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**STATE OF NEW HAMPSHIRE
BEFORE THE
NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION**

**RE: PENNICHUCK WATER WORKS, INC.
DW 21- xxx**

2021 QUALIFIED CAPITAL PROJECT ADJUSTMENT CHARGE FILING

**DIRECT TESTIMONY
OF
John J. Boisvert**

February 11, 2021

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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

1 1994. Prior to entering full time graduate programs at the University of New
2 Hampshire and Vermont Law School I was employed by Civil Consultants of
3 South Berwick, Maine as a Project Engineer from 1986 to 1989 and by
4 Underwood Engineers of Portsmouth, New Hampshire as a project Engineer
5 from 1985 to 1986.

6

7 **Q. What are your responsibilities as Chief Engineer of the Company?**

8 A. As Chief Engineer, I manage and oversee the Company's Engineering
9 Department. I lead the Company's Asset Management program. I, as head of
10 the Engineering Department, am responsible for the planning, design, permitting,
11 construction, and startup of major capital projects, including pipelines,
12 reservoirs/dams, building structures, pumping facilities, treatment facilities, and
13 groundwater supplies. The Engineering Department staff provides regular
14 technical assistance to the Company's Water Supply Department, Distribution
15 Department, Customer Service Department, and Senior Management.

16

17 **Q. What is the purpose of your testimony?**

18 A. My testimony will present the major Qualified Capital Projects initiated and
19 completed in 2020 as well as providing details of the major capital projects
20 planned and budgeted for 2021-2023 as part of the Company's 2021 Qualified
21 Capital Project Adjustment Charge ("QCPAC") filing. My testimony supports, and
22 is in addition to, testimony being provided by the Company's Chief Operating

1 Officer Donald L. Ware for this docket. Detailed project listings mentioned in this
2 testimony are detailed in Mr. Ware’s testimony (Exhibit DLW-1 Pages 1 – 6).

3
4 **Q. What types of projects can be described as “major capital projects”?**

5 A. Major capital projects require significant capital investment and are approved
6 annually in the Company’s capital budget by the Company’s Board of Directors.
7 Projects are associated with dams, treatment facilities, pumping facilities, storage
8 tanks, water main replacements, valve and hydrant replacements, building facility
9 improvements and refurbishments, as well as non-structural efforts to improve
10 Company performance, such as Asset Management. These generally include:

- 11 • The replacement of infrastructure that has reached the end of its useful
12 life, does not achieve the level of service required of it (water quality,
13 capacity, and efficiency), or the Company’s ability to properly maintain it
14 (outdated/lack of repair parts, etc.) is either impractical or more costly
15 than replacing it.
- 16 • Infrastructure upgrades to improve system performance.
- 17 • Investments to ensure compliance with the primary and secondary Safe
18 Drinking Water Act standards.
- 19 • Engineering studies and evaluations to assess infrastructure and system
20 performance to aid in planning future capital investment needs.
- 21 • The implementation of processes and systems such as Asset
22 Management, which incorporates/integrates Geographical Information
23 Systems (GIS), Computerized Management and Maintenance System

1 (CMMS- Oracle WAM now Cityworks as of 12/31/2020), electronic time
2 and record keeping, as well as inventory management, allowing the
3 Company to have access to the data and information needed to make
4 cost effective, immediate and long-term operations and planning
5 decisions.

6

7 **Q. What is the process that the Company employs and what are the factors**
8 **the Company considers when developing the capital budget for water main**
9 **replacements?**

10 A. The Company considers a number of factors in developing a capital budget for
11 water main rehabilitation, replacement, and/or new construction. The Company
12 is transitioning to an Asset Management based approach which considers risk of
13 asset failure, consequence of asset failure, the criticality of an asset, and
14 required level of service for all assets including:

- 15 ○ Water main break/failure history;
- 16 ○ Water quality problems;
- 17 ○ Fire protection flows;
- 18 ○ The proximity of and support provided to key critical customers (public
19 safety, government, hospitals, etc.);
- 20 ○ Coordination with gas company infrastructure replacement projects;
- 21 ○ Geographic grouping of streets where mains to be replaced/rehabilitated
22 for improved efficiency by keeping work in close proximity;

- 1 ○ The opportunity to take advantage of efficiencies gained from coordinating
2 with the City of Nashua (“City”) and Town of Amherst’s (“Town”) paving,
3 storm water and sewer projects, to replace water main where aging
4 unlined cast iron, steel, and Asbestos-Cement (“A-C”) water pipes are
5 present.
- 6 ○ Industry guidelines of the American Water Works Association for the
7 replacement of water main using an average life expectancy for water
8 main of 100 years absent specific information on a particular asset. The
9 Company considers this rate to be reasonable until the Asset
10 Management System allows for a more system/asset specific assessment
11 to be performed. It will remain important when the City or Town is working
12 on a street (either sewer replacement or total repaving) where the
13 Company has an unlined cast iron, steel, or A-C water main residing
14 under that street, for the Company to replace the water main in
15 coordination with the City or Town’s project. There are cost savings in
16 pavement repair and traffic control associated with completing projects
17 while the municipality or gas company is working on a street.

18 Furthermore, it is rare that the City can replace older sewers or storm drains and
19 not undercut existing water mains. Often, the water mains were installed in the
20 same trench as the sewer main, with the sewer main being installed first and the
21 water main laid higher in the same trench. This generally makes it impossible to
22 replace the sewer main without adversely affecting the integrity of the water
23 main. Unlined cast iron, steel, and A-C water main usually cannot survive loss of

1 soil support or the vibration from heavy construction equipment without
2 experiencing high levels of breakage. Municipal infrastructure replacement will
3 continue to be a major driver of our water main replacement for the foreseeable
4 future.

5

6 **Q. Please describe the pipeline composition of the Company's core water**
7 **distribution system.**

8 A. As of the end of 2020, the Company had just under 2,200,000 linear feet ("LF") of
9 water main in its core water system. The water main targeted for replacement
10 includes unlined cast iron water mains, steel and galvanized steel water mains,
11 and A-C water mains. The Company has approximately 235,000 LF of unlined
12 cast iron water main, approximately 5,000 LF of steel water main, approximately
13 6,500 LF of unknown material (likely cast iron), and approximately 202,000 LF of
14 A-C water mains in its core distribution system.

15 **Q. What are the major projects the Company started in 2020 that the Company**
16 **will be completing as part of the 2021 Capital Budget?**

17 A. The Company completed a number of water main replacement/additions in 2020.
18 The projects went used and useful just prior to winter. Final landscaping and
19 paving could not be completed in 2020 and this work will carry over into the 2021
20 budget. Two projects, the Kessler Farm Tank Replacement and the Coburn
21 Woods Water Main Replacement had delayed starts due to schedule impacts
22 due to Covid-19 protocols and policies. The Kessler Farm Tank was bid in 2020
23 with a construction start scheduled for March 2021. The Coburn Woods project

1 mobilized in November 2020. Some construction was completed but winter set in
2 halting work. Construction will resume in March/April 2021.

3 These 2020 carry over projects include:

4 Final Paving and/or restoration for Water Main Replacement

- 5 - Brook Street
- 6 - Hamilton Street
- 7 - Burritt Street (two sections)
- 8 - Verona Street
- 9 - Sarasota Avenue Street

10 Other Capital Projects

- 11 - Coburn Woods water main replacement
- 12 - Kessler Farm Tank Replacement
- 13 - Merrimack River Pump Station (Completion of system/equipment
14 upgrades for the third raw water pump and to provide an emergency
15 generator connection). The third pump is for redundancy in case of
16 failure of one of the other two pumps because two pumps are required
17 to generate the summer peak flows. It is the Company's intent to take
18 as much water from the Merrimack River as possible as the levels of
19 PFOA in the Merrimack River range between 3 and 5 parts per trillion
20 (ppt) versus the range of PFOA in the Pennichuck Brook Systems
21 between 15 and 35 ppt. The cost of electricity to run the Merrimack
22 pumps is less than 1/5th the cost of a carbon media change-out at the
23 filtration plant. Based on several years of filter media monitoring the

1 filter media would be exhausted every 18 to 24 months if it was
2 required to treat Pennichuck Brook water to levels of PFOA less than
3 12 ppt while the carbon media will last in excess of 60 to 84 months if it
4 is treating Merrimack River water for PFOA removal.

