
# Annual Green Bonds and Sustainability Bonds Report

September 2023

# Table of Contents



# Connect with the Trust

**Twitter:** *https://twitter.com/MASSCLEANWATER*

**LinkedIn:** *https://www.linkedin.com/showcase/massachusetts-clean-water-trust/*

# Contact Our Team


**MASSACHUSETTS CLEAN WATER TRUST**
Office of the State Treasurer
**A:** 1 Center Plaza, Suite 430 | Boston, MA 02108
**E:** masswatertrust@tre.state.ma.us

**SUSAN PEREZ**
*Executive Director*
**P:** (617) 367-9333 x 816
**E:** sperez@tre.state.ma.us

**NATE KEENAN**
*Deputy Director*
**P:** (617) 367-9333 x 508
**E:** nkeenan@tre.state.ma.us

**MY TRAN**
*Treasurer*
**P:** (617) 367-9333 x 813
**E:** mtran@tre.state.ma.us

# A Note from the Treasurer

As Chair of the Massachusetts Clean Water Trust (the Trust) Board of Trustees, and in keeping with the Commonwealth of Massachusetts' and the Trust's policy of openness and transparency, I am pleased to submit the 2023 Annual Green Bonds and Sustainability Bonds Report.

The Trust has issued seven Green Bond series totaling nearly **$1.3 billion** to support **384** local water infrastructure projects, and two series of Sustainability Bonds totaling over **$352.5 million** in support of **91** projects. By the issuance of Green and Sustainability Bonds, the Trust is once again demonstrating their commitment to an innovative finance program.

The projects financed by these bonds enhance ground and surface water resources, ensure the safety of drinking water, protect public health, and develop resilient communities. The impact of these investments may not always be visible to the public, but it is felt in every glass of water poured, in restored water bodies, and in homes and businesses that receive safe and reliable water.

These designations help provide investors with an Environmental, Social, and Corporate Governance (ESG) focus, an opportunity to invest in bonds that support critical public health infrastructure that both supports needed environmental improvement and helps the communities most in need within the Commonwealth.

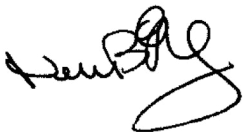
**Sustainability.** The Trust was one of the first to leverage the Sustainability Bonds designation for water infrastructure through the State Revolving Fund program. Sustainability Bonds finance projects that meet the same standards as Green Bonds but have the additional impact of serving communities that have socio-economic challenges. Bonds finance projects in our most at need communities. As this ESG marketplace continues to mature, the Trust commits to transparent and accurate reporting for the bond label to continue to instill investor confidence.

**AAA Credit Rating.** With its AAA credit rating by all three major credit agencies, the Trust provides low interest loans to local governments and other eligible entities for water infrastructure projects across the Commonwealth. Since its establishment, the Trust has financed approximately **$8.6 billion** for nearly three hundred borrowers, serving **97%** of the Commonwealth's population.

**Commitment.** The Trust is committed to transparency and constant improvement. This can be found in its industry leading issuances to the improved accessibility to its documents from the preliminary official statements to this very report. We are pleased to contribute to this innovative marketplace and stay committed to improving our communications. We ask that you let us know if there are any additional ways that we can meet your information needs. Your feedback is much appreciated and always welcome.

Finally, I am deeply thankful to the staff of the Trust and our program partners, the Massachusetts Department of Environmental Protection (MassDEP and EPA Region 1, for their tireless work and commitment to the communities of the Commonwealth. The Trust and MassDEP are constantly innovating and remain dedicated to the mission of serving our communities.

Sincerely,



**Deborah B. Goldberg**
Treasurer and Receiver-General
Commonwealth of Massachusetts
*mass.gov/treasury*

# Introduction to the Trust

**The Massachusetts Clean Water Trust (the Trust), in collaboration with the Massachusetts Department of Environmental Protection (MassDEP), helps communities build or replace water infrastructure that enhances ground and surface water resources, ensures the safety of drinking water, protects public health, and develop resilient communities. It accomplishes these objectives by providing low-interest loans and grants to cities, towns, and water utilities through the Massachusetts State Revolving Funds (SRFs).**

The Trust and MassDEP administer two SRFs, the Clean Water (CW) and Drinking Water (DW) SRFs. The CWSRF was established in 1987 under the Clean Water Act and the DWSRF was established in 1996 under the Safe Drinking Water Act. The Trust manages the flow of funds to borrowers while MassDEP manages project development and oversight.

SRFs receive funding from the United State Environmental Protection Agency (EPA) in the form of annual capitalization grants. The SRFs function as an environmental infrastructure bank making loans to local governments with the federal funds and once those loans are paid back, the funds are then loaned out again, which is how the fund "revolves."

The Trust uses a "leveraged financing model" to provide more funding to projects than the federal and state grants. Bonds are issued in the capital markets and are secured by borrower repayments and reserve funds. The proceeds from bonds are used to provide capital for new, below-market rate loans to borrowers for water infrastructure projects. This model has allowed the Trust to finance approximately $8.6 billion in projects from nearly $3.1 billion in federal grants and state matching funds.

The Trust is administered by a three-member Board of Trustees that is chaired by the Treasurer of the Commonwealth. The Secretary of the Executive Office for Administration and Finance and the Commissioner of MassDEP serve as Trustees. During monthly meetings, the Board of Trustees approves all financial commitments, agreements, and program decisions. All Board of Trustees materials can be found on the Trust's website along with all pertinent investor information, including this report.

# About this Report

This report covers the Trust's activity during State Fiscal Year (SFY) 2023 and is separated into three sections. The first section, "The Trust's Bonds," details the Trust's process for issuing Green Bonds and Sustainability Bonds. It covers program-specific project categories, project selection and an overview of the Trust's operations. The second and third sections provide full project descriptions from the Trust's Series 24 issuance, organized by the CWSRF and DWSRF programs. Projects associated with Series 24 Sustainability Bonds are shaded in light orange. The appendices at the end of this report list all loans by Green Bonds and Sustainability Bonds series that are still being funded. Additional information such as the percentage of project funding drawn, and loan numbers are included. Readers should note that the main report sections are organized by projects that, in certain cases, were financed by multiple loans spanning multiple bond series.

For full project descriptions for previous bond series, please review previous editions of the Green Bond Report, the Trust's Annual Reports, or the specific bond series' official statements. All reports and documents may be found on the Trust's website under "Investor Resources": *www.mass.gov/orgs/the-massachusetts-clean-water-trust*.

# Section I · The Trust's Bonds

In SFY 2023, the Trust successfully issued two series of bonds — Series 24A Green Bonds and Series 24B Sustainability Bonds. This was the Trust's seventh issuance of Green Bonds and the second issuance of Sustainability Bonds. This section will describe the Trust's approach to issuing Green Bonds and how the Trust has adopted the International Capital Market Association (ICMA) 2021 *Green Bond Principles* framework for project selection. Further, this section details how Sustainability Bonds are designated and their distinction from Green Bonds. Finally, the section will describe how the Trust maps projects to United Nations Sustainable Development Goals (UN SDGs)

Series 23 and 24 departed from the way the Trust has traditionally issued Green Bonds. The Trust made the decision to include all projects associated with the issuances. Previous practice limited project disclosure to those directly funded through bond proceeds and did not include projects that were financed with the Trust's program funds and pledged to secure the Trust's bonds. Series 23 and 24 included all projects, whether they were bond funded or funded by Trust program funds. Tables found in this report that detail the number of projects or loans for previous issuances reflect the policy that was in place at the time of issuance and should be considered individually.

## GREEN BONDS

Since 2015, the Trust has issued over $1.27 billion of its bonds as Green Bonds in compliance with the federal Clean Water Act and the Safe Drinking Water Act. Consistent with the "Green Bond" classification, the proceeds are dedicated to projects that promote pollution prevention, sustainable water, wastewater management, energy efficiency or other environmentally sustainable purposes in alignment with ICMA's *Green Bond Principles*. The Green Bonds were issued to finance 384 loans for 318 water infrastructure projects through the CWSRF and DWSRF programs.

**Green Bonds Issued**

| Series | Year | Issue Amount | Total Loans |
|---|---|---|---|
| **Series 18** | 2015 | $228,155,000 | 81 |
| **Series 19** | 2016 | 207,805,000 | 66 |
| **Series 20** | 2017 | 207,350,000 | 51 |
| **Series 21** | 2018 | 163,460,000 | 38 |
| **Series 22** | 2019 | 191,610,000 | 44 |
| **Series 23A** | 2021 | 141,945,000 | 48 |
| **Series 24A** | 2022 | 137,095,000 | 56 |
| **Totals** | | **$1,277,420,000** | **384** |

## SUSTAINABILITY BONDS

The Trust issued Sustainability Bonds due to the projects' adherence to the same environmental standards of the Green Bonds and the designation of certain borrowers as "Disadvantaged Communities" under the acts. These projects represent communities that are identified as the most disadvantaged in relation to other communities in the Commonwealth.

The purpose of labeling the bonds as "Sustainability Bonds" is to allow investors to invest directly in bonds that finance projects in Disadvantaged Communities and are environmentally beneficial projects that meet ICMA's 2021 Green Bond Principles, Social Bond Principles, Sustainability Bond Guidelines, and the United Nations Sustainable Development Goals. Projects designated as "Sustainability Bonds" are made up exclusively from Disadvantaged Community projects ranked as Tier 3, those most in need, according to the Trust's Annual Affordability Calculation as detailed below. Sustainability Bonds were issued to finance 91 loans for 68 water infrastructure projects through the CWSRF and DWSRF programs.

| Sustainability Bonds Issued | | | |
|---|---|---|---|
| **Series** | **Year** | **Issue Amount** | **Total Loans** |
| **Series 23B** | 2021 | $209,495,000 | 44 |
| **Series 24B** | 2022 | 143,060,000 | 47 |
| **Totals** | | **$352,555,000** | **91** |

## THE TRUST'S DISADVANTAGED COMMUNITY PROGRAM

The Clean Water Act and the Safe Drinking Water Act define a Disadvantaged Community as a municipality most in need as identified by a state's affordability criteria. SRFs are required to provide additional subsidies to Disadvantaged Communities, calculated as an annual percentage of the CWSRF and DWSRF capitalization grants. Massachusetts awards this subsidy in the form of loan forgiveness, reducing the principal obligation that must be repaid on eligible loans. Additionally, the Trust applies further loan forgiveness through a state matching component to this federal requirement.

The Trust uses the Affordability Calculation for an adjusted per capita income (APCI) metric as its affordability criteria. This approach identifies communities that are the most in need of additional financial assistance to construct needed infrastructure improvements. In addition to determining financial need, the metric uses publicly available, transparent sources of data. Pursuant to EPA guidance, the criteria must be based upon income, unemployment data, population trends, and other data determined relevant by the state. The Trust uses the following formula to calculate the affordability tiers.

*Adjusted Per Capita Income (APCI) = Per Capita Income * Employment Rate * Population Change*

**PER CAPITA INCOME** (as listed on the most recent data tables of the Massachusetts Department of Revenue): Per Capita Income is a widely accepted metric of an ability to afford the cost of infrastructure projects.

**EMPLOYMENT RATE** (as listed on the most recent calendar year data tables of the Massachusetts Department of Revenue): The percentage of the workforce employed. Higher employment rates suggest that a community has more residents able to afford the cost of infrastructure than a community with lower employment rates.

**POPULATION CHANGE:** The percentage of gain or loss, according to the US Census data, in a municipal population between 2010 and 2020. Increase in population suggests that the community is experiencing growth, which provides a larger rate payer base to support infrastructure costs. Loss of population suggests negative growth and leaves fewer taxpayers and rate payers to absorb the burden of the infrastructure cost.

Based on the APCI formula described above, the Trust calculates APCI for the state and its 351 individual municipalities annually. Communities that fall below the Commonwealth's APCI are assigned into the three (3) affordability tiers based on a community's APCI as a percentage of the Commonwealth's APCI. The table below shows how the tiers are broken down.

| Disadvantaged Community Tier Designation | |
|---|---|
| **Tier 1** | APCI equal to or more than 80% of the State APCI, but less than 100% of the State APCI |
| **Tier 2** | APCI equal to or more than 60% of the State APCI, but less than 80% of the State APCI |
| **Tier 3** | APCI less than 60% of the State APCI |

## PROJECT SELECTION

The Trust's loan process is dictated by an annual list of projects it commits to finance called the Intended Use Plan (IUP). MassDEP compiles two IUPs annually, one for each SRF program. Project eligibility is determined by the Clean Water Act and Safe Drinking Water Act for the CWSRF and DWSRF, respectively. Projects that apply for financing are selected during an annual solicitation process which is open July through August.

MassDEP compiles the annual IUPs using this rigorous selection process that establishes the Commonwealth's priorities for the upcoming year. MassDEP engineers review detailed project specifications and rank them using an established set of criteria that measures the severity of the problem, the sensitivity of the environmental hazard, the public health risk, and the appropriateness of the proposed solution.

For CWSRF projects, the program emphasizes watershed management priorities, stormwater management, green infrastructure and encourages communities to undertake projects with meaningful water quality and public health benefits. The DWSRF program emphasizes compliance with federal and state water requirements to protect public health while addressing the Commonwealth's drinking water needs.

## PROJECT FUNDING

The Trust, MassDEP, and EPA have entered into a Revolving Fund Operating Agreement for the CWSRF and DWSRF. These agreements establish rules, procedures, and activities to be followed by the EPA and the Trust in administering federal grants. To date, the Trust has been awarded approximately $1.8 billion in federal grants and $344.9 million in state matching funds for the CWSRF program. Approximately $772.9 million in federal grants and $129.3 million in state matching funds have been awarded to the DWSRF program. Additionally, the Commonwealth appropriated $30 million for funding or securing financing solely for local Community Septic Management Programs.

## PROJECT CATEGORIES

The SRF programs fund or finance a wide range of projects. 11 categories of projects are eligible to receive CWSRF assistance and six categories are eligible to receive DWSRF assistance. To streamline the content of this report, the Trust has consolidated similar and related categories while omitting categories with no current projects. Below is an overview of the categories listed within this report.

## CLEAN WATER CATEGORIES

**Wastewater Treatment Projects**
These projects involve the maintenance, upgrade, or construction of wastewater treatment facilities (WWTF). A WWTF receives all the sewage from a municipality or utility district service area then treats the water before releasing it back into the environment in accordance with National Pollutant Discharge Elimination System (NPDES) permits. The goal of these projects is to reduce or eliminate pollutants and nutrients found in wastewater for cleaner water ways.

**Infiltration/Inflow (I/I) and Sewer System Rehabilitation Projects**
These projects involve removing infiltration and inflow (i.e. water other than wastewater) from a sewer system, including construction associated with I/I rehabilitation. I/I is when groundwater or stormwater enters a dedicated wastewater or sanitary sewer system either by direct connections or through damaged parts of sewer pipes. I/I increases the flow to wastewater treatment facilities and leads to back-ups or overflows of the systems. Sewer system rehabilitation and I/I correction projects are concerned with removing sources of water that are either illicitly adding to a sewer system, or from sources entering via defective pipes or utility access holes. Eliminating I/I and replacing sewer systems reduces the occurrences of overflows, meaning less untreated wastewater is released into surface water bodies.

**Collector and Interceptor Sewer Projects**
These projects involve the reduction of untreated water discharged from combined sewer systems. Combined sewer systems are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater all in the same pipe. During wet weather events, combined sewer systems can reach capacity and the excess overflows into surrounding waters, creating a CSO. CSO correction projects work to reduce the amount of untreated water discharged from combined sewer systems. Eliminating CSOs is an EPA and Commonwealth priority goal because it will reduce untreated water being released into surface water bodies.

**Combined Sewer Overflow (CSO) Correction Projects**
These projects involve the reduction of untreated water discharged from combined sewer systems. Combined sewer systems are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater all in the same pipe. During wet weather events, combined sewer systems can reach capacity and the excess overflows into surrounding waters, creating a CSO. CSO correction projects work to reduce the amount of untreated water discharged from combined sewer systems. Eliminating CSOs is an EPA and Commonwealth priority goal because it will reduce the amount of untreated wastewater that is released into water bodies.

**Non-Point Source (NPS) Sanitary Landfill**
These projects involve the reduction of NPS pollution from landfills by capping, installing leachate collection systems or repairing insufficient or damaged landfill systems. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, depositing them into ground and surface waters.

**NPS Decentralized Wastewater Treatment Systems**
These projects involve the rehabilitating or replacing residential onsite wastewater treatment systems or clustered systems. Failed onsite systems are a leading source of groundwater and nutrient enrichment in waterways. This category contains the projects related to the community septic management program

**Stormwater Infrastructure**
These projects involve techniques for managing stormwater to prevent or reduce non-point source pollutants from entering surface waters or ground waters. This includes designing and installing stormwater management systems for conveying, collecting, storing, discharging, recharging, or treating stormwater. These systems aim to reduce the overall impact of excess water on an existing system during wet weather events.

**Planning Projects**
These projects involve developing plans to address water quality and related public health problems. Infrastructure management tracking, capital investment schedules, and the adoption of best management practices are also common objectives. For example, comprehensive wastewater management plans provide strategies for addressing wastewater treatment and disposal issues in a community. Integrated municipal stormwater and wastewater resource management planning assists communities with meeting requirements that arise from distinct wastewater and stormwater programs. Fiscal sustainability and asset management planning assists communities with maintaining replacement schedules and forecasting capital needs.

## DRINKING WATER CATEGORIES

**Drinking Water Treatment Projects**
These projects involve the upgrade, maintenance, and construction of water treatment facilities. These projects are meant to improve the overall quality of drinking water and are targeted to remove pollutants that are known health risks. Treatment plant upgrades can impact the overall efficiency of a plant's energy consumption. Replacing equipment at the end of its useful life will improve overall system efficiency. New pumping and filtering equipment is designed with energy efficiency in mind.

**Drinking Water Transmission and Distribution Projects**
These projects involve the infrastructure that brings untreated water to treatment facilities and the infrastructure that conveys treated water for consumption. This includes everything from large transmission mains from reservoirs to the service lines that provide treated water to homes and businesses. Lines at the end of their useful life can lead to inefficiency in water transmission. Older pipes made of lead or cast iron can be severe health risks when corrosion occurs. Upgrades to pumping and booster stations make the transmission process more energy-efficient and improve the overall efficiency of the system.

**Drinking Water Source and Storage Projects**
These projects involve two distinct categories. Source water projects are related to untreated water sources – such as rehabilitating surface water in a reservoir or drilling and maintaining wells. Storage projects deal with infrastructure for maintaining and storing treated water before it is distributed into a system.

**Drinking Water Planning and Design Projects**
These projects involve the activities needed to plan, design, and/or study drinking water infrastructure. Such projects are essential for maintaining and improving the key infrastructure that protects public health and water quality.

## UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS PROJECT MAPPING

The United Nations Sustainable Development Goals (UN SDGs) are 17 goals adopted as part of the '2030 Agenda for Sustainable Development.' The goals were adopted by all United Nations member states in 2015. The UN SDGs are meant to provide a blueprint for combating poverty, spurring economic growth, and improving health and education while ensuring both climate and environmental sustainability. In reference to the 2022 International Capital Market Association's *Green and Social Bonds: A High-Level Mapping to the Sustainable Development Goals*, the Trust intends for the proceeds from the designated bonds to be used in a manner that is expected to be consistent with the following UN SDGs.

While the Trust intends for projects financed with Green Bonds and Sustainability Bonds to adhere to the applicable UN SDGs as detailed below, the Trust does not guarantee that such criteria will ultimately be met, either in substance or with respect to any timelines set forth in the UN SDGs.

