

EXHIBIT V

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

AQUA PENNSYLVANIA WASTEWATER, INC.

DOCKET NO. A-2022-3033138

AQUA STATEMENT NO. 2

**DIRECT TESTIMONY OF
MARK J. BUBEL, SR.**

**With Regard To
Description of the System
Environmental Compliance**

February 2023

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1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Mark J. Bubel, Sr. My business address is 762 West Lancaster Avenue, Bryn
4 Mawr, Pennsylvania 19010.

5
6 **Q. By whom are you employed and in what capacity?**

7 A. I am employed by Aqua Pennsylvania, Inc. (“Aqua PA”) as a Project Engineer III.
8

9 **Q. Please provide a brief description of your education and work experience.**

10 A. I received a Bachelor’s of Science Degree (B.S.) in Civil Engineering in 1980 from Lehigh
11 University and a Master’s Degree in Civil Engineering (M.C.E.) with a concentration in
12 Environmental Engineering in 1983 from Villanova University. I have worked in various
13 engineering roles and have over 40 years of experience in environmental engineering
14 related to municipal and industrial wastewater treatment and operations. I have worked at
15 Essential Utilities, Inc. *f/k/a* Aqua America, Inc. since 2003 in roles related to wastewater
16 treatment facilities including planning, design, start-up, and operational troubleshooting. I
17 am a Registered Professional Engineer in Pennsylvania, Delaware, Maryland, North
18 Carolina, and Florida. I am also a Licensed Water and Wastewater Operator in
19 Pennsylvania.

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1 **Q. Have you previously testified before the Pennsylvania Public Utility Commission**
2 **(“PUC” or the “Commission”)?**

3 A. Yes. I provided testimony in Aqua Pennsylvania Wastewater, Inc.’s (“Aqua” or the
4 “Company”) New Garden, Limerick, East Bradford, Cheltenham, East Norriton, Delaware
5 County Regional Water Quality Control Authority, Lower Makefield, Willistown, and East
6 Whiteland Section 1329 Application proceedings at Docket Nos. A-2016-2580061, A-
7 2017-2605434, A-2018-3001582, A-2019-3008491, A-2019-3009052, A-2019-3015173,
8 A-2021-3024267, A-2021-3027268, and A-2021-3026132 respectively. I also provided
9 testimony in Aqua PA and Aqua’s 2018 base rate case proceeding at Docket Nos. R-2018-
10 3003558 and R-2018-3003561

11

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

13 A. The purpose of my testimony is as follows: (1) to provide a general description of the
14 acquired system and (2) to discuss environmental compliance of the System.

15

16 **Q. Are you sponsoring any Exhibits with the Company’s filing?**

17 A. Yes. Attached to my direct testimony as Appendix A is Aqua’s 10-year capital plan for
18 the City of Beaver Falls (“City” or “Beaver Falls”) wastewater collection and treatment
19 system (“System”).

20

21

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1 **II. OVERVIEW OF AQUA AND THE BEAVER FALLS SYSTEM**

2 **Q. Please provide a general overview of Aqua.**

3 A. Aqua, a subsidiary of Aqua PA, is engaged in the business of collecting, treating,
4 transporting, and disposing of wastewater for the public. Aqua serves approximately
5 60,000 customers in Adams, Berks, Bucks, Carbon, Chester, Clarion, Clearfield, Delaware,
6 Lackawanna, Luzerne, Monroe, Montgomery, Pike, Schuylkill, Venango, and Wyoming
7 Counties. Aqua operates 39 wastewater treatment plants (“WWTP”) throughout the
8 Commonwealth of Pennsylvania, and four systems of Aqua’s Western Division are in
9 proximity to the City allowing for operational efficiencies. Aqua, and its parent company
10 Aqua PA, have approximately 600 employees bringing extensive expertise in providing
11 water and wastewater service to citizens of Pennsylvania.

