STATE OF NEW HAMPSHIRE

BEFORE THE

PUBLIC UTILITIES COMMISSION

Re: Petition of Pennichuck Water Works, Inc. for Approval of Financing

Under the State Drinking and Groundwater Trust Fund

for the

Merrimack River Intake Improvements

DW 19-___

DIRECT PREFILED TESTIMONY OF JOHN J. BOISVERT

February 7, 2019

Professional and Educational Background

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

A. My name is John J. Boisvert. I am the Chief Engineer of Pennichuck Water Works, Inc. (the "Company" or "PWW"). I have worked for the Company since February 1, 2006. I am a licensed professional engineer in New Hampshire and Maine.

Q. Please describe your educational background.

A. I have a Bachelor of Science degree and a Master of Science degree in Civil Engineering from the University of New Hampshire in Durham, New Hampshire. I also have a Master's degree in Environmental Law and Policy from Vermont Law School in South Royalton, Vermont.

Q. Please describe your professional background.

A. Prior to joining the Company, I served as a Team Leader for Weston & Sampson Engineers of Portsmouth, New Hampshire in their Water Practices Group from 2000 to 2006. Prior to Weston & Sampson I was employed by the Layne Christensen Company of Shawnee Mission, Kansas as Regional Manager for their Geosciences Division in Dracut, Massachusetts from 1994 to 2000. I completed graduate school in 1992 and was employed by Hoyle, Tanner, & Associates of Manchester, New Hampshire as a Project Engineer from 1992 to 1994. Prior to entering full time graduate programs at the University of New Hampshire and Vermont Law School I was employed by Civil Consultants of South Berwick, Maine as a Project Engineer from 1986 to 1989 and by Underwood Engineers of Portsmouth, New Hampshire as a project Engineer from 1985 to 1986.

Q. What are your responsibilities as Chief Engineer?

A. As Chief Engineer, I am responsible for the planning, design, permitting, construction, and startup of major capital projects, including pipelines, reservoirs/dams, building structures, pumping facilities, treatment facilities, and groundwater supplies. I provide regular technical assistance to PWW's Water Supply Department, Distribution Department, Customer Service Department, and Senior Management. In addition, I oversee the Company's Asset Management Program.

Q. What is the purpose of your testimony?

A. I will be describing the replacement of the Company's existing Merrimack River Intake (MRI). The new MRI will replace the existing river bank intake with a new deep-water intake further out into the Merrimack River in Merrimack, New Hampshire. The Company seeks approval to finance the work with proceeds from a loan issued by the New Hampshire Department of Environmental Services ("NHDES") through the State Drinking Water and Groundwater Trust Fund ("DWGTF"). Please see Exhibit JJB-1 for the letter offering DWGTF Loan funds for this work.

Q. What are the terms of the DWGTF loan?

A. The NHDES is offering a $5,500,000 loan with a 30-year term with level total payments and a current interest rate of 3.38% per annum to fund the project. Please see Exhibit JJB-3 for the confirmation of the 30-year loan term.

Q. Please describe the MRI project for which the Company is seeking DWGTF financing.

A. The project is to construct a new raw water intake from the west side to the center of the Merrimack River at the location of the Company's existing intake and raw water pumping station in Merrimack, NH. The project will include the installation of

approximately 250 linear feet of 48-inch steel pipe, of which approximately 200 linear feet extends into the Merrimack River connecting to two 30 million gallons per day (mgd) capacity intake screens. On the river bank, two concrete wet well/junction box structures will provide access to piping and connect to the existing intake raw water pumping station. An airburst cleaning system will be constructed in the existing intake station and will be connected to the intake screens by installing approximately 250 linear feet of 6-inch HDPE pipe. The project will utilize land that Pennichuck Water Works owns in Merrimack, NH. Please see Exhibit JJB-2 for the project design drawings that includes a project location map.