## MAPPING GREEN BONDS

Consistent with the "Green Bond" classification, the proceeds from the Green Bonds will be dedicated to projects that promote pollution prevention, sustainable water and wastewater management, energy efficiency, or other environmentally sustainable purposes in alignment with ICMA's 2021 *Green Bond Principles*.

**Goal 3: Ensure healthy lives and promote well-being for all at all ages**

**3.9** By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

**Goal 6: Ensure availability and sustainable management of water and sanitation for all**

**6.1** By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

**6.3** By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

**6.4** By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

**6.5** By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.

**6.b** Support and strengthen the participation of local communities in improving water and sanitation management.

**Goal 12: Ensure sustainable consumption and production patterns**

**12.2** By 2030, achieve the sustainable management and efficient use of natural resources.

**12.4** By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

**Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development**

**14.1** By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

**14.2** By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.

| Programs | Project Category | UN SDG Alignment |
|---|---|---|
| CWSRF Eligible Projects | Wastewater Treatment | 6.3, 6.4, 12.4 |
| | Collector and Interceptor Sewers | 6.3, 6.4, 14.1 |
| | Combined Sewer Overflow Correction | 6.3, 6.b, 12.2, 14.1 |
| | Infiltration/Inflow and Sewer System Rehabilitation | 6.3, 6.b, 14.1 |
| | NPS Sanitary Landfill | 6.3, 6.b, 12.2, 12.4, 14.1, 14.2 |
| | NPS Decentralized Wastewater Treatment Systems | 6.3, 6.b, 12.4 |
| | Stormwater Infrastructure | 6.3, 6.b, 12.2, 14.1, 14.2 |
| | Planning | 6.3, 6.4, 6.5, 6.b, 12.2, 14.1 |
| DWSRF Eligible Projects | Drinking Water Treatment | 6.1, 6.4, 6.5, 12.4 |
| | Drinking Water Transmission and Distribution | 6.1, 6.4, 12.2 |
| | Drinking Water Source and Storage | 6.1, 12.2, 12.4 |
| | Drinking Water Planning and Design | 6.1, 6.4, 6.5, 6.b, 12.2, 12.4 |

## MAPPING SUSTAINABILITY BONDS

Projects financed as 'Sustainability Bonds' will generally adhere to the UN SDGs as detailed in this report. In addition, the projects financed by the Series 23B Bonds all fall into the Tier 3 Disadvantaged Communities as determined at the time of project approval.

**Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**

**9.1** Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

**Goal 10: Reduce inequality within and among countries**

**10.2** By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.

**Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable**

**11.1** By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.

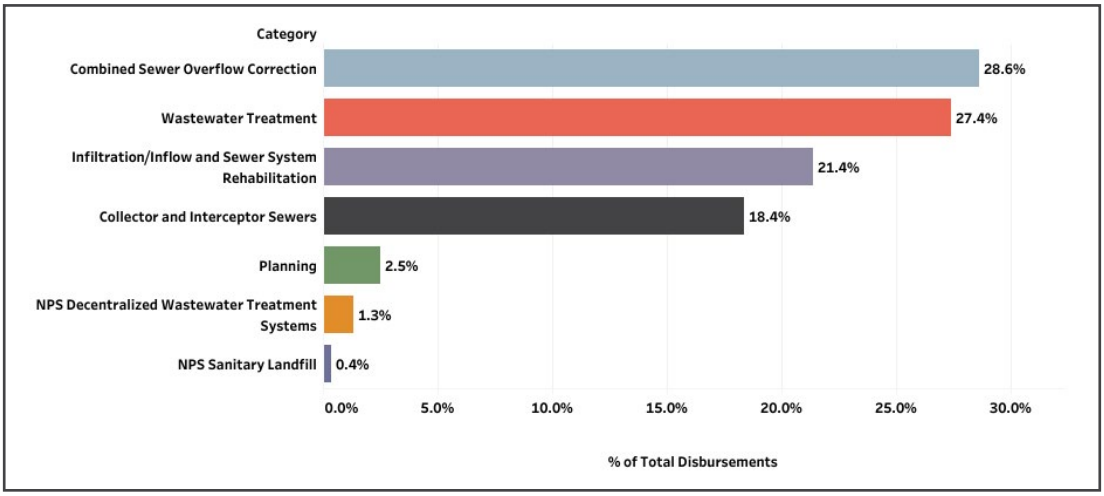
**11.b** By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all.

# A Look at Series 24

## THE DATA

Series 24 is composed of 103 projects with 64% being CWSRF projects and 36% DWSRF projects. The following charts illustrate the distribution of Series 24 projects in each of the CWSRF and DWSRF project categories, first by financing amount and then by number of projects.

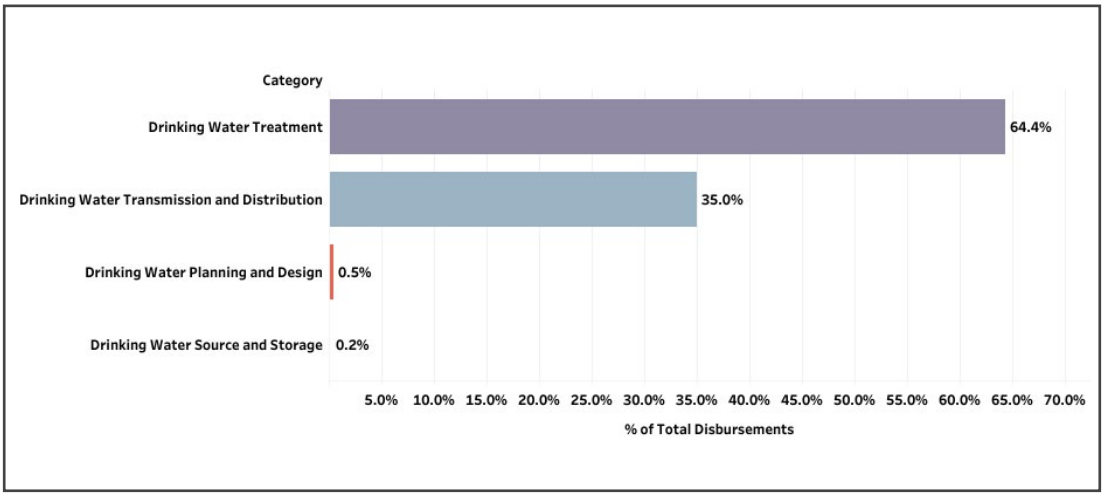
**Series 24 CWSRF Funding Distribution by Project Category**




## SERIES 24 DATA HIGHLIGHTS

- Wastewater Treatment projects received **18.5%** of total funding and encompasses 27.4% of CWSRF funding. This percentage of total funding is down significantly from Series 23 but remains a significant portion of the CWSRF funding.
- I/I and Sewer System Rehabilitation projects that received CWSRF funding and project distributions are proportionate to each other, **21.4% and 31.9%**, respectively, meaning the average amount of funding for each project is similar but still larger than projects in other categories.
- CSO Correction projects account for **28.6%** of CWSRF Series 24 funding and only 12.5% of the number of projects. These projects tend to be in early industrialized communities, where the cost of repair is disruptive and expensive. Based on the aforementioned statistics, the projects in this category tend to receive substantial amounts of financing to help these communities reduce the amount of untreated water released into the environment.
- Collector and Interceptor Sewer projects account for **7.6%** of CWSRF project funding and 11.1% of the total number of CWSRF projects.
- NPS Sanitary Landfill was the least represented category of projects in CWSRF Series 24, with only one project accounting for **0.4%** of funding.
- NPS Decentralized Wastewater Treatment Systems has the third largest portfolio of projects but only accounts for **1.3%** of CWSRF funding.
- Planning projects, unlike the other categories, are less costly per project as they do not require the procurement of physical infrastructure. While Planning projects account for approximately 10% of the total number of projects, they only occupy **2.5%** of total CWSRF funding.

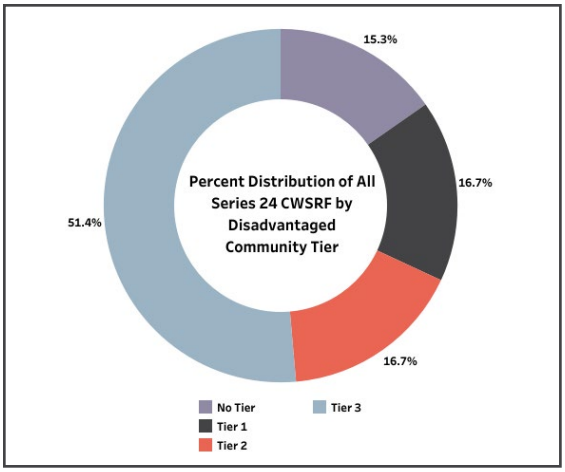
### Series 24 DWSRF Funding Distribution by Project Category



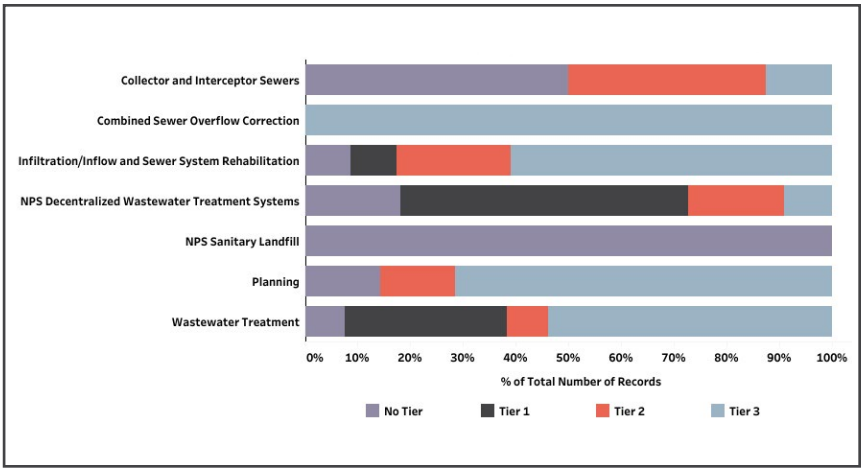

- Drinking Water Treatment projects account for approximately **33%** of the Series 24 DWSRF projects but represent nearly **64.4%** of project funding.
- Drinking Water Transmission and Distribution accounts for most remaining funds. These 15 projects account for more than **35.0%** of total project funding.
- Drinking Water Planning and Design projects account for **0.5%** of total project funding. Like their CWSRF counterparts, Drinking Water Planning and Design is limited to non-construction activities. However, it should be noted that many projects will build this design work into their DWSRF projects.
- Drinking Water Source and Storage's single project accounts for the last **0.2%** of project funding. These projects focus on improving the infrastructure that maintains and stores treated water prior to its distribution back into the community, as well as rehabilitating surface water in reservoirs and wells.

## The following charts show the distribution of Series 24 funds to CWSRF and DWSRF programs by Disadvantaged Community tiers.

### Percent Distribution of All Series 24 CWSRF by Disadvantaged Community Tier

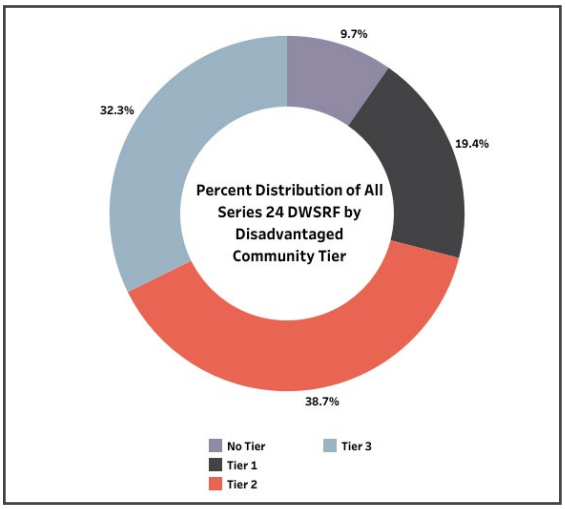



### Percent Distribution of CWSRF in each Project Category by Disadvantaged Community Tier

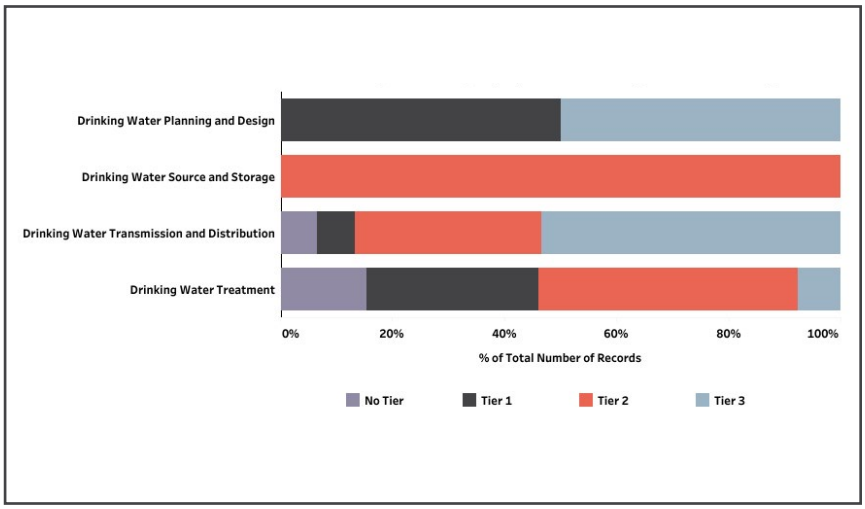



- **$373.1 million** or 79.2% of all Series 24 loans went to a Disadvantaged Community.
- **$189.3 million** of all Series 24 loans were made to Tier 3 Disadvantaged Communities.
- **86.3%** of the Tier 3 allocation went to CWSRF Disadvantaged Community projects.
- **85.7%** of Planning project funding went to Disadvantaged Communities.
- **91.0%** of I/I and Sewer System Rehabilitation projects are for Disadvantaged Communities, with 60.1% going to Tier 3 Disadvantaged Communities.

**Percent Distribution of All Series 24 DWSRF by Disadvantaged Community Tier**




**Percent Distribution of DWSRF in each Project Category by Disadvantaged Community Tier**




- Approximately **33%** of Disadvantaged Community funding was allocated to DWSRF projects, but this is proportionate to the size of the DWSRF portfolio.
- **90.3%** of total DWSRF loan funds went to Disadvantaged Communities, a 34% increase from the previous series. Most of this increase is seen in Tier 3 funding, which increased 65% from the previous series.
- **100%** of Drinking Water Planning project funds went to Tier 3 Disadvantaged Communities. These projects are intended for drinking water improvement in densely populated neighborhoods in Tier 3 Disadvantaged Communities.

# Section II · Series 24 Clean Water State Revolving Fund Projects

## WASTEWATER TREATMENT PROJECTS

Wastewater treatment projects are eligible for SRF assistance under the Clean Water Act for facilities that provide, or are being upgraded to provide, secondary or advanced wastewater treatment. Water treatment facility upgrades or improvements can vary widely depending on the age of the infrastructure in question. These facilities are governed under the National Pollutant Discharge Elimination System (NPDES), which determines the level of water treatment required to discharge wastewater. Many of the upgrades help facilities meet environmental and public health requirements. Upgrades include replacing inefficient mechanical equipment, upgrading pollutant removal systems, or updating water storage facilities to reduce odor.

| Wastewater Treatment Projects | | | |
|---|---|---|---|
| **Total Amount in Dollars ($)** | **Total Number of Projects** | **Total Series 24 Amount in Dollars ($)** | **Total Number of Series 24 Projects** |
| $2,834,524,994 | 341 | $87,278,017 | 10 |

## SERIES 24 WASTEWATER TREATMENT IMPACT

- **Bourne, Brockton, Pittsfield**, and **Taunton** are undergoing wastewater treatment upgrades to comply with National Pollutant Discharge Elimination System (NPDES) permit requirements. Upgrades reduce contaminants such as nitrogen from being discharged from wastewater treatment systems.
- **Billerica, Kingston, Leominster, Lowell, Pittsfield, Taunton,** and **Wareham** projects are upgrading wastewater infrastructure that will increase the plant and process efficiency that will reduce energy consumption and reduce costs.
- **Bourne** is constructing new wastewater treatment plants with advanced filtration technology to reduce capacity at a neighboring town's plant and reduce the amount of treated effluent discharging into the Agawam River.

| Borrower | Project Description | Amount |
|---|---|---|
| **Billerica** | **Wastewater Treatment Facility (WWTF) and Pump Station (PS) Upgrades**<br>This project includes the modifications and additions to the existing WWTF aimed at improving functionality, safety, and treatment. Aging chemical tanks are being replaced to maintain a safe environment at the WWTF. An industrial vacuum truck unloading station is being installed to alleviate the currently labor-intensive set up. A new plant-wide emergency generator is being installed, and the existing generator is being removed. Sludge conveyors were installed to improve the ease of hauling sludge. Several buildings were renovated to increase lab space, machine shops and vehicle storage. The Salem Road PS is also being upgraded to replace aging equipment. | $10,985,731 |
| **Bourne** | **Buzzards Bay Wastewater Treatment Facility (WWTF)**<br>The project involves the construction of a new 100,000 gallon per day (gpd) package WWTF with subsurface discharge on town-owned land. The plant was designed using Membrane Bioreactor (MBR) technology. A groundwater discharge permit has been approved for the WWTF. Based on detailed site testing and groundwater modeling, treated effluent will move towards the Cape Cod Canal. Added capacity is needed to handle flows above the 200,000 gpd capacity designated for Bourne in the Wareham WWTF. Existing sewer flows from a portion of Bourne's sewered area will be intercepted and re-directed to the new treatment plant, redirecting treated effluent away from the Agawam River. | $3,341,513 |
| **Brockton** | **Wastewater Treatment Facility (WWTF) Upgrade**<br>This Biological Nutrient Removal project is necessary to enable the Brockton Advanced Water Reclamation Facility (AWRF) to comply with its National Pollutant Discharge Elimination System permit requirement to achieve effluent Total Nitrogen of 450lbs/day seasonally, equivalent to 3 mg/L on an 18 million gpd average flow basis. The improvements anticipated are based on the demonstrated results and findings of a full-scale pilot process train that has been operational for almost two full nitrogen-removal seasons. This project will involve upgrading the AWRF's other six aeration basins to the Bardenpho configuration (a biological process which provides special conditions for both nitrogen and phosphorous removal) and making other AWRF improvements as necessary to support the process upgrade. | $939,000 |

