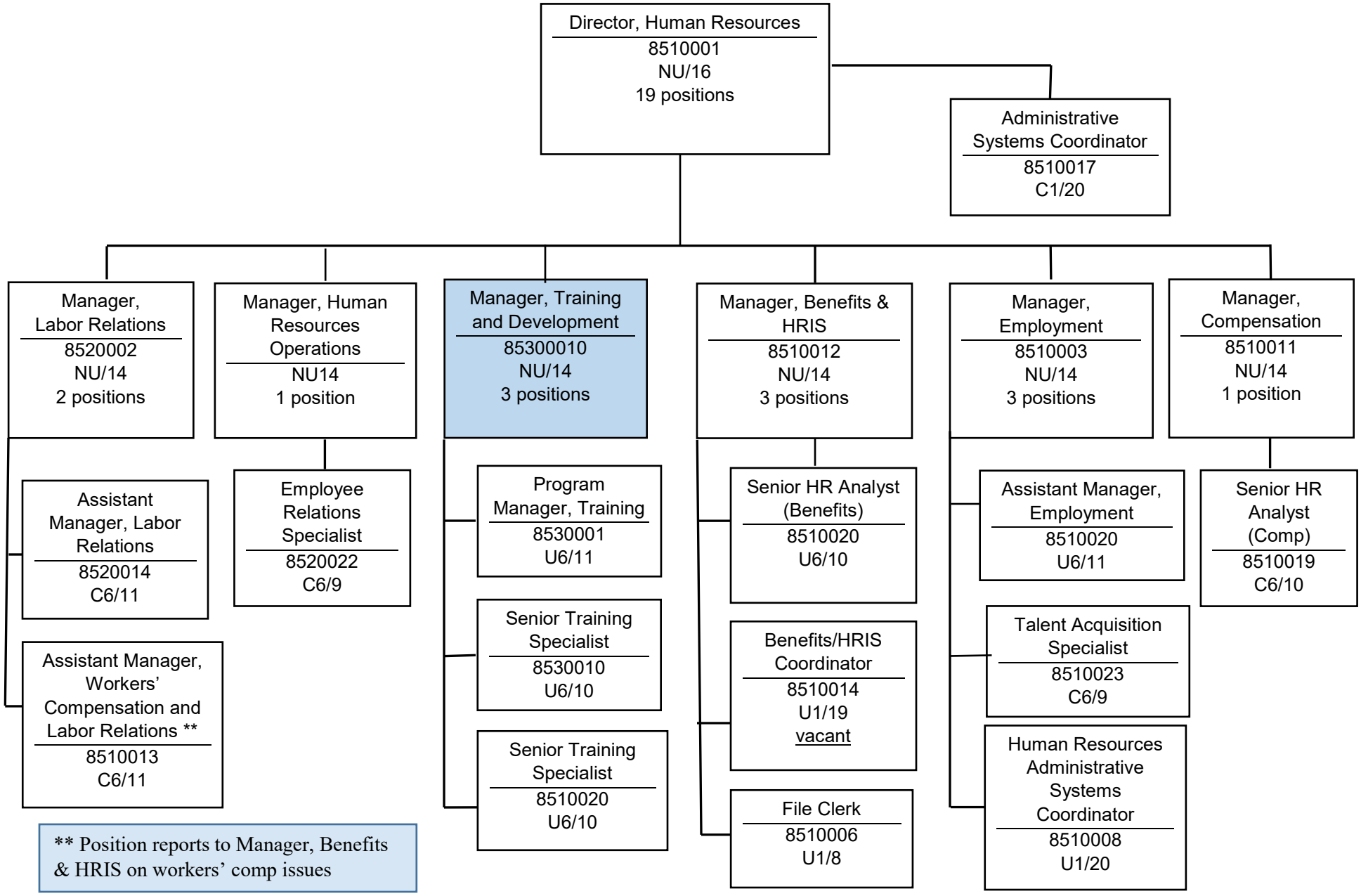
While performing the duties of this job, the employee regularly works in an office environment.

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

This position may be eligible for occasional telework.

January 2024

Administration Division
Human Resources Department
Org chart March 2024



MASSACHUSETTS WATER RESOURCES AUTHORITY

Deer Island
33 Tafts Avenue
Boston, MA 02128

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

BOARD OF DIRECTORS' MEETING

Date: Wednesday, March 13, 2024

Time: 1:00pm

Location: MWRA Chelsea Administration Building, 2nd Floor, Rooms 2C and D
2 Griffin Way
Chelsea, MA 02150

A photo ID will be required for entry.

The meeting will also be available via Webex. The Webex meeting link and password to attend virtually are below:

Webex meeting link (Registration required):

https://mwra.webex.com/weblink/register/r77f0e88da2876d77ba80eb9db57a2092

Meeting Number: 2341 033 0434 Password: 3132024

REVISED AGENDA

I. APPROVAL OF MINUTES

II. REPORT OF THE CHAIR

III. REPORT OF THE EXECUTIVE DIRECTOR

IV. EXECUTIVE SESSION

i. Approval of February 21, 2024 Executive Session Minutes

A. Real Estate

1. MWRA Hingham Sewage Pump Station: Acceptance of Grant of Sewer Easement from the Commonwealth acting by and through DCAMM (ref. ES 2.a)
2. Watershed Land Acquisition (ref. ES 2.b)
3. Watershed Land Acquisition, Amendment to Prior Board Vote (ref. ES 2.C)

B. Litigation

1. To Discuss Strategy with Respect to Litigation (verbal)

C. Collective Bargaining

1. Collective Bargaining Update – Units 1, 2, 3, 6 and 9 (verbal)

INFORMATION ITEMS

- Metropolitan Water Supply Tunnel Program Overview
- Local Water System Assistance Program Annual Update
- Infiltration/Inflow Local Financial Assistance Program Annual Update

V. BOARD ACTIONS

A. APPROVALS

1. Metropolitan Water Tunnel Program: Contract Structure for Final Design Engineering Services, Contract 7556 (ref. W B.1)
2. March 2024 PCR Amendments (ref. P&C A.1)
3. Appointment of Heather Sulejman, Manager, Training and Development (ref. P&C A.2)

B. CONTRACT AWARDS

1. Thermal Plant, Hydro Power and Wind Turbine Maintenance: O'Connor Corporation, Contract OP-464 (ref. WW B.1)

C. CONTRACT AMENDMENTS/CHANGE ORDERS

1. Section 101 Pipeline Extension (Waltham): Baltazar Contractors, Inc., Contract 7457, Change Order 4 (ref. W D.1)
2. Rehabilitation of WASM 3 Sections W11/W12/W16/51 (Medford, Somerville and Arlington): Albanese D&S, Inc., Contract 6544, Change Order 9 (ref. W D.2)
3. Enterprise Content Management System Purchase and Implementation: Cadence Solutions Inc., Contract 7438, Amendment 2 (ref. A&F B.1)

VII. OTHER BUSINESS

VIII. CORRESPONDENCE TO THE BOARD

IX. ADJOURNMENT

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the Board of Directors

February 21, 2024

A meeting of the Massachusetts Water Resources Authority ("MWRA") Board of Directors was held on February 21, 2024 at MWRA's headquarters at Deer Island in Boston, and also via remote participation.