- 5 - Merrimack River Intake (Completion of the Source Water Protection
6 Plan)

7
8 **Q. What were the major water main projects completed in 2020?**

9 A. The following water main projects were completed in 2020 as part of the
10 Company's effort to replace aging infrastructure.

11 Lake Street Area Phase 2 (\$1,061,109)

- 12 - Fulton Street: Replaced 180 LF of 2" CL steel with 4" DIPCL
- 13 - Manatee Street: Replaced 240 LF of 6-inch CI with 8" DIPCL
- 14 - Ash Street: Replaced 480 LF of 6-inch CI with 8 and 6-inch DIPCL
- 15 - Pine Street, Manatee Street, and Sarasota Avenue: Intersection work
16 to cut in tees for Manatee Street and Sarasota Avenue.
- 17 - Brook Street: Replaced 225 LF of - inch and 915 LF of 6-inch CI with
18 1140 LF of 8-inch DIPCL
- 19 - Hamilton Street: Replaced 410 LF of 6-inch CI with 4-inch DIPCL
- 20 - Verona Street: Replaced 675 LF of 6-inch CI with 8-inch DIPCL
- 21 - Sarasota Avenue: Replaced 250 LF of 6-inch CI with 8-inch DIPCL

22 City of Nashua Sewer/Paving Related Projects (\$433,685)

- 1 - Crescent Street: Replaced 250 LF of 4-inch CI and 96 LF of 1 1/4 inch
- 2 CL with 150 LF of 4" PVC
- 3 - Crescent Street (paving contribution): Replaced 250 LF of 4-inch CI
- 4 and 96 LF of 1 1/4 inch CL with 150 LF of 4" PVC
- 5 - School Street: Replaced 400 LF of 4-inch CI with 680lf of 6-inch
- 6 DIPCL (created a looped pipe system)
- 7 - Ingalls Street Emergency water main replacement: Replaced 175 LF
- 8 of Galvanized pipe (1921) replaced with 4" PVC
- 9 - Walnut Street: Replaced 56 LF of 12" CI and 230 LF of 8" CI (1925-
- 10 unlined) with 286 LF of 12" DIPCL
- 11 - Walnut St (paving contribution): Paving Contribution for paving in 2021

12 These projects represent an investment of approximately \$1,495,000 in the
13 replacement of aging infrastructure.

14

15 **Q. Please identify and describe water main projects planned for 2021, 2022,**
16 **and 2023.**

17 A. Proposed water main construction and corresponding water main trench
18 restoration is presented, by year, below. The majority of the water main being
19 replaced is in Nashua and is near or greater than 100 years old. The pipe is
20 generally 2-inch through 8-inch diameter unlined cast iron pipe (CI). Most of this
21 pipe suffers from internal corrosion (tuberculation) resulting in substandard fire
22 flows. This internal corrosion also increases the risk of the delivery of
23 substandard quality water to our customers, including bacteria (from the potential

1 loss of chlorine residual) and colored water from flow fluctuation or pipe
2 disturbance. Some of the work in 2021 may be done in conjunction with sewer
3 improvements by the City of Nashua. The City schedules and completes their
4 work annually based upon a July 1st – June 30th fiscal year and does not finalize
5 and provide the Company with their capital project plans until March or April each
6 year.

7 Planned 2021 Water Main Replacements/Additions

8 Water main work is anticipated within the City and the Town of Amherst as part
9 of ongoing replacement of aging infrastructure. The projects total approximately
10 \$975,000 in reinvestment for new projects. Much of this effort will be
11 associated/coordinated with other utility work and road reconstruction.