12
13 **Q. Please provide a description of the Beaver Falls System.**

14 A. The City is located in the north central part of Beaver County, Pennsylvania and the entirety
15 of the City is served by a public sewer system. The Beaver Falls System is a collection,
16 conveyance, and treatment system owned by the City that collects wastewater from within
17 City and from the seven contributing municipalities – Big Beaver Borough, West Mayfield
18 Borough, White Township, Patterson Township, Patterson Heights Borough, North
19 Sewickley Township, and Eastvale Borough, collectively the “Contributing
20 Municipalities”. The wastewater from North Sewickley and Eastvale is pumped via the
21 Eastvale pump station into the City and then flows by gravity sewers to the City owned
22 wastewater treatment plant (“WWTP”). The other Contributing Municipalities’ flow is

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1 pumped via pump stations owned by those municipalities and flows into the City via
2 gravity sewers to the WWTP.

3 Description of the System

4 The City WWTP began treatment of wastewater in about 1938. The plant receives
5 flow from the Contributing Municipalities from one force main and gravity sewers. Flow
6 from the one force main discharges to gravity sewer about mid-way through the City's
7 collection system. The plant raw wastewater influent structure provides fine screening
8 meters and diverts the flow into three primary clarifiers, which are operated in parallel, for
9 gravity settling to remove heavy inorganic and organic solids as well as to reduce
10 biochemical oxygen demand ("BOD5"). Following the primary clarifiers, further
11 reduction of BOD5 (sufficient to also allow nitrification) occurs biologically in the two
12 circular trickling filters ("TFs") which provides fixed film biological treatment of the
13 wastewater. Final settling is achieved following the TFs in five final settling tanks. The
14 final treatment step prior to discharge to the Beaver River is chlorine gas disinfection.

15 Wastewater solids produced during primary clarification are pumped through
16 cyclone de-gritters where grit is removed from the wastewater and separated into a sanitary
17 waste bin for landfill disposal.

18 The City WWTP is permitted at an annual average flow of 4.8 million gallons per
19 day ("MGD") and has a maximum monthly average flow of 2.59 MGD. The 2021 annual
20 average flow was 2.02 MGD and the 3-month maximum average flow was 2.3 MGD. The
21 WWTP is permitted for a maximum organic loading of 9,207 pounds per day (lbs./day).
22 The 2021 maximum month organic loading was 6,225 lbs./day.

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1 The City collection and transmission piping is summarized in the Engineering
2 Assessment included as Exhibit D to the Application.

3

4 **Q. Please provide the elevations for the City WWTP, Eastvale Pump Station, and the**
5 **Requested Territory.**

6 A. City WWTP: elevation generally varies between EL 722 to EL 738.

7 Requested Territory: Area elevations vary generally from:

- 8 • EL 885 to EL 1150 along the western boundary.
- 9 • EL 720 to EL 985 along the southern boundary.
- 10 • EL 755 to EL 850 along the northern boundary.
- 11 • EL 720 to EL 820 along the eastern boundary.

12 Eastvale Pump Station: The Pump Station elevation is approximately EL 741.

13

14 **Q. Please state the approximate time of the installation of the component facilities of the**
15 **system.**

16 A. With regard to the approximate time of the original construction, the City's WWTP was
17 constructed and placed in service in approximately 1938 and provided basic primary
18 treatment. The plant was most recently upgraded in 1996 with the installation of a second
19 oxidation tower, three additional final settling tanks, a grit wash and grease separator
20 building, aerated sludge holding tank, thickened sludge storage tank, and upgrades to the
21 garage, belt filter press and secondary pump station.

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1 The majority of the City System was originally constructed between 1936 and 1938
2 with the above-described additions made in the 1990s. The average age of the pipe in the
3 City System is approximately 74 years old.

4

5 **Q. Is Aqua planning any capital projects over the next 10 years?**

6 A. Yes. Aqua looked at upgrades to the treatment plant, and gravity collection systems based
7 on facility conditions observed, facility age, and safety. Aqua estimates that it will invest
8 approximately \$10.2 million over the next 10 years.