| Borrower | Project Description | Amount |
|---|---|---|
| **Billerica** | **Wastewater Treatment Facility (WWTF) and Pump Station (PS) Upgrades**<br>This project includes the modifications and additions to the existing WWTF aimed at improving functionality, safety, and treatment. Aging chemical tanks are being replaced to maintain a safe environment at the WWTF. An industrial vacuum truck unloading station is being installed to alleviate the currently labor-intensive set up. A new plant-wide emergency generator is being installed, and the existing generator is being removed. Sludge conveyors were installed to improve the ease of hauling sludge. Several buildings were renovated to increase lab space, machine shops and vehicle storage. The Salem Road PS is also being upgraded to replace aging equipment. | $10,985,731 |
| **Bourne** | **Buzzards Bay Wastewater Treatment Facility (WWTF)**<br>The project involves the construction of a new 100,000 gallon per day (gpd) package WWTF with subsurface discharge on town-owned land. The plant was designed using Membrane Bioreactor (MBR) technology. A groundwater discharge permit has been approved for the WWTF. Based on detailed site testing and groundwater modeling, treated effluent will move towards the Cape Cod Canal. Added capacity is needed to handle flows above the 200,000 gpd capacity designated for Bourne in the Wareham WWTF. Existing sewer flows from a portion of Bourne's sewered area will be intercepted and re-directed to the new treatment plant, redirecting treated effluent away from the Agawam River. | $3,341,513 |
| **Brockton** | **Wastewater Treatment Facility (WWTF) Upgrade**<br>This Biological Nutrient Removal project is necessary to enable the Brockton Advanced Water Reclamation Facility (AWRF) to comply with its National Pollutant Discharge Elimination System permit requirement to achieve effluent Total Nitrogen of 450lbs/day seasonally, equivalent to 3 mg/L on an 18-million gpd average flow basis. The improvements anticipated are based on the demonstrated results and findings of a full-scale pilot process train that has been operational for almost two full nitrogen-removal seasons. This project will involve upgrading the AWRF's other six aeration basins to the Bardenpho configuration (a biological process which provides special conditions for both nitrogen and phosphorous removal) and making other AWRF improvements as necessary to support the process upgrade. | $939,000 |
| **Kingston** | **Kingston Wastewater Treatment Plant (WWTP) Expansion**<br>This project involves expanding the Kingston WWTP to create capacity for flows from multiple proposed private housing and economic development projects. Though there were a number of these project within the Town which were limited by the capacity of the plant, the largest of these was the redevelopment of the Kingston Collection Mall to support a mixed-use development to include hotel, residential, and commercial space. The project will also provide a private, 55+ residential community with the opportunity to connect to municipal sewer as their private WWTP is near the end of its useful life. | $15,955,530 |
| **Leominster** | **Aeration Basin and Secondary Clarifier Upgrade**<br>This is a nutrient removal project that consists of an evaluation of Leominster's water pollution control facility's aeration and secondary clarifier systems. All systems will be upgraded with new premium motors equipped with variable frequency drives for optimum efficiency. A new dissolved oxygen (DO) control system and supervisory control and data acquisition upgrades will be installed to maintain proper DO levels in the aeration basin to facilitate aeration zones and increase nutrient removal. | $11,649,712 |
| **Lowell** | **Capital Improvement Program (CIP) Phase – Wastewater Treatment Facility (WWTF) and Infrastructure Upgrades**<br>This project implements improvements to the WWTF as part of an ongoing phased CIP. The focus of the work includes equipment in the WWTF and six wastewater pump stations, which had outlived their expected service life and are no longer reliable. These improvements address equipment life cycle and maintenance requirements and improve overall reliability for treatment of sewage and wet weather flow. | $4,121,168 |
| **Orleans** | **Downtown Area Collection System and Wastewater Treatment Facility (WWTF)**<br>The construction project includes a new collection system, Pump Station (PS), WWTF, and effluent disposal for the downtown area consisting of about 1,087 users to address water quality in various estuaries. In general, the project includes multiple factors, including WWTF influent screening and flow measurement, flow equalization, biological process sequencing batch reactors, effluent filters, post equalization, effluent pumps, UV disinfection, odor control, septage receiving and processing, solids storage and thickening, and effluent disposal. The project also includes the construction of about 30,800 linear feet (lf) of 8" to 12" gravity sewers and appurtenances, about 2,000 lf of 1-1/2" to 2-1/2" low pressure sewers and appurtenances, about 9,200 lf of 8" effluent force main, 3 PS, and about 9,200 lf of 6" and 8" force mains and appurtenances for the estimated flow of 250,000 gallons per day. | $14,852,300 |

| Borrower | Project Description | Amount |
|---|---|---|
| **Pittsfield** | **Wastewater Treatment Plant (WWTP) Nutrient Removal**<br>This project upgrades the WWTP to achieve compliance with National Pollutant Discharge Elimination System permit limits and an administrative order issued by the EPA. The project optimizes the nitrogen removal process and results in reductions of phosphorus and aluminum discharges to the Upper Housatonic River area of critical environmental concern and remediate documented nutrient enrichment in the downstream Wood's Pond impoundment. Four major component projects are necessary to achieve compliance: tertiary treatment upgrade, sludge dewatering upgrade, nitrogen removal upgrade (Phase I), and secondary clarifiers upgrade. The project components are consistent with the plant needs and energy efficiency improvements identified in the recently updated WWTP facilities plan. | $5,300,640 |
| **Taunton** | **Wastewater Treatment Facility (WWTF) Upgrade - Phase 1**<br>This project was part of a complete upgrade to the Taunton WWTF that are necessary to meet the requirements of the new National Pollutant Discharge Elimination System permit. The facility will expand hydraulically to reduce combined sewer overflows. This project encompasses solids handling improvements. | $12,023,423 |
| **Wareham** | **Process Upgrades at the Wareham Pollution Control Facility (WPCF)**<br>This project will construct denitrifying filters, a lined equalization lagoon and lined and a covered raw wastewater lagoon. The lagoons will provide equalization during wet weather events. The new filters will provide redundancy and the covered lagoon will reduce odors at the WPCF. | $8,109,000 |

# CITY OF TAUNTON

**LOAN NUMBER:** CWP-20-21 | **SERIES 24 LOAN AMOUNT:** $12,023,423
**TOTAL LOAN AMOUNT:** $29,983,598 | **LOAN FORGIVENESS AMOUNT:** $2,968,376
**DISADVANTAGED COMMUNITY TIER:** 3 | **UN SDG:** 3, 6, 9, 10, 11, 1

## PROJECT OVERVIEW

According to the United States Environmental Protection Agency (EPA), a combined sewer overflow (CSO) is when a combined sewer system collects rainwater runoff, domestic sewage, and industrial wastewater in one pipe. If the amount of stormwater and wastewater that is collected is too much for a wastewater treatment facility (WWTF) to handle, then there will be overflow into nearby waterbodies. When CSOs happen, communities become subject to National Pollution Discharge Elimination System (NPDES) permits.

In 2015, the EPA and MassDEP issued a NPDES permit to the City of Taunton which has led to new requirements that need to be met. The NPDES permit limits the amount of nitrogen that is to be discharged into the Taunton River. To meet this nitrogen level limit, Taunton needs to remediate CSOs, expand the capacity and treatment level of its WWTF. These upgrades will improve water quality in the Taunton River, and subsequently in Mt. Hope Bay and Narragansett Bay, all waterbodies that have been severely impacted by untreated sewer discharges.

Taunton's WWTF was upgraded to handle a higher peak hydraulic capacity of 25 MGD of wastewater. The first phase of this comprehensive upgrade project focuses on solids handling. Two new centrifuges and gravity thickeners are being installed. Centrifugal thickening technology for wastewater treatment has been used since the 1930s to separate wastewater solids from liquid to produce solid "cake." This technology, which allows for rapid processing, leads to improved wastewater treatment with very little residuals left behind.

Because this wastewater treatment facility upgrade project has the primary focus of nutrient enrichment reduction, this loan was issued with 0% interest and received nearly $3 million in loan forgiveness. With loan forgiveness and no interest, Taunton will save just over $15.4 million over the 30-year life of the loan. Further, Taunton is finalizing the last two phases of this project which focus on nitrogen removal and pump station equipment respectively and will likely see additional savings from reduced interest and loan forgiveness in the years to come.

## NPS DECENTRALIZED WASTEWATER TREATMENT SYSTEMS

The NPS decentralized wastewater treatment systems projects are comprised of the Community Septic Management Program (CSMP). The CSMP provides loans to the Commonwealth's cities and towns for assisting homeowners in the repair or replacement of failed septic systems. These projects help eliminate contamination from failing septic systems which are a leading source of groundwater pollution that causes contaminated drinking water, tainted shellfish beds, weed choked lakes and ponds, and polluted beaches. With the CSMP, the Trust issues low-interest rate loans to communities who, in turn, issue loans directly to homeowners for up to 20 years. Loans to homeowners are secured through a betterment on their properties. This program allows municipalities to provide access to capital for home septic repair or replacement at a subsidized interest rate. The program is funded within the CWSRF program as NPS projects.

| Community Septic Management Projects | | | |
|---|---|---|---|
| Total Amount in Dollars ($) | Total Number of Projects | Total Series 24 Amount in Dollars ($) | Total Number of Series 24 Projects |
| $135,670,671 | 430 | $4,270,410 | 11 |

## SERIES 24 COMMUNITY SEPTIC MANAGEMENT PROGRAM IMPACT

- Repair and replacement of failing septic systems can be a vital component for reducing pollution. This is especially important to communities with little wastewater infrastructure. For example, **Cape Cod** contains roughly 145,000 developed parcels. 74% of these homes and businesses are not connected to a wastewater treatment system and utilize septic systems. Septic Nitrogen loading accounts for roughly 80% of the water quality degradation of Cape Cod.

| Community Septic Management Program | |
|---|---|
| Borrower | Amount |
| Bridgewater | $400,000 |
| Concord | $300,000 |
| Easton | $500,000 |
| Hanson | $200,000 |
| Kingston | $200,000 |
| Lakeville | $960,000 |
| Middleborough | $500,000 |
| Millville | $160,410 |
| Plymouth | $300,000 |
| Taunton | $250,000 |
| Westport | $500,000 |

## INFILTRATION/INFLOW (I/I) AND SEWER SYSTEM REHABILITATION PROJECTS

These projects correct sewer system infiltration and inflow problems. Infiltration includes water, usually groundwater, penetrating a sanitary or combined sewer system from the ground through defective pipes or utility access holes. Inflow includes controlling the penetration of water, usually stormwater, into a system from sump pumps, drains, storm sewers, and other improper entries. Sewer system rehabilitation projects maintain, reinforce, or reconstruct deteriorating or undersized sewer systems. Corrective actions are necessary to maintain the functional integrity of the system.

| Infiltration/Inflow (I/I) and Sewer System Rehabilitation Projects | | | |
|---|---|---|---|
| **Total Amount in Dollars ($)** | **Total Number of Projects** | **Total Series 24 Amount in Dollars ($)** | **Total Number of Series 24 Projects** |
| $1,001,780,546 | 353 | $68,074,622 | 17 |

## SERIES 24 INFILTRATION/INFLOW (I/I) AND SEWER SYSTEM REHABILITATION PROJECT IMPACT

- **Brockton, Chicopee, Fall River, Massachusetts Water Resources Authority, Nahant, Quincy, Revere, Saugus, South Essex Sewerage District, Taunton, Tyngsborough**, and **Winthrop** are upgrading pumping stations, replacing failing waste water collections mains, or replacing failing mechanical and/or electrical systems that will lead to more efficient wastewater systems while operating with more energy efficient components.
- **Brockton, Dudley,** and **Revere** implemented illicit discharge detection and elimination activities that removed illicit drain connections from sump pumps, gutters, and the like which increase the volume of water during wet weather events.

| Borrower | Project Description | Amount |
|---|---|---|
| **Brockton** | **2019 Sewer Rehabilitation Project**<br>The Taunton River watershed has bacteria water quality impairments during both wet and dry weather conditions. Most bacteria sources can be eliminated by implementing an Illicit Discharge Detection Elimination (IDDE) program, which finds the sources of bacteria and develops recommendations to remove and eliminate them. The City will continue addressing areas identified through recent IDDE detection procedures and Sewer System Evaluation Study. By implementing these projects, the water quality within the City's receiving watershed has improved. | $2,597,167 |
| **Brockton** | **Sewer Rehabilitation Project**<br>This sewer rehabilitation project included a trenchless rehabilitation and open cut repair of prioritized areas in the City's wastewater collection system to address sources of exfiltration, infiltration and inflow, and sections of undersized pipe. The objective is to reduce flows at the Advanced Water Reclamation Facility (AWRF), allow for more capacity for Brockton residents and surrounding communities, prevent exceedances of the City's National Pollutant Discharge Elimination System permit for the AWRF flows, lower maintenance costs, and improve water quality of surrounding watersheds. | $1,470,637 |
| **Chicopee** | **Jones Ferry Wastewater Pump Station (PS) Phase II Improvements**<br>This project included the replacement and upgrade of numerous pieces of equipment, including the replacement of existing wastewater PS with new submersible pumps, the replacement of the existing entry doors, roof, grating in the wet well, slide gates, and fuel storage tank, replacing the motor control center and upgrading the ventilation system, oil furnace, unit heaters, and monorail system. It also included the installation of new sewage grinders, variable frequency drives, a rock catcher, and a magnetic flow meter. The Jones Ferry PS is critical to the City because it pumps most of the flow that is conveyed to the water pollution control facility in the Connecticut River interceptor. The PS has several critical vulnerabilities, including one pump that is offline due to impeller failure and no existing means to isolate and bypass the PS due to generally aging infrastructure. | $3,857,686 |
| **Dudley** | **Dudley Infiltration and Inflow (I/I) Mitigation Construction Project**<br>The Town of Dudley completed an I/I analysis and is performing a Sewer System Evaluation Survey (SSES). The SSES fieldwork will be the basis for the design of construction projects to remove the identified sources of excessive I/I. These projects could remove as much as 184,400 gallons per day of infiltration and 169,600 gallons of inflow during extreme wet weather events. These projects will protect public health and the environment by reducing the occurrence of sanitary sewer overflows. | $863,107 |

| Borrower | Project Description | Amount |
|---|---|---|
| **Fall River** | **South End Sewer Pump Station (PS) Replacement**<br>This project replaced the South End Sewer PS. The PS was constructed in the 1960's. It exceeded its useful life and struggled to keep up with wet weather flows due to high I/I within the sewer system. A new submersible PS was constructed to replace the outdated pumps, piping, and equipment. The PS was constructed with additional capacity to manage wet weather flows, a standby power generator, motor controls, and a Supervisory Control and Data Acquisition system. | $3,425,557 |
| **Massachusetts Water Resources Authority (MWRA)** | **Nut Island HW Odor Control & HVAC - Contract 7548**<br>The Nut Island Headworks is a preliminary treatment facility serving 22 communities that provides screening and de-gritting of wastewater prior to the wastewater receiving primary and secondary treatment and disinfection at MWRA's Deer Island Treatment Facility. This project replaces the odor control and Heating, Ventilation, and Air Conditioning (HVAC) systems at the Nut Island Headworks to maintain reliable operation of the systems, to meet requirements of their air quality permit and maintain an environment within the facility that is safe for workers and suitable for equipment. The project will also replace other equipment at the headworks that is approaching the end of its lifecycle to ensure reliable operation of this critical wastewater treatment facility. | $8,986,259 |
| **Nahant** | **Sewer Collection System – Repair and Replacement**<br>The project involved the sewer pipeline repairs and replacements within the Town to improve water tightness, eliminate infiltration and inflow influences, and the replacement of broken and collapsed sections of the sewer collection system. Sewer utility access hole, force main and pump station repairs and upgrades were also included in the town-wide improvement program. Phase 1 addresses high priority defects identified by a comprehensive town-wide assessment and closed-circuit television pipe inspection program. | $9,767,852 |
| **Quincy** | **The Strand Pump Station (PS) Upgrade Project**<br>The PS was built in the late 1990's and has reached the end of its design life. Recent coastal storms and power outages have caused PS failure. Inundation has led to flooded neighborhoods. Sanitary sewer overflows and water quality concerns from these events are further detailed in this application. The Department of Public Works has also addressed a sewer force main break which indicated the 20-year-old ductile iron sewer force main is corroding and pitting. The project included replacing the standby generator with a more modern, efficient generator, modifying the electrical system to reduce the frequency and duration of power outages, expanding the sewer pumping capacity, replacing the sewer force main with high density polyethylene pipe, and increasing elevation to be above future forecasted base flood elevation. | $2,724,124 |
| **Quincy** | **Fiscal Year (FY) 2020 Sewer Improvements**<br>The City has ongoing infrastructure improvements including rehabilitation, repair, and replacement of coastal utility access holes and sewer piping. The City is proactively implementing Phase IV of the rehabilitation of existing sewer pipe and utility access holes to remove infiltration and inflow of seawater in areas of the City. The City conducted multiple investigations including a Sanitary Sewer Evaluation Survey to identify specific problem areas, which are addressed in this project. To date, the City has completed multiple phases. Phase I was completed for utility access hole rehabilitation, repair, and replacements. Phase II was completed for coastal utility access hole and piping improvements. Phase III was completed for illicit discharge and elimination improvements. | $3,184,496 |
| **Revere** | **Phase VII Construction – Infiltration and Inflow (I/I), Illicit Discharge Detection and Elimination (IDDE), Pump Station (PS), and Drainage**<br>The Phase VII Construction project included the removal of I/I from the City's system. Construction included the redirection of public and private inflow sources discovered during the Phase VI investigations, IDDE source removal, and drainage improvements. Construction also included PS improvements (both wastewater and stormwater), Cured-in-place-pipe lining, sewer spot repairs, new sewer lines, sewer cleaning, and additional wastewater metering. | $8,556,684 |
| **Revere** | **Phase X Construction – Infiltration and Inflow (I/I), Illicit Discharge Detection and Elimination (IDDE), Pump Station (PS), and Drainage**<br>The Phase X Construction project included the removal of I/I from the City's sewer system. Construction included the redirection of public and private inflow sources discovered during Phase X field investigations, IDDE source removal, and drainage improvements. Illicit connections, including sump pumps and roof leaders, were removed from the City's sewer system to remove inflow and increase wastewater capacity. Construction included PS improvements (both stormwater and wastewater), Cured-in-place-pipe lining, sewer spot repairs, replacements, new sewer lines, cleaning, and additional wastewater metering. | $3,624,587 |

| Borrower | Project Description | Amount |
|---|---|---|
| **Revere** | **Phase XI Construction - Infiltration and Inflow (I/I), Illicit Discharge Detection and Elimination (IDDE), Pump Station (PS) and Drainage**<br>The Phase XI construction project included the removal of I/I from the City's sewer system. Construction included the redirection of public and private inflow sources discovered during Phase X field investigations, IDDE source removal, and drainage improvements. Illicit connections, including sump pumps and roof leaders, were removed from the City's sewer system to remove inflow and increase wastewater capacity. Construction included PS improvements (both stormwater and wastewater), cured-in-place-pipe lining, sewer spot repairs, replacements, new sewer lines, cleaning, and additional wastewater metering. | $5,130,346 |
| **Saugus** | **Lincoln Avenue Pump Station (PS) Improvements, Phase 2**<br>The Lincoln Avenue PS serves as the main PS for the Town of Saugus to convey wastewater to the Lynn Regional Wastewater Treatment Facility. The station was built in 1982, has a considerable number of deficiencies, and has experienced several failures. Equipment failures have occurred on multiple occasions, seriously affecting the PS' reliability. Some improvements were made in 2018. However, additional upgrades are necessary at the station. variable frequency drive pump replacement, new motors, power cables, control wiring, station controls, programmable logic controllers, alarms, and upgrades to the 42" influent slide gate to the station are amongst the additional improvements. | $571,162 |
| **South Essex Sewerage District** | **Contract No. 20-1 Danvers Siphon Rehabilitation**<br>Rehabilitation of the siphons using cured-in-place-pipe (CIPP) lining will fully restore the structural integrity of the pipelines, remove the current risk of a pipe failure and potential sewage exfiltration, and provide a minimum 50-year extension of the design life. Installation of CIPP in inverted siphons has a low environmental impact and will not require major construction or disturbance to the adjacent residents and environment. The project will repair and replace impacted concrete within all 7 primary clarifiers to ensure long-term structural reliability of the tanks. | $1,788,940 |
| **Taunton** | **Main Lift Pump Station (PS) Improvements Phase 2**<br>The Taunton Wastewater Treatment Facility (WWTF) receives all its flow from the Main Lift PS. Improvements to the station were required to provide reliable operation. This project included new force mains and an influent sewer. The primary goals of the project were to provide more reliable pumping service, increase capacity, and reduce combined sewer overflows to the Taunton River. Previously, when flows exceeded the capacity of the existing Main Lift PS, the system surcharges and excess flow overflows into the river untreated. Debris clogging pumps is now less frequent with the installation of non-clog pumps. This project was done in conjunction with future upgrades to the WWTF. | $3,802,796 |
| **Tyngsborough** | **Infiltration and Inflow (I/I) Rehabilitation**<br>The project addressed pipeline and utility access hole rehabilitations in areas identified as contributing significant I/I. As a regional partner to the Lowell Regional Wastewater Utility, Tyngsborough I/I has a direct impact on its intermunicipal agreement partners. | $450,677 |
| **Winthrop** | **Town Center - Sewer and Drainage Improvements**<br>This project included upgrading existing sanitary sewer and stormwater infrastructure in the Centre Business District. The existing infrastructure was failing and needed to be replaced to increase capacity. Sewer backups and infiltration and inflow (I/I) related to broken and failing sewer mains occur. This project replaced existing sewer main and laterals with new pipe sized for current and future flows. The design improved hydraulics by increasing slope, promoting self-cleansing velocities, and correcting inverse sloped pipe. Drainage system improvements included increasing the capacity of undersized pipes to reduce flooding concerns and convey stormwater flows. Drainage design included tree box filter treatment. Drains have been sized to account for additional runoff. | $7,272,545 |

# MASSACHUSETTS WATER RESOURCES AUTHORITY

**NUT ISLAND HEAD WORKS ODOR CONTROL & HVAC - CONTRACT 7548**
**LOAN NUMBER:** CW-20-46 (CW-19-45, CW-21-56, AND CW-22-06) | **SERIES 24 LOAN AMOUNT:** $8,986,259
**TOTAL SRF LOAN AMOUNT:** $63,614,621 | **UN SDG:** 6, 14

## PROJECT OVERVIEW

In the early days of American history, Boston Harbor was revered as a pristine port. However, as the city's population grew throughout the 19th and 20th centuries, the harbor faced extreme challenges as it was marred with waste and contamination. The water was odorous, dangerous to swim in, and unfishable. In 1982, catastrophic levels of pollution struck as over 3 billion gallons of raw sewage coursed through the harbor following equipment failure at the Nut Island Sewerage Treatment Facility in Quincy, Massachusetts. As concerns over conditions mounted, the City of Quincy sued the Commonwealth and the agency operating the water system under the Clean Water Act of 1972.

