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

**RE: PENNICHUCK EAST UTILITY, INC.
DW 20- ____**

2020 QUALIFIED CAPITAL PROJECT ADJUSTMENT CHARGE FILING

**DIRECT TESTIMONY
OF
John J. Boisvert**

February 11, 2020

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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. (“PWW”), which provides services to Pennichuck East Utility, Inc. (“PEU” or the “Company”) pursuant to a management allocation agreement. I have worked for PWW 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, &

1 Associates of Manchester, New Hampshire as a Project Engineer from 1992 to
2 1994. Prior to entering full time graduate programs at the University of New
3 Hampshire and Vermont Law School I was employed by Civil Consultants of
4 South Berwick, Maine as a Project Engineer from 1986 to 1989 and by
5 Underwood Engineers of Portsmouth, New Hampshire as a project Engineer
6 from 1985 to 1986.

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

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

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

19 A. I will be providing details of the major capital projects planned and budgeted for
20 2020-2022 as part of the Company's 2020 Qualified Capital Project Adjustment
21 Charge ("QCPAC") filing. This testimony will present the major QCPAC projects
22 initiated and completed in 2019 as well as proposed projects for 2020, 2021 and
23 2022. My testimony supports, and is in addition to, testimony being provided by

1 the Company's Chief Operating Officer Donald L. Ware for this docket. Detailed
2 project listings mentioned in this testimony are detailed in Mr. Ware's testimony
3 (Exhibit DLW-1 Pages 1 – 5).

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

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

- 12 • The replacement of infrastructure that has reached the end of its useful
13 life, does not achieve the level of service required of it (water quality,
14 capacity, and efficiency), or the Company's ability to properly maintain it
15 (outdated/lack of repair parts, etc.) is either impractical or more costly
16 than replacing it.
- 17 • Infrastructure upgrades to improve system performance.
- 18 • Investments to ensure compliance with the primary and secondary Safe
19 Drinking Water Act standards.
- 20 • Engineering studies and evaluations to assess infrastructure and system
21 performance to aid in planning future capital investment needs.

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

4 A. The Company considers a number of factors in developing a capital budget for
5 water main rehabilitation, replacement, and/or new construction. The Company
6 has completed the first phase of its Asset Management Initiative. The Company
7 has inventoried its pipeline assets and documented them within the GIS. An
8 initial condition assessment and a preliminary evaluation of the consequence of
9 failure of certain water main assets has been completed. The effort thus far is
10 serving as an effective tool to determine which assets are most critical and
11 should be evaluated in more detail for possible inclusion in the current 2020 –
12 2022 capital budget. During 2020 and 2021 upon the transition to a new
13 Computerized Management and Maintenance software, the Asset Management
14 Initiative will be expanded its focus to look more closely at specific assets to
15 identify the risk of failure, whether it be a structural failure (break) or the asset is
16 not attaining the required level of service (water quality, flow, or pressure) to
17 guide future capital expenditures. The Asset Management approach considers
18 the following for all assets including:

- 19 • Water main break/failure history;
- 20 • Water quality problems;
- 21 • Fire protection flows;
- 22 • The proximity of and support provided to key critical customers (public safety,
23 government, hospitals, etc.;

- 1 • Coordination with gas company replacement projects;
- 2 • Geographic grouping of streets where mains to be replaced/rehabilitated for
- 3 improved efficiency by keeping work in close proximity;
- 4 • The opportunity to take advantage of efficiencies gained from coordinating
- 5 with the paving, storm water and sewer projects of Cities and Towns served
- 6 by the Company, to replace water main where substandard plastic water
- 7 pipes are present.
- 8 • Industry guidelines of the American Water Works Association for the
- 9 replacement of water main using an average life expectancy for water main of
- 10 100 years absent specific information on a particular asset. The Company
- 11 considers this rate to be reasonable until the Asset Management System
- 12 allows for a more system/asset specific assessment to be performed. It will
- 13 remain important when a City or Town is working on a street where the
- 14 Company has substandard plastic water main for the Company to replace the
- 15 water main. There are cost savings in pavement repair and traffic control
- 16 associated with completing projects while the municipality or other utility
- 17 company is working on a street.

18 Replacement of aging and substandard infrastructure will continue to be a major

19 driver of the Company's water main replacement for the foreseeable future.

20

21 **Q. Were there any major projects the Company started in 2019 that the**

22 **Company will be completing as part of the 2020 Capital Budget?**

1 A. Yes. The Company continues to plan and design for improvements to the Locke
2 Lake Community Water System (Locke Lake) anticipated for construction in 2019
3 and 2020. The planning and evaluation was initiated in 2019 and is continuing
4 into 2020.

