



City of Rochester, New Hampshire

Office of Budget Management & Purchasing
(603) 508-1908

April 27, 2021

Mayor McCarley & City Council

c: Blaine Cox, Katie Ambrose

Fm: Mark Sullivan-Deputy Finance Director *Mark Sullivan*

Re: Water Fund Capital Improvements Project-Omission

Mayor & City Council,

While performing additional FY22 budget reviews with Departments it was discovered that eight (8) Water Fund Capital Improvement Projects (CIP) were not assigned City Manager Proposed category within the CIP database. All CIP projects begin as a Department Requested category, and require manually category adjustments to be accepted into the City Manager's Proposed CIP budget detail. The intent was to include these projects into the FY22 City Manager Proposed Capital Improvements Budget. There are seven (7) projects that impact FY22 Water Fund CIP appropriation consideration, and one (1) project is related to FY24. The FY22 projects are as follows;

WTP Anthracite Cell Dividers	Cash	75,000
WTP Fluoride Analyzer Replacement	Cash	22,000
WTP Insulation & Heating Systems Upgrades	Cash	22,000
WTP Sodium Bicarbonate Controls Upgrade	Cash	50,000
WTP Electrical Service-Upgrade	Borrow	250,000
WTP Flow Meters-Hydraulic Upgrade	Borrow	105,000
WTP Residuals Disposal	Borrow	620,000
Subtotal: Water Works	0	1,144,000

The FY24 project is Winter Street Neighborhood Reconstruction- \$2,300,000 borrow.

Enclosed is a packet of the eight projects for Council review. Council will have to motion to accept these projects into the FY22 Council Adopted Capital Improvements budget.

Additional review process shall be implemented to prevent this from occurring in the future.

FY22 CAPITAL IMPROVEMENTS PROGRAM SCHEDULE-WATER FUND ADDITIONAL PROJECTS 4-27-21

DEPARTMENT/DESCRIPTION	*C/O AMOUNT	AMOUNT	BORROWING PROCEEDS	O&M CASH	FUND BAL RET EARN	SRF	GRANT	LIFE
WATER FUND								
WTP Anthracite Cell Dividers	Cash	75,000	-	75,000	0	0	0	20
WTP Fluoride Analyzer Replacement	Cash	22,000	-	22,000	0	0	0	15
WTP Insulation & Heating Systems Upgrades	Cash	22,000	-	22,000	0	0	0	15
WTP Sodium Bicarbonate Controls Upgrade	Cash	50,000		50,000				10
WTP Electrical Service-Upgrade	Borrow	250,000	250,000	-	0	0	0	25
WTP Flow Meters-Hydraulic Upgrade	Borrow	105,000	105,000	-	0	0	0	25
WTP Residuals Disposal	Borrow	620,000	620,000	-	0	0	0	40
Subtotal: Water Works	0	1,144,000	975,000	169,000	0	0	0	

CITY ROCHESTER

FY 22 PROPOSED CIP-ADDITIONAL

CAPITAL IMPROVEMENTS PROJECTS-WATER FUND ADDITIONAL

City of Rochester, New Hampshire

CAPITAL PROJECT REQUEST FORM

Request Type:

☒ New

☐ Continuation

Capital Improvements for Fiscal Years 2022 - 2027

Department: Water Department	FY Start: FY22	Project Title:	
	Project #: FY22-WAT-74	WTP Anthracite Filter Cell Dividers	
Type of Project: Other		Expected Useful Life: 20Years	Status: City Department Requested
Location: Water Treatment Plant		Total Project Cost: \$75,000	
		Current FY Cost: \$75,000	
Project Priority or Need: Desirable		Anticipated Funding Source(s): Cash: Water/Sewer/Arena	

General Description:

The Surface Water Treatment Plant (WTP) utilizes two filters: a sand filter (primary) and an anthracite filter (polishing). Performance metrics and filter surveillance of the anthracite filter have demonstrated the need to install individual filter cell dividers. Filter media blinding, mudballing, and preferential path formation have been occurring at increasing frequencies. This project will involve installation of flexible heavy duty sheet material in the existing filter at strategic locations provide smaller areas for controlled filter bed development and improved backwash effectiveness.