Among the changes spurred by the growing attention on Boston Harbor was the establishment of the Massachusetts Water Resources Authority (MWRA). As a new, independent agency, MWRA set out to upgrade the water infrastructure and clean up the harbor. In the summer of 1998, MWRA put the Nut Island Headworks into service, replacing the former plant that had been in use since 1952, thus ushering in a new era for waste treatment.

For 25 years, the facility had screened and de-gritted wastewater to remove large objects, sand, and gravel from sewage before it is conveyed to MWRA's Deer Island Treatment Facility for primary and secondary treatment and disinfection. The equipment at this vital facility was beginning to reach the end of its useful life.

In 2016, the system was damaged by a fire that spread from a scrubber vessel to a fan and ductwork, expediting the need for upgrades. This project has allowed improvements to the Nut Island Odor Control System (NIOCS) and HVAC systems at the facility to begin. Through financing from the Trust, these systems are being rehabilitated or replaced to treat air and prevent the release of odors to surrounding areas to meet the requirements of the MassDEP Air Quality Permit. The upgrades ensure a safe environment for workers and the efficient, reliable operations of systems and equipment at Nut Island Headworks, a critical asset of the MWRA wastewater system.

## PROJECT IMPACT

The Nut Island Headworks serves 22 communities and treats wastewater from the vast majority of MWRA's southern sewer system, demonstrating a substantial impact in the Boston area. As a wastewater treatment facility for a densely populated area most of Nut Island's operations take place underground, allowing for the land above to be used as a natural space for locals and wildlife to enjoy. The NIOCS ensures that air discharged into the atmosphere is properly treated and safe for the surrounding community, making the flowering perennials and salt water the only scents worth noting on Nut Island.

The ecological impact of the facility cannot be understated. Wastewater that begins at Nut Island Headworks and moves to Deer Island is eventually pelletized to be used as fertilizer at farms and in gardens in Massachusetts. What was once dubbed the "Flounder Capital of the World" after the fish that thrived in the surrounding sludge-riddled waters is now a serene national park with fish populations, including flounder, striped bass, and bluefish returning in balanced numbers.

Today, the Nut Island Headworks serves as a symbol of the progress that has been made with the Boston Harbor cleanup. The Boston Harbor Islands, polluted beyond comprehension just decades ago, are being restored to their former glory. Through continued technological innovation and investment in water infrastructure, exemplified by MWRA at Nut Island Headworks, Boston Harbor will be preserved for future generations to come.

MWRA was issued Trust loan CW-20-46 in the amount of nearly $9 million. Additional phases of the project were financed under interim loans CW-19-45, CW-21-56, and CW-22-06. As a 2021 wastewater project, MWRA CW-21-56 was awarded $2.4 million in loan forgiveness thanks to American Rescue Plan Act funds.

## COLLECTOR AND INTERCEPTOR SEWERS PROJECTS

According to the EPA, millions of gallons of human and industrial waste are sent through complex underground collections systems. These systems operate all day, every day. Most municipal sewer systems are at least 60 years old. Collection systems consist of pipelines, conduits, pumping stations, force mains, and other components to collect wastewater and convey it to treatment facilities before being discharged into the environment. Design, operation, and maintenance are critical for system efficiency and public health. System expansions can be used to mitigate issues with combined sewer overflows and septic systems. New collector sewers are projects associated with new pipes used to collect and carry wastewater from a sanitary or industrial wastewater source to an interceptor sewer that will convey the wastewater to a treatment facility. New interceptor sewers and pumping stations are being built to convey wastewater from collection sewer systems to a treatment facility or to another interceptor sewer. This category includes costs for relief sewers, which are designed to handle the excess capacity of an existing system.

| Collector and Interceptor Sewer Projects | | | |
|---|---|---|---|
| **Total Amount in Dollars ($)** | **Total Number of Projects** | **Total Series 23 Amount in Dollars ($)** | **Total Number of Series 23 Projects** |
| $ 1,172,561,820 | 355 | $91,116,508 | 7 |

## SERIES 24 COLLECTOR AND INTERCEPTOR SEWERS PROJECTS PROJECT IMPACT

- **Chatham, Easton, Harwich**, and **Tyngsborough** have installed new Collector and Interceptor Sewers to reduce the effects of failing septic systems and ensure that properties have a sanitary alternative that will control pollution being added to the environment, In the cases of Chatham, Easton, and Harwich, regional solutions are being added to reduce non-point source pollution on Cape Cod.
- **Chicopee, Nantucket**, and **West Springfield** improved, repaired, or expanded their wastewater collection systems to reduce the amount of untreated wastewater being discharged into the environment.

| Borrower | Project Description | Amount |
|---|---|---|
| **Chatham** | **Phase 1D - Chatham/Harwich Regionalization**<br>The collection system extension project allowed the Town to continue moving forward with addressing the nitrogen loading concerns by expanding the wastewater collection system. The towns of Chatham and Harwich successfully executed an intermunicipal agreement for wastewater collection and treatment. The purpose of this project was to provide the infrastructure in the Town to support the connection to Harwich for collection and treatment of their wastewater. The Town of Harwich completed a separate project for their portion of this important regional coalition to address nitrogen total maximum daily loads. | $5,800,258 |
| **Chicopee** | **Blue Bird Acres Sewer Pump Station (PS) and Force Main**<br>This project included sewer rehabilitation measures and other corrective actions in the Meadowbrook Underdrain area to eliminate contamination of surface waters, reduce infiltration and inflow and improve as well as renovate conveyance. The Town is under an EPA administrative order to remediate these issues. | $1,823,094 |
| **Easton** | **Easton Five Corners Sewer**<br>The Five Corners sewer project provided sewer services to the Five Corners needs area in the Town. This needs area was determined to be a high-priority area during the Comprehensive Wastewater Management Plan process that was completed in 2014. The needs area stretches between the intersection of Foundry Street and Robert Drive to the intersections of Foundry Street, Depot Street, and Bay Road. This area includes ponds, wetlands, and two historical districts, all of which are being threatened by failing septic systems. The project consisted of approximately 11,100 linear feet (lf) of gravity sewer, 2,700 lf of force main, and 850 lf of low-pressure sewer. Additionally, the project required the construction of one pump station on a Town-owned parcel. Flows will be conveyed to the Mansfield Water Pollution Control Facility for treatment. | $10,720,026 |

| Borrower | Project Description | Amount |
|---|---|---|
| **Harwich** | **Harwich Sewer Collection System - Phase 2**<br>The Town implemented Phase 2 of their Comprehensive Wastewater Management Plan and installed a sewer collection system in the Pleasant Bay Watershed. After a 400% population increase since 1951, the Town saw water quality issues due to septic systems releasing nutrients which infiltrate into the ground and over fertilized water bodies, resulting in degraded water quality. Wastewater collected in the Pleasant Bay area in Harwich is now being treated at the existing Chatham Water Pollution Control Facility. The towns of Harwich and Chatham signed an intermunicipal agreement to work together to meet their shared goals of the Pleasant Bay total maximum daily load and to protect their resources, which include drinking water supply wells. | $16,092,328 |
| **Nantucket** | **Surfside Road Area Sewer System Improvements**<br>This project involved the upgrade of the Surfside Road Pump Station (PS) and the replacement of approximately 5,400 linear feet of existing gravity sewers tributary to the PS. The purpose of the project is to provide adequate downstream capacity for the sewer expansions needs areas identified in the approved 2014 Comprehensive Wastewater Management Plan update. | $6,995,000 |
| **Tyngsborough** | **Phase 2 Middlesex Road North**<br>The Phase 2 Middlesex Road North project was located on the northern portion of Route 3A in Tyngsborough. There were multiple public groundwater supplies directly abutting the Phase 2 Sewer project area. The T.J. Maxx Plaza Wastewater Treatment Facility (WWTF) is located on the northern-most section of Middlesex Road within the Phase 2 project area and has a groundwater discharge which is a potential threat to the environmental resources in the area. By adding public sewer to the Phase 2 area, the T.J. Maxx Plaza WWTF would come offline, and the plaza would connect into the sewer, eliminating potential harmful groundwater discharge. There are multiple issues with septic systems due to many commercial parcels located in the plaza. | $10,246,968 |
| **West Springfield** | **Birnie Avenue and Piper Road Area Sewer Project**<br>This project involved the installation of approximately 17,000 linear feet (lf) of gravity sewer line, 1,100 lf of force main, and three lift stations. Each lift station will be designed to include energy efficient measures such as premium efficiency motors for the lift pumps. The Town is working to protect and enhance the quality of its water resources, improve wastewater service, and eliminate potential environmental health problems. The project assists nearly 170 homeowners in the ability to decommission their septic systems, especially the 26 systems that have previously failed and others that are aging, by providing a means to which they can dispose of their sewage via the sanitary sewer pipeline. | $6,789,474 |

# TOWN OF HARWICH

**HARWICH SEWER COLLECTION SYSTEM – PHASE 2**
**LOAN NUMBER:** CWP-18-23 | **SERIES 24 LOAN AMOUNT:** $16,092,328
**TOTAL LOAN AMOUNT:** $22,214,467 | **LOAN FORGIVENESS AMOUNT:** $568,522
**DISADVANTAGED COMMUNITY TIER:** 2 | **UN SDG:** 3, 6, 14

## PROJECT OVERVIEW

The Town of Harwich, and all coastal communities on Cape Cod, are acutely aware of the harm caused by nitrogen pollution. The primary source of nitrogen pollution in Harwich is runoff from septic systems into the Pleasant Bay Watershed. This causes vastly degraded water quality. Because of these issues, the Town completed a construction project to prevent nitrogen from entering the environment. The completed project has resulted in significant reductions of pollution and protects the environmental and economic health of Harwich and all Cape communities. Diverting these pollutants from entering the Watershed was a productive step in implementing Harwich's Comprehensive Wastewater Management Plan (CWMP) and contributed to the goal of meeting the Pleasant Bay Watershed's total maximum daily load and protecting drinking water supply wells.

## ENVIRONMENTAL IMPACTS OF NITROGEN POLLUTION

Nitrogen is a beneficial ingredient when used in certain contexts, such as in fertilizers. However, when large quantities enter waterways through non-point source runoff, it can lead to disastrous effects. The main effect is eutrophication, also referred to as algal blooms. Eutrophication damages public health by impairing drinking water wells and harming wildlife.

Excess nitrogen in the environment causes rapid growth in aquatic plants and algae, which use up all the dissolved oxygen in the waterbody. The lack of oxygen kills fish, invertebrates, and aquatic vegetation. Additionally, some of the colonies of algae that grow during these events can produce toxic or harmful effects.

Eutrophication events jeopardize the health and wellbeing of Cape residents and tourists. Human health can be harmed by drinking or swimming in water contaminated by toxic algae, including symptoms such as respiratory irritation, vomiting, skin, eye, and throat irritation, and in extreme cases, seizure or coma. The harm to human health in turn affects the economic health of the Town and surrounding areas. Cape communities depend on tourism to sustain their economies.

Algal blooms shut down beaches and waterways. The blooms also prevent the harvesting of commercial and recreational fish and shellfish. Because of all the associated harms and costs that come from nitrogen pollution, addressing the root cause of the problem on the Cape is imperative.

## TECHNICAL OVERVIEW

The Town completed Phase 2 of their CWMP by installing a sewer collection. Harwich saw a 400% population increase since 1951, which has led to the need for sewered wastewater treatment. The newly constructed system transports up to 300,000 gallons of wastewater per day to the neighboring town of Chatham for treatment. The towns of Chatham and Harwich signed an intermunicipal agreement to facilitate the construction and transportation of wastewater. The collection system services approximately 600 homes in Harwich and requires the construction of over 12 miles of gravity sewer pipe, pressure sewer pipe, force main, and six pumping stations. Phase 2 of the CWMP also provided sewer service to the East Harwich Village Center, a commercial district and destination for residents and tourists. The construction of the collection system has already showed positive tangible effects. Since its implementation, 2,872 kilograms per year of nitrogen has been diverted from entering the Pleasant Bay Watershed.

## FINANCIAL OVERVIEW

The Town of Harwich was issued a $22.2 million loan from the Massachusetts Clean Water Trust. The project was awarded numerous subsidies from the Trust. Subsidies included a 0% interest rate and $568,522 in loan forgiveness from the Trust's Disadvantaged Community Program. The zero percent interest rate compared to the Trust's standard 2% interest rate results in over $5 million in additional savings. There was over $5.6 in additional loan forgiveness awarded from the Cape Cod Islands and Water Protection Fund (CCIWPF), a subsidy that the Clean Water Trust disburses which also reduces the net loan obligation for eligible wastewater infrastructure and pollution remediation projects on the Cape. The subsidies the Trust and CCIWPF provide greatly reduce the financial burden of Harwich residents.

## COMBINED SEWER OVERFLOW (CSO) CORRECTION PROJECTS

CSOs are events where a combined sewer system fails to collect rainwater, domestic sewage, and industrial wastewater in the same pipe as intended. When these systems exceed their capacity, untreated water can discharge directly into a water body. CSO correction projects are associated with measures used to achieve water quality objectives by preventing or controlling periodic discharges that occur when the capacity of a sewer system is exceeded during a wet weather event.

| Combined Sewer Overflow (CSO) Correction Projects | | | |
|---|---|---|---|
| **Total Amount in Dollars ($)** | **Total Number of Projects** | **Total Series 23 Amount in Dollars ($)** | **Total Number of Series 23 Projects** |
| $1,603,821,585 | 163 | $66,956,032 | 5 |

## SERIES 24 COMBINED SEWER OVERFLOW CORRECTION PROJECT IMPACT

- **Fitchburg, Holyoke, Lynn Water & Sewer Commission, New Bedford**, and **Springfield Water & Sewer Commission** underwent projects to reduce the amount of untreated sewage discharged into rivers and nearby water bodies during wet weather events. These projects help protect water quality and public health.
- **Springfield Water & Sewer Commission's** CSO project will reduce the amount of untreated water being discharged into the Connecticut River by 40% annually. This project will help reduce the number of pollutants that affect environmentally threatened and endangered animals, while also improving the quality of water that will eventually flow into the Long Island Sound.
- **Lynn Water & Sewer Commission's** project is the first of many sewer separation projects to mitigate CSO discharges into Lynn Harbor. This project involves sewer separation of approximately 260 acres of the western portion of Lynn.

| Borrower | Project Description | Amount |
|---|---|---|
| **Fitchburg** | **Combined Sewer Overflow (CSO) 007, 011, 039, and 048 Separation and Rehabilitation**<br>This nutrient removal project is separating 4,800 linear feet (lf) of combined sewers. It is facilitating the installation of 4,500 lf of new sewers, 1,600 lf of new drains, and the closure of three regulators (CSO 007, 039, and 048). The project includes approximately 2,700 lf of sewer replacement and 18,500 lf of trenchless rehabilitation to reduce infiltration and inflow upstream of the three regulators. This project will reduce nutrient loading to the North Nashua River by removing untreated CSO discharges from these regulators. | $7,810,236 |
| **Holyoke** | **Jackson Street Area Sewer Separation Project**<br>The project consists of sewer separation of combined sewers in the Jackson Street area to eliminate 23 million gallons of annual combined flow that discharged to the Connecticut River from the Jackson Street area outfall. The work includes the construction of 14,400 linear feet (lf) of new sewers and drains and 3,200 lf of sewer lining. Eliminating the Jackson Street outfall will result in a significant improvement to water quality in the Jackson Street area of the Connecticut River. The project is consistent with the City's combined sewer overflow long-term control plan and is being required by an administrative order issued by the EPA and a draft consent decree issued by the U.S. Department of Justice. | $8,024,306 |
| **Lynn Water & Sewer Commission** | **West Lynn Sewer Separation**<br>The Commission entered a third modified consent decree with the EPA to implement a long-term control plan to reduce combined sewer overflow (CSO) discharges to local receiving waters. This project is the first of several projects included in the plan to mitigate CSO discharges into Lynn Harbor. The project involved sewer separation of approximately 260 acres within the western portion of Lynn as well as the installation of a 114 million gallon per day stormwater pump station with a force main out to a new or reconstructed outfall into the Lynn Harbor. The project will significantly reduce sanitary sewer overflows and CSOs which will improve the water quality in nearby water bodies. | $10,017,036 |

| Borrower | Project Description | Amount |
|---|---|---|
| **New Bedford** | **Wastewater Collection System Improvements**<br>This project includes several improvements to the City's infrastructure including an interceptor and collector sewer rehabilitation program, a sanitary sewer evaluation survey for high priority areas, a lateral sewer rehabilitation program, and a sewer separation project. The progression of these programs will further the City's efforts to dramatically lessen or eliminate infiltration and inflow issues, reduce combined sewer overflows, reinforce the critical components of the City's sewer system, address capacity management operations and maintenance and regulatory requirements, and eliminate illicit discharges. These programs will address needs identified in the City's integrated plan. | $3,878,436 |
| **Springfield Water & Sewer Commission (SWSC)** | **York Street Pump Station (PS) and Connecticut River Crossing**<br>Consistent with the SWSC Integrated Wastewater Plan, the York Street PS and Connecticut River Crossing project will increase the wet weather flow to the Springfield Regional Wastewater Treatment Facility (WWTF), substantially reducing the volume and frequency of combined sewer overflow (CSO) events from multiple regulators across the Connecticut River CSO system. The project includes a new 62 million gallons per day wastewater pumping station and screening facility, three new pipes crossing under the Connecticut River to the Springfield Regional WWTF, and modification to the Springfield Regional WWTF influent structure. | $61,386,494 |