12 Specific Projects are as follows:

- 13 - Coburn Woods (carry over): Replace 4400 LF of 2-inch PVC with 4-
14 inch DIPCL
- 15 - Balcom Street: Replace 1240 LF 6-inch CI with 240 LF 8-inch DIPCL
- 16 - Euclid Avenue: Replace 425 LF 6-inch CI with 425 LF 8-inch

17 Planned 2022 Water Main Replacements/Additions

18 Approximately 16,000 LF of water main replacement is anticipated in 2022.
19 Roughly 3,400 LF will be associated/coordinated with City sewer projects with
20 the remainder of the work consisting of aging infrastructure replacement at a
21 budget of approximately \$5,462,000. The specific locations include:

- 22 - Linwood Street: Replace 960 LF of 6-inch CI with 8-inch DIPCL

- 1 - Sargent Street: Replace 1900 LF 6-inch CI with 1900 LF 16-inch
- 2 DIPCL
- 3 - Courtland Street: Replace 1170 LF 4-inch CI with 1170 LF 16-inch
- 4 DIPCL
- 5 - Allds Street: Replace 1860 LF of 6 & 8 inch CI with 12-inch DIPCL
- 6 - Lawndale Avenue: Replace 1085 LF of 6-inch CI with 12-inch DIPCL
- 7 - Benson Avenue: Replace 550 LF of 4-inch CI with 8-inch DIPCL
- 8 - Spaulding Street: Replace 950 LF of 6-inch CI with 8-inch DIPCL
- 9 - Alstead Avenue: Replace 240 LF of 4-inch CI with 4-inch DIPCL
- 10 - Spaulding Avenue: Replace 430 LF of 6, 2, & 1.25-inch CI with 4-inch
- 11 DIPCL
- 12 - St Lazare Street: Replace 415 LF of 2-inch CI with 4-inch DIPCL
- 13 - Ingalls St (St Camille to end): Replace 200 LF of 1.5-inch CI with 4-
- 14 inch DIPCL
- 15 - Nye Avenue: Replace 400 LF of 2 & 1.5-inch CI with 4-inch DIPCL
- 16 - Copp Street: Replace 350 LF of 6-inch CI with 8-inch DIPCL
- 17 - Fairview Street: Replace 800 LF of 6-inch CI with 800 LF 8-inch
- 18 DIPCL
- 19 - Gray Avenue: Replace 360 LF of 6-inch CI with 6-inch DIPCL
- 20 - Temple St (south to Gorman St.): Replace 900 LF of 8-inch CI with
- 21 12-inch DIPCL
- 22 - School Street (High St. to W. Pearl Alleyway): Replace 400 LF of 4-
- 23 inch CI with 8-inch DIPCL

- 1 - Additional Water Main Replacement: To be determined
- 2 - 2022 Nashua City Sewer Projects: To be determined
- 3 - Fairview Street: Replace 800 LF of 6-inch CI with 800 LF 8-inch
- 4 DIPCL
- 5 - Sargent Street: Replace 1,900 LF of 6-inch CI with 1900 LF 16-inch
- 6 DIPCL
- 7 - Temple Street: Replace 900 LF of 8-inch CI with 12-inch DIPCL

8

9 Planned 2023 Water Main Replacements/Additions

10 Water main replacements total approximately 15,000 LF for 2023 at a budget of
11 \$4,600,000 and includes the following locations:

- 12 - City Sewer Projects: Replace approximately 3,100 LF of CI with
- 13 DIPCL
- 14 - Water Main Replacement: Replace approximately 12,000 LF of
- 15 various diameter CI, AC, and steel water main with DIPCL.