Chair Tepper presided from MWRA Headquarters. Board Members Flanagan, Foti, Pappastergion, Peña, Taverna, Jack Walsh and White-Hammond also participated From MWRA Headquarters. Board Member Vitale participated remotely. Board Members Patrick Walsh and Wolowicz were absent.

MWRA Executive Director Frederick Laskey; General Counsel Carolyn Francisco Murphy; Chief Operating Officer David Coppes; Deputy Chief Operating Officer Rebecca Weidman; Director of Finance Thomas Durkin; Director of Administration Michele Gillen; Special Assistant for Affirmative Action Patterson Riley; Director of Planning and Sustainability Stephen Estes-Smargiassi; Senior Program Manager, Engineering and Construction Kathleen Cullen; Procurement Director Douglas Rice; Risk Manager Paul Whelan; Senior Program Manager, Planning Michael O'Keefe; MIS Director Paula Weadick; Budget Director Michael Cole; Deputy Finance Director/Treasurer Matthew Horan; Energy Manager Kristen Patneaude; TRAC Director Matt Dam; Deputy Deer Island Treatment Plant Director Chad Whiting; Senior Program Manager, Environmental Monitoring David Wu; Associate Special Assistant for Affirmative Action Tomeka Cribb; IT Asset Management Analyst, Michael Curtis; Chief of Staff Katie Ronan; Associate General Counsels Angela Atchue, Kimberley McMahon and Kristen Schuler Scammon; and, Assistant Secretary Kristin MacDougall participated at MWRA Headquarters.

Vandana Rao, EEA, participated at MWRA Headquarters, and Matt Romero, MWRA Advisory Board, participated remotely.

Chair Tepper called the meeting to order at 1:02pm.

ROLL CALL

MWRA General Counsel Francisco Murphy took roll call of Board Members in attendance and announced that Board Member Vitale was participating remotely. The Chair announced that the meeting was being held at MWRA's Headquarters and virtually, via a link posted on MWRA's website. She added that the meeting would be recorded, and that the agenda and meeting materials were available on MWRA's website. She also announced that individual roll call votes would be conducted after each motion was made and given an opportunity for discussion.

APPROVAL OF JANUARY 17, 2024 MINUTES

A motion was duly made and seconded to approve the minutes of the Board of Directors' meeting of January 17, 2024.

Chair Tepper asked if there was any discussion or questions from the Board. Hearing none, she requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. I)

REPORT OF THE EXECUTIVE DIRECTOR

MWRA Executive Director Fred Laskey noted that former State Senator Linda Dorcena Forry delivered an inspirational talk as part of MWRA's Lunchtime Speaker Series on February 13, 2024. He added that the March speaker will be Fredie Kay, President of the Women's Suffrage Celebration Coalition of Massachusetts, and invited Board Members to attend. Next, Mr. Laskey reported that MWRA received approximately $220,000 in revenue for providing emergency backup water supplies to Cambridge while the city completed necessary system repairs in January. He then advised that the Healey-Driscoll administration had released the state's first Environmental Justice (EJ) strategy in February. He noted that the strategy document includes MWRA's EJ Plan and features a photo of the Nut Island Headworks' landscaped grounds, and thanked staff for their work. Next, he reported that MWRA had sold the Cleverly Court parcel at the Fore River Shipyard. Finally, Mr. Laskey provided a brief status update on the System Expansion studies for Quabbin Reservoir-area communities. (ref. III)

EXECUTIVE SESSION

Chair Tepper requested that the Board move into Executive Session to discuss Litigation, since discussing such in Open Session could have a detrimental effect on the litigating position of the Authority. She announced the planned topic for Executive Session was a discussion of strategy with respect to litigation. She announced that the Board would return to Open Session after the conclusion of Executive Session.

A motion was duly made and seconded to enter Executive Session for these purposes, and to resume Open Session after Executive Session adjournment.

General Counsel Francisco Murphy reminded Board members that under the Open Meeting Law members who were participating remotely in Executive Session must state that no other person is present or able to hear the discussion at their remote location. A response of "yes" to the Roll Call to enter Executive Session when their name was called would also be deemed their statement that no other person was present or able to hear the Executive Session discussion.

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

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappas		
Pena		
Taverna		
Vitale		
J Walsh		
White-Hammond		

Voted: to enter Executive Session, and to resume Open Session after Executive Session adjournment.

*** EXECUTIVE SESSION ***

The meeting entered Executive Session at 1:07pm and adjourned at 1:39pm.

*** CONTINUATION OF OPEN SESSION ***

WATER POLICY AND OVERSIGHT

Information

Lead and Copper Rule Changes and Recommendations

Stephen Estes-Smargiassi, MWRA Director of Planning and Sustainability, presented an update on the EPA's Lead and Copper Rule Changes and Recommendations. He began with a brief summary of the timeline of the EPA's Lead and Copper Rule Improvements ("LCRI"). He explained that the Draft LCRI was issued in December 2023, and that the final is expected in October 2024, with an effective date in October 2027.

Mr. Estes-Smargiassi advised that the LCRI is more stringent than the current Lead and Copper Rule Revisions ("LCRR"). He noted that the LCRR requirements due by October 16, 2024, such as service line inventories; notices to every customer with service lines made of lead, galvanized metals, or unknown materials; and, 24-hour public notices if a community lead sample surpasses the Action Level, are still in effect. He further noted that the LCRI will supersede the LCRR, and includes additions, modifications and deferrals.

