STATE OF NEW HAMPSHIRE

BEFORE THE

PUBLIC UTILITIES COMMISSION

RE: PENNICHUCK WATER WORKS, INC.

DW 24-___

PETITION FOR APPROVAL OF FINANCING UNDER THE STATE PFAS REMEDIATION FUND FOR THE NASHUA WATER TREATMENT PLANT CHEMICAL FEED AND STORAGE IMPROVEMENT PROJECT

DIRECT TESTIMONY

OF

CHRISTOPHER J COUNTIE

July 3, 2024

Q. What is your name and what is your position with Pennichuck Water Works, Inc.?

A. My name is Christopher J. Countie. I currently hold the position of Director of Operations.

Q. Please describe your educational background.

A. I have an Associate of Science in Civil Technology and a Bachelor of Science in Business Administration both from the University of New Hampshire.

Q. Please describe your professional background.

A. I have been employed by Pennichuck Water Works, Inc. ("PWW" or "Company") since 1991 and have served in many roles. I was both a Water Supply and Distribution Technician and was Assistant Distribution Manager from 1993-1998. I was an Engineering Project Manager from 1998-2001. From 2001 to 2023, I served as the Company's Director of Water Supply and Community Water Systems. In January 2024, I was promoted to my current position of Director of Operations.

Q. What are your responsibilities as Director of Operations for the Company?

A. As Director of Operations, I am responsible for the general oversight and planning for the Company's Distribution, Water Supply and North Country Operations divisions. I am also the Chief Negotiator for the Company in matters related to union grievance resolutions and contract negotiations.

Q. What is the purpose of your testimony?

A. I will be describing the Nashua Water Treatment Plant, Chemical Feed and Storage Improvement Project.

Q. Please describe the Nashua Water Treatment Plant Chemical Feed and Storage Improvement Project for which the Company is seeking financing from thePFAS Remediation Fund.

A. The project includes the construction of a new building, sufficiently sized to accommodate additional bulk chemical storage for ferric chloride, the primary coagulant chemical used in the treatment process, and primary bulk storage for sodium hypochlorite, the primary disinfectant. The project will also replace existing chemical feed equipment for the coagulant chemical, replace obsolete programmable logic controllers (PLC) and other miscellaneous equipment related to chemical feed systems in the plant.

Q. Please describe the purpose of and need for the project.

A. The Nashua Water Treatment Plant ("WTP") was originally constructed in 1980 to ensure compliance with the federal Safe Drinking Water Act. It was significantly re-built in 2006-2009 to ensure compliance with more stringent standards of the Safe Drinking Water Act, Surface Water Treatment Rule. During this time of reconstruction, most of the major components related to the water treatment process were either rebuilt or replaced. New treatment technologies were also added to enhance the facilities ability to meet both current and future anticipated regulations.

Q. What has changed since the WTP was rebuilt between 2006 and 2009 that caused the need for this project?

A. The WTP uses two primary sources of surface water supply; (1) the Pennichuck Brook Reservoir (PBR), and (2) the Merrimack River (MR). Historically, the Merrimack River was used only in the summer months of the year when daily demand in the system exceeded 13 million gallons per day. This is the safe yield of the PBR system. The design parameters used by the engineering firm chosen to complete the 2006 – 2009 WTP enhancements used this mode of operation as their fundamental assumption when considering chemical feed capacity related to pumping equipment as well as storage. Furthermore, the basis for feed rate for chemicals was based on limited historical water quality information both for raw and finished water parameters.

Plant upgrades were completed in 2009 and the plant operated as designed with ample storage for chemicals and adequate pumping equipment for all anticipated water quality conditions and flows. In 2014, as a part of the Federal EPA's Unregulated Contaminant Monitoring Rule ("UCMR"), water suppliers of a certain size were required to test for a variety of Per- and Polyfluoroalkyl Substances ("PFAS"). At that time, the Minimum Reliable Detection Limits ("MRDL") of the available laboratory equipment, could not detect the levels present in the PBR and therefore, the system's reported results were below the MRDL. As science and technology evolved related to determining the presence and proliferation of these PFAS chemicals and their impacts to human health, the State of NH proactively set drinking water standards, or Maximum Contaminant Levels ("MCL"), in 2019 for certain PFAS chemicals. The new MCL's for two chemicals were below the now detectable levels of 1.4 to 1.8 parts per trillion (ppt) in the

PBR. The PFAS chemicals detected above the newly established MCL were Perfluorooctonoic Acid (PFOA) and Perflourooctanesulfonic Acid (PFOS).

