

STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES

IN THE MATTER OF THE
REVISION OF RATES FILED BY
MIDDLESEX WATER COMPANY
BPU DOCKET NO. WR2105_____

PREFILED TESTIMONY

OF

ROBERT K. FULLAGAR
VICE PRESIDENT - OPERATIONS

MAY 2021

1 MIDDLESEX WATER COMPANY
2 STATEMENT OF THE VICE PRESIDENT OF OPERATIONS
3 TESTIMONY OF ROBERT K. FULLAGAR
4

5 Q. PLEASE STATE FOR THE RECORD YOUR NAME, OCCUPATION AND
6 BUSINESS ADDRESS.

7 A. My name is Robert Fullagar. I am the Vice President of Operations of Middlesex Water
8 Company (“Middlesex,” the “Company” or “Middlesex System”), located at 485C Route
9 1 South, Suite 400, Iselin, New Jersey.

10 Q. PLEASE STATE YOUR PROFESSIONAL AND EDUCATIONAL BACKGROUND
11 AND EXPERTISE.

12 A. My professional qualifications and experience are set forth on Appendix A, attached
13 hereto.

14 Q. ARE YOU FAMILIAR WITH THE ASSETS AND OPERATIONS OF MIDDLESEX
15 WATER COMPANY?

16 A. Yes. I joined Middlesex Water Company in October 1997 as Director of Distribution. I
17 was promoted to Assistant Vice President in January 2019 and Vice President of
18 Operations in July 2019. With the various positions I have held within the Company
19 during the past twenty four years, I have supervised, reviewed, and managed elements
20 pertaining to system operations, maintenance and construction; safety compliance and
21 program development; operational risk and resiliency; emergency management and
22 planning; and physical security.

23 Q. WILL YOU BRIEFLY DESCRIBE THE CUSTOMER BASE, SOURCE OF SUPPLY
24 AND UTILITY PLANT OF MIDDLESEX WATER COMPANY?

25 A. Middlesex presently serves approximately 62,000 retail customers, primarily in
26 Middlesex County. We serve retail customers in Woodbridge Township, the City of
27 South Amboy, the Boroughs of Metuchen and Carteret, roughly one half of the Township
28 of Edison, roughly one third of the Borough of South Plainfield in Middlesex County and
29 a portion of the Township of Clark in Union County. Middlesex also provides water
30 service to approximately 300 customers in Cumberland County in a system known as the

1 Bayview System. The Bayview System is not interconnected with the Middlesex
2 System. On a wholesale contract basis, the Company serves part of the Township of
3 Edison, the Borough of Highland Park, the Old Bridge Municipal Utilities Authority, the
4 Marlboro Township Water Department and the City of Rahway. Under a contract with
5 the Township of East Brunswick, Middlesex provides treatment and delivery of East
6 Brunswick’s entire water supply. The raw water supply is allocated and purchased by
7 East Brunswick directly from the New Jersey Water Supply Authority (NJWSA).
8 The Middlesex System obtains water from three sources: a) raw surface water through
9 the Delaware and Raritan Canal purchased from the NJWSA; b) groundwater from
10 Company-owned wells; and c) purchase of treated water from the New Jersey American
11 Water Company (NJAWC). The entire Middlesex transmission and distribution network
12 functions as an integrated fully interconnected system. An automated and unmanned raw
13 water intake and pumping station, with auxiliary electric power generation, is located on
14 the banks of the Delaware and Raritan Canal in New Brunswick. This station delivers
15 raw surface water to the Company’s Carl J. Olsen Water Treatment Plant (CJO Plant)
16 located in Edison through a 54-inch diameter raw water supply main approximately 5,200
17 feet in length; and a 60-inch raw water supply main approximately 6,250 feet in length.
18 The CJO Plant comprises chemical treatment facilities, high rate up-flow clarifiers,
19 chlorine-contact basins (currently being replaced by ozone contact chambers), mixed
20 media filters with appurtenant wash water and reclamation facilities, filtered water
21 pumps, auxiliary electric power and a Supervisory Control and Data Acquisition System
22 (SCADA). The CJO Plant has a rated total capacity of 60 million gallons per day (mgd or
23 MGD).

24 The installed pumping capacities of Company-owned wells are as follows:

	No. of	Capacity
<u>Location</u>	<u>Wells</u>	<u>MGD</u>
Park Avenue	15	14.4
Tingley Lane	9	5.4
Sprague Avenue	2	2.4

1	Maple Avenue	<u>1</u>	<u>0.9</u>
2	Total	27	23.1

3
4 Detailed below is an approximation of the mix of the source of supply used to serve our
5 customers in the Middlesex system:
6

Surface	74%
Purchased	7%
Wells	19%
Total	<u>100.0%</u>

7
8 The Middlesex System has approximately 741 miles of transmission and distribution
9 (T&D) mains, ranging from 4 inches to 48 inches in diameter, and approximately 63,000
10 meters and 4,800 hydrants in service.