Next, Mr. Estes-Smargiassi discussed some key LCRI changes. He explained that the LCRI will require water systems to replace all lead service lines within ten years regardless of lead sampling results, and includes a Lead Action Level ("AL") of 10 parts per billion ("ppb"), versus the current AL of 15ppb. He advised that MWRA and its customer communities are more likely to exceed the LCRI's lower AL. He then described proposed changes to lead sampling and compliance calculation requirements. He explained that the LCRI proposes requirements for sampling at only homes with lead service lines (for systems that have any), and compliance calculations based on the higher result of first-liter and fifth-liter samples. Mr. Estes-Smargiassi advised that these changes will likely result in higher reported lead levels. He further advised that the LCRI proposes more stringent requirements for water systems that exceed the AL three times in five years, including additional public outreach, and the offering of water filters for all customers. He noted that MWRA will provide training on new LCRI requirements for customer communities.

Mr. Estes-Smargiassi then discussed how MWRA's corrosion control treatment could be affected if the MWRA system exceeds the new, lower LCRI Lead Action Level. He explained that in the case of AL exceedances, MWRA could be required to re-optimize its corrosion control system, potentially with the addition of orthophosphate, at an estimated capital and operating expense of $60-$80 million over 20 years.

Mr. Estes-Smargiassi stressed that any changes to corrosion control treatment must be carefully considered and studied to avoid unintended consequences such as water distribution system disruption; taste, color and odor changes; associated public perception concerns; and, the implications of adding a nutrient to the wastewater treatment system. He noted that if MWRA adds orthophosphate corrosion control treatment, it would need to continue doing so even after all community lead service lines are replaced. He advised that the LCRI includes a provision that water systems can avoid corrosion control re-optimization if they replace all lead service lines within five years, at a rate of 20% per year, rather than 10% per year.

Next, Mr. Estes-Smargiassi presented MWRA lead sampling data, including system-wide 90% lead levels for fully-supplied communities since 1992 (with an AL of 15ppb) and 2023 sampling results (10.8 ppb system-wide, average). He noted that the 2023 results indicate that the lead levels for samples collected from homes with lead service lines are four times higher than those

from homes without them. He then advised that approximately 91% of MWRA system samples that exceeded that Lead AL in 2022 and 2023 were taken from sites with lead service lines, which suggests that lead service lines, rather than MWRA water chemistry, are the main sources of elevated lead levels at service-area taps.

Mr. Estes-Smargiassi then discussed MWRA's ongoing Lead Service Line Loan Program. He reported that MWRA has provided approximately $41 million in loans to 17 customer communities since 2016, covering the cost to replace approximately 4,000 lead service lines. He then explained that approximately 15,400 lead service lines remain within MWRA communities, with an estimated total replacement cost of $150 million. He noted that updated community lead service line replacement data will be available in October 2024.

Next, Mr. Estes-Smargiassi outlined ways that MWRA could help communities to accelerate lead service line replacement rates, thus avoiding unnecessary corrosion control treatment optimization, including adding a $100 million Lead Service Line Loan Program phase and providing 25% grants to facilitate service line replacements on private property, at an estimated total cost of $40 million. He advised that MWRA and customer communities must act quickly to complete the replacement of all service lines within the MWRA service area by the expected LCRI deadline (2033).

Board Member Pappastergion asked if the LCRI takes brass fittings into consideration. Mr. Estes-Smargiassi explained that the LCRI does not specify requirements for brass, and noted that MWRA data shows that brass does not appear to be a significant factor in sampled lead levels.

Mr. Laskey stressed the importance of making sound strategic decisions with regard to system-wide lead service line replacement. He advised that in his view, constructing new water treatment facilities and making major changes to MWRA's water chemistry would prove to be costly, and provide fewer public health benefits, than undertaking a more aggressive lead service line replacement schedule. He noted that the matter of lead service line replacement versus corrosion control treatment optimization would be discussed further at a future Board meeting. Mr. Estes-Smargiassi added that under the LCRI, all lead service lines would need to be replaced within ten years whether MWRA re-optimized its corrosion control treatment or not. Chair Tepper requested clarification on the $150 million estimate for system-wide lead service line replacement. Mr. Estes-Smargiassi explained that the figure represents costs to replace all MWRA-area service lines over a 10-year period, and does not include costs to build and operate a new corrosion control facility. Mr. Laskey noted that the potential ramifications of added corrosion control chemicals on MWRA's wastewater treatment plant discharges should also be considered.

Board Member White-Hammond asked if the addition of orthophosphate would change the

taste of MWRA drinking water, and advised that such a change could negatively impact customers' perceptions of their tap water. Mr. Estes-Smargiassi agreed, noting that re-optimizing MWRA's corrosion control treatment could also cause other negative impacts such as water discoloration, especially during the transition period. There was brief, general discussion about public perception of significant water treatment changes.

Mr. Pappastergion expressed concern about the complexity of replacing lead service lines on private property. Mr. Estes-Smargiassi explained that the previously-discussed 25% grant program for privately-owned lead service line replacement was developed to address such concerns. He noted that approximately half of the communities participating in MWRA's Lead Service Line Loan Program already provide full funding to replace privately-owned portions of lead service lines. He advised that communities that simplify the service line replacement process by directly funding the work and providing contractors have higher participation rates than communities that require property owners to engage their own contractors and request reimbursement. Finally, Mr. Estes-Smargiassi noted that MWRA and its water communities may eventually need to develop additional strategies to encourage any outlying holdouts to have the private portions of their lead service lines replaced.

Hearing no further discussion or questions from the Board, Committee Chair Vitale moved to Contract Awards. (ref. V A.1)

Contact Awards

Top of Shaft 5 Interim Improvements, R. Zoppo Corp., Contract 7671

A motion was duly made and seconded to approve the award of Contract 7671, Top of Shaft 5 Interim Improvements, to the lowest responsible and eligible bidder, R. Zoppo Corp., and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of $5,361,500, with a contract term of 913 calendar days from the Notice to Proceed.