9 Upgrades to the treatment plant include improvements to filter tower No. 1 and
10 sludge collectors, along with electrical work associated with the Supervisory Control and
11 Data Acquisition (“SCADA”) systems to provide greater assurance of continued process
12 control and compliance. Aqua also plans to complete headworks upgrades and gas to liquid
13 chlorine conversion to improve safety. Gravity collection system pipe rehabilitation and
14 replacement will occur based on an assessment of pipe age and condition. Aqua will work
15 with City and the DEP to address the inflow and infiltration (“I&I”) and sanitary sewer
16 overflows (“SSOs”) within the System if they were to occur. Aqua will also work with the
17 Contributing Municipalities regarding the Corrective Action Plans (“CAP”) of those
18 Contributing Municipalities. There were no reported SSOs in 2020 or 2021 as reported in
19 the respective Chapter 94 Reports.

20

21 **Q. Do you foresee any other projects that would be required in the immediate future?**

22 A. Replacement and upgrade of facilities will continue beyond Aqua’s 10-year capital plan
23 based on facility age and expected facility life span.

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Q. Please state the actual number of City customers by class and gallons billed. The City has 3,190 customers and 7 Contributing Municipalities. The breakdown by customer class and usage is shown in the below table.

Service Area	Residential	Commercial	Public	Industrial	Contributing Municipalities	Bulk Other (Dalton)	Total
Beaver Falls	2,879	276	17	7	7	1	3,187
Gallons	109,238,000	44,017,000	4,710,000	2,708,000	177,925,000	1,762,115	340,360,115

Gallons billed in the above table are based on water meter data. Total Gallons treated at the City WWTP for 2021 was 738,580,000.

Q. Are the acquired City customers currently Aqua PA water customers?

A. No. City wastewater customers are currently served by the Beaver Falls Municipal Authority within the City.

III. ENVIRONMENTAL COMPLIANCE

Q. Does the Application include National Pollution Discharge Elimination System (“NPDES”) permits?

A. Yes, the NPDES discharge permit for the City WWTP is included in the Application as Exhibit N1.

Q. Does the Application include Water Quality Management (“WQM”) Permits?

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1 A. Yes. The WQM permits for the City WWTP and Eastvale Pump Station are included with
2 the Application as Exhibit M1 and M2.

3

4 **Q. Are Act 537 plans included in the Application?**

5 A. Yes. The City's Act 537 plan is included with the Application as Exhibit P1.

6

7 **Q. Are there any Notices of Violation ("NOV") issued to City by the DEP in the last five**
8 **years?**

9 A. Yes. The City received an NOV in July 2021 related to total suspended solids ("TSS")
10 violation and from the sampler refrigerator which was not keeping the sample at six degrees
11 Celsius. No formal action was taken as the TSS violation was noted in the March 2021
12 discharge monitoring report, and a new sampler and industrial refrigerator was already
13 ordered to replace the existing refrigerator.

14 The City received an NOV in August 2017 and November 2018 related to effluent
15 limitation exceedances of its NPDES permit, and had noted exceedances in an August 2019
16 inspection report. The City provided a response in August 2017 to address DEP's letter.
17 The City provided an email response to the November 2018 NOV related to the by-pass
18 plant flow during a 6.05 inch rain event (discussed below); there was not a formal letter
19 response. The effluent exceedances during this time period were addressed in a Consent
20 Assessment of Civil Penalty ("CACP") discussed below.

21

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23 **Q. Were there any other environmental issues concerning the System the last five years?**

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1 A. The City experienced a secondary bypass of 1,035,000 gallons in September 2018 due to
2 high levels of rainfall. This incident was reported to DEP via email included in Exhibit O1
3 to the Application. Aqua understands that the November 2018 NOV resulted from
4 discharge monitoring report (“DMR”) exceedances from July 2017 to June 2018.