11 In addition, the Middlesex System has 17 million gallons of distribution storage provided
12 by one 5-million gallon steel reservoir, one 2-million gallon steel standpipe, and one 10-
13 million gallon steel reservoir, all located in Edison. There are four booster stations within
14 the Middlesex System. One (Edison) is used in conjunction with distribution storage
15 facilities and three (Tingley Lane, Menlo Park and Randolph Avenue) are used to
16 facilitate the purchase of water from NJAWC.

17 Q. HOW WERE THE PUMPAGE ESTIMATES DEVELOPED AND USED TO
18 DETERMINE THE POWER, CHEMICAL AND RESIDUAL ADJUSTMENTS?

19 A. Total pumping estimates were developed using a three-year average of total production
20 for the Middlesex System. The resulting total production was then used to develop
21 production estimates for the Company’s individual production facilities, namely the CJO
22 Plant and the Company-owned wells. These individual production facility values were
23 then used to determine the costs for power, chemicals and for the CJO Plant purchased
24 water and residuals disposal. Chemical cost estimates include the addition of liquid
25 oxygen (LOX), sodium bisulfite and hydrogen peroxide as these treatment chemicals are
26 associated with the operation of the new ozone treatment system (the “Ozone System”)

1 at the CJO Plant. The increase in production costs associated with the addition of the
2 ozone-related chemicals is anticipated to be offset somewhat by the need to use less
3 sodium hypochlorite and powder-activated carbon. It is estimated that the Ozone System
4 will increase power consumption at the CJO Plant by approximately \$15.00 per million
5 gallons (mg or MG).

6 Q. DID YOU PROVIDE THIS WATER PRODUCTION INFORMATION TO THE
7 COMPANY WITNESS SPONSORING AN EXHIBIT REPRESENTING THE PRO
8 FORMA INCOME STATEMENT FOR THE ADJUSTED TEST YEAR LABELED P-
9 5?

10 A. Yes. The information on Exhibit P-5, page 3 includes pro forma purchased water
11 volumes for raw water from the NJWSA and treated water from the NJAWC.

12 The information on Exhibit P-5, page 4 is based on the costs developed.

13 The chemical costs shown on Exhibit P-5, page 5 are based on anticipated dosages,
14 expected average production by facility, developed as detailed above, and the unit costs
15 based on the chemical bids received. Once the Ozone System is placed in service the
16 Company anticipates a reduction in powder activated carbon in the water treatment
17 process. The Test Year chemical costs, in total, are estimated to be reduced by
18 approximately \$466,000.

19 The residuals removal costs shown on Exhibit P-5, page 6 include a projected increase of
20 5.0% in 2021. Edison Township has yet to notify the Company of the actual increase.

21 Increases in residual costs imposed by Edison Township have historically been
22 retroactive to the beginning of the calendar year, so this will be updated during the course
23 of this proceeding. In conjunction with the Company's construction of the ozone
24 treatment facilities and upon placing the Ozone System in service, the Company
25 anticipates a reduction in residual costs associated with the reduced need to feed powder
26 activated carbon in the treatment process. The Ozone System related reduction in Test
27 Year residual disposal costs is, in total, estimated to be approximately \$538,000.

28 Q. CAN YOU DESCRIBE THE INDUSTRY-WIDE CHANGES IN THE
29 DEMOGRAPHICS OF THE WORKFORCE WITH RESPECT TO THE LEVEL OF
30 WORKER EXPERIENCE AND HOW THAT IS IMPACTING MIDDLESEX?

1 A. Retirements and the associated loss of significant institutional knowledge is creating
2 challenges with respect to maintaining our high levels of operational resiliency and
3 overall customer service. The ratio of experienced-to-lesser experienced workers has
4 gradually shifted over time. Based on current job descriptions of entry to mid-level
5 supervisors, the Company equates experience with 5 to 10 years of service in conjunction
6 with above-average performance evaluations and the successful ability to manage
7 increasing levels of responsibility. In the early 2000's the ratio was approximately 30:1.
8 In 2017, this ratio was approximately 10:1. At present, this ratio is at or near 1:1 for
9 Middlesex, and Middlesex has no reason to believe that this ratio will not continue to
10 trend negatively toward having even more less experienced workers. Our experience has
11 been that this situation is being exacerbated by the fact that all utility sectors (electric, gas
12 and water), as well as contractors, are competing for a diminishing pool of experienced
13 and non-skilled resources, a factor that is also trending in an unfavorable direction and
14 resulting in making it more difficult to staff experienced transmission and distribution
15 (T&D) repair crews. The Company invests several weeks of initial safety and skills
16 training on new T&D employees, followed by successive skills development training
17 over several months to increase the versatility of these individuals to perform a variety of
18 required operational tasks. Our overarching objective is to enable the Company to
19 continue to allocate resources expeditiously where the inherent risks associated with
20 certain operational functions are highest.