Kathleen Cullen, Senior Program Manager, Engineering and Construction, discussed a proposed contract award for Top of Shaft 5 Interim Improvements in Weston. She explained that this project was part of MWRA's wider effort (the Metropolitan Redundancy Interim Improvements Program) to improve and protect critical facilities related to the existing water tunnel system at nine shaft locations in Weston, Newton, Brighton, Malden, Boston College, Chestnut Hill, Dorchester and Somerville. She noted that this program is intended to reinforce the water system at points that will continue to lack redundancy until the Metropolitan Water Tunnel Program is complete, and presented a brief progress update. She explained that the program work is designed to take place without taking the MWRA water system out of service, and added that staff will discuss the Metropolitan Redundancy Interim Improvements Program further at a future Board meeting.

Next, Ms. Cullen described the scope of the Top of Shaft 5 Interim Improvements project. She showed examples of work to be performed, such as corrosion protection, bolt replacement and waterproofing at multiple valve vaults, and the decommissioning of an abandoned underground pump room to prevent potential leaks. She advised that this project presents significant challenges such as labor-intensive activities in confined spaces 400-feet below surface, and the need to restrict work during the summer peak water demand period due to the lack of redundancy.

Finally, Ms. Cullen summarized the contract's procurement process. She reported that the recommended contractor, R. Zoppo Corp. ("Zoppo"), had submitted the lowest bid, which came in under the Engineer's Estimate.

There was brief, general discussion about the Engineer's Estimate and the difference between Zoppo's bid price versus those of the two other bidders. Ms. Cullen noted that Zoppo's bid was lower because Zoppo will not use a tunnel subcontractor. She added that Zoppo's approach aligned with the assumptions in the Engineer's Estimate. There was brief, general discussion about the contract's scope, the required engagement of a tunnel rescue team, the contract cost, and the nut and bolt removal process.

Rev. White-Hammond expressed concern that Zoppo's bid price was lower than the Engineer's Estimate and significantly lower than the two other bids received. Ms. Cullen explained that Zoppo's performance of the work without a tunnel subcontractor was a significant factor in the lower bid price. Board Member Taverna requested more information about the project's Design Engineer. Ms. Cullen explained that the design firm was Hazen and Sawyer.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. V B.1)

ADMINISTRATION, FINANCE AND AUDIT

Information

Delegated Authority Report – January 2024

Douglas Rice, MWRA Director of Procurement, briefly discussed two items in the January 2024 Delegated Authority Report. He advised that the cost for Item C-6, Chestnut Hill and Weston Reservoir Dam Instrumentation (Piezometers) Installation should read "($38,707.50)"; and noted that item P-4, Purchase Order for Security Network Systems Administrator II Consultant (State Contract ITS77 Category 1A and 1B) was the companion contract for a security equipment and maintenance repair services contract that was awarded in November 2023 (ref. VI B.1, November 15, 2023).

Board Member Vitale requested more information about the non-selected bids received for Item C-4, Insurance Consulting Services – Task Order Contract, and Item C-12, Actuarial Services Related to Compliance with GASB No. 74 and 75. Paul Whelan, MWRA Risk Manager, advised that one non-selected bid for Item C-4 was received (from USI Insurance Services). He explained that USI's bid was deemed non-responsive because it was submitted on a lump sum, rather than hourly basis. He added that USI provides broker services. Thomas Durkin, MWRA Finance Director, advised that four non-selected bids were received for Item C-12, including the Siegel Group, Inc. ("Siegel"). Mr. Vitale asked why Stone Consulting, Inc. ("Stone") was selected for Item C-12. Mr. Durkin explained that while Siegel is well-qualified and does excellent work for MWRA on other contracts, their bid price for this contract was significantly higher than Stone's.

Hearing no further discussion or questions from the Board, Mr. Foti moved to the next Information item. (ref. VI A.1)

FY2024 Second Quarter Orange Notebook

Michael O'Keefe, MWRA Senior Program Manager, Planning, summarized key highlights of MWRA's Second Quarter Orange Notebook for FY2024. He reported that while staffing levels remained below target, hiring rates had increased in the second quarter ("Q2"). He added that staffing-related performance indicators that had not met targets for several quarters had met their goals in Q2. Next, Mr. O'Keefe advised that historically high precipitation levels and associated Deer Island flows had subsided to below-average levels overall in Q2, despite a few very intense storms in December, 2023. Finally, Mr. O'Keefe reported that the number of positive community total coliform test results had decreased substantially in Q2, and that there were no positive E. coli community test results in that timeframe.

Hearing no discussion or questions from the Board, Mr. Foti moved to the next Information item. (ref. VI A.2)

FY24 Financial Update and Summary through January 2024

Mr. Durkin reported that FY24's financial trends continued through January. He advised that budgetary challenges related to wages and salaries continued due to lagging full-time equivalent ("FTE") counts. He noted that chemical costs increased at a lower than anticipated rate in January, attributable to stabilizing inflation rates. Mr. Durkin relayed variable interest rates continued to be volatile in January 2024. He noted that variable rate volatility can be managed by balancing the associated debt cost increases with higher variable rate earnings on assets. He added that MWRA's investment income was higher than estimated due to rising money market rates. Finally, Mr. Durkin reported that MWRA's Capital Improvement Plan ("CIP") was within the range of historical precedent at 17.4% underspent, and that the Current Expense Budget ("CEB") was progressing well.

Mr. Jack Walsh requested more information about a $1.1 million line item for computer hardware presented in Attachment 2 of the Staff Summary for this agenda item. Paula Weadick, MWRA MIS Director, explained that those expenditures were mostly for the replacement of all printers, and for the procurement of new audio/visual equipment used for remote meetings at multiple worksites.

(Mr. Peña temporarily left the meeting, and Chair Tepper briefly left and returned to the meeting during the discussion.)

Hearing no further discussion or questions from the Board, Mr. Foti moved to the next Information item. (ref. VI A.3)

Fiscal Year 2024 Mid-Year Capital Improvement Program Spending Report

Mr. Durkin reported that the FY2024 CIP was 17.4% underspent overall through January, 2024. He noted that the CIP is historically 24%-27% underspent at the end of the fiscal year.