16

17 **Q. Your testimony states that water main replacement varies each year (2021-**
18 **2023) due to balancing the investment in water main replacements with**
19 **other major capital projects. What are those projects?**

20 A. The Company has typically targeted overall capital investment (reinvestment)
21 between \$8 million-\$12 million per year. The Company is limited to spending no
22 more than around \$11.5 million per year in total capital expenditures due to the
23 limits on the maximum amount that it can fund annually through its Fixed Asset

1 Line of Credit during construction. The Fixed Asset Line of Credit is
2 subsequently re-financed annually to long-term debt by issuing bonds using the
3 New Hampshire Business Finance Authority as its conduit to the tax-exempt and
4 taxable bond markets. Most of the investments are associated with horizontal
5 assets such as water main as opposed to vertical assets that including storage
6 tanks, pumping stations, treatment facilities, dams, and process related
7 improvements (SCADA, Asset Management, etc.) or run rate capital such as the
8 replacement of rolling stock, meters, radios, small pump and well replacements.
9 In some years there may be more need for more horizontal asset investment
10 rather than vertical assets. In other years the opposite may be true.

11 **Q. What were the other major projects completed in 2020?**

12 A. In 2019 the Company completed the replacement of the existing Merrimack River
13 Intake with the construction of a new deep-water Merrimack River Intake. A
14 requirement of the permit to construct the new intake was the initiation of a
15 Modified Source Water Protection Plan (SWPP) in accordance with NHDES
16 regulation. Work began on the SWPP in 2020 and the assessment of potential
17 threats to water quality will continue into 2021. As a continuation of the overall
18 plan, 2020 saw a third 350 horsepower raw water pump added to the Merrimack
19 River pumping station, including the modifications to the building structure to
20 facilitate pump removal in the future, as well as adding provisions for electrical
21 system upgrades scheduled for April/May 2021. These improvements were
22 placed into service in 2020 at a cost of approximately \$482,000.

23

1 Additional major projects completed in 2020 included the following:

- 2 - Final close out of the Northwest Distribution System Improvements project
3 that began in 2019.
- 4 - The Company's existing Computerized Management and Maintenance
5 System (CMMS), Oracle WAM, was replaced in 2020 with Cityworks. The
6 Company's current version of WAM was slated to be an unsupported
7 software application by Oracle in 2021, and as such, would either need to
8 be upgraded to the latest version of Oracle WAM, or replaced with an
9 alternative work order management system. The Company hired a
10 consultant to assess the impacts that the upgrade to the latest version of
11 the Oracle WAM software would have on our current system and business
12 processes. The consultant indicated that the Company would need to
13 invest over \$1,000,000 to upgrade to the new Oracle WAM version.
14 Further research completed by the consultant, as well as independent
15 research by Company staff, found the estimated cost to upgrade
16 consistent with what other utilities of similar size had incurred in
17 accomplishing this upgrade. In addition, the new Oracle WAM version
18 upgrade would not include some of the functionality used by the Company
19 which would continue to be needed by the Company going forward. As
20 such, the Company researched other CMMS vendors and identified the
21 "Cityworks" work order management application package as a viable
22 alternative to replace the Oracle WAM application. Cityworks would meet
23 the needs of the Company going forward at a significantly lower cost than

1 Oracle WAM. The Company then sought competitive proposals from
2 qualified Cityworks implementation vendors. The Company spent about
3 \$433,000 in 2020 to purchase the software and hardware in initiate the
4 implementation of Cityworks. The Cityworks system was tested in 2020
5 and prepared for the 12/31/2020 CMMS switchover from Oracle WAM to
6 Cityworks. The estimated remaining cost to complete the implementation
7 of Cityworks is budgeted at \$100,000 in 2021.