5
6 **Q. Have there been any CACPs entered into by the Township and the DEP?**

7 A. Yes. The City entered into a CACP with DEP in 2019 for failure to comply with effluent
8 limitations under its NPDES permit on multiple occasions from 2016-2019. The City
9 agreed to pay \$8,500 to resolve the exceedances during this period. The CACP is included
10 with the Application as Exhibit O2.

11
12 **Q. Please state if there are any current environmental compliance issues for the City**
13 **System.**

14 A. The City is currently under a CAP on file with DEP. The CAP is included in the
15 Application as Exhibit O3. The CAP does not require physical upgrades to the system, but
16 does require updating the existing sewer collection system mapping, administering the Tap
17 Control Plan (Connection Management Plan), and continuing to prevent unpermitted
18 discharges. The Contributing Municipalities also have CAPs submitted to DEP, except
19 Eastvale Borough, Patterson Heights Borough, and West Mayfield Borough who have not
20 submitted a CAP to DEP. Aqua believes that what prompted DEP to require a CAP was
21 the fact that there were a number of City customers who would experience basement
22 flooding due to surcharged sewers in rain events even though the City’s collection is not a
23 combined system, that is, conveying both sanitary and stormwater flow. As Aqua

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1 understands, the City addressed the basement flooding condition through the installation
2 of backflow prevention devices on the subject customer laterals.

3 The Company's review of the flow and billing data from the City indicates that
4 there is likely I&I present in the system. While this is expected for a system of this age,
5 Aqua has planned main and manhole repairs in its capital plan and will continue reviewing
6 ways to address sources of I&I within the system. Aqua plans on conducting manhole
7 inspections as well as developing a Geographic Information System ("GIS") map of the
8 collection system to supplement and confirm work that the City has also conducted as part
9 of the CAP. This work is planned for the first full year of ownership and budgeted to cost
10 approximately \$80,000. In addition, flow metering of the collection system will be
11 conducted to identify basin areas contributing the greatest amount of flow in comparison
12 to the City customers present within the basin areas, thereby providing targeted areas for
13 Closed Circuit Television ("CCTV") and subsequent I&I repair work. This study may cost
14 approximately \$100,000. Sanitary sewer lateral repair work is also included in the capital
15 plan to be conducted on an annual basis; \$50,000 per year has been budgeted. Laterals can
16 be a significant source of I&I present within a system.

17 CCTV inspection of pipes will be conducted following completion of the temporary
18 flow metering program once those basin areas identified as generating the greatest amount
19 of I&I can be determined. CCTV work is presently planned for years 4 through 6 after
20 taking ownership of the system and is projected to cost approximately \$375,000.
21 Prioritized sewer main rehabilitation and replacement will be conducted in the same time
22 period and \$90,000 has been allocated; a total of just over \$2 million has been budgeted in
23 years 8 through 10 for sewer main rehabilitation and replacement to address the defects

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1 identified during the CCTV phase of the work. \$400,000 has been allocated for manhole
2 rehabilitation during the same period. Aqua’s 10-Year Capital Plan is attached to my Direct
3 Testimony as Appendix A.

4

5 **Q. Are there any noncompliance issues pending with the United States Environmental**
6 **Protection Agency (“EPA”)?**

7 A. None of which Aqua is aware.

8

9 **Q. Please state the estimated number of future connections for the system for the next 5**
10 **years.**

11 A. The below table provides projected equivalent dwelling units (“EDU”) for the next five
12 years (2022-2026):

Year	2022	2023	2024	2025	2026	Total
City	36	34	36	38	39	183

13

14 **Q. Is there present system capacity to meet the demands of current and future**
15 **customers?**

16 A. Yes. Based upon the permitted capacity of the WWTP at 4.8 MGD, the average annual
17 flow ranging from 2-3 MGD over the last five years, and the projected EDUs over the next
18 five years, there is system capacity to meet the demands of present and future customers.

19

20

21 **IV. CONCLUSION**

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

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- 1 A. Yes, it does. However, I reserve the right to supplement my testimony as additional issues
2 and facts arise during the course of this proceeding.