21 Q. HOW HAS THE COMPANY RESPONDED TO THE CONTINUING CHALLENGES
22 PRESENTED BY THESE CHANGES?

23 A. The shift in the ratio of experienced-to-lesser experienced personnel mentioned above
24 and the associated loss of institutional knowledge within our workforce have increased
25 the need to place significantly greater emphasis on safety and skills training of our
26 growing number and proportion of inexperienced personnel. In order to develop, evolve,
27 maintain and continually deliver safety and skills training, the Company created a
28 Production Training Coordinator position. This position was filled internally that in turn
29 created an opportunity to backfill the open position with an apprentice through the New
30 Jersey Department of Labor and the New Jersey Water Association's Operator

1 Apprenticeship Program. In order to address the influx of new and generally less-
2 experienced T&D employees, and to retain the talent being developed while maintaining
3 appropriate staffing levels of T&D repair crews, the Company is in the process of hiring
4 seven (7) additional Utility Service Representatives (USRs). The addition of these 7
5 additional USRs is intended to provide needed stability and counter the demographic
6 transition of the Company's workforce from more experienced to lesser experienced
7 employees. The labor and benefits costs for the Production Training Coordinator position
8 was filled as of March 2021 and has been included as adjustments to the Test Year as
9 shown on Exhibit P-5, pages 9 and 11. Ms. Tilley has also sponsored testimony on the
10 mathematical calculations for this position.

11 Q. PLEASE DESCRIBE THE OPERATIONAL MEASURES IMPLEMENTED BY THE
12 COMPANY TO COMPLY WITH THE ASSET MANAGEMENT REQUIREMENTS
13 OF THE WATER QUALITY ACCOUNTABILITY ACT (WQAA).

14 A. In order to comply with the operational asset management aspects of the WQAA, the
15 Company hired a Maintenance Planner. This position maintains and manages the
16 Company's existing Production assets in our Work and Asset Management system as
17 well as the new Production assets that are being introduced with the new ozone treatment
18 facility at the CJO Plant. This position was filled internally from the pool of Control
19 Room Operators effective March 20, 2021, which thereby created another opportunity to
20 backfill that Operator vacancy with an Apprentice through the New Jersey Department of
21 Labor and the New Jersey Water Association's Operator Apprenticeship Program.
22 The labor and benefits costs for this position has been included as adjustments to the Test
23 Year as shown on Exhibit P-5, pages 9 and 11. Ms. Tilley has also sponsored testimony
24 on the mathematical calculations for this new position.

25 Q. HAVE YOU SPONSORED PROPOSED NON-RATE CHANGES TO THE
26 MIDDLESEX WATER COMPANY TARIFF FOR WATER SERVICE (TARIFF)?

27 A. Yes. I am proposing changes to Section 7 of the Tariff. Specifically, I am sponsoring
28 changes to Section 7.8 and the addition of a new Section 7.14 of the Tariff. The proposed
29 changes to Section 7.8 clarify that private wells are an unapproved source of supply for
30 purposes of the prohibition on physical connections between pipes on the customer's

1 premises and an unapproved source of supply. The proposed new Section 7.14 of the
2 Tariff prohibits the installation of a private well on a residential customer's property and
3 a requirement that existing private wells on a residential customer's property be
4 decommissioned if: (1) determined by the Licensed Operator to pose a public health risk
5 to the community water system, or (2) at the time of a change in ownership of the
6 premise. This is a public health and safety issue. The proposed changes to the Company's
7 tariff are designed to address the threat to public health posed by cross connections with
8 the MWC system by customers attempting to supplement their potable water needs with a
9 private well. For example, during summer months it is not an infrequent occurrence for a
10 child to spray water, or even drink water, from a garden hose. The Company's proposed
11 tariff changes are designed to mitigate if not outright eliminate the risk that the child
12 residing at the premise in question could consume water containing an unacceptable level
13 of contaminant within a private well.

14 MWC has observed customers wishing to operate private wells on their property while
15 receiving water service from Middlesex becoming a more frequent occurrence. It is
16 MWC's experience that customers have sought to continue to operate private wells in
17 order to reduce their metered water consumption from Middlesex, which also results in a
18 corresponding reduction in their municipal sewer bills that are based on the metered
19 potable water consumption. As discussed above, however, the continued operation of
20 private wells create an unreasonable health and safety risk that MWC is addressing
21 through these proposed changes to the Company's Tariff. A marked copy of the Tariff
22 with the proposed changes and additions has been filed as part of the Petition at Exhibit
23 A.