Justification:

The project will improve filter operations and finished water quality. Backwashing activities will be more effective and efficient.

Relationship to Other Projects:

WTP Residuals Disposal.

Implications of Deferring Project:

Continued and increasing excessive filter maintenance, and low efficiencies of backwash operations. Heightened monitoring of the filter beds will be needed and increased frequency of media backwash to remove solids build up will continue. Filter inefficiencies and reduced effectiveness of backwash can lead to taste and odor concerns in the drinking water system, and potentially public health concerns.

Project Components	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Building Construction	\$75,000	\$0	\$0	\$0	\$0	\$0	\$75,000
Totals	\$75,000	\$0	\$0	\$0	\$0	\$0	\$75,000

Funding Sources	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Cash: Water/Sewer/Arena	\$75,000	\$0	\$0	\$0	\$0	\$0	\$75,000
Totals	\$75,000	\$0	\$0	\$0	\$0	\$0	\$75,000

City of Rochester, New Hampshire

CAPITAL PROJECT REQUEST FORM

Request Type:

☒ New

☐ Continuation

Capital Improvements for Fiscal Years 2022 - 2027

Department: Water Department	FY Start: FY22	Project Title: WTP Fluoride Analyzer Replacement	
	Project #: FY22-WAT-75		
Type of Project: Machinery & Equipment		Expected Useful Life: 15Years	Status: City Department Requested
Location: Water Treatment Plant		Total Project Cost: \$22,000	
		Current FY Cost: \$22,000	
Project Priority or Need: Maintenance		Anticipated Funding Source(s): Cash: Water/Sewer/Arena	

General Description:

The Rochester public water system is a fluoridated drinking water system. Accurate dosing of fluoride is required to maintain fluoride levels in a recommended range and meet regulatory requirements. The existing fluoride analyzer is many years old, has been rebuilt over the years, and uses out-dated technology. This project will replace the existing instrument with a fluoride analyzer of the latest technology.

Justification:

The existing fluoride analyzer is beyond its useful life expectancy. A reliable and accurate fluoride analyzer is critical to provide proper chemical dosing and meet regulatory water quality treatment requirements.

Relationship to Other Projects:

WTP Flow Meters & Hydraulic Capacity Upgrade.

Implications of Deferring Project:

The aged fluoride analyzer will eventually fail, resulting in inaccurate dosing of fluoride. Inaccurate dosing of fluoride could be harmful to public health and violate drinking water regulatory requirements.

Project Components	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Machinery and Equipment	\$22,000	\$0	\$0	\$0	\$0	\$0	\$22,000
Totals	\$22,000	\$0	\$0	\$0	\$0	\$0	\$22,000

Funding Sources	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Cash: Water/Sewer/Arena	\$22,000	\$0	\$0	\$0	\$0	\$0	\$22,000
Totals	\$22,000	\$0	\$0	\$0	\$0	\$0	\$22,000

City of Rochester, New Hampshire

CAPITAL PROJECT REQUEST FORM

Capital Improvements for Fiscal Years 2022 - 2027

Request Type:

☒ New

☐ Continuation

Department: Water Department	FY Start: FY22 Project #: FY22-WAT-76	Project Title: WTP Insulation & Heating Systems Upgrades	
Type of Project: Building Improvement		Expected Useful Life: 15Years	Status: City Department Requested
Location: Water Treatment Plant		Total Project Cost: \$22,000	
		Current FY Cost: \$22,000	
Project Priority or Need: Desirable		Anticipated Funding Source(s): Cash: Water/Sewer/Arena	

General Description:

A 2019 Energy Evaluation of the Rochester Water System included several recommendations for energy savings. This project implements remaining recommendations, including upgrades to heating systems and other energy efficiency modifications and improvements at the Surface Water Treatment Plant (WTP). Specifically, upgrades include heat pump conversions from electric to efficient air source, installation of insulation at sodium bicarbonate silo and maintenance building, and replacement of electric unit heaters with hydronic unit heaters.

Justification:

This project includes upgrades that will improve energy efficiency and provide energy cost savings.