## NON-POINT SOURCE (NPS) SANITARY LANDFILL PROJECT

NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff water moves, it picks up and carries away natural and human-made pollutants, finally depositing them into ground and surface waters. Ensuring that landfills are properly capped, maintained, and monitored is necessary to avoid water contaminants leaks into local waters. NPS landfill projects can include purchase, installation, and repair of capping systems (gas venting layer, geosynthetics, barrier layer, top cover, etc.), leachate collection, storage, and treatment systems (onsite or off-site), side slope seepage prevention and control systems, gas condensation systems, monitoring wells and equipment, and stormwater runoff controls.

| Non-Point Source (NPS) Sanitary Landfill | | | |
|---|---|---|---|
| **Total Amount in Dollars ($)** | **Total Number of Projects** | **Total Series 24 Amount in Dollars ($)** | **Total Number of Series 24 Projects** |
| $87,673,566 | 36 | $1,182,752 | 1 |

## SERIES 24 NON-POINT SOURCE (NPS) SANITARY LANDFILL PROJECT IMPACT

- **Leverett** is reducing the public health risk by providing clean water to homes affected by a leaking landfill.

| Borrower | Project Description | Amount |
|---|---|---|
| **Leverett** | **Connection to Amherst Waterline**<br>The Town connected approximately one dozen houses, that are downhill of the previously contaminated area that extended from the closed and capped Leverett Landfill to the Town of Amherst's public water supply as a permanent solution to a longer-term public health and housing problem. Leverett secured Small Town Housing Choice grant funds to generate plans and design for the project. | $1,182,752 |

## PLANNING PROJECTS

Projects in this category are for developing plans to address water quality and water quality-related public health problems. Planning projects can consist of multiple types of investigations. Field investigations are used to view the state of current water infrastructure assets to identify and prioritize design, maintenance, and replacement activities. Sensor and field analysis can be used as part of a larger analysis that consists of plans to adopt best management practices and capital improvements. These projects assist municipalities with determining environmental issues that may be affecting local water sources or endangering public health.

| Planning Projects | | | |
|---|---|---|---|
| **Total Amount in Dollars ($)** | **Total Number of Projects** | **Total Series 24 Amount in Dollars ($)** | **Total Number of Series 24 Projects** |
| $364,620,336 | 354 | $8,028,214 | 7 |

## SERIES 24 PLANNING PROJECTS IMPACT

- **Lawrence** and **Revere** completed analysis projects related to mitigating combined sewer overflows and sanitary sewer overflows, with Illicit Discharge Detection and Elimination programs, sewer inspections via remote camera. These survey methods assist utilities with creating more efficient systems that discharge less untreated water. Upgrading facilitates reduces the amount of energy needed to treat and pump water.
- **Gloucester** and **Sudbury** worked to develop Comprehensive Wastewater Management Plans (CWMP) which evaluate the current state of wastewater disposal and help develop future improvement programs. These plans often review existing conditions and provide roadmaps with alternative options for development into the future. The CWMP is a necessary tool for community leaders to use when deciding contemplating future development or long-term spending for infrastructure.
- **Revere** completed an evaluation study on alternative wastewater connections to the regional wastewater treatment system to evaluate efforts in reducing sanitary sewer overflows.

| Borrower | Project Description | Amount |
|---|---|---|
| **Gloucester** | **Gloucester Comprehensive Wastewater Management Plan (CWMP)**<br>This project is developing a CWMP for the City. The CWMP consists of three phases. Phase I includes an assessment of existing conditions, projection of future wastewater disposal needs, and a needs assessment for the entire City's study area. In Phase II, alternative means of managing the wastewater are developed to address the needs identified in Phase I. Phase III involves a detailed evaluation of the alternatives identified and a recommendation of a specific wastewater management plan. A draft and a final CWMP report will be prepared, submitted, and reviewed for approval by the City and MassDEP. | $180,000 |
| **Lawrence** | **Sanitary Sewer Evaluation Survey (SSES) Phases VI through VIII**<br>This project consists of phases VI through VIII of the annual SSES activities. Phases I through IV were completed in 2014 through 2017, respectively. Phase V is underway. Phases VI through VIII include flow isolation, utility access hole inspections, cleaning and television inspections, smoke testing, and dye testing in a project area that consists of 355,000 linear feet of sanitary sewer ranging from 8-inches to 54-inches in diameter and of approximately 120 utility access holes. The City has periodically experienced surcharging and Sanitary Sewer Overflows into the storm drain system and Combined Sewer Overflows to the Merrimack River. This work is recommended in the 2017 SSES Summary Report and will assist in complying with the federal consent decree. | $3,000,000 |
| **Revere** | **Phase XI Investigations**<br>The Phase XI field investigations, Illicit Discharge Detection and Elimination (IDDE), and illicit connection and sump pump investigation programs are important planning projects for the City of Revere. The investigation programs include IDDE, Closed-Circuit Television of drains and sewers throughout the City, dye testing, smoke testing, wastewater and stormwater pump station inspections, and inspections of private homes and businesses. These programs are used to identify sources of inflow from sump pumps, roof leaders, roof drains, driveway drains, yard drains, and other sources of inflow. The findings of these investigations will be incorporated in the City's future construction projects to address the detected deficiencies. | $1,500,000 |

| Borrower | Project Description | Amount |
|---|---|---|
| Revere | **Phase XII Investigations**<br>The Phase XII field investigations, Illicit Discharge Detection and Elimination (IDDE), and illicit connections and sump pump investigation programs are important planning projects for the City. The investigation programs use IDDE, closed-circuit television of drains and sewers throughout the City, dye testing, smoke testing, wastewater and storm water pump station inspections, and inspections of private homes and businesses to identify sources of inflow from sump pumps, roof leaders, roof drains, driveways drains, yard drains and other sources of inflow. The findings of these investigations will be incorporated in the City's future construction projects to address the detected deficiencies. | $1,300,000 |
| Revere | **Alternative Wastewater Connections and Storage Evaluation**<br>This planning project will focus on the evaluation of alternative connections to the Massachusetts Water Resources Authority's regional system and/or storage requirements to meet the obligations of the consent decree and eliminate sanitary sewer overflows. This planning project includes field investigations, hydraulic modeling, and cost analysis efforts. | $750,000 |
| Revere | **Fats, Oils, and Grease (FOG) Control and Capacity, Management, Operations and Maintenance (CMOM) Equipment Procurement**<br>The planning project procured specialized equipment needed as part of the City's ongoing CMOM program, as well as further develop and implement a FOG inspection program throughout the City. The project will evaluate alternative connections to the Massachusetts Water Resources Authority's regional system and/or storage requirements to meet the obligations of the consent decree and eliminate Sanitary Sewer Overflows. The project includes field investigations, hydraulic modeling, and cost analysis efforts. The investigation programs included Illicit Discharge Detections and Elimination, Closed-Circuit Television of drains and sewers throughout the City, dye testing, smoke testing, wastewater and storm water pump station inspections, and inspections of private homes and businesses to identify sources of inflow from sump pumps, roof leaders, roof drains, driveways drains, yard drains and other sources of inflow. The findings of these investigations will be incorporated in the City's future construction projects to address the detected deficiencies. | $798,214 |
| Sudbury | **Comprehensive Wastewater Management Plan (CWMP) Update**<br>This project included updates of previous studies being incorporated into a CWMP and completed tasks initiated by bringing the planning into a document. Tasks included updates to needs areas and corresponding flows and loads, reviews, and updates of evaluations for potential wastewater treatment facility siting, on-site investigations for groundwater discharge, and development of public outreach. | $500,000 |

# Section III · Series 24 Drinking Water State Revolving Fund Projects

## DRINKING WATER TREATMENT PROJECTS

Treatment projects include the construction, expansion and rehabilitation of drinking water infrastructure that reduces contamination through various treatment processes. Such processes aim to condition water or remove contaminants. Treatment processes include filtration of surface water, pH adjustment, softening, disinfection, waste handling, and other treatment needs (i.e., granular activated carbon which filters out chemicals, particularly organic chemicals, aeration, and iron and manganese removal) along with chemical storage tanks.

Upgrades and maintenance to water treatment plants leads to improved water quality and system efficiency. Replacing equipment that has reached the end of its useful life along with upgrading filtering and purifying equipment makes these facilities less susceptible to failures that could endanger public health. Additionally, system improvements such as corrosion control help keep the public safe from issues related to older cast iron pipes and lead service lines. Upgraded equipment generally leads to more efficient facilities that consume less power and improves worker safety.

| Drinking Water Treatment Projects | | | |
|---|---|---|---|
| **Total Amount in Dollars ($)** | **Total Number of Projects** | **Total Series 24 Amount in Dollars ($)** | **Total Number of Series 24 Projects** |
| $1,239,032,224 | 243 | $98,295,929 | 13 |

## SERIES 24 DRINKING WATER TREATMENT IMPACT

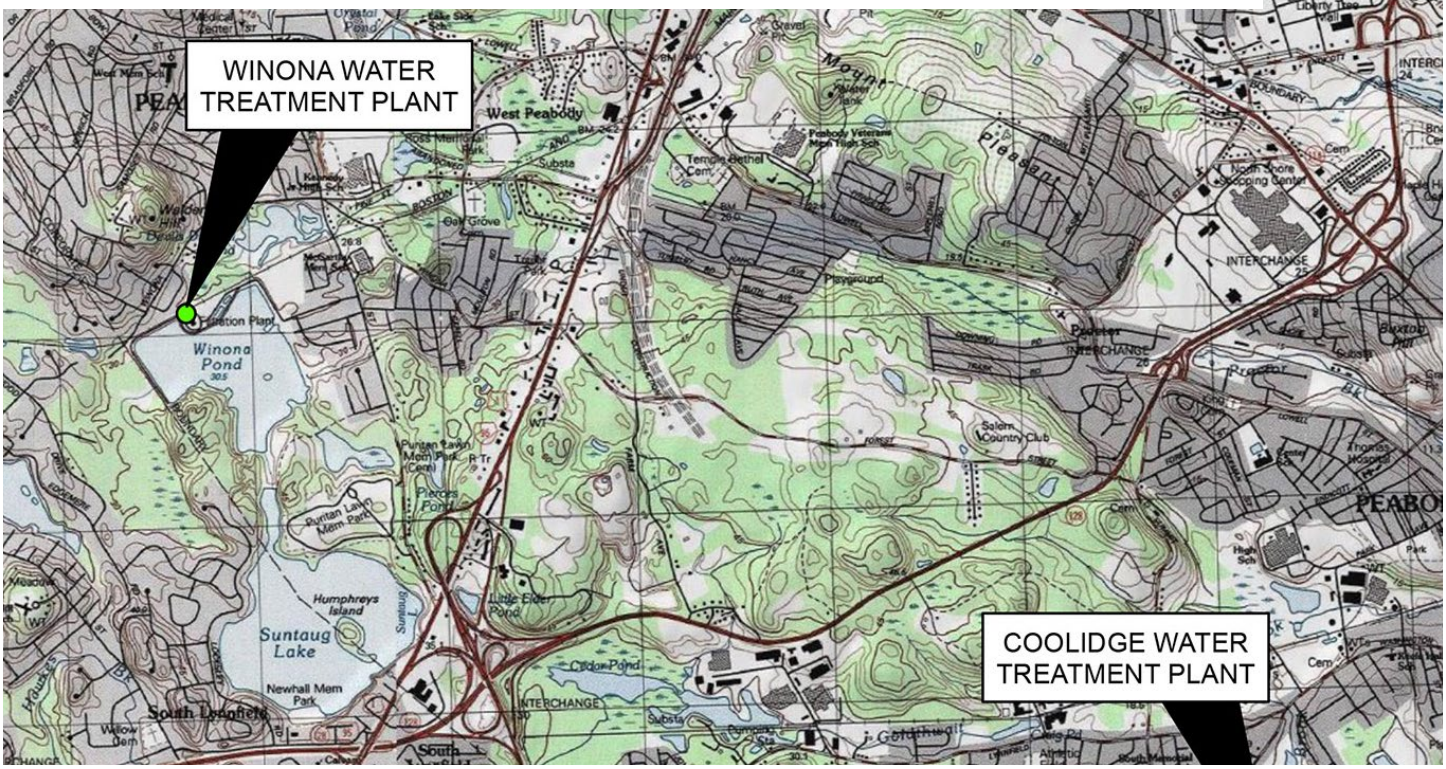
- **Ayer** and **Barnstable Fire District** completed activities aimed at protecting residents from per- and polyfluoroalkyl substances (PFAS). PFAS are a family of chemicals widely used to manufacture common consumer goods and can be found in some legacy firefighting foams. PFAS has been known to enter drinking water at sites where it was manufactured, used, disposed of, or spilled. PFAS seeps through the soil into groundwater or surface water. Humans are exposed to PFAS by consuming contaminated drinking water. Adverse health effects in humans exposed to high levels of PFAS may include hepatic, cardiovascular, endocrine, immune, reproductive, and developmental effects.
- **Blackstone, Bridgewater, Dracut Water Supply District, Kingston, Peabody, Scituate**, and **West Boylston Water District** underwent projects to reduce manganese concentrations. Drinking water with high levels of manganese may harm brain development in infants and young children. It can also stain laundry, cause scaling in plumbing, and make water look, smell, or taste bad. These upgrades increase the capacity of these facilities while also improving plant efficiency and filtration capabilities.
- **Dartmouth** and **Peabody's** projects were implemented to reduce total trihalomethane (TTHM) levels. TTHM's are a group of disinfection byproducts that form when water disinfectants such as chlorine or ozone react with other naturally occurring chemicals in the water. These chemicals are thought to be carcinogenic to humans.

| Borrower | Project Description | Amount |
|---|---|---|
| Ayer | **Spectacle Pond Wellfield Per- and Polyfluoroalkyl Substances (PFAS) Treatment**<br>The project constructed a PFAS treatment process for the Spectacle Pond Water Treatment Plant (WTP). This is the second PFAS treatment project implemented in the Town. Both wells No. 1A and 2A exceeded MassDEP's future health advisory levels (HAL) of 20 parts per trillion. The new PFAS treatment process, to be confirmed by bench-scale testing, is designed with anion exchange for its demonstrated effectiveness at the Grove Pond WTP as well as treatment and operational consistency across both WTPs. This treatment addition will lower the total concentration of PFAS below the anticipated HAL. | $5,253,989 |

| Borrower | Project Description | Amount |
|---|---|---|
| **Barnstable Fire District** | **Per- and Polyfluoroalkyl Substances (PFAS) Interim Rehabilitation of Well Pump Station 1**<br>As a temporary solution, the District was blending water sources to maintain PFAS concentrations below 20 parts per trillion (ppt) in the water supply. In addition, to meet seasonal water demands and to aid in maintaining PFAS levels below 20 ppt in the blended water, the District completed an interim rehabilitation of Well Pump Station 1, which was offline because it did not contain PFAS compounds. | $1,362,187 |
| **Blackstone** | **Blackstone Groundwater Treatment**<br>The Town is constructing a new Water Treatment Facility (WTF) and water mains to connect to the existing distribution system. The new WTF includes a GreensandPlus filtration system to improve the drinking water quality by reducing high manganese concentrations. | $5,390,280 |
| **Bridgewater** | **New High Street Water Treatment Facility (WTF)**<br>This project included the construction of a 1.62 million gallons per day manganese Greensand water treatment plant to treat elevated iron and manganese levels from the Town's High Street wells. The Town was concerned about the elevated levels of manganese based on the EPA's health advisory. Currently, blended phosphates are added to sequester iron. This practice is not sufficient. The Town is seeking to improve water quality by constructing a new WTF. This project also includes an upgrade to the Town's existing Supervisory Control and Data Acquisition network with a master terminal unit located at the new plant. | $12,198,813 |
| **Dartmouth** | **Action Plan to Reduce Total Trihalomethane (TTHM) Levels**<br>The project included the construction of an in-tank aeration systems in both Allen Street water storage tanks and the modification of all three of the Town's existing water treatment plants by changing the secondary disinfection from free chlorine to chloramines. The Town entered an administrative consent order with MassDEP to reduce TTHM levels in the distribution system. The project improved drinking water quality by reducing TTHM concentration, which will also avoid potential future Stage 2 Disinfection Byproducts Rule violations for high locational running annual averages TTHM. | $1,174,616 |
| **Dracut Water Supply District** | **Water System Improvements**<br>This project reduced iron and manganese levels in the District's Tyngsborough wells to below the secondary maximum contaminant levels and MassDEP Office of Research and Standards Guidelines' limits. The project included a new sole transmission main and a water storage tank to increase capacity to meet current demands and create redundancy. | $8,343,085 |
| **Kingston** | **Manganese Removal Facility for GH and 1-86 Wells**<br>The project involved construction of a new water treatment facility (WTF) for the removal of iron and manganese from two of the Town's wells. The WTF includes pressure filtration with anthracite and GreensandPlus media, chemical feed systems for sodium hypochlorite (oxidation and disinfection) and potassium hydroxide (corrosion control), Supervisory Control and Data Acquisition system controls, emergency back-power, and water main piping to re-route the wells through the new facility prior to the distribution system. The project will improve drinking water quality by removing elevated levels of iron and manganese. It will improve public health protection. It will also improve customer confidence and satisfaction. | $7,723,970 |
| **Peabody** | **Winona and Coolidge Water Treatment Plant (WTP) Improvements**<br>This project includes a full rehabilitation of the City's Winona WTP and additional treatment improvements at the Coolidge WTP to lower the manganese and total trihalomethanes (TTHM) levels. The Winona WTP is being fully renovated with dissolved air flotation and backwash holding tanks with recycle and residuals management improvements. The City is installing aeration systems in Winona Pond and Suntaug Lake for the control of manganese in the raw water. It is performing improvements to the Cedar Grove Clearwell at the Coolidge WTP including installation of aeration for the purposes of stripping TTHMs from the finished water. | $18,832,825 |

| Borrower | Project Description | Amount |
|---|---|---|
| **Scituate** | **Scituate Well 17A Water Treatment Plant (WTP)**<br>The goal of the project was to treat raw water from Well 17A for elevated iron and manganese levels. Treating the raw water onsite allowed for the well to pump directly to the distribution system instead of being diverted into a nearby reservoir and treated at the Old Oaken Bucket Pond WTP. Water is now conveying to the treatment plant via an existing 10-inch diameter transmission water main along with a new 6-inch water main before entering the WTP. Raw water is being treated with chemical addition, filtered, and conveyed to a filtered water storage tank. This is where it is being metered and receives additional chemical treatment before entering the distribution system. | $6,586,387 |
| **Springfield Water & Sewer Commission (SWSC)** | **Clearwell and Backwash Pump Station (PS) Replacement**<br>This project is to construct a new 1 million-gallon clearwell and associated backwash PS that will replace old, failing facilities that are needed to maintain reliable operation of the 60 million gallons per day water production. The failing facilities are adversely impacting water quality being produced, contributing to maximum contaminant level exceedances of haloacetic acids that resulted in non-compliance with the Stage 2 Disinfection By-Products Rule. | $12,030,000 |
| **Water Supply District of Acton** | **Manganese Removal Water Treatment Plant**<br>The project included the construction of a new WTP and water mains for the Conant No. 1 and No. 2 wells in accordance with MassDEP requirements. The new WTP includes media filtration, aeration tower, chemical feed, and a clear well water purifier. The completed project improves drinking water quality by reducing high manganese (above MassDEP's Office of Research and Standards Guideline Limit of 0.30 mg/L) and iron concentrations. | $11,796,097 |
| **West Boylston Water District** | **Manganese Removal Treatment at Oakdale Well**<br>The project was crucial for protecting public health in the Town of West Boylston. The project consisted of a new Water Treatment Facility (WTF) to reduce manganese concentrations to acceptable levels from the Oakdale Well. The new WTF lowers manganese levels (which were above the MassDEP Health Advisory Level of 0.3 mg/L), the level associated with potential health implications, to below the Secondary Maximum Contaminant Levels (SMCL) of 0.5 mg/L. The treatment facility consists of a pressure filtration system produced by GreensandPlus, with a sodium hypochlorite feed system to oxidize the manganese. | $7,603,680 |

# CITY OF PEABODY




**WINONA AND COOLIDGE WATER TREATMENT PLANT (WTP) IMPROVEMENTS**
**LOAN NUMBERS:** DWP 19-15, DWP 20-10 | **SERIES 24 LOAN AMOUNT:** $10,152,825
**TOTAL LOAN AMOUNT:** $18,832,825 | **LOAN FORGIVENESS AMOUNT:** $1,320,000, $1,416,236
**DISADVANTAGED COMMUNITY TIER:** 2 | **UN SDG:** 3, 6, 12

## PROJECT OVERVIEW

The City of Peabody has a population of roughly 54,000 people and is in the northeast Massachusetts county of Essex. It is a Tier 2 Disadvantaged Community and serves 13,686 water connections with its drinking water infrastructure. The City relies primarily on the Winona and Coolidge water treatment plants (WTP) for their supply of drinking water. The water servicing the Winona WTP is sourced from Winona Pond while the water serving the Coolidge WTP is sourced from Suntaug Lake and Spring Pond. The Ipswich River sources the water for both Suntaug Lake and Winona Pond. In recent years, concerns over the effectiveness of the WTPs arose and were remedied with help from the DWSRF.