24 Q. MR. FULLAGAR, DOES THIS CONCLUDE YOUR TESTIMONY?

25 A. Yes it does.

PROFESSIONAL QUALIFICATIONS

~ ***ROBERT K. FULLAGAR, P.E.*** ~

SUMMARY OF QUALIFICATIONS

Over 30 years of diverse experience in water supply/wastewater utility operations management, subsidiary executive administration and consulting engineering. Expertise in areas including but not limited to infrastructure resiliency; regulatory compliance; operational risk management; emergency management; business continuity program development and implementation; development of resiliency and security best practices; asset management and system rehabilitation.

EXPERIENCE

Middlesex Water Company (2019 to present) – Vice President of Operations

Establishes the vision in accordance with the core values of the Enterprise and develops strategic plans to drive performance and achieve all levels of compliance within the regulated operating units and the unregulated business units. Oversees and administers the operation, maintenance, rehabilitation and construction of water and wastewater infrastructure associated with the entire operations portfolio. Responsible for the operating expense budgets and capital project delivery across the Enterprise.

**Emergency Management and Security Committee Chair (2005 to present)
Safety Committee Chair (2011 to present)**

Directs and administers corporate functions relating to operational resiliency, safety, security, emergency management and business continuity.

Middlesex Water Company (1997 to 2018) - Director of Distribution

Directs and administers the operation and maintenance of infrastructure associated with the transmission and distribution (T&D) network, retail/wholesale customer meter management, field services, T&D network construction, capital improvement planning and program implementation, fleet and building maintenance management/administration.

**Utility Service Affiliates (2019 to present) – Subsidiary President
(2009 to 2018) - Subsidiary Vice President of Operations**

Utility Service Affiliates is a wholly-owned, unregulated subsidiary of Middlesex Water Company. Provides executive-level administration and oversight of subsidiary business functions associated with utility operation and regulatory compliance contracts for the Borough of Highland Park and Township of Monroe.

**Twin Lakes Utilities, Inc. (2019 to present) – Subsidiary President
(2009 to 2018) - Subsidiary Vice President of Operations**

Twin Lakes Utilities, Inc. is a wholly-owned, regulated subsidiary of Middlesex Water Company. Provides executive-level administration and oversight of subsidiary business functions including but not limited to regulatory compliance, capital program development/delivery, rate case proceedings and utility operations.

U.S. Water L.L.C (1994 – 1997) - Senior Project Manager, Project Manager

Managed the utility operations, regulatory compliance, capital and expense budgets; associated with potable water and sanitary wastewater systems at various municipalities in New Jersey, including but not limited to those in North Brunswick Township and Howell Township.

CFM Associates, Inc. (1990 - 1994) - Staff Engineer

Performed engineering analysis, evaluation and design associated with potable water treatment/distribution and sanitary wastewater treatment/collection projects.

Killam Associates, Inc. (1989-1990) - Staff Engineer

Performed engineering analysis, evaluation and design associated with hazardous waste remediation projects.

PROFESSIONAL LICENSES, QUALIFICATIONS AND AWARDS

New Jersey Professional Engineer (#39457) 1995

Pennsylvania Professional Engineer (#050207) 1995

New Jersey Water Treatment Plant Operator, Classification T4 (#20380) 1998

New Jersey Water Distribution System Operator, Classification W4 (#19108) 1998

New Jersey Wastewater Collection System Operator, Classification C2 (#15373) 1995

New Jersey Industrial Wastewater Treatment Plant Operator, Classification N2 (#4681) 1993

Pennsylvania Waterworks Operator, Classification WA1 (#W8072) 1996

Pennsylvania Sewage Treatment Plant Operator, Classification SA1 (#T2043) 1996

U.S. Department of Homeland Security – SECRET Level Clearance

New Jersey Incident Management Level 3 Certification

New Jersey State Firefighter II

Lead NJ Fellow - Class of 2015

American Water Works Association – New Jersey Section, 2016 Meritorious Operator Award

PROFESSIONAL AFFILIATIONS

- New Jersey Office of Homeland Security and Preparedness - Infrastructure Advisory Committee (IAC) Water and Wastewater Systems Sector Chair (2016 to present)
- New Jersey Utility Association – Operations Committee, vice Chair (2014 to present)
- New Jersey Section American Water Works Association – Licensed Operator Committee (2016 to 2019)
- American Water Works Association
- American Society of Civil Engineers
- National Fire Protection Association
- ASIS International

EDUCATION

B.S. Civil Engineering - New Jersey Institute of Technology, Newark, New Jersey