Appendix A

	System Component	Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOTAL
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
1	Safety Measures (Safety)	Miscellaneous	\$ 75,000										\$ 75,000
2	Collection (Compliance)	MH Inspections / GIS Based Map Creation	\$ 80,000										\$ 80,000
3	Collection (Compliance)	Temporary Metering Program	\$ 100,000										\$ 100,000
4	Collection (Compliance)	CCTV Main Inspections				\$ 125,000	\$ 125,000	\$ 125,000					\$ 375,000
5	Collection (Compliance)	MH Rehabilitation							\$ 100,000	\$ 100,000	\$ 200,000		\$ 400,000
6	Collection (Compliance)	Prioritized Main Rehabilitaton and replacement				\$ 30,000	\$ 30,000	\$ 30,000	\$ 1,300,000		\$ 650,000		\$ 2,040,000
7	Collection (Compliance)	Upgrade / Replace Contributing Municipality Meters		\$ 250,000									\$ 250,000
8	Collection	New Customer Connections		\$ 25,000		\$ 25,000		\$ 25,000		\$ 25,000		\$ 25,000	\$ 125,000
9	Collection (Compliance)	Existing Lateral Repairs	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 500,000
10	Treatment (Safety / Compliance)	Replace Trickling Filter Tower #1		\$ 125,000	\$ 125,000								\$ 250,000
11	Treatment (Safety)	HVAC Upgrades in Headworks	\$ 175,000										\$ 175,000
12	Treatment (Safety)	Headwork Room Upgrades		\$ 250,000									\$ 250,000
13	Treatment (Safety / Compliance)	Screen Replacement					\$ 350,000						\$ 350,000
14	Treatment (Safety / Compliance)	Electrical Upgrades / Arc Flash remediation		\$ 250,000			\$ 750,000		\$ 750,000				\$ 1,750,000
15	Treatment (Safety)	Convert from Cl Gas to Hypo					\$ 300,000						\$ 300,000
16													\$ -
17	Treatment (Compliance)	Replace primary clarifier sludge collector gear drives					\$ 250,000						\$ 250,000
18	Treatment (Compliance)	SCADA System	\$ 50,000	\$ 250,000									\$ 300,000
19	Treatment (Compliance)	Miscellaneous Repairs	\$ 50,000	\$ 50,000		\$ 50,000	\$ 50,000		\$ 50,000	\$ 50,000		\$ 50,000	\$ 350,000
20													\$ -
21	Administration	IT Transition	\$ 50,000										\$ 50,000
22	Administration	IT Capex (@\$16/customer & 7,019 customers)	\$ 112,304	\$ 112,304	\$ 112,304	\$ 112,304	\$ 112,304	\$ 112,304	\$ 112,304	\$ 112,304	\$ 112,304	\$ 112,304	\$ 1,123,040
23	Transportation	Colorado Extended Cab 4X4	\$ 38,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 38,000
24	Transportation	Replace Dump Truck (if needed)	\$ 75,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 75,000
25	Safety Measures (Safety)	PHASE II Site Assess	\$ 100,000										\$ 100,000
26													\$ -
27													\$ -
	Contingency 10%	10% of items above	\$ 95,530	\$ 136,230	\$ 28,730	\$ 39,230	\$ 201,730	\$ 34,230	\$ 21,230	\$ 238,730	\$ 26,230	\$ 108,730	\$ 930,604
		TOTALS	\$ 1,050,834	\$ 1,498,534	\$ 316,034	\$ 431,534	\$ 2,219,034	\$ 376,534	\$ 233,534	\$ 2,626,034	\$ 288,534	\$ 1,196,034	\$ 10,236,644
		Rolling Total	\$ 1,050,834	\$ 2,549,369	\$ 2,865,403	\$ 3,296,938	\$ 5,515,972	\$ 5,892,506	\$ 6,126,041	\$ 8,752,075	\$ 9,040,610	\$ 10,236,644	