- 8 - An upgrade of the SCADA historian (long-term record storage) software
9 and hardware to ensure compliance/compatibility with current and future
10 version of the SCADA software. The upgrade will allow more streamlined
11 extraction of data into the Cityworks CMMS going forward. (\$55,000).
- 12 - Implementation of the Cityworks computerized, maintenance, and
13 management system software replacing the Company's outdated Oracle
14 WAM system.
- 15 - Fit up costs associated with the Company's move of its corporate office
16 from Merrimack to Nashua to more cost-effective space in a long-term
17 leasing arrangement. These costs include information systems hardware,
18 phone system components (which was slated for replacement regardless
19 of the office move, as the current phone system software was going
20 unsupported as of 2021), security systems, and building furniture, etc.
- 21 - Carbon filter media change out in filters #5 and #6 to ensure compliance
22 with changing NHDES regulation related to PFAS compounds (\$495,000).

- 1 - Development and certification of the Risk and Resiliency Assessment
2 (RRA) and the Emergency Response Plan (ERP) for the Nashua Core
3 system as required by Federal Law (\$117,000).

4

5 **Q. Please identify and describe other projects planned for 2021, 2022, and**
6 **2023.**

7 A. The projects are described by year below as follows:

8 2021 Vertical Projects

9 The 2021 budget includes improvements to the Harris Dam earth embankment
10 and dike (estimated cost - \$965,000). Improvements are in response to an
11 NHDES letter of deficiency and are needed to ensure the Harris Dam has
12 enough freeboard for the spillway to pass 2.5 times the 100-year flood based
13 upon updated NHDES 100-year flood events which were increase recently in
14 response to climate change predictions.

15

16 Supply Pond Dam will be evaluated in response to a Letter of Deficiency issued
17 by the NHDES. The primary focus will be on the spillway capacity to ensure that
18 the spillway can pass the required flood flows which were updated by the
19 NHDES as noted above. Design of the improvements will be completed in 2021
20 with bidding in early 2021 at an estimated construction cost of \$750,000.

21

22 The Company will begin the process of replacing customer meter radios that are
23 approaching the end of their useful life. The project is anticipated to take seven

1 years to complete resulting in radios being replaced between year 15 and 21 of
2 their lives. All the radios in question were installed in 2007 and are warrantied for
3 10 years. Annual radio failure rate has increased from about 0.5% per year to
4 just under 2% per year. The plan is designed to avoid mass failure of the radios.
5 Replacing radios at the time of failure results in an estimated meter read and a
6 special trip to the location of the failed radio to complete the radio replacement.
7 On average (based on system geography, typical 45 minutes in Nashua up to 2
8 hours in remote system) between \$146 and \$206 per replacement. This is
9 opposed to a dedicated, planned replacement program where all radios in a
10 remote area are replaced at once with one trip versus individual trips where the
11 time spent per radio replacement is no more than 15 minutes per radio resulting
12 in a replacement cost of about \$122. Extending the replacement plan over 7
13 years will allow the Company to view radio failure rates for radios between 15
14 and 21 years old and allow a better timing of the next set of radio replacements
15 while further spreading the radio replacements out over a longer period of time
16 than the original single year implementation. The 2021 budget for this effort is
17 \$425,000. This work will continue into and be further budgeted in 2022 and 2023
18 at \$520,000 per year.

19
20 The Kessler Farm Tank Replacement Project (estimated cost \$4,000,000) will
21 replace an existing 4.5 million gallon welded steel tank with a new 4.5 million
22 gallon precast, pre-stressed concrete tank. The interior and exterior coatings of
23 the existing steel tank, which were repainted in 2002, have reached the end of

1 their useful lives. The estimated cost to recoat the interior and exterior of the
2 existing tank would be in excess of \$1,000,000, and this repainting process
3 would need to be completed again in another fifteen years, based upon
4 experience. Replacing the existing tank with a new concrete tank, which does
5 not require significant annual or regular maintenance other than periodic
6 inspection and cleaning over an 80-year design life, brings significant long-term
7 economic advantages to bear, as compared to the painting/restoration of the
8 existing tank. As mentioned above, the steel tank was painted slightly more
9 than 15 years ago and would need to be painted 5 or more times (once every 15
10 years), at a cost of \$1,000,000 or more each time, over the next 80 years.
11 Replacement of the steel tank with a concrete will result in a net savings of more
12 than \$2,000,000 in maintenance cost (painting) over the 80-year design life.