Mr. Vitale asked Mr. Durkin to discuss hypothetical rate impacts of reducing the CIP budget, noting a continued pattern of CIP underspending. Mr. Durkin explained that the CIP is designed to document MWRA's needs and aspirational goals, and that the CIP is a tool for communicating MWRA's plans and priorities with stakeholders. He further explained that MWRA's community assessments are mostly driven by debt service, and that MWRA limits borrowing so as not to borrow more or sooner than necessary. Mr. Vitale briefly discussed the Boston Water and Sewer Commission's budget, investment and bond issuance methodologies, and their impacts on rates. Mr. Durkin briefly described the purpose of MWRA's Current Revenue for Capital budget line item, the need to balance debt costs and revenue to control community assessments, and the principles of pay-as-you-go capital and generational equity. Finally, Mr. Durkin noted that the Staff Summary for the FY2024 Mid-Year Capital Spending Program Report includes detailed information and analysis of CIP spending.

Hearing no further discussion or questions from the Board, Mr. Foti moved to the next Information item. (ref. VI A.4)

FY2024 Community Assessment Adjustments

Mr. Durkin described how community assessment adjustments are calculated using community meter data, and advised that MWRA Metering staff had discovered an inaccuracy in CY2022 sewer metering data for Somerville during a routine quality assurance review. He explained that the discrepancy was subsequently investigated and validated, resulting in the issuance of a $351,687 reduction in Somerville's FY2024 sewer assessment, which will be applied to the City's FY2025 assessment. Mr. Durkin further explained that assessment adjustments due to the revised sewer flow shares will also be applied to FY2025 assessments for MWRA's other sewer communities.

Hearing no discussion or questions from the Board, Mr. Foti moved to the next Information item. (ref. VI A.5)

Preliminary FY25 Water and Sewer Assessments

Mr. Durkin summarized MWRA's water and sewer assessment strategy, and advised that staff are recommending a 3.0% combined increase for wholesale water and sewer charges in FY2025. He noted that the 3.0% increase is lower than June 2023's budget projection of 3.4%, partly due to the stabilization of inflation. Mr. Durkin referred Board Members to the Staff Summary for this agenda item, which includes more detailed information about FY25 Preliminary Assessments for each member community.

(Mr. Peña returned to the meeting during the summary.)

Mr. Vitale asked how much of the 3.0% increase in MWRA's annual rate revenue requirement is due to inflation. Mr. Durkin explained that nearly 60% of MWRA's budget is allocated for debt service. He further explained that inflation and interest rates have more impact on direct expenses, such as wages, salaries and chemicals, than on debt service.

Hearing no further discussion or questions from the Board, Mr. Foti moved to Approvals. (ref. VI A.6)

Approvals

Transmittal of the FY25 Proposed Current Expense Budget

A motion was duly made and seconded to approve the transmittal of the FY25 proposed Current Expense budget to the MWRA Advisory Board for its 60-day review and comment period.

Mr. Durkin briefly summarized MWRA's annual budget cycle, and noted that it is part of a

continuous, multi-year strategy.

Michael Cole, MWRA Budget Director, presented highlights of MWRA's Proposed CEB for FY2025. He began with an overview of the CEB budget structure. He reported a preliminary increase of 1.5% for direct expenses, driven by costs for chemicals, wages, salaries and maintenance. He noted that FY2025 direct expenses were offset by approximately 30% in savings for chemicals, due to ongoing price stabilization since June 2023. Mr. Cole then discussed the preliminary budget for indirect expenses (a 5.3% increase due to pension, reserve changes and watershed reimbursement). He explained that the preliminary FY2025 CEB includes an additional $7.7 million for pensions in anticipation of the 2030 full-funding deadline. He advised that staff had removed a vacancy adjustment for watershed reimbursement because the Department of Conservation and Recreation's watershed staffing level had recently reached 149 of its budgeted 150 FTEs.

Next, Mr. Cole discussed the preliminary budget for debt service, noting a proposed 3.6% increase driven by the structure of new and existing debt. He then presented historical rates and preliminary rate projections for FY2025 on a combined basis (+3.0%), and by utility (+3.9% for water, +2.5% for wastewater). He noted that the FY2025 preliminary rates reflected an overall decrease from what was projected when the FY24 budget was finalized and approved in June 2023. Finally, he summarized the next steps of the MWRA budget review and approval process.

Hearing no discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VI B.1)

Approval of the Eighty-Seventh Supplemental Bond Resolution

A motion was duly made and seconded to adopt the Eighty-Seventh Supplemental Resolution authorizing the issuance of up to $85,000,000 of Massachusetts Water Resources Authority

Subordinated General Revenue Bonds and the supporting issuance resolution.

Matthew Horan, MWRA Deputy Director of Finance/Treasurer advised that staff sought Board authorization to borrow $85 million from the State Revolving Fund (SRF). He explained that the Massachusetts Clean Water Trust ("Trust") offers subsidized SRF loans at 2.15% interest, which is lower than market rates. Mr. Horan noted that MWRA and its ratepayers are expected to save approximately $80 million in interest over the life of all loans with the Trust, which supports MWRA's overall debt reduction strategy. He advised that if approved, this borrowing would allow MWRA to access remaining American Rescue Plan Act ("ARPA") funds that have not yet been allocated. He noted that MWRA has received approximately $3.4 million in ARPA funds to date, and could potentially receive an additional $3 million in funding if the proposed borrowing is approved.

Mr. Vitale requested more information about the timeline for the proposed transaction. Mr. Horan explained that staff planned to execute an interim borrowing, followed by quarterly draws, and that the Trust is expected to issue permanent financing in October or November, 2024. Mr. Vitale then asked if recently announced federal funding for clean water and sewer infrastructure would impact MWRA. Mr. Horan explained that most of the federal clean infrastructure funds earmarked for Massachusetts will go to the Trust, which leverages those funds with state funding and distributes them through the SRF loan program. Finally, he added that the Trust could potentially apply some of the federal clean infrastructure funds to increased principal forgiveness, and advised that staff will keep Board Members updated as more details are released.

Mr. Jack Walsh requested clarification on the borrowing and bond authorization process. Mr. Horan briefly explained the steps.

Hearing no discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VI B.2)

Delegation of Authority to Execute a Contract for the Purchase and Supply of Electricity for the Deer Island Treatment Plant

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to execute a contract for the supply of electricity to the Deer Island Treatment Plant with the lowest responsive and responsible bidder for the period and pricing structure determined by staff to be in MWRA's best interest, and for a contract supply term not to exceed 36 months. This delegation of authority is necessary because MWRA will be required to execute a contract within several hours of the price submission in a constantly changing market.