5
6 **Q. What were the major water main projects completed in 2019?**

7 A. The following projects were completed in 2019 :

8 Rolling Hills CWS – Plaistow

9 The Company replaced an estimated 755 LF of substandard 2 inch plastic pipe
10 with 794 LF of 6 inch DICLP. The original 2 inch pipe (constructed in the 1970's
11 long before PEU ownership) ran through private property and under a deck and
12 other out structures of the property owner. The original pipe leaked and could
13 not be readily repaired due to the proximity of the private structures. The
14 Company constructed the new water main within the public roadway and
15 reconnected house services to the new water main. The original 2 inch pipe was
16 retired from service. The project costs in 2019 was approximately \$188,000. An
17 additional \$32,000 will be spent in 2020 on site restoration and pavement repair.

18 Locke Lake CWS

19 The Company completed water main replacement on the following locations:

20 Georgetown Drive: Replaced 4600 LF of 4 inch schedule 40 PVC with 6 inch
21 C900 PVC

22 Bradford Lane: Replaced 1825 LF of 4 inch schedule 40 PVC with 6 inch C900
23 PVC

1 North Barnstead Road: Added 680 LF of 4 inch C-900 PVC to eliminate dead
2 end. Replaced 275 LF of 4 inch sch 40 PVC with 6 inch C900 PVC
3 Belmont Drive: Replaced 500 LF of 4 inch schedule 40 PVC with 6 inch C900
4 PVC

5
6 **Q. Please identify and describe water main projects planned for 2020, 2021,
7 and 2022.**

8 A. Planned water main replacements and additions are listed below by year.

9 2020 Water Main Replacements/Additions

10 The continues to focus a significant amount of water main replacement in its
11 Locke Lake CWS in Barnstead, NH. Supply concerns, discussed later in this
12 testimony and leakage from substandard water pipe are priority concerns for the
13 Company. The Company plans to complete the following water main
14 replacements and additions in 2010

15 Route 28: Replace 720 LF of 2 inch PE pipe with 4 inch C-900 PVC

16 Locke Lake CWS

17 North Barnstead Road: Eliminate a dead-end piping by adding 680 LF of 4
18 inch C-900 PVC. Replace 275 LF of 4 inch sch 40 PVC with 6 inch C-900 PVC.

19 The Locke Lake work is being funded by a NH SRF loan approved by NH PUC
20 Order No. 26,819. The total loan amount approved by Order No. 26,819 is
21 \$4,240,000 to cover three projects at Locke Lake. The water main replacement
22 project (2019 – 2020) is estimated at \$1,400,000, of this total authorized amount.

23

1 The Company is also redirecting water from its Airstrip Well away from its current
2 treatment facility on North Barnstead Road to the Peacham Road treatment
3 facility. Water from the Airstrip well will be treated for iron, manganese, and
4 arsenic at Peacham Road at a considerably lower cost than the current
5 adsorptive media proves. The project involves the installation of approximately
6 1300 feet of 4 inch C-900 PVC raw water main on South Shore Road and
7 approximately 1000 feet of 3 inch HDPE water main installed in an 8 inch HDPE
8 sleeve under Locke Lake between Georgetown Road and Varney Road.
9 Installation of the sleeve will be by horizontal directional drilling. The Company is
10 seeking a license to cross under Locke Lake from the Commission in DW 19-
11 198. All easements for the project have been secured. The estimated cost for
12 this project is \$540,000. the company has seen adsorptive media change outs
13 go from one per year to two or more per year at the 10 parts per billion (ppb)
14 standard. Each change out costs the Company approximately \$40,000. The
15 NHDES recently promulgated a lower standard for arsenic. The new standard is
16 reduced to 5 ppb as of July 1, 2021. The lower standard will increase the
17 number of media change outs to approximately 4 per year at a cost of \$80,000.
18 In contrast treating the water at the Peacham Road treatment facility using
19 coprecipitation/filtration will result in a much lower treatment cost of
20 approximately \$2,000 per year. This operational savings will help offset the
21 principal and interest payments of the pipeline as well as the property taxes
22 associated with the capital investment. Once the Airstrip Well is connected to the

1 Peacham Road treatment facility, the current Airstrip Station can be
2 decommissioned and retired removing it from property tax rolls.