## TECHNICAL OVERVIEW

The Winona WTP was constructed in 1974. By 2018, water contained detectable levels of manganese, haloacetic acid (HAA5), and total trihalomethanes (TTHM). TTHMs and HHA5s are formed when chlorine reacts with organic matter in water, creating disinfection by-products. TTHM was detected at 110 parts per billion (ppb) in 2018, well above the 80 ppb the established Massachusetts Maximum Contamination Level (MMCL) set by MassDEP. An algal bloom caused the water to smell unpleasant, requiring the City to additionally monitor for cyanobacteria and algae. The Winona WTP was constructed to operate at 5.5 million gallons per day (MGD) but generally operated at only 3 MGD. Treatment systems such as filter media, valves, water pumps, and control panels date back to their construction in 1974. Furthermore, MassDEP categorized Peabody's surface water as susceptible to contamination from the source water, in this case the Ipswich River.

In 2017, Peabody began consultations with the Massachusetts Water Resources Authority (MWRA) with the intention to abandon the Winona WTP and convert to the MWRA's water supply, specifically for the West Peabody High Service System. MWRA constructed a pipeline that would supply Peabody with drinking water. However, due to required minimum annual water purchases, this resulted in the City having to pay an excess of $1 million in water costs. Relying on MWRA raised the water rates in Peabody by 9%. The Coolidge WTP caught fire in 2017 and sustained severe damage.

Although the WTP was repaired, it could not solely sustain the entire City's drinking water needs.

In May 2018, MassDEP issued a Notice of Noncompliance for the Winona WTP, citing deficiencies in plant mechanical systems. The City requested a cost estimate for WTP repairs. The consultant suggested a recommendation for a full renovation of the Winona WTP and improvements to the Coolidge WTP. This included the need to clean and rehabilitate the lagoons, fully upgrade the plant controls, and rebuild filter media and internals among other concerns. The City determined that providing their own drinking water was more desirable and affordable than remaining on the MWRA's plan.

## FINANCIAL IMPACT

In 2019, the Peabody City Council implemented a Clean and Sustainable Water Future Use Plan, a four-step plan to both modernize the water system and bolster its sustainability. In April 2020, the City Council appropriated $4 million for "financing roadway paving and water system improvements." These improvements included financing the water transmission main and pump stations. The Trust provided $18.8 million in financing for the project.

Beyond the savings the City receives from no longer relying on MWRA for drinking water, Peabody replacing outdated water pumps with high efficiency pumps saved the City $25,000 annually in power costs. As a Tier 2 Disadvantaged Community, the City received over $2.7 million in loan forgiveness. This will save the City over $3.4 million over the life of the loan.

## RENOVATIONS AND FINAL IMPACT

The primary aspect of the Clean and Sustainable Water Future Use Plan was a complete renovation of the Winona WTP. This project includes the complete demolition and reconstruction of the existing equipment, installation of new water treatment equipment and chemical systems, and building an addition for chemical storage totaling 1,000 square feet. An HVAC system, sewers, pump station, and yard piping were installed.

The WTP is being converted to dissolved air flotation to treat heightened algae levels, in-pond aeration that diffuses oxygen into the water supply and improves water quality through circulation, and water tank mixers to remove stratification and circulate the water supply. The flocculation basin is being converted to serve the incoming DAF equipment. To control manganese levels, contractors are installing a new pond aeration system. The filter underdrain systems are being replaced and the gravity filters were converted to granular activated carbon systems to filter contaminants from the water sources.

The new design is more compact than the original layout, providing space for general storage. The WTP laboratory, control room, and administrative spaces are being updated. In addition to the Winona WTP project, new water lines connecting the Coolidge WTP to West Peabody homes and businesses are being installed along with a water booster pump. A water transmission main is also being built, connecting the neighborhood of South Peabody to Route 1.

The entirety of the Clean and Sustainable Water Future Use Plan was completed in 2022 ahead of the originally proposed schedule. In September 2022, Peabody's Department of Public Services received the Utility of the Year award from the New England Water Works Association for their swift completion of the project.

## DRINKING WATER TRANSMISSION AND DISTRIBUTION PROJECTS

Projects in this category are for developing plans to address water quality and water quality-related public health problems. Planning projects can consist of multiple types of investigations. Field investigations are used to view the state of current water infrastructure assets to identify and prioritize design, maintenance, and replacement activities. Sensor and field analysis can be used as part of a larger analysis that consists of plans to adopt best management practices and capital improvements. These projects assist municipalities with determining environmental issues that may be affecting local water sources or endangering public health.

| Drinking Water Transmission and Distribution Projects | | | |
|---|---|---|---|
| **Total Amount in Dollars ($)** | **Total Number of Projects** | **Total Series 24 Amount in Dollars ($)** | **Total Number of Series 24 Projects** |
| $901,405,791 | 334 | $53,499,490 | 15 |

## SERIES 24 DRINKING WATER TRANSMISSION AND DISTRIBUTION PROJECTS IMPACT

- **Chicopee, Deerfield Fire District, Dudley, East Brookfield, Fall River, Holyoke, Massachusetts Water Resources Authority, New Bedford, Taunton**, and **West Boylston Water District** are upgrading their water conveyance system to increase capacity, replace deteriorated water mains, or run additional mains to provide safe drinking water to residents. Removing leaks from the water distribution system improves system efficiency by ensuring treated water is not lost in the system.
- **Eastham** lacked a municipal water supply system and has been prompted to implement a new system after water quality sampling determined that there were water quality issues with ground water. This first phase of water system development included the construction of two well fields, a storage tank, and 45 miles of water distribution piping.
- **Deerfield Fire District, Fall River**, and **Taunton's** projects involve the removal of lead service lines and lead goosenecks in their water distribution systems.
- **Dudley, Lawrence**, and the **Massachusetts Water Resources Authority's** projects repair or replace pump stations which are both vital and energy intensive facilities required to ensure that water distribution systems can maintain pressure and circulate water when demand may be excessive. These facilities are vital when drinking water systems are connected to fire hydrants or are located at elevations higher than the drinking water treatment facility. Improving these stations with modern equipment improves reliability and reduces elasticity cost.

| Borrower | Project Description | Amount |
|---|---|---|
| **Chicopee** | **Redundant Water Transmission Main**<br>The City's source of drinking water is the Chicopee Aqueduct, which is owned and maintained by the Massachusetts Water Resources Authority. The City's transmission main from this source was a single 36-inch diameter cast iron main. When there was no redundant transmission main, a majority of the City was at risk of losing water if the single transmission line went down. Depending on where the damage to the existing main occurred, service could have been lost for an extended period. Construction of the second main allows for repairs and upgrades to be made to the existing main, without interruption in service. The project replaced the existing gaseous chlorine system with a sodium or calcium hypochlorite system to improve safety and performance of the transmission main. | $123,260 |
| **Deerfield Fire District** | **Greenfield Road Water Main Replacement Project**<br>The project consists of replacing approximately 3,800 linear feet of existing water main on Greenfield Road to address water quality complaints from aged, heavily tuberculated water mains. The project includes the replacement of 25 existing lead goose necks on service lines. | $688,291 |

| Borrower | Project Description | Amount |
|---|---|---|
| Dudley | **Dudley Drinking Water System Improvements Project**<br>This project will allow Dudley to meet maximum-day demands and provide redundancy by connecting a replacement to a pump station. This project also includes replacement of approximately 8,600 linear feet of asbestos concrete water mains and the rehabilitation of two water storage tanks. | $4,059,754 |
| East Brookfield | **Water Main Replacement and Wellhouse Upgrades**<br>This project consists of replacing an old and severely tuberculated water main which causes high head loss and discolored water. There are several small upgrades being made to the sole water supply including a variable frequency drive, flow meter, and back-up generator to ensure safe and reliable water supply. | $3,472,000 |
| Eastham | **Phase 2B of Town-Wide Water System**<br>The project constructed a municipal water system for the Town of Eastham. The Town relied on individual private or community wells for water supply and onsite systems for wastewater disposal. Long-term monitoring of private wells confirmed that the water quality of these wells is deteriorating. This project will construct part of the remaining water system that will serve all properties in the Town. | $9,722,989 |
| Eastham | **Eastham Water System - Phase 2C**<br>The project will construct a municipal water system for the Town of Eastham. The Town has relied on individual private or community wells for water supply and onsite systems for wastewater disposal. Long-term monitoring of private wells confirmed that the water quality of these wells is deteriorating. This project will construct part of the remaining water system that will serve all properties in the Town. | $11,938,889 |
| Fall River | **Phase 19 - Water System Improvements**<br>This project continued the City's cast iron water main and lead service replacement program. The Phase 19 water main improvements included the rehabilitation or replacement of approximately 11,390 linear feet of cast iron water mains and lead services to provide safe and reliable drinking water to customers of the City. | $1,862,773 |
| Fall River | **Water Main Rehabilitation - Phase 20**<br>This project was part of the annual cast iron water main and lead service replacement program. Phase 20 water main improvements included the rehabilitation or replacement of approximately 11,495 linear feet of cast iron water mains and 19 lead services. | $1,875,518 |
| Holyoke | **Phase 2A Water Main Replacement Project**<br>This project included replacement of approximately 6,000 linear feet of cast iron, undersized (4-inch and 6- inch), and aging (100+ years old) water main in downtown. This work was Phase 2A of Holyoke Water Works' Capital Improvement Plan to address high priority water main replacements. The work was also in coordination with the City's combined sewer overflow abatement project happening in the same area. The replacement improved redundancy and reliability in the water distribution system. | $2,104,387 |

| Borrower | Project Description | Amount |
|---|---|---|
| Lawrence | **Water Valve Replacement Project**<br>This project involves replacing approximately 194 broken and malfunctioning valves ranging in size from 4-inch to 12-inch diameter that were installed in the city prior to 1975. | $2,193,753 |
| Lawrence | **Marston Street Pump Station (PS) Replacement**<br>This project is for replacing the Marston Street PS. | $1,502,938 |
| Massachusetts Water Resources Authority (MWRA | **Sewer Collection System – Repair and Replacement**<br>The project involved the sewer pipeline repairs and replacements within the Town to improve water tightness, eliminate infiltration and inflow influences, and the replacement of broken and collapsed sections of the sewer collection system. Sewer utility access holes along with force main and pump station repairs and upgrades were also included in the townwide improvement program. Phase 1 addressed high priority defects identified by a comprehensive townwide assessment and closed-circuit television pipe inspection program. | $9,798,686 |
| New Bedford | **Highway Bridge Crossing Replacement Project**<br>The Highway Bridge Crossing Replacement Project continued to remedy system deficiencies and prevent serious threats to New Bedford's water system by replacing four watermains that crossed under three separate bridges and two major highways, Interstate 195 and Route 140. Three of the four water mains were shut down due to leaks. The project replaced the water mains, pipe supports, and hangers. This project was of utmost importance to the City because it can now maintain safe and reliable delivery of water to its customers and protect public health. | $819,581 |
| Taunton | **2018 Water Main Improvements Project**<br>The project consisted of removing lead goosenecks and installing new ductile iron water mains. City records indicated that there we no known lead service connections. However, lead goosenecks were used for connections from the water main to service connections in the early part of the 20th century. Lead goosenecks can leach lead into the water, so replacing them lowered potential lead exposure and protects public health. The water mains to which the lead goosenecks were connected were replaced. The water mains are old, unlined cast iron pipes with substantial tuberculation, which can cause dirty water and reduce the hydraulic capacity. The upgrades improved water quality and increased the available fire flow. | $3,228,606 |
| West Boylston Water District | **North Main Street and Laurel Street Water Main Replacement**<br>This project involved the replacement of aging infrastructure to protect public health. The water main on North Main Street, Laurel Street, Waushacum Street, and Reed Street was deteriorating and had reached the end of its useful life. The main was suffering from repeat breaks, notably in August 2018. During the repair it was discovered that the water main had lost thickness around the break. The concern was that more of the water main was deteriorating and would continue to suffer from breaks until it was replaced with new ductile iron mains. Additionally, this area of the district's water distribution system had numerous lead goosenecks on customer service lines. These lead goosenecks were eliminated through this water main replacement project. | $108,065 |

## DRINKING WATER SOURCE AND STORAGE PROJECTS

This project category is for developing or improving sources of water used in public water systems. Project costs include those for constructing or rehabilitating surface water intake structures, drilled wells, wellhead pumps, and spring collectors. Having multiple sources of raw water is a standard precaution to make sure that water supplies are not endangered or cut off. Source protection and testing are necessary to confirm that raw water quality can be properly purified at the intended water treatment plant. Excessive amounts of toxins or pollutants in raw water can cause efficiency issues once raw water reaches a water treatment plant. Pumping, well maintenance, and water extraction must be monitored to ensure that water quality at the source is not impacted by these activities.

Storage projects in this category aim to provide finished water storage for public water systems. Examples may include systems involving elevated and ground level storage for treated water and covers for existing storage. Storage tanks and the systems they employ are vital components of a water distribution system. Tanks are used to ensure the water supply when there may be issues with supply lines or when maintenance is being performed. Upgraded systems that chlorinate water or monitor water quality are more efficient with advanced systems. This means that water quality is more consistent and requires less human maintenance.

| Drinking Water Source and Storage Projects | | | |
|---|---|---|---|
| **Total Amount in Dollars ($)** | **Total Number of Projects** | **Total Series 24 Amount in Dollars ($)** | **Total Number of Series 24 Projects** |
| $241,042,606 | 127 | $245,835 | 1 |

## SERIES 24 DRINKING WATER SOURCE AND STORAGE PROJECTS IMPACT

- **West Springfield** is installing a new 300,000-gallon storage tank and improving the transmission infrastructure to ensure the system can meet the demand of the growing Town. Further, the Town is replacing old water meters that where underreporting or not operating to ensure the Town can properly track water.

| Borrower | Project Description | Amount |
|---|---|---|
| **West Springfield** | **Drinking Water System Improvements Project**<br>The project includes a new 300,000-gallon elevated water storage tank, a transmission main from the existing high pressure service area to supply the new pressure zone, and improvements to the existing pump station serving the high-pressure zone to meet increased demand. There is also work being done to replace approximately 2,200 existing meters and a townwide leakage testing plan is being implemented. This will enable the Town to recover costs of under-registering meters and significantly reduce the amount of unaccounted water. It will also ensure adequate water supply for drinking and fire protection. | $245,835 |

## DRINKING WATER PLANNING AND DESIGN PROJECTS

These projects involve the activities needed to plan for design and/or study drinking water infrastructure. Planning and design projects are essential for maintaining and improving the key infrastructure that protects public health and water quality. These activities may include using geographic information services (GIS) to map infrastructure, develop asset management plans to better track capital cost, and system maintenance. Additionally, these projects may be used to determine system improvement needs related to water loss, emerging contaminants, and numerous other issues that may affect the effectiveness of a system's ability to provide safe drinking water to a community.

| Drinking Water Source and Storage Projects | | | |
|---|---|---|---|
| **Total Amount in Dollars ($)** | **Total Number of Projects** | **Total Series 24 Amount in Dollars ($)** | **Total Number of Series 24 Projects** |
| $11,588,047 | 21 | $697,542 | 2 |

## SERIES 24 DRINKING WATER TRANSMISSION AND DISTRIBUTION PROJECTS IMPACT

- **Barnstable** is conducting a critical study of its five wells related to treatment options for contaminants found in the source water. The analysis will assist Barnstable in reducing the current health risk from their drinking water system.
- **Fall River** undertook an extensive asset management planning activity meant to assist the City in compiling an inventory and condition assessment of its drinking water, wastewater, and stormwater systems. The information allows the city to develop realistic risk assessments and provide policy makers with the best data possible when developing capital improvement plans. Further, the City evaluated software and hardware options meant to be deployed with city staff in the field to improve on the ground information and ensure the city is aware of changing conditions in real time.

| Borrower | Project Description | Amount |
|---|---|---|
| **Barnstable** | **Wells Treatment Pilots, Conceptual Plans, and Layouts**<br>This project is a continuation of a previously approved project handling chemical contamination at the five wells; including pilot testing of recommended treatment options, the development of conceptual layouts, planning schedules for design, construction, and capital and operational costs, and recommendations on how to proceed. | $547,542 |
| **Fall River** | **Fall River Asset Management Plan (AMP)**<br>The purpose of this project was to implement a consistent AMP for the City's water, wastewater, and stormwater utilities. The work included development of an asset inventory, condition assessment and risk analysis of assets of the water system facilities, wastewater pump stations and combined sewer overflow screening and disinfection facilities. The City evaluated, purchased, and implemented a computerized maintenance management system. It also developed a level of service agreement for all three utilities. This work included preparing a written management plan narrative that describes the operation of the AMP to be utilized by the City's management team moving forward. | $150,000 |

Appendix A - Series 24 Projects[1] · Projects associated with Series 24 Sustainability Bonds are shaded in light orange.