Kristen Patneaude, MWRA Energy Manager, presented a proposal to execute a contract for the supply and delivery of electricity to the Deer Island Treatment Plant ("DITP"). She noted that MWRA has procured electricity in the competitive market since 2001, and that the largest electricity contract for DITP will expire in October 2024. She explained that staff sought approval for the delegated authority to competitively procure and execute a replacement contract. She advised that the delegated authority is needed due to the constantly changing market, which requires staff to execute the contract within hours of the price submission.

Next, Ms. Patneaude presented an overview of MWRA's electricity contracts. She explained that the Deer Island account represents 68% of MWRA's total purchase load, and 52% of electrical expenses. She then discussed MWRA's Interval accounts for larger facilities such as the Carroll Water Treatment Plant and the Clinton Wastewater Treatment Plant. She noted that interval accounts represent 28% of MWRA's electrical purchase load and 41% of expenses. Further, she relayed that profile accounts for smaller facilities such as CSOs and headworks make up 3% of MWRA's load and 6% of expenses, and that 0.1% of MWRA's purchase load is for basic electric service provided by utilities, to power devices such as meters and motorized valves. She explained that there is currently no financial advantage to competitively procuring electricity for these devices, due to administration costs relative to low load size. Ms. Patneaude stated MWRA facilities that are located within municipal light plant districts are not allowed to operate on competitively-supplied electricity.

Ms. Patneaude then explained that the proposed delegated authority contract to competitively purchase electricity for DITP is part of MWRA's overall strategy to optimize the procurement of commodities. She advised that this strategy take the type, size, and operational characteristics of the facilities supplied by each type of account into consideration, and added that staggering the procurements, as well as their terms and durations, mitigates overall financial risk. Finally, Ms. Patneaude commented that the proposed delegated authority contract under discussion reflects only the cost of energy supply, and that the non-negotiable delivery costs are determined by the regulated utilities.

Rev. White-Hammond requested the length of the proposed contract's term, and asked if MWRA could pursue higher levels of renewable electricity supplies. Ms. Patneaude responded that MWRA would seek bids for terms of one, two and three years. She advised that MWRA had historically purchased voluntary renewable energy certificates ("RECs"), and would suspend the practice for this contract because the voluntary REC market may be driving up the prices of the regular market, which impacts all stakeholders, and because the electrical grid is becoming greener regardless of the purchase of voluntary RECs. She added that MWRA staff sought guidance from state officials, who did not recommend the use of voluntary RECs to offset onsite greenhouse gas emissions versus investment in renewables that decrease onsite fossil fuel usage. Rev. White-Hammond suggested that the use of one, two, or three-year contracts may not provide enough leverage with respect to purchasing power for facilities that are expected to operate for decades, and that MWRA and other public entities could consider working collaboratively to maximize collective purchasing power. Ms. Patneaude agreed and, also, noted that MWRA had historically bundled the purchase of voluntary RECs with its electricity supply contracts; however, staff subsequently discontinued this approach due to a lack of supplier competition. Chair Tepper relayed that the EEA is working to address the previously-discussed issues with respect to voluntary RECs, while also focusing on the development of concrete projects that promote renewable energy and decrease fossil fuel use. She welcomed future conversations with MWRA and other stakeholders to develop collective buying power strategies.

There was further, general discussion about voluntary RECs, MWRA's onsite renewable power generation capabilities, its program to sell self-generated power back to the grid, and the sale of green credits. Mr. Laskey noted MWRA's participation in ISO New England's demand response program to use onsite, off-grid power during times of peak demand, and the potential to generate and sell more electricity to the grid. Rev. White-Hammond encouraged staff to consider engaging in collaborative efforts to further advance renewable energy generation and grid transformation. Chair Tepper encouraged continued discussion on the matter in the future and thanked staff for their work on the purchase.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		

Yes	No	Abstain
Vitale		
J. Walsh		
White-Hammond		

(ref. VI B.3)

Contract Awards

Remarketing Agent for the 2008 Series A-1 and A-3: TD Securities (USA), LLC Raymond James & Associates Inc., Contract F275

A motion was duly made and seconded to authorize the Executive Director, pursuant to the Fifty-fourth Supplemental Resolution, to approve the recommendation of the Selection Committee for Raymond James & Associates, Inc. and TD Securities (USA) LLC to provide remarketing services for 2008 Series A-1 and 2008 Series A-3 Multi-Modal Subordinated General Revenue Refunding Bonds, respectively, and to award successor contracts.

Mr. Horan advised that staff sought to engage new bond remarketing agents because one of its current agents with two series, Citigroup, had announced that they are exiting the municipal business and would no longer provide tax-exempt bond underwriting and remarketing of variable rate bonds. He summarized the procurement process for the new remarketing agents. Finally, he noted that 12 proposals were received, and that TD Securities (USA) LLC and Raymond James & Associates, Inc. were the recommended vendors.

In response to a question from Mr. Jack Walsh, Mr. Horan described the bond remarketing process. There was brief discussion about the process. Mr. Vitale requested more information about the number of remarketing agents engaged by MWRA and their allocations, as well as the number and allocations of liquidity banks. Mr. Horan explained that MWRA engages six remarketing agents. He noted that most of the agents have a 13% allocation, with one at 28%, which is held over from 2008. He further explained that MWRA engages approximately four liquidity banks, and advised that he would provide more details at a later date.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		

Yes	No	Abstain
Vitale		
J. Walsh		
White-Hammond		

(ref. VI C.1)

WASTEWATER POLICY AND OVERSIGHT

Approvals

Amendments to the MWRA Regulations for Sewer Use

A motion was duly made and seconded to authorize the TRAC Director, on behalf of the Authority, to publish notice of proposed amendments to MWRA's Regulations for Sewer Use (360 CMR 10.000), as outlined in the February 21, 2024 Staff Summary presented and filed with the records of this meeting, in the Massachusetts Register and newspapers for public comment. Staff will return to the Board for approval to adopt the amendments after public comments have been received.

Matt Dam, MWRA TRAC Director, requested Board approval to publish proposed Amendments to MWRA's Sewer Use Regulations for public comment. He explained that the revisions include a 3% increase in permit and monitoring fees for FY2025-FY2029, and two amendments related to a CY2021 EPA audit. He briefly described the timeline and next steps of the public comment period. Lastly, Mr. Dam advised that staff would return to the Board for final approval on the amended regulations after the public comments are reviewed and addressed.