3 Other PEU Water Systems

4 The Company will be replacing approximately 1600 LF of 3 inch PE with 12 inch
5 C-900 and add 775 LF of 12 in C-900 Monticello Drive & Lane Road in the
6 Williamsburg system in Pelham, NH. The project replaces substandard 3 inch
7 polyethylene piping and adds new water main to connect two dead end mains.
8 The work will improve flow and reliability to this area of Pelham and also takes
9 advantage of a savings in pavement costs because the finished paving is being
10 completed by a private party as part of a separate project. The estimated cost of
11 the project is \$239,000 and will be funded with a loan from CoBank.

12 2021 Water Main Replacements/Additions

13 There are no planned water main additions or replacements planned for 2021.
14 Water main work was deferred from this year due to the large investment in the Locke
15 Lake surface water treatment plant of \$1,900,000 being completed in this year.

17 2022 Water Main Replacements/Additions

18 Gage Hill CWS

19 The Gage Hill water system in Pelham, NH is another system the Company
20 acquired with substandard small diameter plastic pipe. The system has
21 experienced 35 breaks over the past 5 years. Those leaks have impacted
22 service to the customer and present risk of contamination due to
23 depressurization. The project will replace main at the following locations.

1 Wellesley Drive: Replace 1760 LF of 2 inch PE with 1760 LF of 4 inch C900 PVC

2 Radcliffe Drive: Replace 720 LF of 1.5 inch PE with 720 LF of 4 inch C900 PVC

3 Vassar Drive: Replace 1740 LF of 2 inch PE with 1740 LF of 4 inch C900 PVC

4 The estimated budget for this project is approximately \$590,000.

5 The Company will be applying to the NH SRF for loans and the NH DWGTF for

6 loans and grants to fund water main projects once the application process opens

7 each year (May and June) for projects planned in 2021 and 2022.

8 **Q. Your testimony states that water main replacement varies each year (2021-**
9 **2022) due to balancing the investment in water main replacements with**
10 **other major capital projects. What are those projects?**

11 A. The Company has typically targeted overall capital investment (reinvestment)
12 between \$1 million-\$2 million per year as necessary. Most of the investments
13 are associated with horizontal assets such as water main. Other major capital
14 projects are associated with vertical assets, including storage tanks, pumping
15 stations, treatment facilities, source of supply and process related improvements
16 (SCADA, Asset Management, etc.). In some years there may be more need for
17 horizontal asset investment rather than vertical assets. In other years the
18 opposite may be true.

19 2020 Vertical Projects

20 Atkinson CWS Station Reconstruction

21 The Company has budgeted \$530,000 (budget has \$30,000 for design and

22 \$500,000 for Station rebuild) to reconstruct and existing water pumping and

23 storage facility that serves a limited area in the Town of Atkinson. The station

1 pumping and piping equipment are beyond the design life and have deteriorated
2 where replacement is necessary. The storage tanks are buried steel and show
3 signs of significant corrosion. The tanks need to be replaced. Finally, the station
4 is required to provide limited fire protection. Existing storage volumes and
5 pumping equipment are not meeting both domestic and fire protection flows. The
6 upgrades are expected to be complete in 2020.

7 Locke Lake CWS Barnstead, NH

8 The Company is operating the Locke Lake CWS under an order from the NH
9 DES and a Corrective Action Plan (CAP) approved by the NH DES to develop
10 additional water source(s) for Locke Lake. The Company continues to pursue
11 additional sources of water for the Locke Lake CWS. The evaluation of Locke
12 Lake as a new surface water source will continue to be assess through a
13 treatment evaluation including water sampling/monitoring and pilot testing
14 different treatment technologies to determine the appropriate technology to treat
15 raw water from Locke Lake/Webster Stream. The Company has selected
16 ultrafiltration membrane filtration to treat the raw water and 2020 will see the final
17 design, permitting and the initial stage of construction of upgrades to the
18 Peacham Road treatment facility to accommodate the membrane filters and
19 supporting equipment. Once the appropriate technology is determined and with
20 the concurrence of the NH DES, the Company will complete the final design and
21 prepare bid documents for construction in 2020. The need for the project was
22 detailed in the Company's petition for financing through the NH SRF (DW 18-
23 132) and as approved in NH PUC Order No. 26-189. The Company has

1 budgeted approximately \$835,000 for work in 2020 and \$1,065,000 in 2021 to
2 complete the project.

3 Londonderry Core Londonderry, NH

4 The Company had planned to replace Gilcrest Road Pressure Reducing Valve
5 (PRV) Pit in 2019. The pit is a converted below ground vault that was installed in
6 the late 1980's. The internal piping is corroded, and several leaks have been
7 repaired. The PRV's in the pit reduce the pressure from the elevation 620 foot
8 pressure zone down to the 498 foot pressure zone in the Londonderry Core. The
9 addition of a second PRV vault as part of the Woodmont Commons development
10 will replace the Gilcrest PRV pit. The change in how water will be fed into the
11 Londonderry system, as discussed below, provides system redundancy and
12 eliminates the need to rebuild the Gilcrest PRV pit.