Relationship to Other Projects:

WTP Sodium Bicarbonate Controls Upgrade.

Implications of Deferring Project:

Unrealized cost savings in energy efficiencies.

Project Components	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Buildings Improvements	\$22,000	\$0	\$0	\$0	\$0	\$0	\$22,000
Totals	\$22,000	\$0	\$0	\$0	\$0	\$0	\$22,000

Funding Sources	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Cash: Water/Sewer/Arena	\$22,000	\$0	\$0	\$0	\$0	\$0	\$22,000
Totals	\$22,000	\$0	\$0	\$0	\$0	\$0	\$22,000

City of Rochester, New Hampshire

CAPITAL PROJECT REQUEST FORM

Capital Improvements for Fiscal Years 2022 - 2027

Request Type:

☒ New

☐ Continuation

Department: Water Department	FY Start: FY22	Project Title: WTP Sodium Bicarbonate Controls Upgrade	
	Project #: FY22-WAT-73		
Type of Project: Other		Expected Useful Life: 10Years	Status: City Department Requested
Location: Water Treatment Plant		Total Project Cost: \$50,000	
		Current FY Cost: \$50,000	
Project Priority or Need: Maintenance		Anticipated Funding Source(s): Cash: Water/Sewer/Arena	

General Description:

This project will upgrade the controls for the sodium bicarbonate dry chemical storage, handling, mixing and feed equipment. The existing control panel enclosure will be reused. New controls will include hardware and control components compatible with the Surface Water Treatment Plant (WTP) control network and associated programming and configuration.

Justification:

The existing control panel components are aged and include obsolete parts and technology. The proposed controller and panel components will match the standard updated hardware throughout the WTP, allowing for savings in spare parts inventory and programming software. The upgrade will provide greater reliability and functionality for monitoring and control of the chemical system.

Relationship to Other Projects:

FY17 Water Treatment Plant Systems Controls Upgrades.

Implications of Deferring Project:

Delaying the upgrade may result in equipment failure requiring emergency repair and replacement. Equipment failure may result in water treatment upsets, water quality issues and additional labor for manual operation of the equipment.

Project Components	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Other	\$50,000	\$0	\$0	\$0	\$0	\$0	\$50,000
Totals	\$50,000	\$0	\$0	\$0	\$0	\$0	\$50,000

Funding Sources	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Cash: Water/Sewer/Arena	\$50,000	\$0	\$0	\$0	\$0	\$0	\$50,000
Totals	\$50,000	\$0	\$0	\$0	\$0	\$0	\$50,000

City of Rochester, New Hampshire

CAPITAL PROJECT REQUEST FORM

Capital Improvements for Fiscal Years 2022 - 2027

Request Type:

☒ New

☐ Continuation

Department: Water Department	FY Start: FY22 Project #: FY22-WAT-77	Project Title: WTP Electrical Service/Main Switchgear Upgrade	
Type of Project: Building Improvement		Expected Useful Life: 25Years	Status: City Department Requested
Location: Water Treatment Plant		Total Project Cost: \$250,000	
		Current FY Cost: \$250,000	
Project Priority or Need: Maintenance		Anticipated Funding Source(s): Bond: Water/Sewer/Arena	

General Description:

The main electrical supply and service disconnects for the Surface Water Treatment Plant (WTP) are 30+ years old. This project replaces and upgrades the main switchgear at the incoming service connection and related components. The project costs include temporary power, which will be provided in a controlled coordinated manner during equipment replacement. The smaller form factor switchgear at the Low Lift Pump Station was previously upgraded for the same reasons.

Justification:

This critical power supply equipment is original to the WTP and is beyond its useful service life; safety and efficiency standards have improved from the original design. Corrosion is evident on several components. The project will improve equipment longevity through cleaner power delivery and surge suppression, integrate intelligent energy management for the campus, and improve efficiency of building electrical distribution. This project is recommended by the 2019 Energy Evaluation to increase efficiency and reliability of power supply equipment. The smaller form factor switchgear at the Low Lift Pump Station was previously upgraded for the same reasons.