Mr. Jack Walsh requested more information about the proposed fee increases. Mr. Dam explained that while the proposed fee increases generally align with the rate of inflation, they may yield higher returns on the Industrial Pretreatment Program's costs.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VII A.1)

Contract Awards/Change Orders

Oxygen Generation Facility Services - Deer Island Treatment Plant: Solutionwerks, Inc., Contract S587, Amendment 2

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to approve Amendment 2 to Contract S587, Oxygen Generation Facility Services, in the amount of $250,000, increasing the contract amount from $2,720,450 to $2,970,450 and extending the contract by 183 calendar days, from April 18, 2024 to October 18, 2024.

Chad Whiting, MWRA Deer Island Treatment Plant Deputy Director, presented the reasons for a proposed amendment to an Oxygen Generation Facilities Services contract at DITP. He explained that the current contract with Solutionwerks, Inc. ("Solutionwerks") is about to expire, and the requested cost increase and time extension will allow Solutionwerks to continue providing services while MWRA procures a new Chapter 149 construction contract. He noted that the new contract will include added maintenance services and other work outside the scope of the existing contract.

Mr. Whiting then presented an overview of the Deer Island Oxygen Generation Facility, and advised that its operation and maintenance requires specialized personnel. He then discussed the facility's equipment and the oxygen generation process.

Next, Mr. Whiting presented the bidding history of MWRA's Oxygen Generation Facility Services contracts. He relayed the pool of qualified bidders was limited due to the specialized nature of the work. He further advised that Solutionwerks is unable to continue providing the required services after its current contract expires, due to staff retirements.

Mr. Whiting then explained that staff are procuring a new Oxygen Generation Facility Services contract under Chapter 149, to address maintenance needs and to widen the bidding pool. He briefly discussed the procurement strategy and scope of the Chapter 149 contract, which includes the inspection of a liquid oxygen tank, and the replacement of a critical programmable logic controller. Finally, Mr. Whiting noted that the Chapter 149 contract was advertised on February 17, 2024 and summarized the next steps for the procurement.

Board Member Peña asked if staff had analyzed the benefits of on-site oxygen generation versus purchase. Mr. Whiting responded in the affirmative. He noted that DITP uses approximately 120 tons of oxygen per day, which depletes its 1,000 ton on-site storage capacity quickly. He explained that on-site generation produces a more stable oxygen supply and reduces the significant truck traffic through neighboring communities that would be required if the oxygen were purchased, as well as the associated costs of oxygen procurement and delivery. Mr. Jack Walsh requested more information on existing maintenance contract staffing. Mr. Whiting explained that one Solutionwerks specialist performs routine maintenance activities on-site one week per month, and approximately three specialists carry out a major

maintenance and inspection protocol twice a year.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VII B.1)

Harbor and Outfall Monitoring, Benthic, Fish, and Shellfish Monitoring: Contract OP-401B, Normandeau Associates, Inc., Amendment 2

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to approve Amendment 2 to Contract OP-401B, Harbor and Outfall Monitoring, Benthic, Fish and Shellfish Monitoring, with Normandeau Associates, Inc., to increase the contract amount by $557,230.94 from $1,940,812.40 to $2,498,043.34 and to increase the contract term by one year, from November 1, 2024 to October 31, 2025.

David Wu, MWRA Senior Program Manager, Environmental Monitoring, requested Board approval for an amendment to a benthic, fish and shellfish monitoring contract for the DITP outfall, as required by the current EPA NPDES permit. He noted that this monitoring is not a requirement of the new Draft Permit issued by the EPA in May, 2023, and is not expected to be included in the Final Permit, which has not yet been issued. He then advised this monitoring will continue to be required until the Final Permit is issued, potentially in one year. Mr. Wu then described the duration and cost of the proposed amendment, which would extend Normandeau Associates, Inc.'s ("Normandeau") current contract through the Final Permit's anticipated issuance. Finally, Mr. Wu briefly discussed the history of the contract, noting that proposed Amendment 2 represents a 2.9% increase over the cost of Amendment 1, which was approved by the Board of Directors in November, 2022.

Board Member Taverna requested more information about the contract's deliverables. Mr. Wu explained that Normandeau produces several reports per year, as well as submits data used for additional analysis as necessary. There was brief, general discussion about the anticipated

exclusion of benthic, fish and shellfish monitoring requirements in the new Final Permit. Mr. Peña complimented staff on a published video of marine life near MWRA's Deer Island Outfall, and asked how often this video is taken. Mr. Wu explained that the video is taken annually, and that a new video for 2023 is being processed.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VII B.2)

PERSONNEL AND COMPENSATION

Information

Reorganization of the Department of Environmental Quality

Rebecca Weidman, MWRA Deputy Chief Operating Officer, discussed a recommended reorganization of MWRA's Department of Environmental Quality ("ENQUAL"). She explained that the reorganization is designed to fulfill succession planning needs in response to the upcoming retirement of Betsy Reilley, MWRA ENQUAL Director, in July, 2024, and to address emerging, priority regulatory matters in the upcoming years. Further, Ms. Weidman relayed staff's recommendation that ENQUAL be broken into two departments: a Department of Environmental Quality to focus on wastewater issues, and a Department of Water Quality to focus on drinking water concerns.

Mr. Peña asked how many positions would be changed as a result of the reorganization. Ms. Weidman confirmed one new position would be created. Mr. Taverna and Rev. White-Hammond complimented Dr. Reilley on her outstanding performance as ENQUAL Director, and thanked her for her many contributions to MWRA. Board Members and meeting participants echoed their remarks and wished Dr. Reilley well.

Hearing no further discussion or questions from the Board, Committee Vice Chair White-Hammond moved to the next Information item. (ref. VIII A.1)

Diversity, Equity and Inclusion Update

Michele Gillen, MWRA Director of Administration, discussed the importance of Diversity, Equity and Inclusion ("DEI") at MWRA, and thanked Board Members for their support of staff's DEI efforts.