13
14 The Company's existing Computerized Management and Maintenance System
15 (CMMS), Oracle WAM, was replaced in 2020 with Cityworks as mentioned earlier
16 in this testimony. The Company will be implementing the follow on modules of
17 that software that will allow the risk and criticality of Company assets to be
18 assessed leading to the risk based planning contemplated by Asset
19 Management. In addition, a second module of Cityworks is scheduled to be
20 implemented that will further automate the construction project management
21 process and allow for the movement and tracking of documents electronically
22 within the Company and to and from customers (homeowners, developers,

1 contractors, regulators, etc.). The budget to implement these two functions is
2 estimated at \$210,000.

3
4 The Company will also be completing engineering evaluations of the
5 recommendations stemming from the RRA and the ERP completed in 2020 with
6 the intent to plan and design projects for implementation/construction in 2022
7 and 2023.

8
9 2022 Vertical Projects

10 The replacement of the Milford Booster Station is also anticipated in 2021. The
11 replacement will eliminate an over 30-year old below ground, confined space
12 entry, EFI steel station with steel piping. The steel piping has developed several
13 small leaks and will continue to do so with more frequency until replaced. Station
14 and pumping equipment upgrades are being made to ensure the Company can
15 meet its contractual obligations to the Town of Milford for water purchases from
16 the Company. The current plan is to relocate the new station closer to the
17 Milford meter which will improve the water distribution system capacity and
18 performance by allowing two major pipeline branches to be closed into a loop.
19 Replacement of the Milford Booster station is estimated at \$800,000. Final
20 station size, location and need will be assessed in 2021, in partnership with the
21 Milford Water Department and the cost sharing of the station will subject to a new
22 Wholesale water contract that is subject to renewal by March 21, 2022.

23

1 In 2021 the Company will begin the process of replacing customer meter radios
2 that are at their useful life. The 2022 budget for this effort is \$520,000.

3
4 The Company plans to complete a reconstruction of the Bowers Dam spillway in
5 response to a letter of deficiency issued by the NHDES. The spillway
6 reconstruction will increase the capacity of the spillway to ensure passage of the
7 required flood flows and for more efficient operations of the overall required
8 height of the dam spillway, as required by NHDES revised 100-year flows. The
9 work will also include, depending upon the final analysis and design,
10 enhancements to the earthen abutments to increase stability and ensure against
11 overtopping during potential and designed for, flood events. The estimated cost
12 for this work is \$1,100,000.

13
14 The Company will implement, and construct projects designed in 2021 that
15 resulted from the recommendations of the Company's RRA and ERP in 2020. A
16 budget of \$500,000 is carried as a budget place holder in 2022. This budget will
17 be refined following the planning and design in 2021.

18

19 2023 Vertical Projects

20 The Company will implement, and construct projects designed in 2021 that
21 resulted from the recommendations of the Company's RRA and ERP in 2020. A
22 budget of \$500,000 is carried as a budget place holder for 2023. This budget will
23 be refined following the planning and design in 2021.

1

2 In 2021 the Company will be evaluated several pumping/booster stations for
3 rehabilitation due to age and performance. It is anticipated that replacement or
4 upgrades to at least one station will be necessary about every other year. The
5 Company has budgeted \$800,000 for this work in 2023.

6

7 It is anticipated that the next round of carbon media replacement will need to
8 begin in 2023 to comply with PFAS standards and is wholly dependent upon the
9 mix of Merrimack River and Pennichuck Brook water that the Company can use.

10 The first replacement is anticipated 4 years after the initial replacement based on
11 heavy use of Pennichuck Brook water during the summer of 2020 when the
12 Merrimack River Station capacity was limited to production of about 12 MGD
13 against seasonal demands of about 16 to 20 MGD. The replacement of media in
14 Filters #1 and #2 is budgeted at \$500,000.

15

16 **Q. Does this conclude your testimony?**

17 A. Yes.