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

A. The Company constructed its current Merrimack River raw water intake and pump station on the west side of the river in 1982 to supply source water to the Company's treatment facility. The treatment facility provides drinking water to the City of Nashua and surrounding communities. The original intent of the Merrimack River as a source of supply was to supplement the primary source of supply, Pennichuck Brook, by delivering water to the Pennichuck Brook reservoir system during periods of low flow in Pennichuck Brook. Even though Pennichuck Brook and the Merrimack River are two separate sources of water they behave as a single source in that both waters are mixed in Bowers Reservoir. In 2009, PWW identified a need to initiate a series of capital improvements to the source of supply such that peak seasonal water demand is satisfied using both sources and to construct facilities that allow each source to be used independently creating truly redundant sources of raw water supply to the treatment facility. In 2011 the Company upgraded the raw water pumps at the Merrimack River

pumping station to ensure 22 million gallons per day could be delivered to the Pennichuck Brook pond system consistent with current demand. In 2017, the Company completed an addition to the raw water pipeline to allow water from the Merrimack River to be discharged into Bowers Reservoir, Harris Reservoir, or directly into the treatment facility creating two independent sources of supply if needed outside of the winter months. The intake project is the next phase of supply improvements and will offer the following benefits:

- Ensure the Company is able to use the full capacity of the 30 million gallon per day withdrawal permit from the Merrimack River throughout the entire year.
- Sustain supply capacity and enhance supply security by offering a truly redundant sources of supply any time of the year.
- The new intake is in the middle of the river and sufficiently deep so that it is not impacted by ice. The existing intake is impacted by ice that accumulates along the river bank.
- Under low river flow conditions, operation of the existing intake mobilizes (draws in) fine sand from along the riverbank into the pumping station causing excessive or premature pumping equipment wear, and increased maintenance. The new location will not be impacted by fine sand.
- Existing intake withdrawals create inflow velocities that are not preventative of fish capture during all river flow conditions (0.5 feet per second or less). The new intake screens are designed to keep intake velocities under 0.5 feet per second.

- Finally, the new intake ensures that the Company is able to meet existing and emerging water quality standards, customer demand, new customer growth due to public water system expansion into areas of Litchfield, NH and Merrimack, NH impacted by groundwater contamination from Per- and Polyfluoroalkyl Substances (PFAS) compounds, and contractual water purchase agreements throughout the year.

Q. Does the Company intend to complete all of the work in 2019?

A. The project will be "used and useful" in 2019 with minor site restoration and tree plantings finished in the spring of 2020. Timing of the construction start will be most critical. The project requires work within the flowage of the Merrimack River. Environmental limitations primarily associated with migratory fish movement limits the in-river work period to late July, August, September, and October. The Merrimack River generally experiences lower flow during this period of the year making in-river work less challenging. Thus, it is critical that the contractor awarded the project be mobilized and ready to work within the river at the earliest possible moment. If the project can meet the anticipated schedule, a December 2019 completion is very likely.

Q. Please describe the estimated timeline required to complete the project in 2019.

A. The design of the MRI is complete. The NHDES has approved the design and authorized the Company to competitively bid the project. The project was publicly advertised on January 22, 2019. To meet the project schedule, the Company has elected to bid the project while concurrently seeking financing approval from the Pennichuck Board of Directors, the Company's shareholder (City of Nashua), and the Commission. In addition, the Company will finalize loan documents with the DWGTF for Governor and

Council approval contingent upon the approval of financing by the Commission. The list below provides an estimated timeline for the two projects:

Regulatory Approvals with Estimated Dates

1. Company Board Resolution approving DWGTF loan (vote by consent) – January 25, 2019.
2. File financing petition with Commission and Company Shareholder January 31, 2019.
3. NHPUC approval of Financing – February 2019.
4. Sign DWGTF Loan Documents April 2019.

Project Related Timelines (Estimated Dates)

1. Complete Engineering design (Complete).
2. Issue project documents for bid January 22, 2019.
3. Receive Bids February 28, 2019.
4. Award Contract April 2019 following Commission and G&C approval.
5. Construction begins May/June 2019.
6. Project substantial completion December 2019.

Q. Does this complete your testimony?

A. Yes.