| Borrower | Loan No. | Project Name | Amount | Percentage Drawn | Program | Category | DC Tier | UN SDG |
|---|---|---|---|---|---|---|---|---|
| Ayer | DWP-20-04 | Spectacle Pond Wellfield Per- and Polyfluoroalkyl Substances (PFAS) Treatment | $5,253,989 | 93% | DW | Drinking Water Treatment | 2 | 3, 6, 12 |
| Barnstable | DW-20-16 | Wells Treatment Pilots, Conceptual Plans, and Layouts | $547,542 | 60% | DW | Drinking Water Planning and Design | 1 | 3, 6, 12 |
| Barnstable Fire District | DWP-20-30 | Per- and Polyfluoroalkyl Substances (PFAS) Interim Rehabilitation of Well Pump Station 1 | $1,362,187 | 78% | DW | Drinking Water Treatment | 1 | 3, 6, 12 |
| Billerica | CWP-19-09 | Wastewater Treatment Facility (WWTF) and Pump Station (PS) Upgrades | $9,907,371 | 92% | CW | Wastewater Treatment | 1 | 3, 6, 12 |
| Billerica | CWP-19-09-A | Wastewater Treatment Facility (WWTF) and Pump Station (PS) Upgrades | $1,078,360 | 100% | CW | Wastewater Treatment | 1 | 3, 6, 12 |
| Blackstone | DWP-20-20 | Blackstone Groundwater Treatment | $5,390,280 | 73% | DW | Drinking Water Treatment | 2 | 3, 6, 12 |
| Bourne | CWP-19-07 | Buzzards Bay Wastewater Treatment Facility (WWTF) | $3,341,513 | 86% | CW | Wastewater Treatment | 1 | 3, 6, 12 |
| Bridgewater | CWT-20-37 | Community Septic Management Program | $400,000 | 100% | T5 | NPS Decentralized Wastewater Treatment Systems | 2 | 3, 6, 12 |
| Bridgewater | DWP-19-17 | New High Street Water Treatment Facility (WTF) | $12,198,813 | 84% | DW | Drinking Water Treatment | 2 | 3, 6, 12 |
| Brockton | CWP-18-42-A | Wastewater Treatment Facility (WWTF) Upgrade | $939,000 | 30% | CW | Wastewater Treatment | 3 | 3, 6, 9, 10, 11, 12 |
| Brockton | CWP-19-34 | 2019 Sewer Rehabilitation Project | $2,264,248 | 76% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Brockton | CWP-19-34-A | 2019 Sewer Rehabilitation Project | $332,919 | 55% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Brockton | CWP-20-17 | Sewer Rehabilitation Project | $1,221,060 | 91% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Brockton | CWP-20-17-A | Sewer Rehabilitation Project | $249,577 | 58% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Chatham | CW-18-24 | Phase 1D - Chatham/Harwich Regionalization | $5,800,258 | 100% | CW | Collector and Interceptor Sewers | - | 3, 6, 14 |
| Chicopee | CWP-19-42 | Blue Bird Acres Sewer Pump Station (PS) and Force Main | $1,823,094 | 85% | CW | Collector and Interceptor Sewers | 3 | 3, 6, 9, 10, 11, 14 |
| Chicopee | CWP-20-31 | Jones Ferry Wastewater Pump Station PS Phase II Improvements | $3,537,236 | 78% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Chicopee | CWP-20-31-A | Jones Ferry Wastewater Pump Station PS Phase II Improvements | $320,450 | 80% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Chicopee | DW-16-04-A | Redundant Water Transmission Main | $123,260 | 100% | DW | Drinking Water Transmission and Distribution | 3 | 3, 6, 9, 10, 11, 12 |
| Concord | T5-05-1243-E | Community Septic Management Program | $300,000 | 100% | T5 | NPS Decentralized Wastewater Treatment Systems | - | 3, 6, 12 |
| Dartmouth | DWP-18-05 | Action Plan to Reduce Total Trihalomethane (TTHM) Levels | $1,174,616 | 100% | DW | Drinking Water Treatment | 1 | 3, 6, 12 |
| Deerfield Fire District | DWP-20-09 | Greenfield Road Water Main Replacement Project | $688,291 | 99% | DW | Drinking Water Transmission and Distribution | 1 | 3, 6, 12 |
| Dracut Water Supply District | DWP-20-18 | Water System Improvements | $8,343,085 | 91% | DW | Drinking Water Treatment | 1 | 3, 6, 12 |
| Dudley | CWP-20-14 | Dudley Infiltration and Inflow I/I Mitigation Construction Project | $863,107 | 87% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 2 | 3, 6, 14 |
| Dudley | DWP-20-25 | Dudley Drinking Water System Improvements Project | $4,059,754 | 78% | DW | Drinking Water Transmission and Distribution | 2 | 3, 6, 12 |
| East Brookfield | DWP-20-22 | Water Main Replacement and Wellhouse Upgrades | $3,472,000 | 56% | DW | Drinking Water Transmission and Distribution | 2 | 3, 6, 12 |
| Eastham | DWP-19-06 | Phase 2B of Town-Wide Water System | $9,722,989 | 91% | DW | Drinking Water Transmission and Distribution | 2 | 3, 6, 12 |
| Eastham | DWP-20-23 | Eastham Water System - Phase 2C | $11,938,889 | 80% | DW | Drinking Water Transmission and Distribution | 2 | 3, 6, 12 |
| Easton | CW-18-25 | Easton Five Corners Sewer | $10,720,026 | 100% | CW | Collector and Interceptor Sewers | - | 3, 6, 14 |
| Easton | CWT-20-10 | Community Septic Management Program | $500,000 | 100% | T5 | NPS Decentralized Wastewater Treatment Systems | - | 3, 6, 12 |
| Fall River | CWP-19-23 | South End Sewer Pump Station (PS) Replacement | $2,911,987 | 98% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Fall River | CWP-19-23-A | South End Sewer Pump Station (PS) Replacement | $513,570 | 82% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Fall River | DWA-19-23 | Fall River Asset Management Plan (AMP) | $150,000 | 100% | DW | Drinking Water Planning and Design | 3 | 3, 6, 9, 10, 11, 12 |
| Fall River | DWP-19-14 | Phase 19 - Water System Improvements | $1,862,773 | 90% | DW | Drinking Water Transmission and Distribution | 3 | 3, 6, 9, 10, 11, 12 |
| Fall River | DWP-20-13 | Water Main Rehabilitation - Phase 20 | $1,875,518 | 93% | DW | Drinking Water Transmission and Distribution | 3 | 3, 6, 9, 10, 11, 12 |
| Fitchburg | CWP-20-03 | Combined Sewer Overflow (CSO) 007, 011, 039, 048 Separation and Rehabilitation | $6,756,066 | 73% | CW | Combined Sewer Overflow Correction | 3 | 3, 6, 9, 10, 11, 12, 14 |
| Fitchburg | CWP-20-03-A | Combined Sewer Overflow (CSO) 007, 011, 039, 048 Separation and Rehabilitation | $1,054,170 | 91% | CW | Combined Sewer Overflow Correction | 3 | 3, 6, 9, 10, 11, 12, 14 |
| Gloucester | CW-20-38 | Gloucester Comprehensive Wastewater Management Plan (CWMP) | $180,000 | 0% | CW | Planning | 2 | 3, 6, 12, 14 |
| Hanson | CWT-18-01-A | Community Septic Management Program | $200,000 | 100% | T5 | NPS Decentralized Wastewater Treatment Systems | 1 | 3, 6, 12 |
| Harwich | CWP-18-23 | Harwich Sewer Collection System - Phase 2 | $16,092,328 | 97% | CW | Collector and Interceptor Sewers | 2 | 3, 6, 14 |

**Footnotes**

[1] Series 24: All Amount and Percentage Completed sections are accurate as of June 30, 2023.

Appendix A - Series 24 Projects [1] · Projects associated with Series 24 Sustainability Bonds are shaded in light orange.

| Borrower | Loan No. | Project Name | Amount | Percentage Drawn | Program | Category | DC Tier | UN SDG |
|---|---|---|---|---|---|---|---|---|
| Holyoke | CWP-19-04 | Jackson Street Area Sewer Separation Project | $7,254,309 | 65% | CW | Combined Sewer Overflow Correction | 3 | 3, 6, 9, 10, 11, 12, 14 |
| Holyoke | DWP-20-11 | Phase 2A Water Main Replacement Project | $2,104,387 | 86% | DW | Drinking Water Transmission and Distribution | 3 | 3, 6, 9, 10, 11, 12 |
| Kingston | CWP-19-46 | Kingston Wastewater Treatment Plant (WWTP) Expansion | $15,955,530 | 74% | CW | Wastewater Treatment | 1 | 3, 6, 12 |
| Kingston | DWP-19-20 | Manganese Removal Facility for GH and 1-86 Wells | $7,723,970 | 100% | DW | Drinking Water Treatment | 1 | 3, 6, 12 |
| Kingston | T5-97-1211-F | Community Septic Management Program | $200,000 | 89% | T5 | NPS Decentralized Wastewater Treatment Systems | 1 | 3, 6, 12 |
| Lakeville | CWT-22-01 | Community Septic Management Program | $960,000 | 100% | T5 | NPS Decentralized Wastewater Treatment Systems | 1 | 3, 6, 12 |
| Lawrence | CW-19-21 | Sanitary Sewer Evaluation Survey (SSES) Phases VI through VIII | $3,000,000 | 79% | CW | Planning | 3 | 3, 6, 9, 10, 11, 12, 14 |
| Lawrence | DWP-19-01 | Water Valve Replacement Project | $2,193,753 | 83% | DW | Drinking Water Transmission and Distribution | 3 | 3, 6, 9, 10, 11, 12 |
| Lawrence | DWP-19-12 | Marston Street Pump Station (PS) Replacement | $1,502,938 | 100% | DW | Drinking Water Transmission and Distribution | 3 | 3, 6, 9, 10, 11, 12 |
| Leominster | CWP-19-26 | Aeration Basin and Secondary Clarifier Upgrade | $11,649,712 | 75% | CW | Wastewater Treatment | 2 | 3, 6, 12 |
| Leverett | CW-20-07 | Connection to Amherst Waterline | $1,182,752 | 100% | CW | NPS Sanitary Landfill | - | 3, 6, 12, 14 |
| Lowell | CWP-16-15-A | Capital Improvement Program (CIP) Phase – Wastewater Treatment Facility (WWTF) and Infrastructure Upgrades | $1,921,168 | 100% | CW | Wastewater Treatment | 3 | 3, 6, 9, 10, 11, 12 |
| Lowell | CWP-16-15-B | Capital Improvement Program (CIP) Phase – Wastewater Treatment Facility (WWTF) and Infrastructure Upgrades | $2,200,000 | 100% | CW | Wastewater Treatment | 3 | 3, 6, 9, 10, 11, 12 |
| Lynn Water & Sewer Commission | CWP-19-27 | West Lynn Sewer Separation | $10,017,036 | 87% | CW | Combined Sewer Overflow Correction | 3 | 3, 6, 9, 10, 11, 12, 14 |
| Massachusetts Water Resource Authority (MWRA) | CW-20-46 | Nut Island HW Odor Control & HVAC - Contract 7548 | $8,986,259 | 0% | CW | Infiltration/Inflow and Sewer System Rehabilitation | - | 3, 6, 14 |
| Middleborough | CWT-20-04 | Community Septic Management Program | $500,000 | 100% | T5 | NPS Decentralized Wastewater Treatment Systems | 2 | 3, 6, 12 |
| Millville | CWT-19-02 | Community Septic Management Program | $160,410 | 100% | T5 | NPS Decentralized Wastewater Treatment Systems | 1 | 3, 6, 12 |
| MWRA | DW-20-33 | Northern Intermediate High Section 89 Replacement | $9,798,686 | 0% | DW | Drinking Water Transmission and Distribution | - | 3, 6, 12 |
| Nahant | CW-20-13 | Sewer Collection System – Repair and Replacement | $9,767,852 | 68% | CW | Infiltration/Inflow and Sewer System Rehabilitation | - | 3, 6, 14 |
| Nantucket | CW-19-32 | Surfside Road Area Sewer System Improvements | $6,995,000 | 68% | CW | Collector and Interceptor Sewers | - | 3, 6, 14 |
| New Bedford | CWP-20-22 | Wastewater Collection System Improvements | $3,666,070 | 79% | CW | Combined Sewer Overflow Correction | 3 | 3, 6, 9, 10, 11, 12, 14 |
| New Bedford | CWP-20-22-A | Wastewater Collection System Improvements | $212,366 | 100% | CW | Combined Sewer Overflow Correction | 3 | 3, 6, 9, 10, 11, 12, 14 |
| New Bedford | DWP-19-24 | Highway Bridge Crossing Replacement Project | $819,581 | 100% | DW | Drinking Water Transmission and Distribution | 3 | 3, 6, 9, 10, 11, 12 |
| Orleans | CW-19-33 | Downtown Area Collection System and Wastewater Treatment Facility (WWTF) | $14,852,300 | 100% | CW | Wastewater Treatment | - | 3, 6, 12 |
| Peabody | DWP-19-15 | Winoma and Coolidge Water Treatment Plant (WTP) Improvements | $8,680,000 | 100% | DW | Drinking Water Treatment | 2 | 3, 6, 12 |
| Peabody | DWP-20-10 | Winoma and Coolidge Water Treatment Plant (WTP) Improvements | $10,152,825 | 88% | DW | Drinking Water Treatment | 2 | 3, 6, 12 |
| Pittsfield | CWP-18-12-B | Wastewater Treatment Plant (WWTP) Nutrient Removal | $3,100,000 | 64% | CW | Wastewater Treatment | 3 | 3, 6, 9, 10, 11, 12 |
| Pittsfield | CWP-18-12-C | Wastewater Treatment Plant (WWTP) Nutrient Removal | $2,200,640 | 91% | CW | Wastewater Treatment | 3 | 3, 6, 9, 10, 11, 12 |
| Plymouth | CWT-20-02 | Community Septic Management Program | $300,000 | 100% | T5 | NPS Decentralized Wastewater Treatment Systems | 1 | 3, 6, 12 |
| Quincy | CWP-19-28 | The Strand Pump Station (PS) Upgrade Project | $2,724,124 | 99% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 2 | 3, 6, 14 |
| Quincy | CWP-19-29 | Fiscal Year (FY) 2020 Sewer Improvements | $3,184,496 | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 2 | 3, 6, 14 |
| Revere | CW-19-40 | Phase XI Investigations | $1,500,000 | 96% | CW | Planning | 3 | 3, 6, 9, 10, 11, 12, 14 |
| Revere | CW-20-28 | Phase XII Investigations | $1,300,000 | 76% | CW | Planning | 3 | 3, 6, 9, 10, 11, 12, 14 |
| Revere | CW-20-29 | Alternative Wastewater Connections and Storage Evaluation | $750,000 | 65% | CW | Planning | 3 | 3, 6, 9, 10, 11, 12, 14 |
| Revere | CW-20-30 | Fats, Oils, and Grease (FOG) Control and Capacity, Management, Operations and Maintenance (CMOM) Equipment Procurement | $798,214 | 85% | CW | Planning | 3 | 3, 6, 9, 10, 11, 12, 14 |
| Revere | CWP-16-17-A | Phase VII Construction – Infiltration and Inflow (I/I), Illicit Discharge Detection and Elimination (IDDE), Pump Station (PS) and Drainage | $8,556,684 | 68% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Revere | CWP-19-39 | Phase X Construction – Infiltration and Inflow (I/I), Illicit Discharge Detection and Elimination (IDDE), Pump Station (PS) and Drainage | $3,624,587 | 89% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |

**Footnotes**

[1] Series 24: All Amount and Percentage Completed sections are accurate as of June 30, 2023.

Appendix A - Series 24 Projects[1] · Projects associated with Series 24 Sustainability Bonds are shaded in light orange.

| Borrower | Loan No. | Project Name | Amount | Percentage Drawn | Program | Category | DC Tier | UN SDG |
|---|---|---|---|---|---|---|---|---|
| Revere | CWP-20-27 | Phase XI Construction - Infiltration and Inflow (I/I), Illicit Discharge Detection and Elimination (IDDE), Pump Station (PS) and Drainage | $4,290,614 | 83% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Revere | CWP-20-27-A | Phase XI Construction - Infiltration and Inflow (I/I), Illicit Discharge Detection and Elimination (IDDE), Pump Station (PS) and Drainage | $839,732 | 78% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Saugus | CWP-19-31 | Lincoln Avenue Pump Station (PS) Improvements, Phase 2 | $571,162 | 94% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 2 | 3, 6, 14 |
| Scituate | DW-19-18 | Scituate Well 17A Water Treatment Plant (WTP) | $6,586,387 | 96% | DW | Drinking Water Treatment | - | 3, 6, 12 |
| South Essex Sewerage District | CW-20-34 | Contract No. 20-1 Danvers Siphon Rehabilitation | $1,788,940 | 78% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 1 | 3, 6, 14 |
| Springfield Water & Sewer Commission (SWSC) | CWP-18-18-D | York Street Pump Station (PS) and Connecticut River Crossing | $55,044,592 | 57% | CW | Combined Sewer Overflow Correction | 3 | 3, 6, 9, 10, 11, 12, 14 |
| SWSC | CWP-18-18-E | York Street Pump Station (PS) and Connecticut River Crossing | $6,341,902 | 83% | CW | Combined Sewer Overflow Correction | 3 | 3, 6, 9, 10, 11, 12, 14 |
| SWSC | DWP-20-01 | Clearwell and Backwash Pump Station (PS) Replacement | $12,030,000 | 78% | DW | Drinking Water Treatment | 3 | 3, 6, 9, 10, 11, 12 |
| Sudbury | CW-19-16 | Comprehensive Wastewater Management Plan (CWMP) Update | $500,000 | 99% | CW | Planning | - | 3, 6, 12, 14 |
| Taunton | CWP-19-53 | Main Lift Pump Station (PS) Improvements Phase 2 | $3,186,512 | 98% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Taunton | CWP-19-53-A | Main Lift Pump Station (PS) Improvements Phase 2 | $616,284 | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 3, 6, 9, 10, 11, 14 |
| Taunton | CWP-20-21 | Wastewater Treatment Facility (WWTF) Upgrade - Phase 1 | $12,023,423 | 63% | CW | Wastewater Treatment | 3 | 3, 6, 9, 10, 11, 12 |
| Taunton | CWT-21-02 | Community Septic Management Program | $250,000 | 100% | T5 | NPS Decentralized Wastewater Treatment Systems | 3 | 3, 6, 9, 10, 11, 12 |
| Taunton | DWP-18-07 | 2018 Water Main Improvements Project | $3,228,606 | 84% | DW | Drinking Water Transmission and Distribution | 3 | 3, 6, 9, 10, 11, 12 |
| Tyngsborough | CW-18-17 | Phase 2 Middlesex Road North | $10,246,968 | 100% | CW | Collector and Interceptor Sewers | - | 3, 6, 14 |
| Tyngsborough | CWP-20-11 | Infiltration and Inflow (I/I) Rehabilitation | $450,677 | 78% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 1 | 3, 6, 14 |
| Wareham | CWP-20-09 | Process Upgrades at the Wareham Pollution Control Facility (WPCF) | $8,109,000 | 62% | CW | Wastewater Treatment | 3 | 3, 6, 9, 10, 11, 12 |
| Water Supply District of Acton | DW-19-16 | Manganese Removal Water Treatment Plant | $11,796,097 | 100% | DW | Drinking Water Treatment | - | 3, 6, 12 |
| West Boylston Water District | DWP-19-27-A | North Main Street and Laurel Street Water Main Replacement | $108,065 | 88% | DW | Drinking Water Transmission and Distribution | 2 | 3, 6, 12 |
| West Boylston Water District | DWP-20-17 | Manganese Removal Treatment at Oakdale Well | $7,603,680 | 78% | DW | Drinking Water Treatment | 2 | 3, 6, 12 |
| West Springfield | CWP-19-41 | Birnie Avenue and Piper Road Area Sewer Project | $5,821,644 | 94% | CW | Collector and Interceptor Sewers | 2 | 3, 6, 14 |
| West Springfield | CWP-19-41-A | Birnie Avenue and Piper Road Area Sewer Project | $967,830 | 100% | CW | Collector and Interceptor Sewers | 2 | 3, 6, 14 |
| West Springfield | DWP-17-13-A | Drinking Water System Improvements Project | $245,835 | 100% | DW | Drinking Water Source and Storage | 2 | 3, 6, 12 |
| Westport | CWT-18-33 | Community Septic Management Program | $500,000 | 100% | T5 | NPS Decentralized Wastewater Treatment Systems | 1 | 3, 6, 12 |
| Winthrop | CWP-19-05 | Town Center - Sewer and Drainage Improvements | $7,272,545 | 78% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 2 | 3, 6, 14 |

**Footnotes**

[1] Series 24: All Amount and Percentage Completed sections are accurate as of June 30, 2023.