Next, Patterson Riley, MWRA Special Assistant for Affirmative Action, highlighted progress made on staffing goals during the second quarter of FY2024, as discussed in the earlier Orange Notebook presentation (ref. VI A.2), and noted that DEI is a key component of MWRA's recruitment and retention strategy. Mr. Laskey complimented MWRA's DEI Workgroup and noted that in his view, promoting DEI in the workplace is a rewarding endeavor. Ms. Gillen agreed, adding that new hires have offered positive feedback on MWRA's DEI program. Mr. Laskey described the successes and benefits of MWRA's programs for mentoring, training, internships and community employer partnerships. Tomeka Cribb, MWRA Associate Special Assistant for Affirmative Action, added that the community employer partnerships subcommittee was established to complement existing recruitment and retention efforts, and discussed recent initiatives, including hosting MWRA's first STEM Fair as part of Massachusetts STEM week; and partnerships with Boston Green Academy, other local high schools and tech vocational schools such as Madison Park.

Rev. White-Hammond expressed appreciation for these initiatives, recognized the positive results of MWRA's sustained DEI efforts over time, and discussed the ongoing challenges of attracting new workers to the water and wastewater industries. Mr. Foti echoed Rev. White-Hammond's remarks, and stressed the importance of promoting public service careers for younger workers. Rev. White-Hammond suggested that MWRA advertise its positive impacts with regard to climate change to recruits, and thanked MWRA staff for their work. (ref. VIII A.2)

Approvals

Approval of the 2024 Affirmative Action Plan

A motion was duly made and seconded that the Board of Directors approve the Massachusetts Water Resources Authority's Affirmative Action Plan effective for a one-year period from January 1, 2024 through December 31, 2024.

Mr. Riley invited questions from the board members concerning MWRA's Affirmative Action Plan for CY2024. He briefly discussed MWRA's ongoing staffing challenges related to COVID. He noted that the recruitment and retention improvements shown in FY2024 Q2 reflect staff's hard work and the value of DEI efforts.

Rev. White-Hammond encouraged staff to continue this positive momentum, and to invest in the development of a two or three-year Affirmative Action Plan. Mr. Vitale asked staff if they considered a Sheltered Market Program. Ms. Francisco Murphy discussed staff's recent review

of the Sheltered Market Program provisions, a statutory program under c. 30B to make available certain contracts to MBE and WBE firms; and noted awareness of Boston's program and the City of Cambridge's efforts to begin such a program. Mr. Vitale asked how MWRA is working to increase diversity among engineering staff. Mr. Riley responded that staff actively recruit through initiatives such as partnerships with local colleges and universities. Mr. Vitale requested more information about MWRA's efforts to increase its M/WBE participation for contractors. Mr. Riley explained that MWRA is conducting a disparity study to identify appropriate actions.

Hearing no further discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. VIII B.1)

February 2024 PCR Amendments

A motion was duly made and seconded to approve amendments to the Position Control Register (PCR) as presented and filed with the records of this meeting.

Ms. Gillen invited questions from Board Members.

Hearing no discussion or questions from the Board, Chair Tepper requested a roll call vote in which the members were recorded as follows:

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		

Yes	No	Abstain
J. Walsh		
White-Hammond		

(ref. VIII B.2)

CORRESPONDENCE TO THE BOARD

There was no correspondence to the Board (ref. IX)

OTHER BUSINESS

There was no other business. (ref. X)

ADJOURNMENT

A motion was duly made and seconded to adjourn the meeting.

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

Yes	No	Abstain
Tepper		
Flanagan		
Foti		
Pappastergion		
Peña		
Taverna		
Vitale		
J. Walsh		
White-Hammond		

(ref. XI)

The meeting adjourned at 3:17pm.

Approved: March 13, 2024

Attest: _____

Brian Peña, Secretary

LIST OF DOCUMENTS AND EXHIBITS USED

- Draft Minutes of January 17, 2024 MWRA Board of Directors' Meeting (ref. I)

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Documents used for this meeting and cited in these minutes, including meeting materials/staff summaries, presentations, and approved minutes, are posted on MWRA's website: https://www.mwra.com/02org/html/bodmtg.htm

- February 21, 2024 Staff Summary and Presentation – Lead and Copper Rule Changes and Recommendations (ref. V A.1)
- February 21, 2024 Staff Summary and Presentation – Top of Shaft 5 Interim Improvements, R. Zoppo Corp., Contract 7671 (ref. V B.1)
- February 21, 2024 Staff Summary – Delegated Authority Report – January 2024 (ref. VI A.1)
- February 21, 2024 Staff Summary – FY2024 Second Quarter Orange Notebook
- February 21, 2024 Staff Summary – FY2024 Financial Update and Summary through January 2024 (ref. VI A.3)
- February 21, 2024 Staff Summary – FY2024 Mid-Year Capital Improvement Program Spending Report (ref. VI A.4)
- February 21, 2024 Staff Summary – FY2024 Community Assessment Adjustments (ref. VI A.5)
- February 21, 2024 Staff Summary – Preliminary FY25 Water and Sewer Assessments (ref. VI A.6)
- February 21, 2024 Staff Summary and Presentation – Transmittal of the FY25 Proposed Current Expense Budget (ref. VI B.1)
- February 21, 2024 Staff Summary – Approval of the Eighty-Seventh Supplemental Bond Resolution (ref. VI B.2)
- February 21, 2024 Staff Summary and Presentation – Delegation of Authority to Execute a Contract for the Purchase and Supply of Electricity for the Deer Island Treatment Plant (ref. VI B.3)
- February 21, 2024 Staff Summary – Remarketing Agent for the 2008 Series A-1 and A-3: TD Securities (USA), LLC Raymond James & Associates Inc., Contract F275 (ref. VI C.1)
- February 21, 2024 Staff Summary – Amendments to the MWRA Regulations for Sewer Use (ref. VII A.1)
- February 21, 2024 Staff Summary and Presentation – Oxygen Generation Facility Services - Deer Island Treatment Plant: Solutionwerks, Inc., Contract S587, Amendment 2 (ref. VII B.1)
- February 21, 2024 Staff Summary – Harbor and Outfall Monitoring, Benthic, Fish, and Shellfish Monitoring: Contract OP-401B, Normandeau Associates, Inc., Amendment 2 (ref. VII B.2)
- February 21, 2024 Staff Summary – Reorganization of the Department of Environmental Quality (ref. VIII A.1)
- February 21, 2024 Staff Summary – Diversity, Equity and Inclusion Update (ref. VIII A.2)
- February 21, 2024 Staff Summary – Approval of the 2024 Affirmative Action Plan (ref. VIII B.1)
- February 21, 2024 Staff Summary – February 2024 PCR Amendments

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