Relationship to Other Projects:

FY19 WTP Main Generator Replacement. 2019 Energy Evaluation.

Implications of Deferring Project:

Deferring the proactive replacement of aged critical equipment could lead to unexpected failure requiring costly emergency repair or replacement. Energy efficiencies would not be realized.

Project Components	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Buildings Improvements	\$250,000	\$0	\$0	\$0	\$0	\$0	\$250,000
Totals	\$250,000	\$0	\$0	\$0	\$0	\$0	\$250,000

Funding Sources	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Bond: Water/Sewer/Arena	\$250,000	\$0	\$0	\$0	\$0	\$0	\$250,000
Totals	\$250,000	\$0	\$0	\$0	\$0	\$0	\$250,000

City of Rochester, New Hampshire

CAPITAL PROJECT REQUEST FORM

Capital Improvements for Fiscal Years 2022 - 2027

Request Type:

☒ New

☐ Continuation

Department: Water Department	FY Start: FY22 Project #: FY22-WAT-72	Project Title: WTP Flow Meters & Hydraulic Capacity Upgrade	
Type of Project: Other		Expected Useful Life: 25Years	Status: City Department Requested
Location: Water Treatment Plant		Total Project Cost: \$105,000	
		Current FY Cost: \$105,000	
Project Priority or Need: Desirable		Anticipated Funding Source(s): Bond: Water/Sewer/Arena	

General Description:

This project includes evaluation of hydraulic restrictions at the Surface Water Treatment Plant (WTP) and replacement of finished water flow meter and clearwell influent flow meter. The existing finished water flow meter is 30+ years old and original to the WTP. Replacement was recommended in the 2020 Water Audit. The existing clearwell influent flow meter is a strap-on ultrasonic meter known to have less accuracy than inline magnetic flow meters. The project includes an engineering evaluation to determine feasibility of replacing the two meters and associated piping with larger diameter parts to remove a hydraulic restriction and increase production capacity; evaluation would be completed prior to determining final meter and pipe sizing.

Justification:

The finished water flow meter is beyond industry standards for useful life span and the make/model is obsolete. The clearwell influent strap-on meter technology is lower accuracy than the proposed inline magnetic flow meter. Accuracy and functionality of the flow meters are critical to monitor production through the WTP and account for water in the system. The finished water meter is also used in operations to determine chemical dosage and monitor filter backwash. The finished water meter is required to continuously monitor flow and report production accurately in NHDES PWS monthly reports. While upgrading, it is prudent to investigate and remove hydraulic restrictions and increase available production capacity for future needs.

Relationship to Other Projects:

FY20 Water Audit completed in 2020.

Implications of Deferring Project:

Reduced reliability of production flow rate and volume data. Failure of the meter due to age would cause WTP operations to be affected and possibly shutdown temporarily for emergency repair. Failure or inaccuracy due to age could also cause treatment operations issues such as under or over dosing treatment chemical. During critical high demand periods, the water treatment plant will continue to be limited to existing throughput capacity due to hydraulic restrictions in the piping.

Project Components	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Eval/Design/Construction	\$105,000	\$0	\$0	\$0	\$0	\$0	\$105,000
Totals	\$105,000	\$0	\$0	\$0	\$0	\$0	\$105,000

Funding Sources	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Bond: Water/Sewer/Arena	\$105,000	\$0	\$0	\$0	\$0	\$0	\$105,000
Totals	\$105,000	\$0	\$0	\$0	\$0	\$0	\$105,000

City of Rochester, New Hampshire

CAPITAL PROJECT REQUEST FORM

Capital Improvements for Fiscal Years 2022 - 2027

Request Type:

☐ New

☒ Continuation

Department: Water Department	FY Start: FY22 Project #: FY22-WAT-50	Project Title: WTP Residuals Disposal	
Type of Project: Other		Expected Useful Life: 40Years	Status: City Department Requested
Location: Water Treatment Plant		Total Project Cost: \$1,240,000 Current FY Cost: \$620,000	
Project Priority or Need: Essential		Anticipated Funding Source(s): Bond: Water/Sewer/Arena	

General Description:

The Water Treatment Plant (WTP) processes generate residuals, including material referred to as "alum sludge", that must be properly disposed of. Currently, a "sludge" transmission pipeline, approximately 5.7 miles in length, carries these residuals from the WTP to the Wastewater Treatment Facility (WWTF). This pipeline was first put into service in 1985 and portions need to be repaired/replaced. Review of the alternatives yielded the following multi-year plan: Yr1-Attenuation Tank, Yr2-Slip line 1 mile of larger pipeline with more adequately sized pipe, Yr3-Increase size of half of 6" pipe restrictions to more adequately sized pipe, and Yr4-Increase size of remainder of 6" pipe restrictions to more adequately sized pipe. This FY22 request is for design and construction funds the proposed Year 3 activity.

Justification:

The "sludge" transmission pipeline is comprised of a number of old and/or abandoned water mains made of various materials. Some of the line is shallow buried and situated amongst ledge. Five major leaks have been repaired in the last ten years. It is believed that there are major infiltration and potentially exfiltration issues with the pipeline. The pipeline regularly backs up when the plant's waste stream is flowing at its peak.

Relationship to Other Projects:

FY18, FY19, FY20, and FY21 appropriations for WTP Residuals Disposal. FY17 Evaluate Alum Sludge Line (\$25,000). Some Sewer projects at the WWTF, including the Sludge Dewatering Facility currently under construction and the Lagoon 1 Solids Removal project.

Implications of Deferring Project:

Risk of increased occurrence of leaks. Increased operations and maintenance costs. Impacts on handling of alum sludge at WWTF. Eventual impact on treatment processes at WTP.

Project Components	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Design thru Construction	\$620,000	\$620,000	\$0	\$0	\$0	\$0	\$1,240,000
Totals	\$620,000	\$620,000	\$0	\$0	\$0	\$0	\$1,240,000

Funding Sources	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Bond: Water/Sewer/Arena	\$620,000	\$620,000	\$0	\$0	\$0	\$0	\$1,240,000
Totals	\$620,000	\$620,000	\$0	\$0	\$0	\$0	\$1,240,000

City of Rochester, New Hampshire

CAPITAL PROJECT REQUEST FORM

Capital Improvements for Fiscal Years 2022 - 2027

Request Type:

☐ New

☒ Continuation

Department: Water Department	FY Start: FY24	Project Title: Winter Street Neighborhood St Reconstruction-Water	
	Project #: FY22-WAT-14		
Type of Project: Other		Expected Useful Life: 40Years	Status: City Department Requested
Location: Other		Total Project Cost: \$2,300,000	
		Current FY Cost: 0	
Project Priority or Need: Maintenance		Anticipated Funding Source(s): Bond: Water/Sewer/Arena	

General Description:

This project will continue from where the Franklin/Western project left off and improve utilities and streetscape in the Winter Street area. This funds the water infrastructure portion of the project. Streets included in this project are Winter, School, Haskell, Friendship, Silver, Heaton, and Olsen, as well as remaining work on First and Second Streets.

Justification:

Aging water infrastructure to be upgraded with other utility and roadway improvements. Limited fire flow in the area.

Relationship to Other Projects:

Public Works and Sewer components of the project. Franklin/Western project. Linden/King Neighborhood St Reconstruction project.

Implications of Deferring Project:

Further deterioration of water infrastructure, including increased water main breaks and water quality issues.

Project Components	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Design Engineering	\$0	\$0	\$100,000	\$0	\$0	\$0	\$100,000
Building Construction	\$0	\$0	\$0	\$2,000,000	\$0	\$0	\$2,000,000
Construction Engineering	\$0	\$0	\$0	\$200,000	\$0	\$0	\$200,000
Totals	\$0	\$0	\$100,000	\$2,200,000	\$0	\$0	\$2,300,000

Funding Sources	FY22	FY23	FY24	FY25	FY26	FY27	Six Year Tot
Bond: Water/Sewer/Arena	\$0	\$0	\$100,000	\$2,200,000	\$0	\$0	\$2,300,000
Totals	\$0	\$0	\$100,000	\$2,200,000	\$0	\$0	\$2,300,000