Appendix B - Series 23 Projects [1] · Projects associated with Series 23 Sustainability Bonds are shaded in light orange.

| Borrower | Loan No. | Project Name | Amount | Percentage Drawn | Program | Category | DC Tier | UN SDG |
|---|---|---|---|---|---|---|---|---|
| Andover | DW-19-13 | Distribution System Improvements | $4,113,418[2] | 100% | DW | Drinking Water Transmission and Distribution | | 6, 12 |
| Auburn Water District | DWP-19-19 | Prospect Street Tank Replacement | $1,579,601[2] | 100% | DW | Drinking Water Transmission and Distribution | 2 | 6, 12 |
| Avon | CWT-15-12 | Community Septic Management Program | $400,000 | 100% | T5 | Community Septic Management Program | 2 | 6, 12 |
| Barnstable | DWP-18-10 | Maher Treatment Facility Upgrade | $9,380,220[2] | 100% | DW | Drinking Water Treatment | 1 | 6, 12 |
| Barnstable | DWP-19-28 | Airport Well and Straightway Facility | $2,581,555[2] | 100% | DW | Drinking Water Treatment | 1 | 6, 12 |
| Billerica | CW-17-15 | Sewer Contract 36 | $12,001,477[2] | 100% | CW | Collector and Interceptor Sewers | 1 | 6, 14 |
| Billerica | CW-17-15-A | Sewer Contract 36 | $275,000 | 100% | CW | Collector and Interceptor Sewers | 1 | 6, 14 |
| Billerica | DWP-19-04 | Water Treatment Plant (WTP) Upgrades | $9,293,414[2] | 100% | DW | Drinking Water Treatment | 1 | 6, 12 |
| Blackstone | DWP-20-20 | Blackstone Groundwater Treatment | $894,183[3] | 100% | DW | Drinking Water Treatment | 2 | 6, 12 |
| Brockton | CWP-18-42 | Wastewater Treatment Plant (WWTP) Upgrade | $5,158,836[2] | 100% | CW | Wastewater Treatment | 3 | 6, 9, 10, 11, 12 |
| Brockton | DW-17-05 | 2017 Transmission Main Assessment | $500,000 | 100% | DW | Drinking Water Planning and Design | 3 | 6, 9, 10, 11, 12 |
| Brockton | DWP-18-11 | Water Pump Well and Clearwell Rehabilitation | $2,888,440[2] | 100% | DW | Drinking Water Transmission and Distribution | 3 | 6, 9, 10, 11, 12 |
| Cohasset | CWT-17-07 | Community Septic Management Program | $150,000 | 100% | T5 | Community Septic Management Program | | 6, 12 |
| Dunstable | DW-19-05 | Dunstable Water Infrastructure Project | $2,477,083[2] | 100% | DW | Drinking Water Source and Storage | | 6, 12 |
| Eastham | DWP-16-02-R | Water System Phase I | $112,586 | 100% | DW | Drinking Water Transmission and Distribution | 2 | 6, 12 |
| Eastham | DWP-19-06 | Phase 2B of Town-Wide Water System | $1,020,581[3] | 100% | DW | Drinking Water Transmission and Distribution | 2 | 6, 12 |
| Eastham | DWP-20-23 | Eastham Water System - Phase 2C | $1,148,767[3] | 100% | DW | Drinking Water Transmission and Distribution | 2 | 6, 12 |
| Easton | CWT-17-06 | Community Septic Management Program | $1,000,000 | 100% | T5 | Community Septic Management Program | | 6, 12 |
| Fall River | CW-18-44 | Stafford Square Collection System Evaluation | $400,000 | 100% | CW | Planning | 3 | 6, 9, 10, 11, 12, 14 |
| Fall River | CWP-18-03 | Combined Sewer Overflows (CSO) Abatement Program-Middle Street | $2,321,027 | 100% | CW | Combined Sewer Overflow Correction | 3 | 6, 9, 10, 11, 12, 14 |
| Fall River | CWP-18-35 | Hyacinth Street Drainage Improvements | $1,027,437[2] | 100% | CW | Stormwater Infrastructure | 3 | 6, 9, 10, 11, 12, 14 |
| Fall River | CWP-18-36 | President Avenue Sewer Pump Station Replacement | $3,900,675[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11, 14 |
| Fall River | CWP-18-38 | Wastewater Treatment Facility (WWTF) Improvements | $20,876,781[2] | 100% | CW | Wastewater Treatment | 3 | 6, 9, 10, 11, 12 |
| Fall River | DWP-17-12 | Automatic Meter Reading and Meter Replacement | $3,336,347[2] | 100% | DW | Drinking Water Transmission and Distribution | 3 | 6, 9, 10, 11, 12 |
| Fall River | DWP-18-15 | Phase 18- Water System Improvements | $964,209[2] | 100% | DW | Drinking Water Transmission and Distribution | 3 | 6, 9, 10, 11, 12 |
| Fitchburg | CWP-16-10-B | Fitchburg Wastewater Treatment Facility Secondary Systems Upgrade | $1,691,026 | 100% | CW | Wastewater Treatment | 3 | 6, 9, 10, 11, 12 |
| Franklin | DW-19-02 | Treatment Plant at Well Stations No. 3 and 6. | $12,299,049[2] | 100% | DW | Drinking Water Treatment | | 6, 12 |
| Gardner | CWP-17-23 | Gardner- Sludge Dewatering Replacement Project | $5,802,527 | 100% | CW | Wastewater Treatment | 3 | 6, 9, 10, 11, 12 |
| Gardner | CWP-17-23-A | Gardner- Sludge Dewatering Replacement Project | $530,533 | 100% | CW | Wastewater Treatment | 3 | 6, 9, 10, 11, 12 |
| Gloucester | CW-17-25 | Utility Master Plan | $1,137,445[2] | 100% | CW | Planning | 2 | 6, 12, 14 |
| Greater Lawrence Sanitary District | CWP-15-15 | Organics to Energy | $23,932,410[2] | 100% | CW | Wastewater Treatment | 3 | 6, 9, 10, 11, 12 |
| Greater Lawrence Sanitary District | CWP-15-16 | Combined Sewer Overflow Abatement Program | $8,293,586[2] | 100% | CW | Wastewater Treatment | 3 | 6, 9, 10, 11, 12 |
| Haverhill | CW-17-14 | Haverhill Wastewater Treatment Facility (WWTF) Improvements | $7,395,624[2] | 100% | CW | Wastewater Treatment | 2 | 6, 12 |
| Haverhill | CW-19-12 | Combined Sewer Overflow (CSO) Control Plan for the Locke Street CSO Area | $1,272,845[2] | 100% | CW | Planning | 2 | 6, 12, 14 |
| Haverhill | DWP-18-06 | Phase 2- Transmission Main Improvements | $6,806,617[2] | 100% | DW | Drinking Water Transmission and Distribution | 2 | 6, 12 |
| Hull | CW-18-20 | Facility Plan and Resiliency Plan Update | $478,890 | 100% | CW | Planning | 1 | 6, 12, 14 |
| Hull | CW-18-21 | Wastewater Treatment Facility (WWTF) Reliability Centered Maintenance (RCM) Assessment | $332,966 | 100% | CW | Planning | 1 | 6, 12, 14 |
| Hull | CW-18-22 | Sewer System Evaluation Survey (SSES) | $1,381,171[2] | 100% | CW | Planning | 1 | 6, 12, 14 |
| Hull | CWP-18-29 | Fiscal Sustainability Plan and Capacity, Management, Operations and Maintenance (CMOM) Upgrades | $9,768,591[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 1 | 6, 14 |

**Footnotes**

[1] Series 23: All Amount and Percentage Completed sections are accurate as of June 30, 2023.
[2] The amount was reduced following the completion of the project. Excess funds were reallocated to additional green projects and are listed within the Series 23 table.
[3] Amount reflects Series 23 Bond proceeds reallocated from excess funds of completed Series 23 projects or may represent prepayment of a portion of the loan.

Appendix B - Series 23 Projects [1] · Projects associated with Series 23 Sustainability Bonds are shaded in light orange.

| Borrower | Loan No. | Project Name | Amount | Percentage Drawn | Program | Category | DC Tier | UN SDG |
|---|---|---|---|---|---|---|---|---|
| Lawrence | CW-14-16-A | Sewer System Rehabilitation | $442,092 | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11, 14 |
| Lawrence | CWP-18-09 | Sewer and Drainage Improvements | $9,394,646[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11 12, 14 |
| Lawrence | CWP-18-09-A | Sewer and Drainage Improvements | $3,793,276[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11 12, 14 |
| Lawrence | CWP-19-06 | Sewer and Drainage Improvements | $4,009,025[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11, 14 |
| Lawrence | CWP-19-06-A | Sewer and Drainage Improvements | $468,570 | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11 12, 14 |
| Lawrence | DWP-19-03 | Distribution System Improvements | $4,795,508[2] | 100% | DW | Drinking Water Transmission and Distribution | 3 | 6, 9, 10, 11, 12 |
| Littleton | DW-20-07 | Emergency PFAS Blending Pipeline Project | $698,250[2] | 100% | DW | Drinking Water Treatment | | 6, 12 |
| Marion | CW-18-37 | Wastewater Treatment Plant & Collection System Improvements | $7,002,294 | 100% | CW | Wastewater Treatment | | 6, 12 |
| MWRA | CW-19-50 | Wastewater Treatment Plant and Sewer Improvements | $2,350,379 | 100% | CW | Wastewater Treatment | | 6, 12 |
| MWRA | CW-19-49 | Facility Asset Protection | $767,671 | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | | 6, 14 |
| MWRA | CW-19-51 | Remote Headworks Upgrade | $22,030,256 | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | | 6, 14 |
| MWRA | CW-20-46 | Nut Island HW Odor Control & HVAC - Contract 7548 | $6,191,660[3] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | | 6, 14 |
| MWRA | DW-19-25 | Southern Extra High Redundancy and Storage | $10,896,491 | 100% | DW | Drinking Water Source and Storage | | 6, 12 |
| MWRA | DW-19-26 | Wachusett Aqueduct Pump Station | $4,103,509 | 100% | DW | Drinking Water Transmission and Distribution | | 6, 12 |
| MWRA | DW-20-31 | Southern Extra High Redundancy and Storage | $7,271,659 | 100% | DW | Drinking Water Source and Storage | | 6, 12 |
| MWRA | DW-20-32 | Commonwealth Ave Pump Station Redundancy | $3,018,669 | 100% | DW | Drinking Water Transmission and Distribution | | 6, 12 |
| Nantucket | CW-18-05 | Emergency Sewer Force Main Assessment Project | $3,801,862 | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | | 6, 14 |
| Nantucket | CWT-19-01 | Community Septic Management Program | $1,040,600 | 100% | T5 | Community Septic Management Program | | 6, 12 |
| New Bedford | CWA-19-17 | Asset Management Plan Grant Loan | $260,000 | 100% | CW | Planning | 3 | 6, 9, 10, 11, 12, 14 |
| New Bedford | DWP-17-06 | Large Meter & Advanced Metering Infrastructure (AMI) Upgrade Program | $4,681,612[2] | 100% | DW | Drinking Water Transmission and Distribution | 3 | 6, 9, 10, 11, 12 |
| New Bedford | DWP-17-07 | High Hill Reservoir Rehabilitation | $13,032,778[2] | 100% | DW | Drinking Water Source and Storage | 3 | 6, 9, 10, 11, 12 |
| New Bedford | CW-17-09 | MS4 Permit Compliance and Reporting | $474,700 | 100% | CW | Planning | 3 | 6, 9, 10, 11, 12, 14 |
| New Bedford | CW-18-31 | Wastewater Treatment Plan (WWTP) Facilities Planning | $2,480,693[2] | 100% | CW | Planning | 3 | 6, 9, 10, 11, 12, 14 |
| New Bedford | CWP-17-16 | Pumping Station Improvements | $5,605,384[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11, 14 |
| New Bedford | CWP-17-16-A | Pumping Station Improvements | $926,670 | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11, 14 |
| New Bedford | CWP-17-17 | Wastewater Collection System Improvements | $823,839[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11, 14 |
| Norton | CWP-18-43 | West Main Street Sewer Extension Project | $4,602,841[2] | 100% | CW | Collector and Interceptor Sewers | 1 | 6, 14 |
| Peabody | DWP-19-11 | Peabody Water Transmission Main and Pump Station | $3,863,466[2] | 100% | DW | Drinking Water Transmission and Distribution | 2 | 6, 12 |
| Peabody | DWP-20-03 | Peabody Water Transmission Main and Pump Station | $4,518,960[2] | 100% | DW | Drinking Water Transmission and Distribution | 2 | 6, 12 |
| Pepperell | CWP-18-08 | Pepperell Wastewater Treatment Facility (WWTF) Upgrade | $4,511,146 | 100% | CW | Wastewater Treatment | 1 | 6, 12 |
| Pepperell | DWP-19-10 | Bemis Water Treatment Plant | $7,734,150[2] | 100% | DW | Drinking Water Treatment | 1 | 6, 12 |
| Pittsfield | CWP-18-12 | Wastewater Treatment Plant (WWTP) Nutrient Removal | $50,724,760 | 100% | CW | Wastewater Treatment | 3 | 6, 9, 10, 11, 12 |
| Pittsfield | CWP-18-12-A | Wastewater Treatment Plant (WWTP) Nutrient Removal | $7,012,322 | 100% | CW | Wastewater Treatment | 3 | 6, 9, 10, 11, 12 |
| Plymouth | CWP-16-07-B | Emergency Sewer Force Main Repairs & Rehabilitation | $13,241,047 | 100% | CW | Collector and Interceptor Sewers | 1 | 6, 14 |
| Plymouth | CWT-18-46 | Community Septic Management Program | $200,000 | 100% | T5 | Community Septic Management Program | 1 | 6, 12 |
| Revere | CW-18-19 | Illicit Connection and Sump Pump Investigation | $500,000 | 100% | CW | Planning | 3 | 6, 9, 10, 11, 12, 14 |
| Revere | CW-18-26 | Phase X Field Investigations- I/I and IDDE | $980,000[2] | 100% | CW | Planning | 3 | 6, 9, 10, 11, 12, 14 |
| Revere | CWP-17-27-A | Phase VIII - I/I, IDDE, P.S., & Drainage | $338,475[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11, 14 |

**Footnotes**

[1] Series 23: All Amount and Percentage Completed sections are accurate as of June 30, 2023.
[2] The amount was reduced following the completion of the project. Excess funds were reallocated to additional green projects and are listed within the Series 23 table.
[3] Amount reflects Series 23 Bond proceeds reallocated from excess funds of completed Series 23 projects or may represent prepayment of a portion of the loan.

Appendix B - Series 23 Projects [1] · Projects associated with Series 23 Sustainability Bonds are shaded in light orange.

| Borrower | Loan No. | Project Name | Amount | Percentage Drawn | Program | Category | DC Tier | UN SDG |
|---|---|---|---|---|---|---|---|---|
| Revere | CWP-18-27 | Illicit Connection & Sump Pump Removal Program | $1,315,397[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11, 14 |
| Revere | CWP-18-28 | Phase IX Construction- I/I, IDDE, P.S. & Drainage | $4,252,154[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 3 | 6, 9, 10, 11, 14 |
| Revere | DW-18-08 | Oak Island Water Main Improvements Planning Stage | $250,000 | 100% | DW | Drinking Water Planning and Design | 3 | 6, 9, 10, 11, 12 |
| Revere | DWP-17-14 | Lead Service Replacement | $2,950,196[2] | 100% | DW | Drinking Water Transmission and Distribution | 3 | 6, 9, 10, 11, 12 |
| Revere | DWP-18-09 | Oak Island Water Main Improvements Planning Stage | $426,641[2] | 100% | DW | Drinking Water Transmission and Distribution | 3 | 6, 9, 10, 11, 12 |
| Saugus | CWP-19-30 | Comprehensive Sewer System Rehab. Subsystem 1C | $1,204,682[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 2 | 6, 14 |
| Scituate | CWT-18-13 | Community Septic Management Program | $199,222 | 100% | T5 | Community Septic Management Program | | 6, 12 |
| Southampton | DWP-18-12 | Southampton Water System Improvement Project | $1,590,719 | 100% | DW | Drinking Water Transmission and Distribution | 1 | 6, 12 |
| Spencer | DWP-18-13 | Main Street Looping Water Main | $1,779,911 | 100% | DW | Drinking Water Transmission and Distribution | 3 | 6, 9, 10, 11, 12 |
| SWSC | CWP-18-18 | York St. Pump Station & Connecticut River Crossing | $49,107,582 | 100% | CW | Combined Sewer Overflow Correction | 3 | 6, 9, 10, 11 12, 14 |
| SWSC | CWP-18-18-A | York St. Pump Station & Connecticut River Crossing | $5,252,623 | 100% | CW | Combined Sewer Overflow Correction | 3 | 6, 9, 10, 11 12, 14 |
| Taunton | CW-17-19 | Main Lift Pump Station Improvements | $9,924,872[2] | 100% | CW | Combined Sewer Overflow Correction | 3 | 6, 9, 10, 11, 12, 14 |
| Taunton | CWP-20-21 | Wastewater Treatment Facility (WWTF) Upgrade - Phase 1 | $1,120,133[3] | 100% | DW | Wastewater Treatment | 3 | 6, 9, 10, 11, 12, 14 |
| Tyngsborough | CW-15-10 | Sewer Extension Phase 1 | $9,282,500 | 100% | CW | Collector and Interceptor Sewers | 1 | 6, 14 |
| Tyngsborough | CW-19-03 | Phase 2 Infiltration and Inflow Study | $441,902[2] | 100% | CW | Planning | 1 | 6, 12, 14 |
| Wareham Fire District | DWP-17-09-A | Maple Springs Water Purification Plant | $7,000,000 | 100% | DW | Drinking Water Treatment | 3 | 6, 9, 10, 11, 12 |
| West Boylston Water District | DWP-19-27 | North Main St. & Laurel St. Water Main Replacement | $1,419,265[2] | 100% | DW | Drinking Water Transmission and Distribution | 2 | 6, 12 |
| West Springfield | CWP-17-30 | Pump Station Improv and Infiltration/Inflow (I/I) Reduction Project | $10,504,644[2] | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 2 | 6, 14 |
| West Springfield | CWP-17-30-A | Pump Station Improv and Infiltration/Inflow (I/I) Reduction Project | $974,973 | 100% | CW | Infiltration/Inflow and Sewer System Rehabilitation | 2 | 6, 14 |
| Westport | CW-18-30 | Integrated Water Resource Management Plan (IWRMP) | $150,000 | 100% | CW | Planning | 1 | 6, 12, 14 |

**Footnotes**

[1] Series 23: All Amount and Percentage Completed sections are accurate as of June 30, 2023.
[2] The amount was reduced following the completion of the project. Excess funds were reallocated to additional green projects and are listed within the Series 23 table.
[3] Amount reflects Series 23 Bond proceeds reallocated from excess funds of completed Series 23 projects or may represent prepayment of a portion of the loan.


# Annual Green Bonds and Sustainability Bonds Report

September 2023