The 2009 upgraded treatment process at the WTP fortunately utilizes filters containing Granular Activated Carbon (GAC) which is considered one of the most effective means of removal of PFAS chemicals from drinking water. However, the capacity to remove PFAS is limited, and it was determined through frequent testing, that the GAC's ability to adsorb PFAS would be exhausted in less than six months based on the PFOA and PFOS levels in the PBR (Average PFOA level of 15.6 ppt and average PFOS level of 4.11 ppt). The cost of the most recent partial changeout of the GAC media in the plant performed in 2023 when extended to a complete change out of all filter GAC media would be about $2.1 million.

Raw water from the MR contains PFAS chemicals that are significantly lower than the PBR (Average PFOA level of 2.87 ppt and average PFOS level of 3.82 ppt) and lower than the State of NH MCL for PFOA and PFOS. Rather than changing GAC from the filters perhaps as frequently as twice per year at a total cost of approximately $4.2 million, the decision was made to switch from using PBR as the primary source of supply using MR all year (as opposed to just seasonally) to lessen the loading of PFAS chemicals on the filters. This extends the life of the GAC media while still providing finished water meeting all state and federal drinking water regulations.

The raw water from the MR, although very similar in typical water quality parameters to the PBR, generally requires a greater amount of coagulant chemical to meet treatment goals for clarity and disinfection by-product pre-cursor removal. Furthermore, changes in water quality due to climate change and its relationship to the frequency of

major storm events, have caused extended periods where the MR raw water has a much stronger coagulant demand. Over time, this dynamic has raised the average coagulant demand beyond the maximum feed rate of the existing chemical feed system. Along with this, the capacity of the bulk storage system for this chemical no longer meets the targeted, Ten State Standard design volume of 30 days of bulk storage at average demand and chemical usage. The current available storage for ferric chloride is 18,000 gallons which translates to 22 days of storage at average flows and coagulant demand. During the summer months the demand for ferric chloride is as high as 3–4000-gallon bulk deliveries per week. If the supply of ferric was interrupted for as little as 10 days, the WTP would run out of ferric chloride.

Q. Has the WTP ever experience an interruption of Ferric Chloride Delivery?

A. Yes. In August of 2022, due to the chemical manufacturer's production and trucking issues related to the COVID 19 Pandemic, bulk chemical levels dropped well below critical (<1500 gallons of the available 16,000 gallons), drastic measures were contemplated that may have impacted finished water quality. Fortunately, emergency deliveries were arranged to restore inventory before those measures were enacted.

In 2023, as a result of this extraordinary occurrence as well as ongoing operational indicators that the system requires more bulk chemical storage, an evaluation was performed by CDM Smith to review historical records of raw water quality, system capacity and projections of future chemical demand. In addition, a condition and capacity assessment was performed for all chemical feed systems in the plant. From this comprehensive evaluation, a project scope and opinion of cost was finalized. CDM

Smith was chosen after a comprehensive review of statements of qualifications and project approach submissions from multiple firms.

To proceed with the project, financing outside of the Company's typical means will be required. Since the timeline of the project design and construction will be over two years, the Company will not be able to utilize PWW's Fixed Asset Line of Credit (FALOC) to provide the short-term capital necessary to complete this project. The Company's arrangement with TD Bank, who provides the FALOC, stipulates that it be paid off on an annual basis by finances obtained through a bond offering through the NH Business Finance Authority. Annual bond financing can only be performed for projects that are completed within one year. Because of the timeline of this project, alternative financing was sought and has been determined to be available subject to NHPUC approval.

An application for a term loan from the NH Drinking Water and Groundwater Trust Fund (DWGTF) in February of 2024 was submitted. There was no decision provided by the DWGTF Board regarding this application as it was requested that we first explore financing through the State of New Hampshire PFAS Remediation Grant and Loan Fund. As a result of an application to this fund, the Company was approved for a loan in the amount of up tp $11,450,000 for 20 years at an APR of 3.5% through the PFAS Remediation Grant and Loan Fund.

Q. Does this financing provide the necessary short-term credit to cover the two years between beginning of final project design and completion of project construction?

A. Yes. The Company can draw from the loan fund, up to the full amount of the loan, on a monthly basis to pay for construction work in progress, until the project is completed.

The Company pays 1% per annum on the amount of money drawn from this loan until the project is complete at which point the Company closes on the final loan for the total amount borrowed during construction and the short-term loan is converted to a long-term loan at the terms previously described.

Q. Please describe the estimated timeline required to complete the project.

A. Upon approval of the proposed financing, the engineering and design will commence in the second quarter of 2024 for construction bidding in late 2024/early 2025. Construction is expected to commence in the second quarter of 2025 with substantial completion in 2026.

Q. Does this complete your testimony?

A. Yes.