13 The Company planned to design and permit a 1.25 million gallon water storage
14 tank to address water supply capacity shortfalls in the Londonderry Core
15 system.as documented by the NH DES in their Sanitary Survey dated January 9,
16 2018. The private development is prepared to contribute 51% of the cost of the
17 tank. Additionally, the construction of the tank will reduce the Company's
18 purchased cost of water from Manchester Water Works. The Company sought
19 and received, through its petition to the Commission (DW 18-101), an approval of
20 a Special Contract with a private entity, Pillsbury Realty Development, LLC
21 ("Pillsbury") for Pillsbury to fund approximately 51% of the project cost.

22 Pillsbury's contribution is the result of their impact on the Londonderry water
23 system from a significant development (Woodmont Commons) that Pillsbury is

1 constructing. The elevated tank required a variance due to its height at the
2 location it was to be constructed

3 Unfortunately, the Londonderry zoning board of adjustment denied the variance
4 in November 2019. Since the denial of the variance, PEU has engaged the
5 services of an engineering consultant to assess other water supply storage and
6 distribution options to achieve the objectives of the original elevated storage tank
7 project and assess the relative costs. During this evaluation process, PEU
8 engaged in discussions with Town of Londonderry staff, our consultants, the NH
9 Department of Environmental Services (NHDES) to advise local officials of the
10 need to make system improvements of which the most technically feasible
11 options include water storage to meet existing water demand conditions
12 regardless of Woodmont Commons. In addition, PEU met with representatives
13 of Pillsbury to present system improvement options that achieve PEU's
14 responsibilities as the public water utility and meet the needs of the Woodmont
15 Commons development consistent with the Special Contract approved by the
16 Commission in Order 26,285. During these discussions, a number of
17 opportunities were discovered or offered by Woodmont Commons that advanced
18 technical alternatives previously unavailable to PEU and would result in similar
19 rate impact to the elevated tank option (originally identified as the "least cost
20 option"). PEU intends to present a new alternative consisting of a ground level
21 storage tank, transmission main, and water booster pumping station. This
22 alternative revises the project scope but is consistent with the cost sharing

1 arrangements with Pillsbury in the Special Contract approved in Order No.
2 26,285.

3 The Company plans to complete the project (used and useful) in 2020. However,
4 depending upon the timing of local permits (Planning Board) and re-approval of
5 the Special contract by the Commission. The project may take 12 to 18 months
6 to complete depending upon when construction can start. The Company
7 estimates its total project expenditure to be \$1,545,000. The project will be
8 financed the cost through CoBank. Once the Project is completed, the Company
9 projects its purchased water costs from Manchester Water Works to the
10 Londonderry Core to be about \$71,000 per year less than before the tank was
11 constructed.

12 2021 Vertical Projects

13 Sunrise Estates CWS Middleton, NH Pumping Station and Storage Tank

14 Replacement

15 The Company will construct a new water booster pumping station and replace
16 the storage tanks at the Sunrise Estates CWS in Middleton. The station and
17 tanks are original to the water system. The structure (partially buried in the
18 ground, the piping internal to the station, and the water storage tanks have
19 passed beyond their useful life. The Company is planning to engineer a new
20 station and storage in 2020. The project will be bid late in 2020 for construction
21 in 2021. The estimated cost of the project is \$300,000.

23 Locke Lake CWS Barnstead, NH

1 The Company will continue the work to complete the development/construction of
2 a new surface water source that began in 2020. The project is receiving financing
3 through the NH SRF (DW 18-132) and was approved in NH PUC Order No. 26-
4 189. The Company has budgeted \$1,065,000 for the project in 2021 bringing the
5 total estimated cost of this project to \$1,900,000.

6 2022 Vertical Projects

7 There are no major vertical capital projects planned for 2022 at this time.

8 **Q. Are there other capital expenditures completed in 2108 and/or proposed for**
9 **2020, 2021, and 2022 that the Company plans to complete?**

10 A. Yes. The Company has a number of routine capital activities that are not
11 classified as “major” but are necessary to operate the business and serve our
12 customers. Some examples are as follows:

- 13 • The Company carried budgets for well rehabilitation, pump replacements,
14 SCADA improvements, security enhancements, along with other treatment
15 and pumping equipment. The Company also budgets a number of hydrant,
16 valve, and service (main to stop) replacements each year.

17 These Capital expenditures will be funded through a loan from CoBank.

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

19 A. Yes.